BTO RESEARCH REPORT 435

Breeding Birds in the Wider Countryside: their conservation status 2005

Baillie, S.R., Marchant, J.H., Crick, H.Q.P., Noble, D.G., Balmer, D.E., Coombes, R.H., Downie, I.S., Freeman, S.N., Joys, A.C., Leech, D.I., Raven, M.J., Robinson, R.A. and Thewlis, R.M.

BTO Birds Science People

Breeding Birds in the Wider Countryside: their conservation status 2005

Trends in numbers and breeding performance for UK birds

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Willow Warbler – one of three rapidly declining species with recent alerts

Using this website

This website is a "one-stop shop" for information about the population status of our common terrestrial birds. It is based on data gathered by many thousands of volunteers who contribute to BTO-led surveys. With one page per species, users can quickly find all the key information about trends in population size and breeding performance over the period 1967–2004, 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 36 years
- Trends calculated from BTO/JNCC/RSPB Breeding Bird Survey (BBS) data, not only for the UK as a whole but also for each of its constituent countries (England, Scotland, Wales and Northern Ireland)
- A system of Alerts that highlight population declines in any census scheme of greater than 25% or greater than 50% that have occurred over the past 5 years, 10 years, 25 years and 36 years.

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

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

The website covers the majority of British breeding birds, over 100 species in total, but excludes colonial seabirds, which are well covered by the JNCC's **Seabird Monitoring Programme** (**Mavor *et al.* 2005**), and rare species that are included in the reports of the **Rare Breeding Birds Panel** (e.g.**Ogilvie & RBBP 2004**).

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

Email your comments

Authors

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

Next page - Key findings

Key findings

Declining species

Best trend estimates over the longest available time period (usually 36 years) provide alerts to rapid declines of 50% or greater for 23 species. These are **Grey Partridge**, **Little Grebe**, **Woodcock**, **Turtle Dove**, **Cuckoo**, **Lesser Spotted Woodpecker**, **Skylark**, **Tree Pipit**, **Yellow Wagtail**, **Song Thrush**, **Whitethroat**, **Willow Warbler**, **Spotted Flycatcher**, **Marsh Tit**, **Willow Tit**, **Starling**, **House Sparrow**, **Tree Sparrow**, **Linnet**, **Lesser Redpoll**, **Bullfinch**, **Yellowhammer** and **Corn Bunting**.

The Tree Sparrow has declined by a massive 97% over the last 36 years

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

The **Whitethroat** decline results from the severe crash between 1968 and 1969 linked to conditions on the wintering grounds. The **Little Grebe** decline should be treated with caution as we have long-term data only from waterways. **Lesser Redpoll**, **Tree Pipit** and **Woodcock** also have limited data. For several of the species listed here long-term trend data are only available for England, where BTO has more volunteers to record information. Different long-term trends could be operating in other parts of the UK.

A further ten species trigger alerts as a result of long-term declines of between 25% and 50% over periods of 25 to 36 years. These are **Red-legged Partridge**, **Kestrel**, **Lapwing**, **Redshank**, **Common Sandpiper**, **Meadow Pipit**, **Dunnock**, **Mistle Thrush**, **Lesser Whitethroat** and **Reed Bunting**. Most of these species are already on the PSOB list on account of their population declines.

Recent alerts

In the 2005 report, we draw special attention to the alerts for three species that have recently crossed the 50% decline threshold. These are **Yellow Wagtail** (-67%), **Willow Warbler** (-60%) and **Cuckoo** (-57%). These may be candidates for future addition to the red section of the PSOB list.

We also identify two species that may become candidates to join the amber list due to declines of between 25% and 50%. These are **Common Sandpiper** (-28% over 28 years) and **Lesser Whitethroat** (-29% over 25 years). **Red-legged Partridge** also falls within this decline category

The Cuckoo declined by 57% in England between 1967 and 2003, and may be a candidate for future red listing

(-46% over 25 years) but would not be a candidate for amber listing because it is an introduced species.

Positive changes

Few of those species that have declined previously show evidence of improvements in status. **Song Thrush** numbers have increased by 23% over the last ten years but even after this recovery they show a 51% decline over the last 36 years. The 25-year decline measures for **Marsh Tit** and **Reed Bunting** are now below 50% as a result of their declines having levelled out in recent years. However, all of these species will need to show further improvements in status if they are to become candidates to leave the red list. For similar reasons **Kestrel** and **Goldcrest** could become candidates for removal from the amber list. Overall, most species that have declined show little sign of recovery in the last ten years (only six of the 37 species with long-term declines may now be recovering). Additionally BBS data indicate recent increases for **Snipe** and **Grasshopper Warbler** but we lack good annual monitoring data on longer-term changes in these species.

The Grey Wagtail has now shown a consistent pattern of recovery over several years

Sixteen species have more than doubled over the longest time period for which data are available (usually 36 years). These are **Mute Swan**, **Canada Goose**, **Shelduck**, **Mallard**, **Oystercatcher**, **Sparrowhawk**, **Buzzard**, **Stock Dove**, **Collared Dove**, **Woodpigeon**, **Green Woodpecker**, **Great Spotted Woodpecker**, **Nuthatch**, **Blackcap**, **Magpie**, **Carrion Crow**.

Reduced breeding success

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

Linnets have declined as a result of reduced breeding success

dependent processes (there are more resources available to feed the young when population numbers are low).

Increased breeding success

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

Early nesting

Data from the Nest Record Scheme provide strong evidence of shifts towards earlier laying in a range of species, linked to climate change (**Crick *et al.* 1997**, **Crick & Sparks 1999**). We have now identified 33 species that, on average, are laying up to 29 days earlier than they did 35 years ago. The species involved represent a wide range of taxonomic and ecological groups. Examples include **Long-tailed Tit** (16 days earlier), **Greenfinch** (13 days earlier), **Blackcap** (12 days earlier) and **Oystercatcher** (8 days earlier). The consequences of these changes for bird populations need further investigation.

On average, Long-tailed Tits are now laying 16 days earlier than in 1968

Next page - Contents

Contents

1. INTRODUCTION

Since its formation in 1933, BTO has been deeply committed to gathering quantitative information on the bird populations of the UK. Its nationwide network of skilled volunteers, many of whom are long-term contributors to survey schemes, provides the ideal way to monitor the bird populations that are widely distributed across the countryside. BTO data, from such schemes as the **Common Birds Census**, the **BTO/JNCC/RSPB Breeding Bird Survey** 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 is 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.

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;

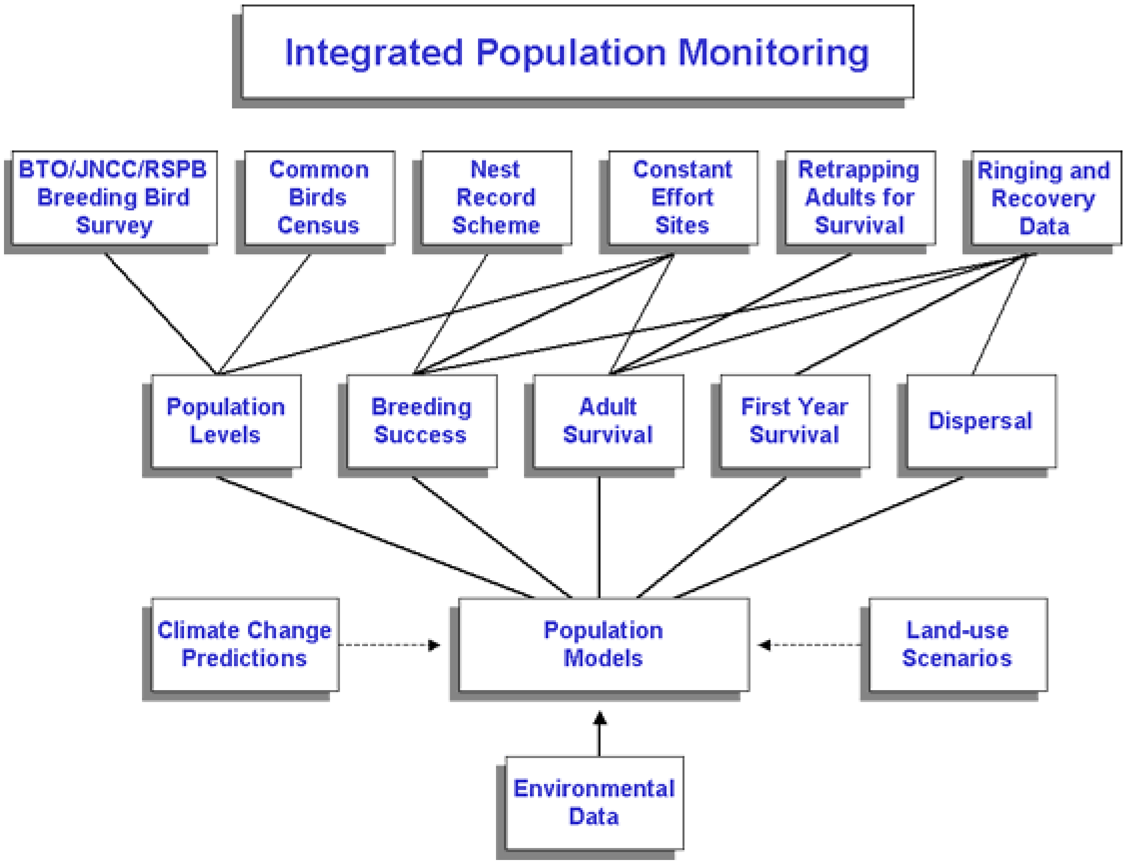
(c) to provide data that will assist in identifying the causes of such changes; and

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

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

- Changes in numbers of breeding birds are measured by:
  - the **Common Birds Census (CBC)** – which ran from 1962 and ended in 2000. This scheme mapped the territories of common birds on 200-300 mainly farmland and woodland plots each year, averaging about 70 and 20 ha respectively.
  - the **Waterways Bird Survey (WBS)** – which began in 1974 and maps the territories of birds along rivers, streams and canals on 80-130 plots each year, each covering, on average, 4.5 km.
  - 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 **BTO/JNCC/RSPB Breeding Bird Survey (BBS)** – which began in 1994, has replaced the CBC as the major monitoring scheme for landbirds, after a seven-year overlap. BBS is based on around 2300 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.
- 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** – 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 by the **Retrapping Adults for Survival** (RAS) project

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



Next Section - 1.2 The value of combining results from different monitoring schemes

Back to Introduction Index

1.2 The value of combining results from different monitoring schemes

Monitoring the changes in the size of a population does not in itself provide sufficient information on which to base an effective conservation strategy (**Goss-Custard 1993**). Concurrent monitoring of breeding performance and survival rates is necessary to allow changes in population size to be properly interpreted (**Temple & Wiens 1989**) 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.

For a long-lived species, a decline in population size may only begin after a long period of low survival or reduced reproductive output. 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**, **Walsh *et al*. 1995**).

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 demographic mechanisms of these declines, using its long-term historical databases (**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. 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 wide 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**), **Spotted Flycatcher** (**Freeman & Crick 2003**), **Starling** (**Freeman *et al.* 2002**), 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 which is most affected during population declines is particularly important for the conservation agencies when considering the plight of species on the lists of conservation concern (**JNCC 1996**; **Anon. 1995**, **1998**). Analysis of BTO data sets, which has already helped to build these lists, is a key point in several of the UK Government's Biodiversity Action Plans for rapidly declining species. Once conservation actions have been initiated, the BTO's Integrated Population Monitoring programme has a further function, because the success of these actions will be measured and assessed by continued BTO monitoring.

Next Section - 1.3 The aims of this report

Back to Introduction Index

1.3 The aims of this report

This report is the latest in a series of reports that are used by conservation practitioners as a ready-reference guide to recent changes in status of breeding birds in the UK. By publishing it on the BTO website, we aim to make it available to a much wider audience, especially BTO members and the general birdwatching public. We also hope that it 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 as possible a readership a species-by-species overview of the trends in breeding population size 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 other conservation bodies concerning 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 regularly 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.* 2005**), and the majority of species covered by the **Rare Breeding Birds Panel** (**Ogilvie & RBBP 2004**), are not included here. Wintering populations of waterfowl are covered by the Wetland Bird Survey annual reports (e.g. **Collier *et al.* 2005**) and by the WeBS alerts system (**Maclean *et al*. 2005**).

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

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

Section 2 - Methodology

Back to Introduction Index

2. METHODOLOGY

Six monitoring schemes have contributed data to this report. Five provide data on changes in abundance: Breeding Bird Survey; Common Birds Census; Waterways Bird Survey; Heronries Census; and Constant Effort Sites ringing scheme. Two schemes provide data on changes in productivity: the Nest Record Scheme and the Constant Effort Sites Scheme. In addition, information from detailed analyses of the recoveries of birds from the Ringing Scheme is included where relevant. The methodologies of the monitoring schemes are described below, including information on fieldwork, data preparation, sampling considerations and the statistical methods used in analysis.

Next Page - Breeding Bird Survey

Back to Contents

2.1 Breeding Bird Survey

The BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched in 1994, following two years of extensive pilot work and earlier desk-based studies. The introduction of the BBS was a move designed to overcome the limitations of the **Common Birds Census** (CBC), which had monitored bird populations since 1962. In particular, it improves the geographical representativeness of UK bird monitoring, and thereby promotes both species and habitat coverage. The BBS uses line transects rather than the more intensive territory-mapping method used by the CBC. This makes the survey relatively quick to undertake, and has been successful in encouraging a large number of volunteers to take part. The average time observers spend per visit is only around 90 minutes.

The sampling units are 1x1-km squares of the National Grid. They are selected randomly by computer (see **Data analysis** below). The BBS requires a relatively large sample of survey squares and the aim is to achieve coverage of about 2500 squares in the UK. An important aspect of BBS is its coordination through a network of volunteer BBS Regional Organisers. Information and survey forms are distributed first to these organisers, who contact volunteers willing to survey the squares every year. After the field season, forms are returned to BTO headquarters again via the Regional Organisers. On-line submission of BBS data is now also available and is recommended – 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 the survey route, the second and third 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 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 is important because it provides a measure of bird detectability in different habitats and 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 2300 BBS squares were being surveyed annually, close to the original target of 2500. 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 2100 in 2002 and had increased further to 2254 squares in 2003 and 2526 in 2004. Squares are distributed throughout the UK and cover a broad range of habitats, including uplands and urban areas. Around 105 species are present on 40 or more BBS squares annually and can be monitored with good precision at the UK scale (**Joys *et al.* 2003**: BTO Research Report 317), although a few present special difficulties because of their colonial or flocking habit or their wide-ranging behaviour. For most of these, BBS can also assess annual population changes within **England** alone, and for about half the species also within **Scotland** and **Wales** as separate units. Sample sizes in **Northern Ireland** currently allow about 20 species to be indexed annually.

Data analysis
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 (stratum), to a density that varies with the number of BTO members resident there. Regions with larger numbers of potential volunteers are thereby allocated a larger number of squares, enabling more birdwatchers to become involved in these areas. This does not introduce bias into the results because the analysis takes the differences in regional sampling density into account.

Change measures between years are assessed using a log-linear model with Poisson error terms. For each species, the higher count from the total early or late counts for each square 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 within the UK. The upper and lower confidence limits of the changes indicate the certainty that can be attached to each change measure. When the limits are both positive or both negative, we can be 95% confident that a real change has taken place. Note that this presentation and its interpretation differs from the 85% confidence limits shown on most graphs within this report (see **here** for details).

Trends are presented as graphs in which annual population indices are shown in blue and their 95% confidence limits in green. A caveat of "small sample" is provided where the mean sample size is in the range 30–39 plots per year for England, Northern Ireland, Wales and Scotland trends. A minimum sample size of 40 plots was required for the UK.

Next section - 2.2 Common Birds Census

Back to Methodology Index

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

2.2 Common Birds Census

The Common Birds Census (CBC), which began in 1962, was the first of the BTO's monitoring schemes for widespread breeding birds, but has now been superseded for this purpose by **BBS**. The 2000 field season was the CBC's last year of full operation. CBC results have been 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 mine of information of unique value for investigating the relationships between breeding birds and their environment, over wide temporal and spatial scales. For many species, CBC and BBS trends can be linked to form joint CBC/BBS trends that provide ongoing monitoring, continuous since the 1960s.

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. Moreover, as the plots were chosen by the observers, some may not have been representative of the surrounding countryside and there may be some bias towards bird-rich habitats. It is for these reasons that the BBS was introduced in 1994. Both surveys were run in parallel for seven years to allow calibration between the schemes (**Freeman *et al.* 2003**: BTO Research Report 303; **Section 2.3** of this report).

CBC, 1962-2000
The results from the Common Birds Census (CBC) provided reliable population trends for more than 60 of the commoner UK breeding species.

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

A territory-mapping approach was used to estimate the number and positions of territories of each species present on each survey plot during the breeding season. Volunteers visited their survey plots typically eight to ten times between late March and early July and all contacts with birds, either by sight or sound, were plotted on 1:2500 maps. Codes were used to note each bird's species, with sex and age where possible, and also to record activity such as song or nest-building. The registrations were then transferred to species maps and returned to BTO headquarters for analysis. 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.

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.

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.

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 way of estimating breeding bird numbers in small areas. **Snow (1965)** compared CBC mapping and intensive nest-finding, and concluded that mapping censuses are good indicators of breeding population size for 70% of species. Experiments to test differences between observers' abilities to detect birds found that, although there was considerable

variation between individual abilities, the observers were consistent from year to year (**O'Connor & Marchant 1981**). As the CBC relies on data from plots covered by the same observer in consecutive years, this source of bias has no implications for the CBC's ability to identify population trends. It has also been confirmed that the sample of plots from which CBC results are drawn has not changed in composition or character over the years (**Marchant *et al.* 1990**) and that the results of territory analysis are not affected by changes in analysts, once trained (**O'Connor & Marchant 1981**). **Fuller *et al.* (1985)** found that farmland CBC plots were representative of ITE lowland land-classes throughout England (excluding the extreme north and southwest), and closely reflected the agricultural statistics for southern and eastern Britain.

Data analysis
Population changes are modelled using a generalised additive model (GAM), a type of log-linear regression model that incorporates a smoothing function (**Fewster *et al.* 2000**). This replaces the Mountford model that employed a 6-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 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 2002. If an index value increases from 100 to 200, the population has doubled; if it declines from 100 to 50, it has halved. The two green lines on the graphs, above and below the index line, are the upper and lower 85% confidence limits. A narrow confidence interval indicates that the index series is estimated precisely, 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 regarded 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, 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 Page - 2.3 Joint CBC/BBS trends

Back to Methodology Index

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

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

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

The BBS, on account of its more rigorous, stratified random sampling design, and its simplicity in the field, produces data that better cover the previously under-represented areas. In previous editions of 'Breeding Birds in the Wider Countryside' (e.g. **Baillie *et al.* 2002**), indices have been published both from CBC and BBS data, for those species with sufficiently large sample sizes. The CBC was discontinued in 2000; from now on, BBS data will be used in the production of national population trends dating back to its year of establishment, 1994.

For many purposes, however, the presentation and analysis of longer time-series will be 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 has led to the BTO recently 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**). 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. In **Freeman *et al.* (2003)** 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 (called CBC/BBS-England index), rather than just the Fuller rectangle. A similar UK index can be produced for only about 50% of species (CBC/BBS-UK index).

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 regional variation in trends was found for approximately half the species (see **Freeman *et al.* 2003** for full details). For such species, the regional bias in CBC data means that no reliable UK index can be produced prior to 1994. In summary, joint population indices dating back to the start of the CBC can continue to be produced for that part of the country well served by the CBC for almost all common species.

The present ‘Breeding Birds in the Wider Countryside’ is the first since the close of the CBC and the first to present joint CBC/BBS indices, in place of those derived solely from the CBC. The model fitted to these combined data is that historically employed for the BBS, a Generalized 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 with 11 degrees of freedom.

Indices are plotted as the blue line on the graphs, and provide a relative measure of population size on an arithmetic scale with a 2000 value of 100. 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, 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 Page - 2.4 Waterways Bird Survey

Back to Methodology Index

2.4 Waterways Bird Survey

The Waterways Bird Survey (WBS) has monitored the population trends of up to 24 riparian bird species on canals and rivers throughout the UK since 1974. WBS uses a territory-mapping method like that of its parent scheme, the **Common Birds Census**, to estimate the breeding population of waterbirds on each plot. Detailed territory maps are prepared that can be compared with habitat data to show which features of linear waterways are important to breeding birds. The plots average 4.4 km in length; almost half are slow-flowing lowland rivers with the rest either fast-flowing rivers/streams or canals. There are currently 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**). Wales, Scotland and especially Northern Ireland are relatively poorly covered.

All fieldwork is carried out by volunteers. Observers are asked to survey their plot 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. Since 1994, observers have completed their own territory analysis, based on the scheme's written guidelines, with results checked by BTO staff. This has successfully speeded up the processing of WBS data at BTO headquarters. As WBS employs 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 has been little change in the composition of the WBS sample in terms of waterway type or geographical spread. 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 is between 10 and 19.

Population changes along waterways are reported annually in *BTO News* for around 20 riparian species, of which Goosander is not covered by BBS monitoring. For specialist waterbirds, including Little Grebe, Mute Swan, Common Sandpiper, Kingfisher, Sand Martin, Grey Wagtail, Dipper and Reed Warbler, targeted surveys along waterways can provide a better precision of monitoring than is possible through the more generalised BBS surveys. WBS indices can also add a new perspective on trends in waterbirds that are monitored, largely in other habitat types, 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, showed greater stability. **Yellow Wagtails** have declined much more steeply in WBS habitats than elsewhere.

WBS has similar limitations as a monitoring scheme that led to the CBC's replacement by BBS. In particular, plot distribution is biased geographically and possibly also towards sites that are good for birds, and an intensive survey method is used that severely limits the sample size (**Marchant *et al.* 1990**). A drawback specific to WBS is that it covers only waterbirds. BTO has addressed these issues by setting up the **Waterways Breeding Bird Survey (WBBS)**, which has been running since 1998 in parallel with WBS. WBBS uses BBS-style transect methods along random waterways, and includes all species of birds. If, once its development is completed, WBBS becomes an ongoing scheme, it will provide 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**). The analytical procedure is the same as that used for the CBC (**section 2.2**).

Next section - 2.5 Heronries Census

Back to Methodology Index

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

2.5 Heronries Census

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

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. Except during the special surveys, rather few counts are made of heronries in Scotland and Northern Ireland. Counts are submitted mostly on cards and the data are entered onto computer at BTO headquarters. The number of heronries cards submitted each year is around 450.

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, resulting in the graph as shown (**Marchant *et al.* 2004**). A short report containing simple estimates of change for the latest year is published annually in *BTO News*.

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

Next Section - 2.6 Constant Effort Sites Scheme

Back to Methodology Index

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

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

BBWC Home > **Contents** > **Methodology** > Constant Effort Sites

2.6 Constant Effort Sites Scheme

The Constant Effort Sites (CES) Scheme uses changes in catch sizes across a network of more than 100 standardised mist-netting sites to monitor changes in the abundance and breeding success of common passerines in scrub and wetland habitats. At each constant effort site, licensed ringers erect a series of mist-nets in the same positions, for the same amount of time, during 12 morning visits between May and August. Year-to-year changes in the number of adults caught provide a measure of changing population size, while the proportion of young birds in the total catch is used to monitor annual productivity (breeding success). By monitoring the abundance of young birds between May and August, the CES method should integrate contributions to annual productivity from the entire nesting season, including second and third broods for multi-brooded species. Between-year recaptures of ringed birds can also be used to calculate annual survival rates, although this requires specialised analytical techniques (e.g. **Peach 1993**) and is not considered further here. Further details of the CES Scheme and methods of analysis are presented by **Peach *et al.* (1996)**.

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

Data Analysis

Annual estimates of the abundance of adults and young are separately assessed through application of log-linear Poisson regression models, from which fitted year-effects are taken as annual relative abundances, compared to an arbitrary value of 100 in 2002. 85% confidence limits are based on the corresponding asymptotic standard errors. At sites where catching effort in a year falls below the required 12 visits, but a minimum of 8 are completed, annual catch sizes are corrected according to experience during years with complete coverage by incorporating an offset into the generalized linear model (see **Peach *et al.* 1998** for full details). Sites with fewer 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 2002. As above, catch sizes are corrected for small numbers of visits missed where necessary. It should be noted that these indices are relative, and are not estimates of the actual numbers of young produced per adult.

Data are presented graphically with annual estimates in blue and their 85% confidence limits in green. Methods and software for the optimal fitting of smoothed trends to CES data remain in development. Here, we also present a non-parametric regression model fitted to the calculated annual indices of abundance and productivity (via thin-plate smoothing splines with six degrees of freedom), to provide a simple smoothed picture. This is the red smoothed line on the CES graphs on the species pages. A caveat is provided for "small samples" when the average number of plots per year is between 10 and 19.

Next Section - 2.7 Nest Record Scheme

Back to Methodology Index

2.7 Nest Record Scheme

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

The primary aim of the Nest Record Scheme is to monitor the breeding performance of a wide range of UK birds annually as a key part of the BTO's data collection. Annual reports are published (e.g. **Crick *et al.* 2004a**) 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.* 1995**, **Crick 1997**, **Browne *et al.* 2005**).

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 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 from the methods of **Mayfield (1961**, **1975**) and **Johnson (1979)** (see **Crick *et al.* 2003** for review).

In order to minimise the incidence of errors and inaccurately recorded nests, a set of rejection criteria was applied to the data: laying date only included 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 only visited after hatching; and maximum brood size was calculated only for nests which were observed after hatching. The last variable is an underestimate of brood size at hatching because observers may miss early losses of individual chicks; it differs from clutch size because eggs may be lost during incubation and hatching success may be incomplete.

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

Statistical analyses of nest record data were undertaken using SAS programs (**SAS 1990**). Regressions through annual mean laying dates, clutch sizes and brood sizes were weighted by sample size. Nest survival was analysed by logistic regression. Quadratic regressions were used when the inclusion of a quadratic term provided a significant improvement over linear regression. These are described as "curvilinear" in the tables on species pages. Significant linear trends are described as "linear". The best fitting regressions (i.e. quadratic or linear) are presented on the figures in this report. Where neither regression is significant the linear regression line is shown for illustrative purposes.

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

Next Section - 2.8 The Alert System

Back to Methodology Index

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

2.8 The Alert System

2.8.1 General approach

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

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

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

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

2.8.2 Smoothing population trends

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

Technical details available here

2.8.3 Years used for analysis

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

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

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

Data for other schemes generally start as soon as the scheme had reached a sufficient size to produce reliable results. The maximum periods available from the main schemes contributing to this report are set out in the table below.

Scheme	Years available		Maximum alert period		
	First year	Last year	First year	Last year	Number of years
CBC/BBS	1966	2004	1967	2003	36
Waterways Bird Survey	1974	2004	1975	2003	28
Constant Effort Sites	1983	2004	1984	2003	19
Heronries Census	1928	2004	1929	2003	74
Breeding Bird Survey	1994	2004	-	-	-

2.8.4 Confidence limits and statistical testing

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

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

Technical details available here

2.8.5 Data-deficient species

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

Unrepresentative data

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

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

Sample size

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

2.8.6 Application to individual schemes

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

BBS started in 1994 so only 10 years' data (1994–2004) were available for this report. This is not a long enough time series to apply the smoothing methods and alerts framework outlined above. Therefore we have simply calculated change measures between the first and last years of the BBS time series based on the standard 'sites x years' model that is used to produce the BBS indices each year.

Technical details available here

Next - 2.9 Statistical methods used for alerts

Back to Methodology Index

2.9 Statistical methods used for alerts

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

2.9.1 General structure of data

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

$$\log(\text{count}) = \text{site effect} + \text{year effect}$$

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

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

2.9.2 Fitting smoothed models

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

$$\log(\text{count}) = \text{site effect} + \text{smooth}(\text{year})$$

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

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

	Years	Length of time series	df for smoothed index
CBC/BBS	1966–2004	39	11
Waterways Bird Survey	1974–2004	31	9
Constant Effort Sites	1983–2004	22	6
Heronries Census	1928–2004	77	23

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

2.9.3 CBC/BBS trends

The model fitted to these combined data is that historically employed for the BBS, a Generalised Linear Model with counts assumed to follow a Poisson distribution and a logarithmic link function. Standard errors were calculated via a bootstrapping procedure. For presentation in the figures, both the population trend and its confidence limits were also subsequently smoothed using a thin-plate smoothing spline with 11 degrees of freedom.

2.9.4 Waterways Bird Survey

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

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

2.9.5 Constant Effort Sites

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

Offsets could not easily be incorporated in the GAM software that we have available. Therefore we fitted a smooth curve to the annual indices. This was done using PROC TSPLINE of SAS with 6 degrees of freedom. This procedure should give very similar estimates to a GAM analysis, but it does not provide confidence intervals for the smoothed population trends, nor for the change measures derived from it. Therefore all alert flags relating to the CES are shown in square brackets.

2.9.6 Heronries Census

The Heronries Census data were analysed using a modified sites x years model 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 with 23 degrees of freedom. 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

Jump to

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**)

Status summary

Mute Swan populations have increased progressively on both WBS and CBC plots 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 (**Gibbons *et al.* 1993**). 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 (**Collier *et al*. 2005**). 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

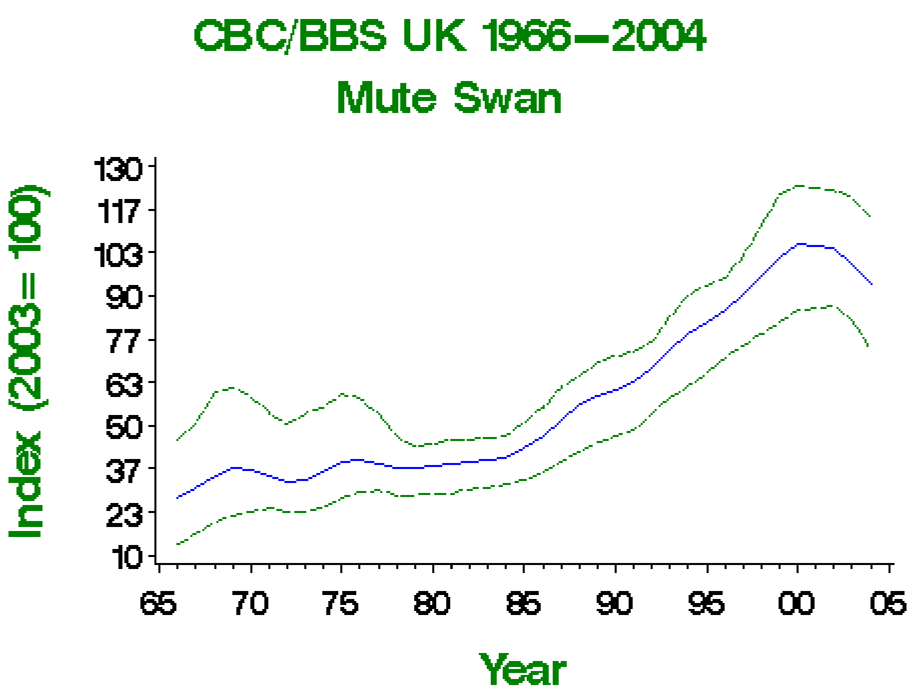


Table of population changes for Mute Swan

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	55	188	43	605		Small CBC sample
	25	1978-2003	73	145	52	248		Small CBC sample
	10	1993-2003	155	19	-2	42		

	5	1998-2003	188	1	-14	12		
CBC/BBS UK	36	1967-2003	64	227	44	603		
	25	1978-2003	85	170	73	336		
	10	1993-2003	182	37	16	88		
	5	1998-2003	224	4	-9	16		
WBS waterways	28	1975-2003	44	71	17	141		
	25	1978-2003	45	56	16	103		
	10	1993-2003	56	29	11	47		
	5	1998-2003	53	3	-6	14		
BBS UK	10	1994-2004	185	0	-14	16		
BBS England	10	1994-2004	158	-21	-32	-8		

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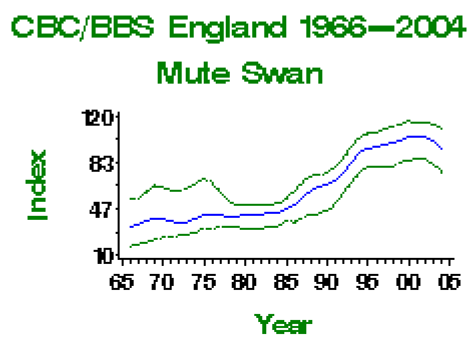
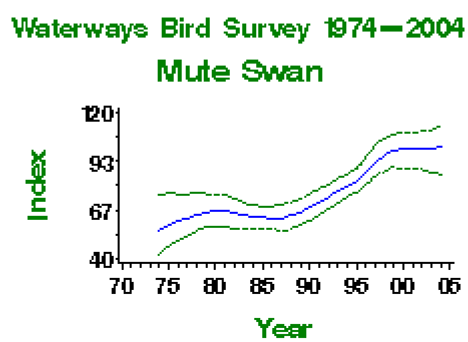
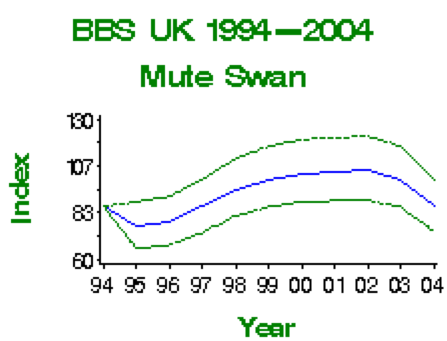
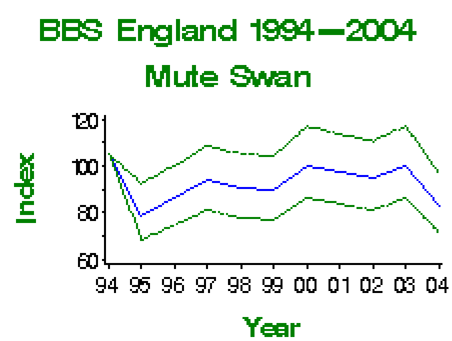






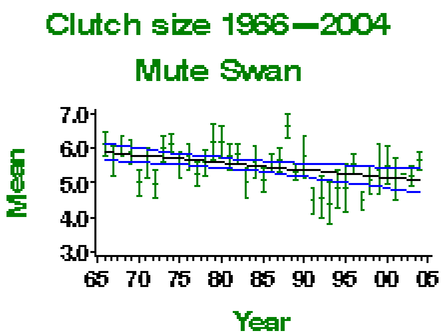


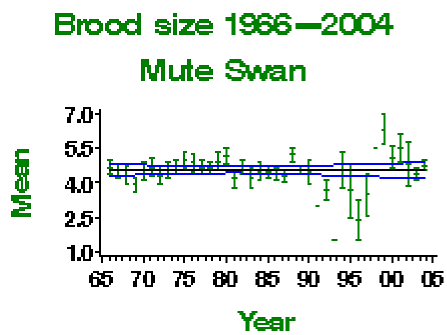
Productivity trends

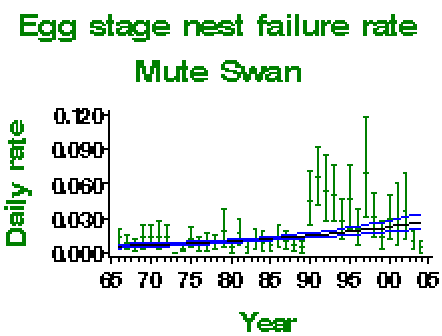
Table of productivity changes for Mute Swan

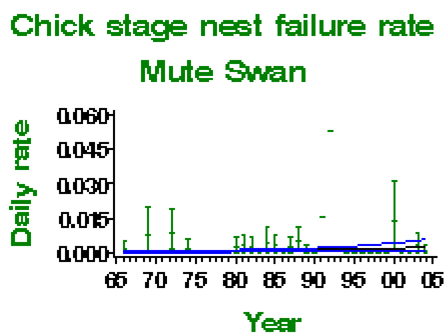
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-	18	Linear decline	5.85 eggs	5.08 eggs	-13%	Small

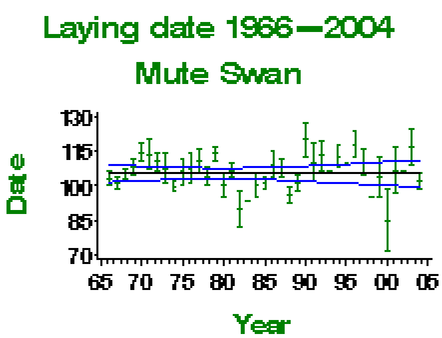
		2003						sample
Brood size	35	1968-2003	31	None				
Daily failure rate (eggs)	35	1968-2003	25	Linear increase	0.64% nests/day	2.56% nests/day	300%	Small sample
Daily failure rate (chicks)	35	1968-2003	19	Linear increase	0.06% nests/day	0.24% nests/day	300%	Small sample
Laying date	35	1968-2003	11	None				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

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 north-west 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**). 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 current formal estimates from 1999 and 2000 (**Collier *et al.* 2005**).

Population changes

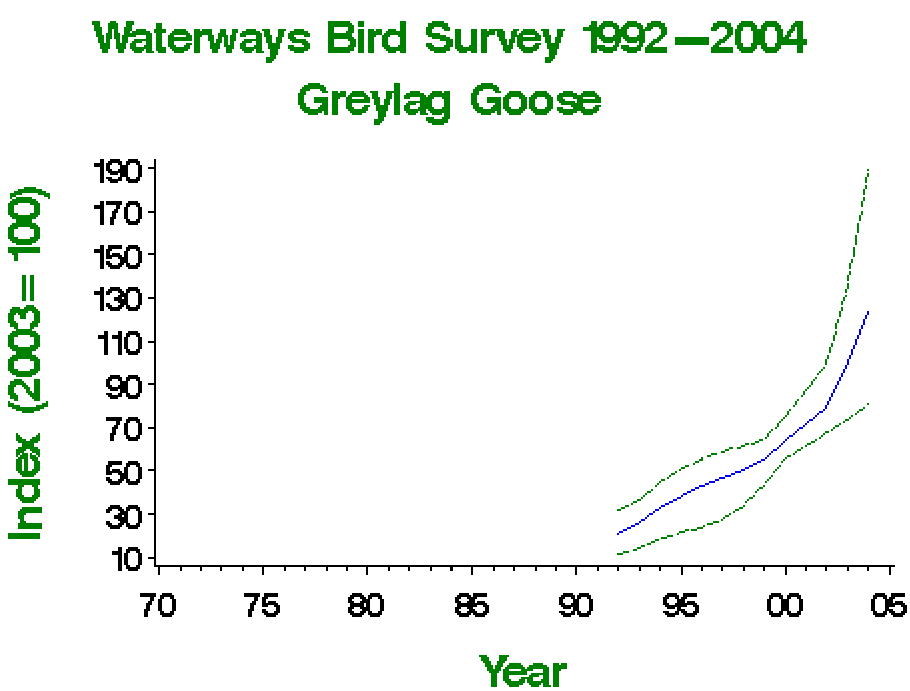


Table of population changes for Greylag Goose

Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment

	(yrs)		(n)	(%)	limit	limit		
WBS waterways	10	1993-2003	12	279	75	1017		Small sample
	5	1998-2003	12	98	13	352		Small sample
BBS UK	10	1994-2004	99	179	119	257		
BBS England	10	1994-2004	80	73	38	117		

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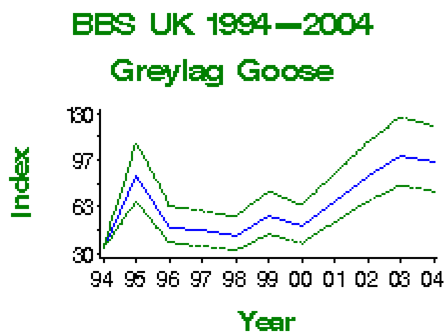

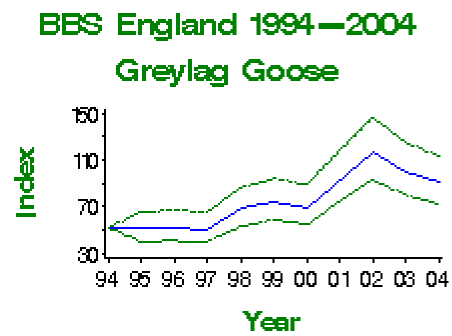

Productivity trends

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**)

Status summary

Canada Geese have increased rapidly, at a rate estimated at 9.9% per annum in southern Britain between the 1988–91 Atlas period and 1999 (**Rehfisch *et al.* 2002**). The WBS sample became large enough for annual monitoring in 1980, since when further, apparently accelerating, increase on linear waterways has been recorded. 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 (**Collier *et al*. 2005**).

Population changes

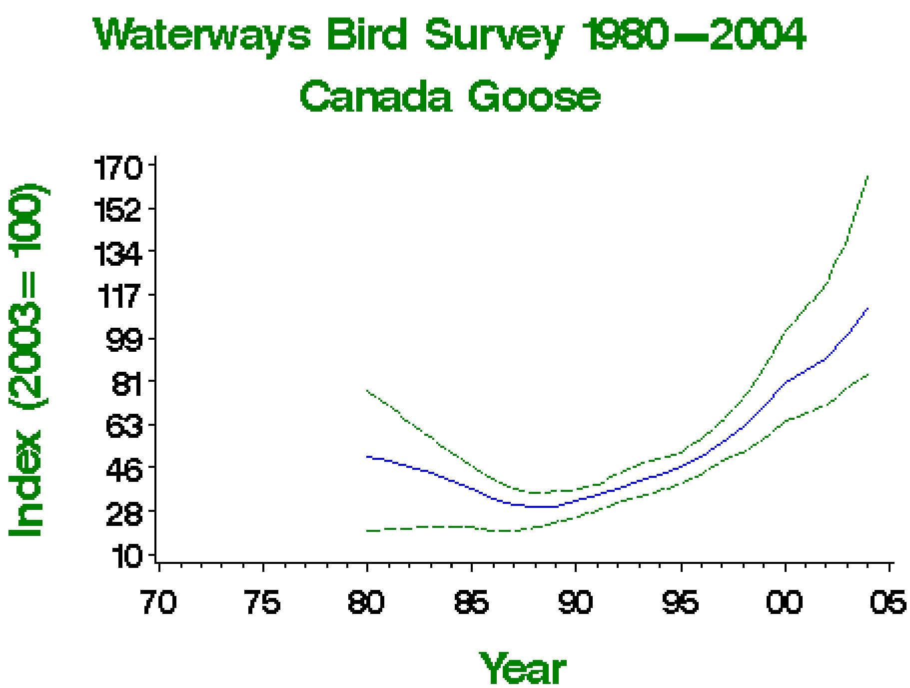

Table of population changes for Canada Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	22	1981-2003	29	108	3	664		
	10	1993-2003	38	151	78	302		
	5	1998-2003	36	61	31	120		
BBS UK	10	1994-2004	331	74	53	98		
BBS England	10	1994-2004	312	65	45	88		

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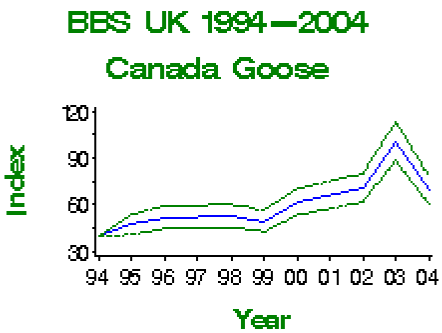
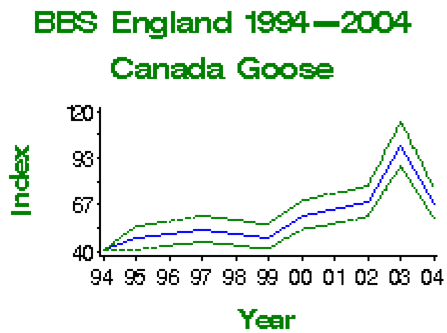




Productivity trends

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 represents that of the population as a whole. 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 of this trend. Population increase was associated with expansion of range, measured at 20% 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, as has the BBS trend (**Collier *et al.* 2005**). The ten-year BBS decline provisionally raises a BTO alert.

Population changes

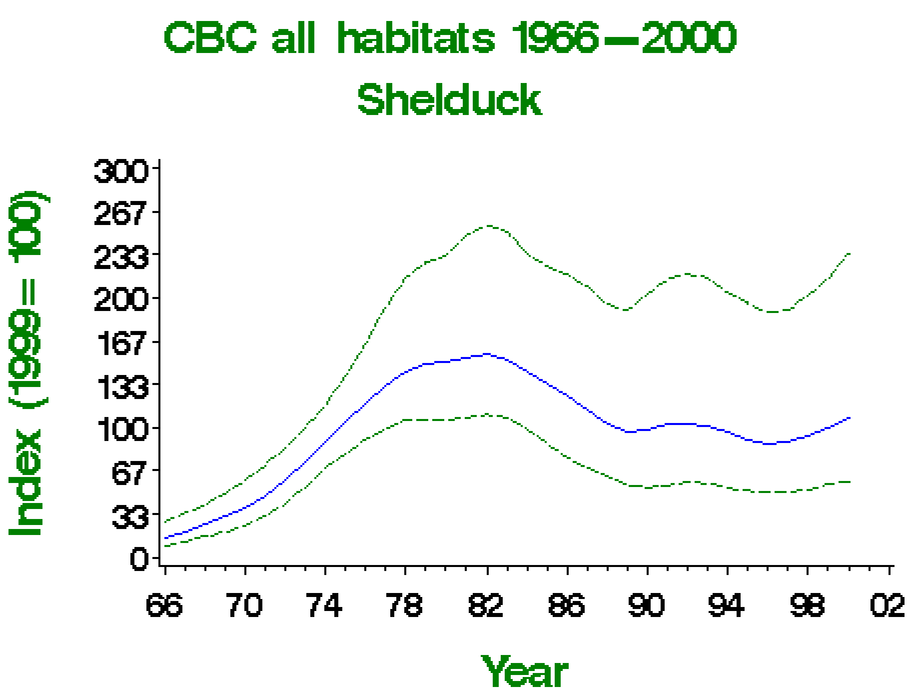
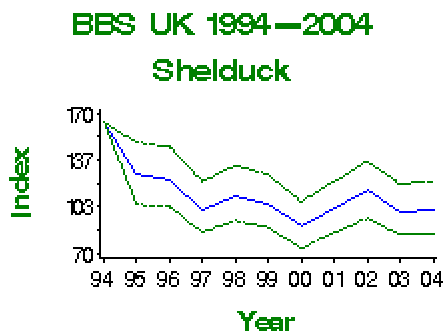


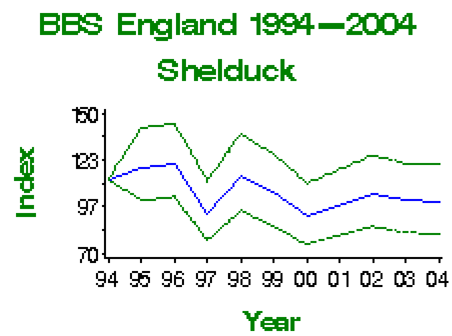
Table of population changes for Shelduck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	18	300	94	787		Small sample

	25	1974-1999	21	12	-40	118		
	10	1989-1999	21	3	-21	40		
	5	1994-1999	23	4	-18	39		
BBS UK	10	1994-2004	118	-38	-49	-26	(>25)	
BBS England	10	1994-2004	97	-12	-28	8		

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





Productivity trends

Productivity information is not currently available for this species

Additional information

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

MALLARD
Anas platyrhynchos

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: rapid increase

UK population size

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

Status summary

The Mallard has increased steadily as a breeding bird in the UK since the 1960s, and especially in England, an increase to which ongoing large-scale releases for shooting may have contributed (**Marchant *et al.* 1990**). Mallards originating from domesticated birds and not resembling wild-type birds in either plumage or behaviour are very abundant but perhaps under-represented in survey data, especially since many individuals appear to be semi-captive. A large part of the increase in breeding numbers may be attributable to such birds, rather than to true-bred stock. Winter populations have declined since the late 1980s (**Collier *et al*. 2005**), linked apparently to a decrease in continental immigration (**Mitchell *et al*. 2002**).

Population changes

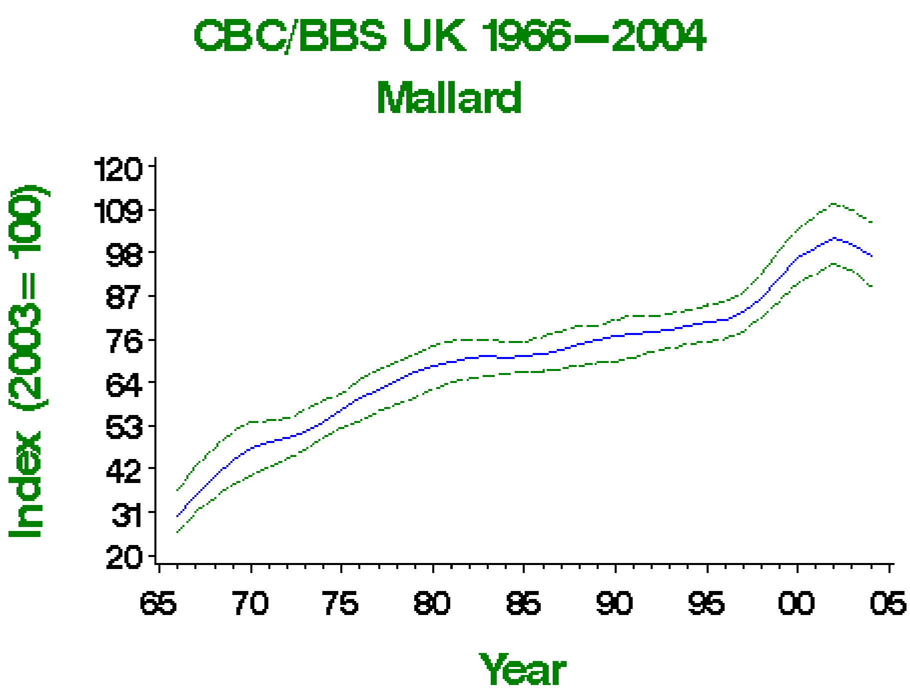


Table of population changes for Mallard

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	290	215	147	288		
	25	1978-2003	382	63	35	94		
	10	1993-2003	799	36	24	46		

	5	1998-2003	962	21	14	27		
CBC/BBS UK	36	1967-2003	344	184	113	253		
	25	1978-2003	455	54	33	86		
	10	1993-2003	955	28	18	42		
	5	1998-2003	1151	16	10	23		
WBS waterways	28	1975-2003	59	185	108	290		
	25	1978-2003	57	150	88	230		
	10	1993-2003	32	21	8	32		
	5	1998-2003	53	-1	-7	5		
BBS UK	10	1994-2004	982	23	15	31		
BBS England	10	1994-2004	819	33	24	42		
BBS Scotland	10	1994-2004	85	4	-19	34		
BBS Wales	10	1994-2004	55	-3	-27	29		

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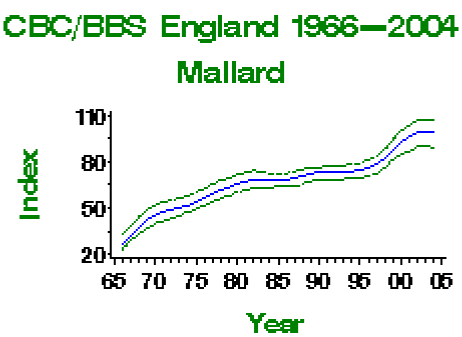
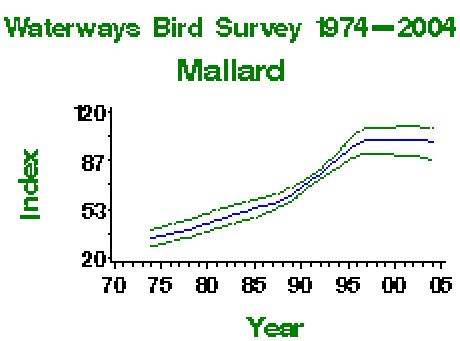
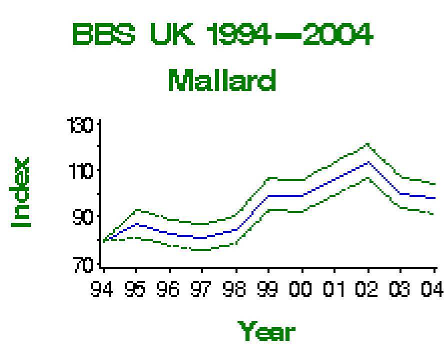
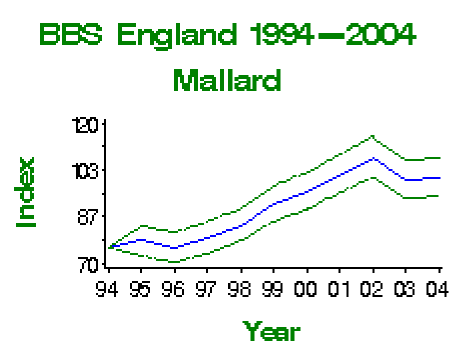
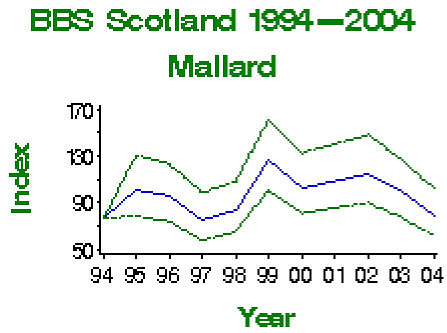
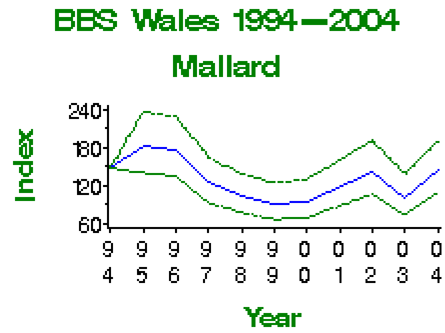












Productivity trends

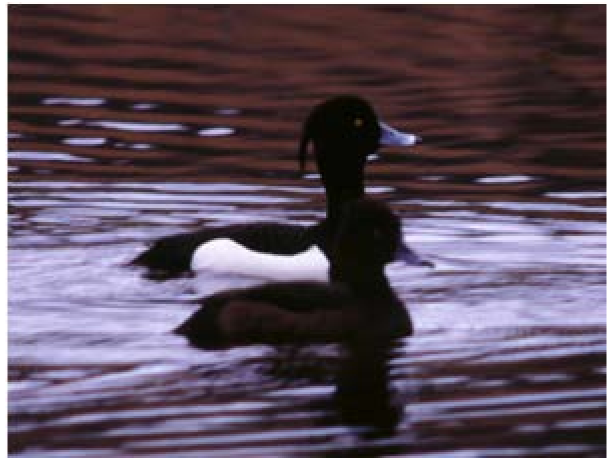
Productivity information is not currently available for this species

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*, which had been introduced accidentally to Britain a few decades earlier. The long-term shallow increase shown by WBS, and the 15% increase in range in Britain between the two atlas periods (**Gibbons *et al.* 1993**) may indicate that population expansion and in-filling of range are still occurring. BBS data suggest significant further increase since 1994, in England and in the UK as a whole. The species' winter trend in the UK since the 1960s, which includes many continental visitors, is also shallowly upward overall (**Collier *et al.* 2005**). In contrast, moderate recent declines elsewhere in northern Europe have resulted in a reclassification as a species of conservation concern.

Population changes

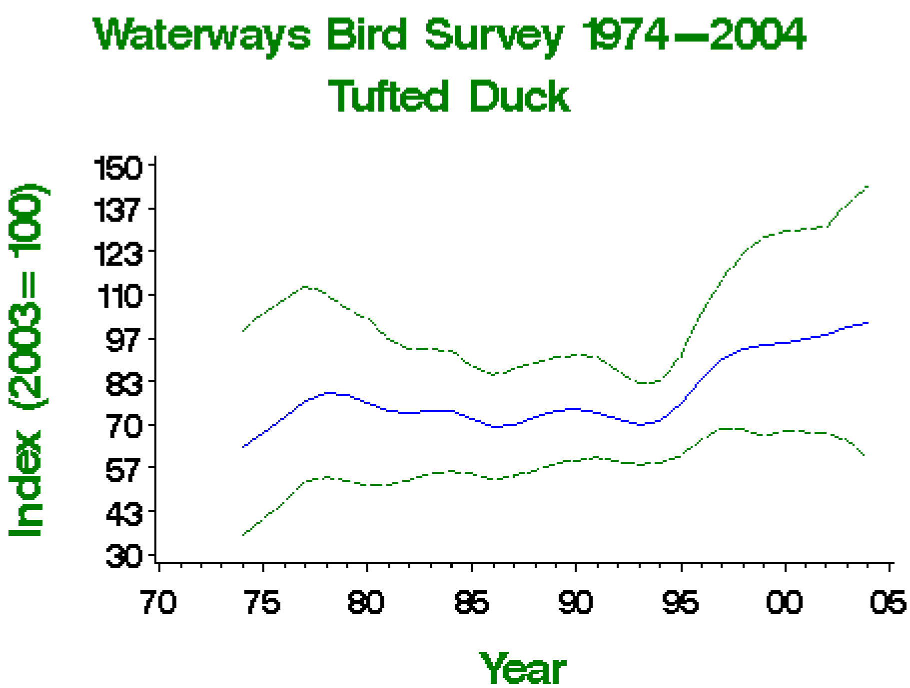


Table of population changes for Tufted Duck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	23	48	-38	253		
	25	1978-2003	24	26	-43	195		

	10	1993-2003	26	43	-15	116		
	5	1998-2003	24	7	-30	40		
BBS UK	10	1994-2004	124	27	4	56		
BBS England	10	1994-2004	107	35	11	64		

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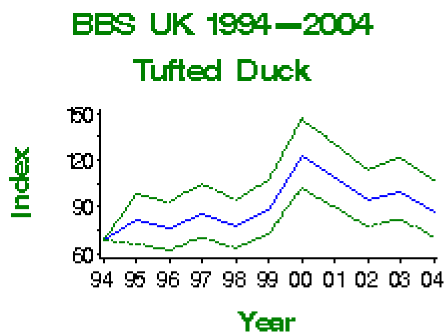

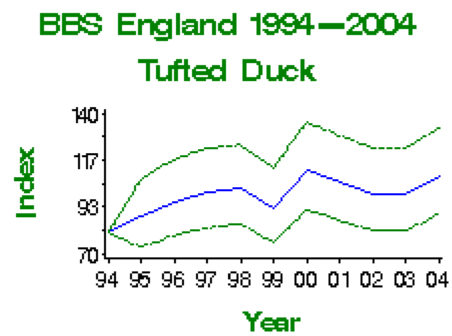

Productivity trends

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: moderate 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 demonstrated an average increase in population size of 3% per annum between 1987 and 1997 (**Rehfisch *et al.* 1999**). Reasons for the colonisation, and the subsequent range expansion and population increase within the UK, are unknown.

Population changes

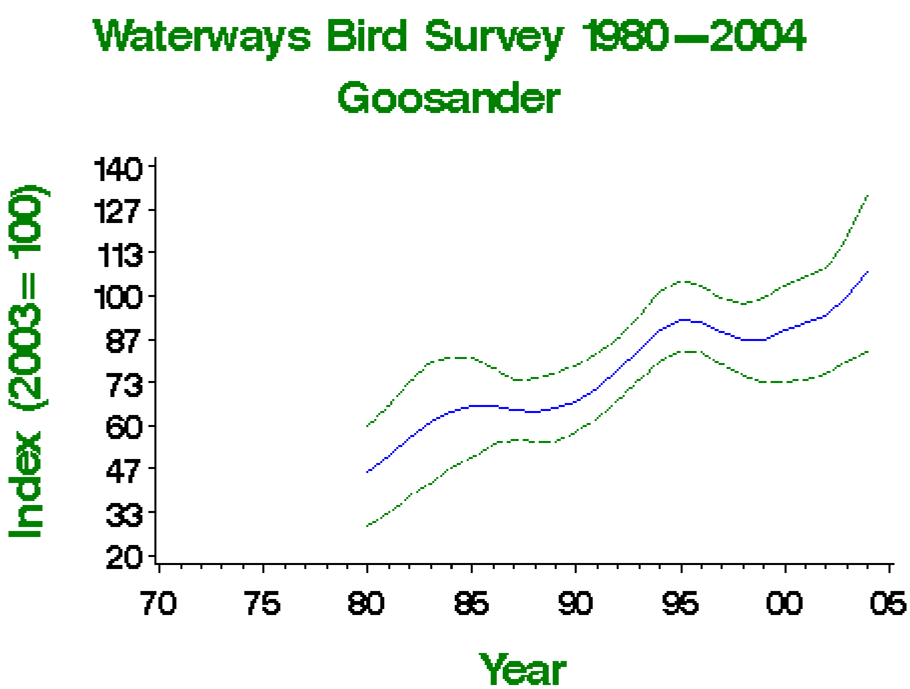

Table of population changes for Goosander

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	22	1981-2003	23	97	18	239		
	10	1993-2003	27	20	-13	58		
	5	1998-2003	25	16	-4	36		

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)

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 post-breeding abundance (**Redpath & Thirgood 1997**). Red Grouse abundance varies in cycles, with periods that vary regionally, that are linked to the dynamics of infection by a nematode parasite (**Dobson & Hudson 1992**, **Gibbons *et al.* 1993**). All population data should therefore be interpreted in this context.

Population changes

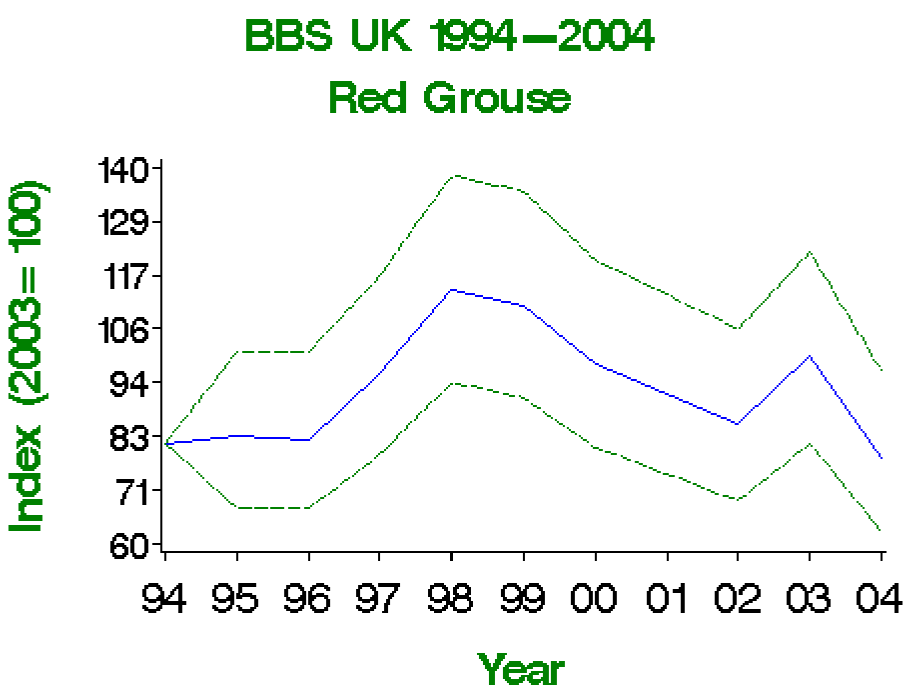

Table of population changes for Red Grouse

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	101	-4	-23	19		
BBS England	10	1994-2004	41	9	-16	40		
BBS Scotland	10	1994-2004	55	-12	-37	23		

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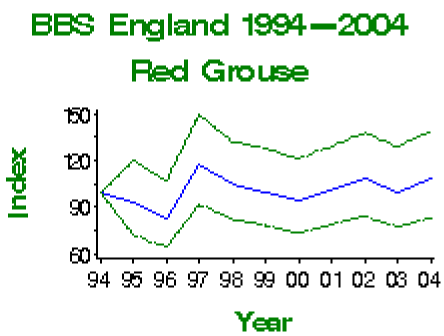

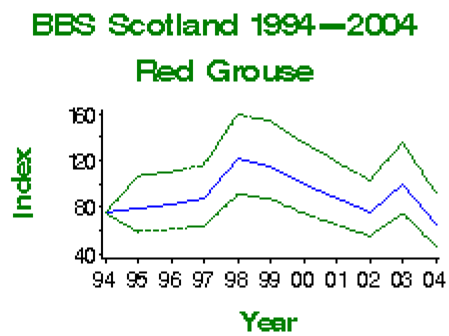

Productivity trends

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 to be shot by hunters, the BTO alerts generated over the recent 25-year period raise no conservation concern. Moreover, BBS data indicate that significant increase has occurred in the UK since 1994. Since 1990, **game-bag data** show that the numbers released per unit area onto shooting estates have more than doubled since 1990, and the number shot has also about doubled, both as parts of long-term trends evident since the 1960s.

Population changes

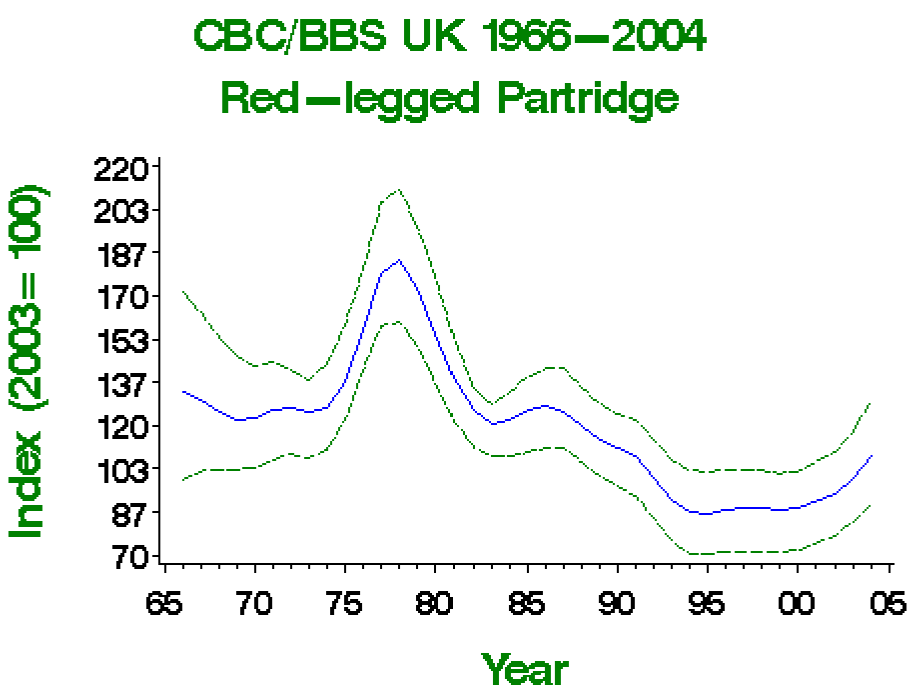

Table of population changes for Red-legged Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	127	-25	-50	25		
	25	1978-2003	170	-47	-62	-24	>25	
	10	1993-2003	369	6	-7	21		
	5	1998-2003	437	12	6	20		
CBC/BBS UK	36	1967-2003	129	-23	-51	18		

	25	1978-2003	172	-46	-62	-22	>25	
	10	1993-2003	374	9	-2	23		
	5	1998-2003	445	14	8	24		
BBS UK	10	1994-2004	404	53	37	70		
BBS England	10	1994-2004	397	46	32	62		

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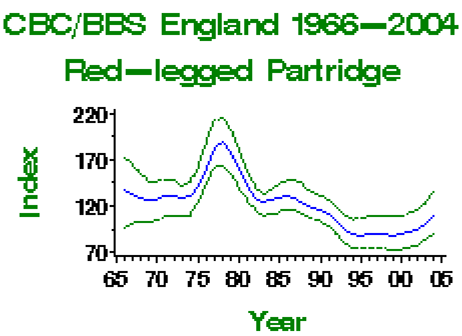

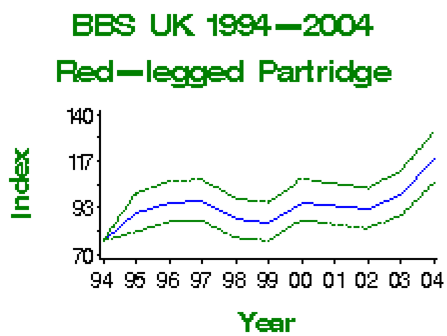

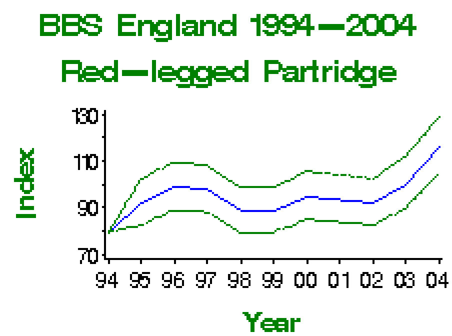

Productivity trends

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)

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 efforts to boost the population have not yet been successful. Local extinctions are now likely to be widespread, but hidden in some areas by continuing releases of hand-reared birds onto shooting estates.

Population changes

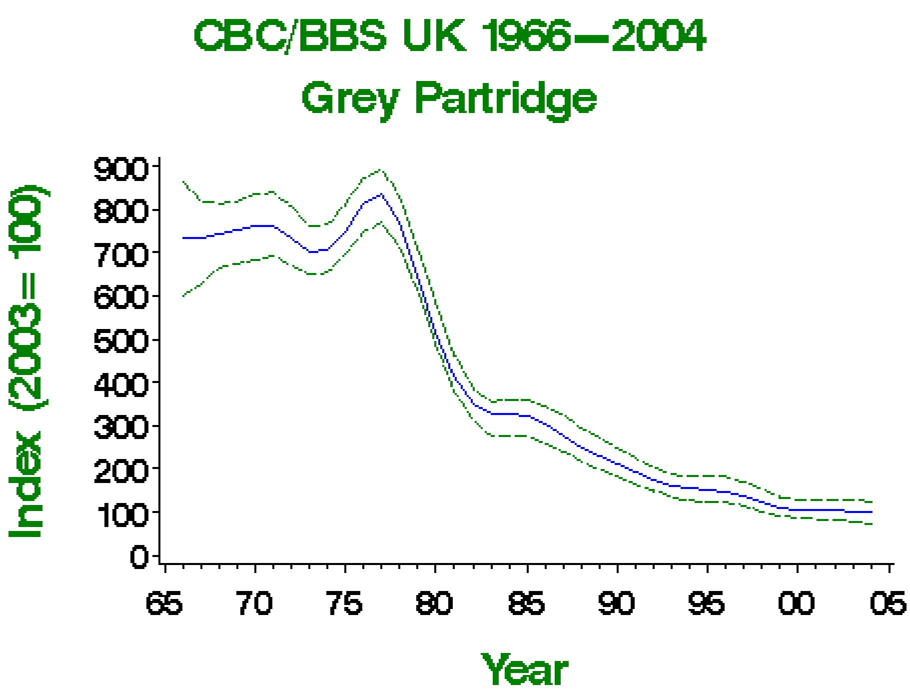

Table of population changes for Grey Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	97	-87	-91	-82	>50	
	25	1978-2003	108	-87	-92	-82	>50	
	10	1993-2003	196	-35	-46	-23	>25	
	5	1998-2003	190	-13	-27	-5		
CBC/BBS UK	36	1967-2003	108	-86	-91	-80	>50	

	25	1978-2003	122	-87	-91	-82	>50	
	10	1993-2003	220	-37	-48	-25	>25	
	5	1998-2003	214	-18	-30	-9		
BBS UK	10	1994-2004	212	-30	-40	-17	(>25)	
BBS England	10	1994-2004	187	-32	-42	-19	(>25)	

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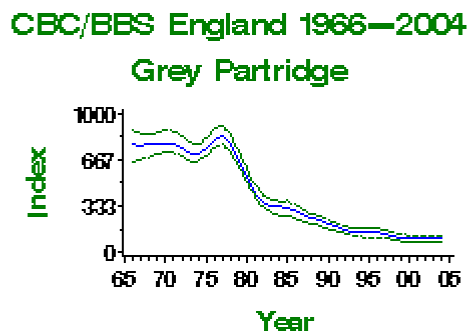

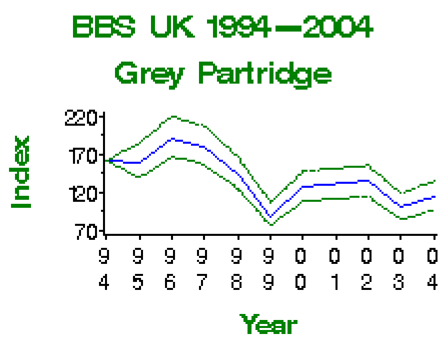

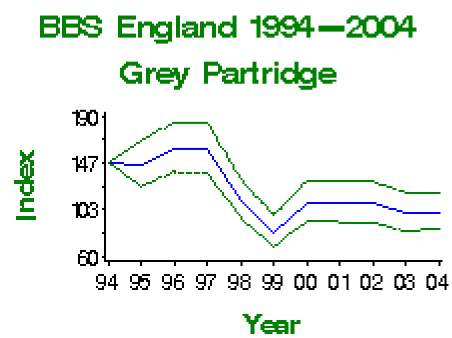

Productivity trends

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**

PHEASANT
Phasianus colchicus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: moderate increase

UK population size

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

Status summary

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

Population changes

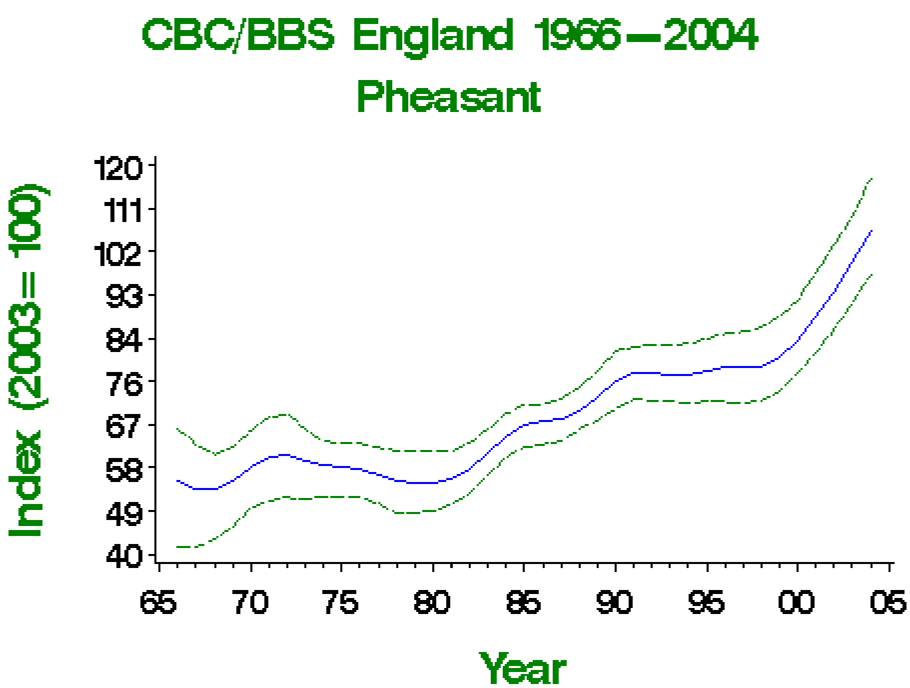

Table of population changes for Pheasant

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

CBC/BBS England	36	1967-2003	377	87	49	178		
	25	1978-2003	501	82	48	131		
	10	1993-2003	1086	30	23	40		
	5	1998-2003	1297	27	22	32		
BBS UK	10	1994-2004	1318	39	32	46		
BBS England	10	1994-2004	1116	45	38	52		
BBS Scotland	10	1994-2004	100	5	-13	27		
BBS Wales	10	1994-2004	69	37	10	70		

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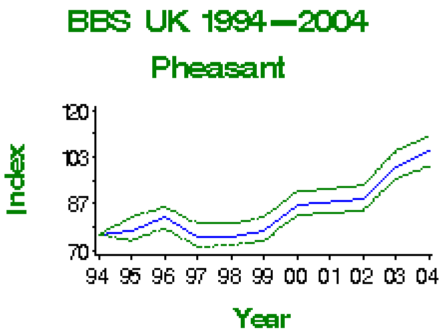
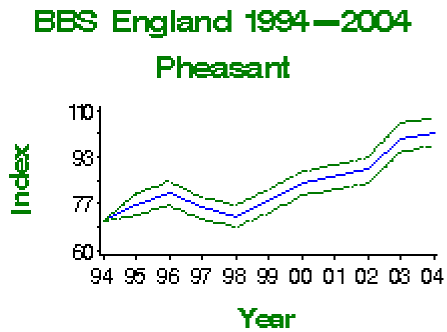
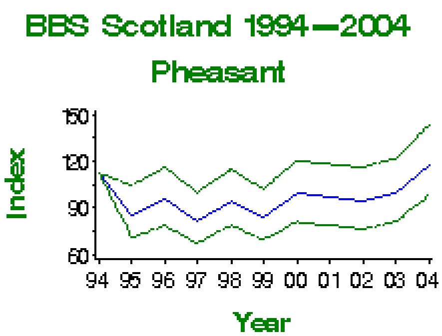
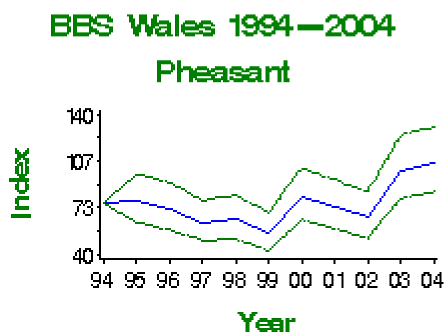








Productivity trends

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 the UK Seabird Monitoring Programme shows that numbers at sample study areas in Shetland fluctuated during 1980–2003, with low points in 1980 and 2000 (**Mavor *et al.* 2004**). 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 has been some increase in the proportion of diver pairs hatching both their chicks.

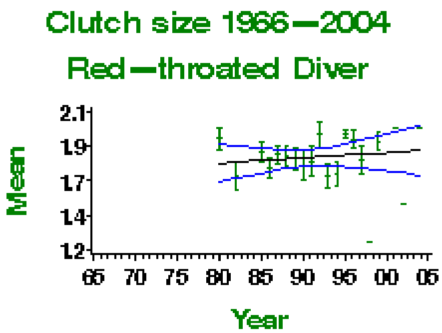
Population changes

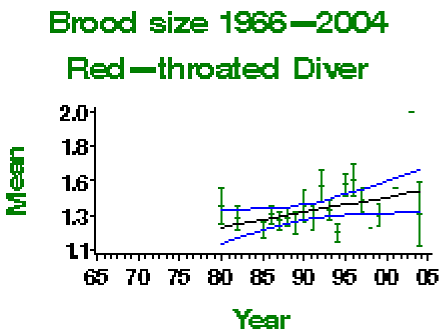
Annual breeding population changes are not currently monitored by BTO for this species

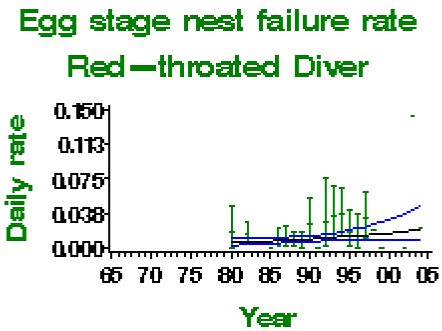
Productivity trends

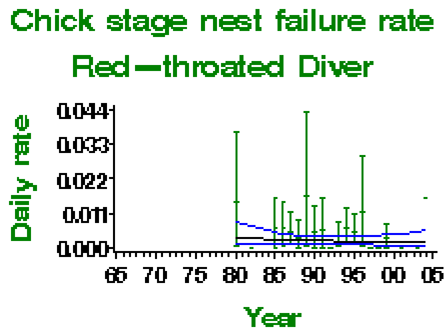
Table of productivity changes for Red-throated Diver

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	23	1980-2003	25	None				Small sample
Brood size	23	1980-2003	40	Linear increase	1.25 chicks	1.47 chicks	18.1%	
Daily failure rate (eggs)	23	1980-2003	15	None				Small sample
Daily failure rate (chicks)	23	1980-2003	21	None				Small sample









Insufficient data on laying date available for this species

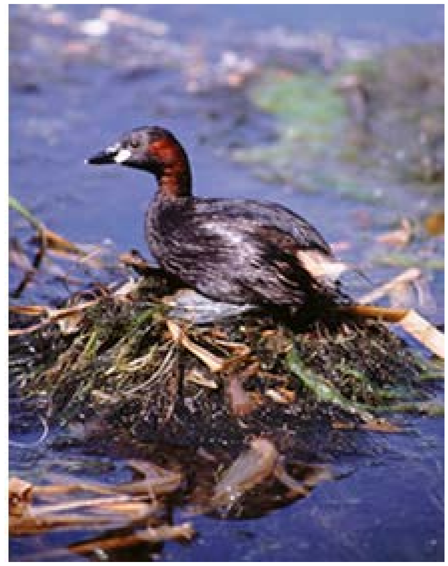
Insufficient data on CES available for this species

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 late 1990s, while shallow increases shown by the CBC and by BBS may suggest that wider populations (including 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 (**Collier *et al.* 2005**).

Population changes

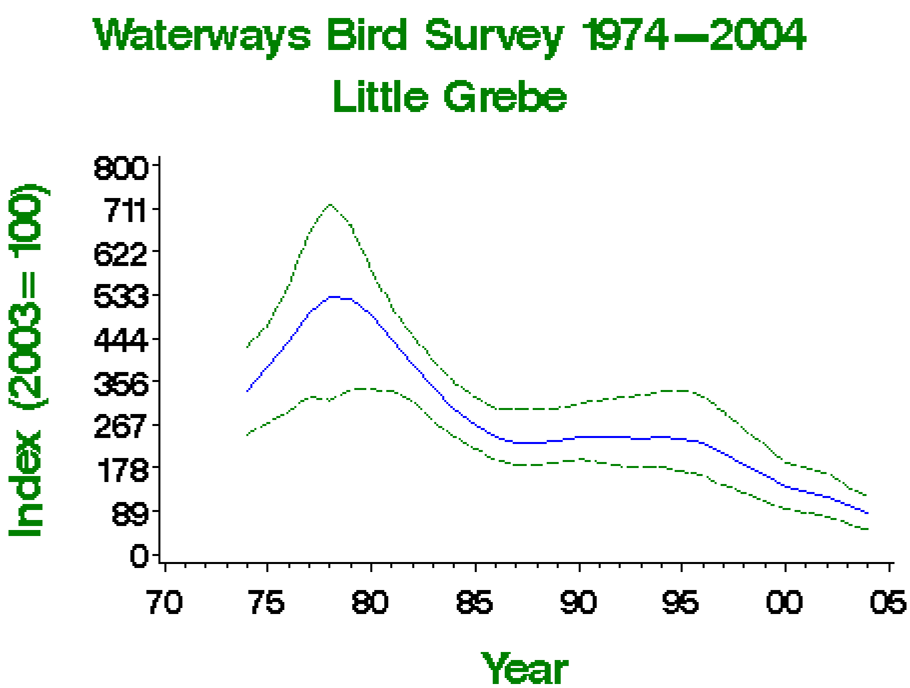


Table of population changes for Little Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	17	-74	-88	-46	>50	Small sample
	25	1978-2003	17	-81	-91	-53	>50	Small sample

	10	1993-2003	15	-58	-74	-43	>50	Small sample
	5	1998-2003	12	-46	-61	-28	>25	Small sample
BBS UK	10	1994-2004	52	24	-11	73		
BBS England	10	1994-2004	43	29	-12	89		

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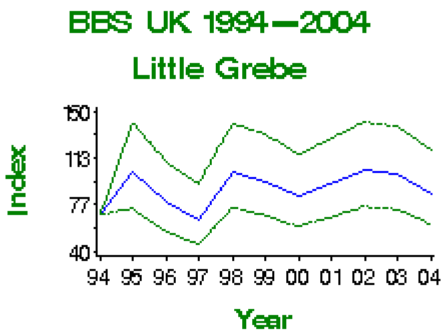
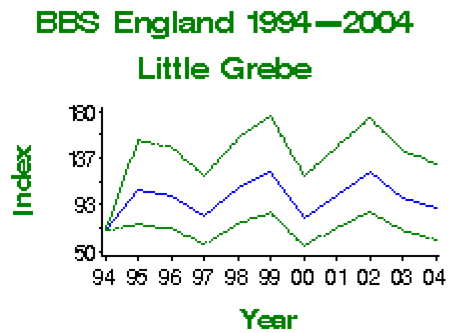




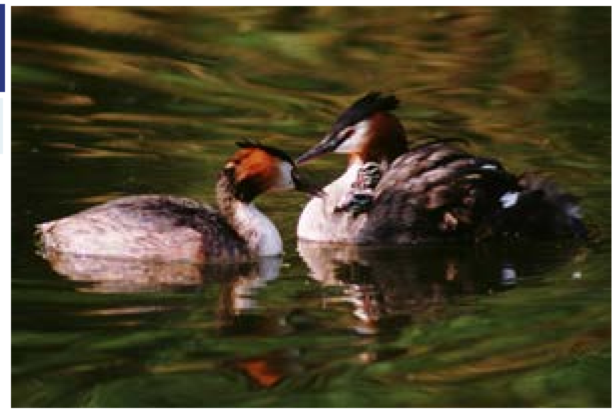
Productivity trends

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 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 (**Collier *et al.* 2005**).

Population changes

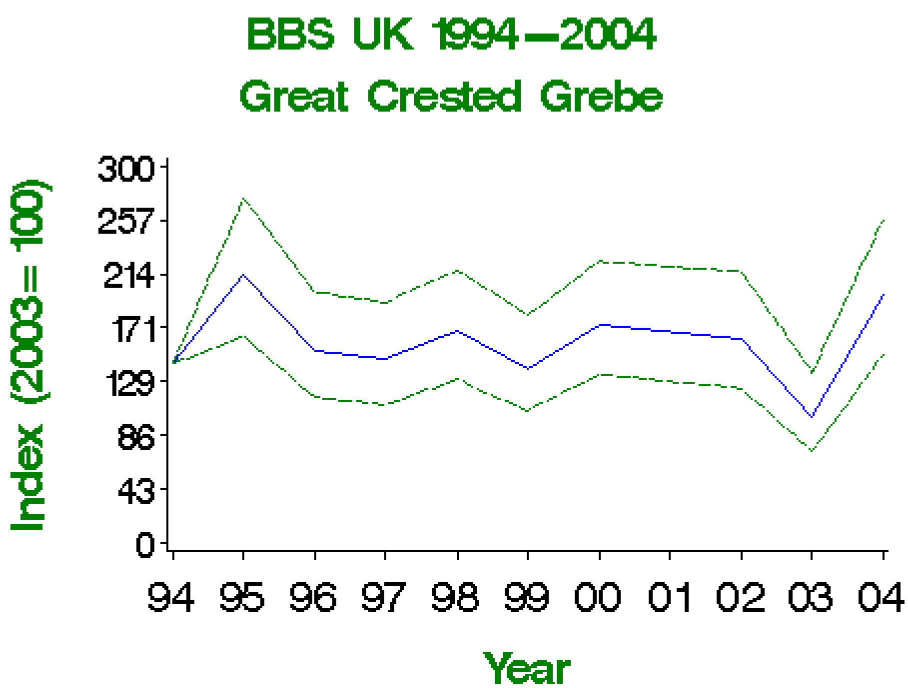


Table of population changes for Great Crested Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	58	38	5	80		
BBS England	10	1994-2004	52	13	-14	49		

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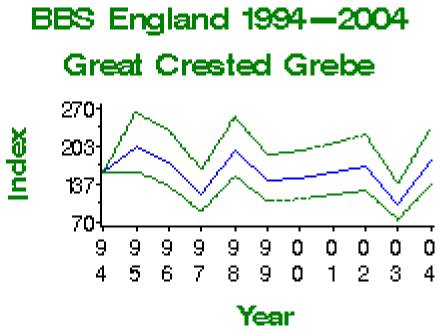

Productivity trends

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**

CORMORANT
Phalacrocorax carbo

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: increase

UK population size

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

Status summary

Cormorants, historically an almost exclusively coastal-breeding seabird in the UK, have established dozens of inland breeding colonies in eastern and central England since 1980 (**Rehfisch *et al.* 1999**). The results from the Seabird 2000 census of Britain and Ireland show a 15% increase in the population between 1985–88 and 1998–2002, with substantial increases coastally in England and Scotland and inland in eastern England (**Mitchell *et al.* 2004**). There were 35 inland colonies holding 15% of the total British and Irish population. BBS indicates a shallow increase in Cormorant numbers. The species has recently been moved from the green to the amber list, for reasons unconnected with its UK trend.

Population changes

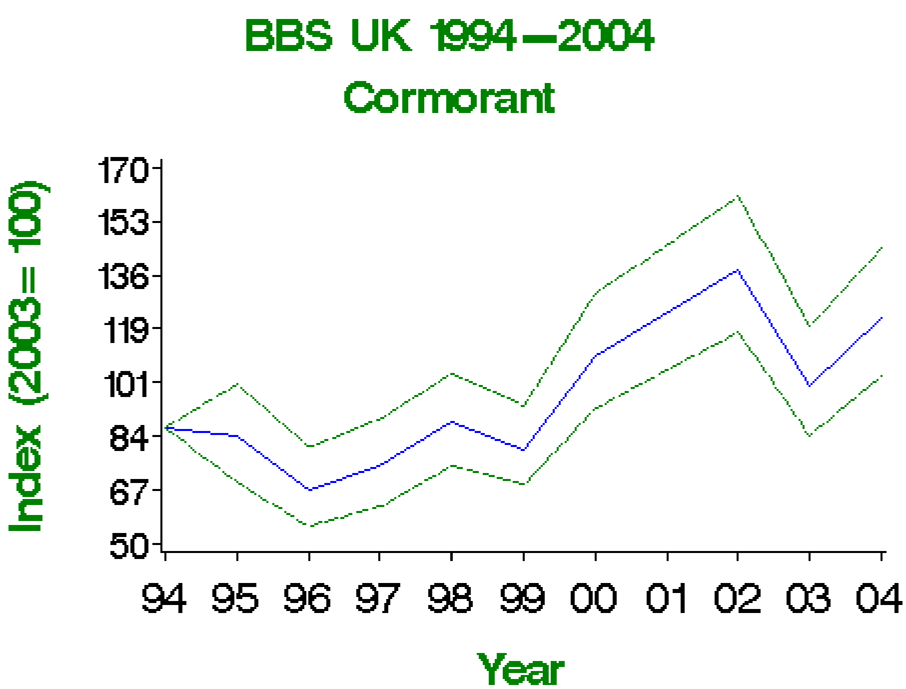

Table of population changes for Cormorant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	166	40	19	66		Non-breeders included
BBS England	10	1994-2004	136	40	17	67		Non-breeders included

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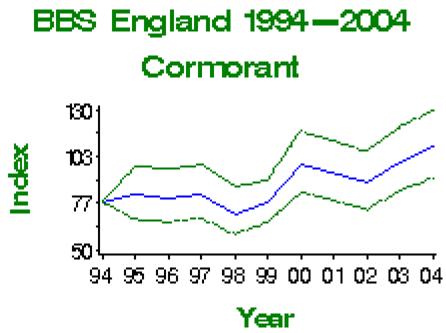


Productivity trends

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

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**)

Status summary

Listed because of substantial declines over the last two centuries, this species has suffered from persecution on grouse moors (**Etheridge *et al.* 1997**) and recently also from loss of habitat as forestry plantations have matured (**Bibby & Etheridge 1993**). 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**). Although average clutch size has declined substantially since the mid 1980s, further investigation has shown that this trend is due to the increased proportions in recent years of records from Orkney, where clutch sizes tend to be smaller than on the mainland (**Summers 1998**, **Crick 1998**).

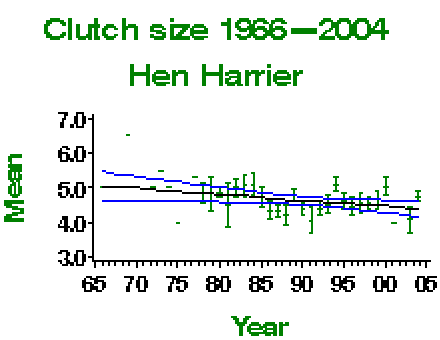
Population changes

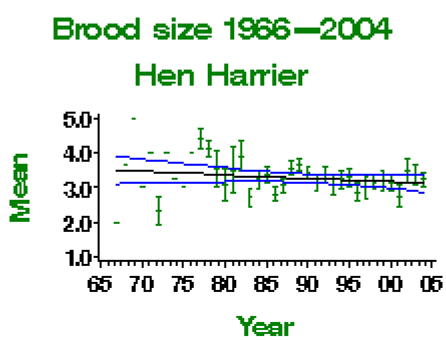
Annual breeding population changes for this species are not currently monitored by BTO

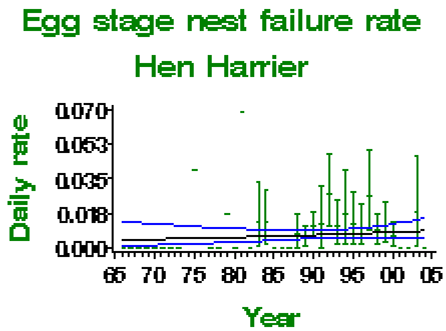
Productivity trends

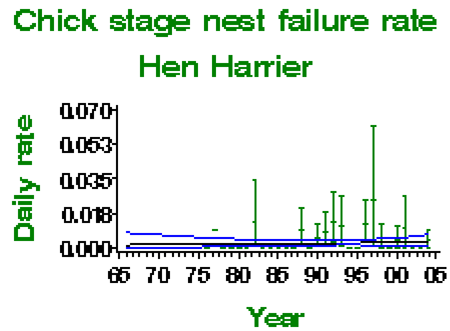
Table of productivity changes for Hen Harrier

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	12	Linear decline	5.02 eggs	4.42 eggs	-12%	Small sample
Brood size	35	1968-2003	19	None				Small sample
Daily failure rate (eggs)	35	1968-2003	11	None				Small sample
Daily failure rate (chicks)	35	1968-2003	13	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

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

SPARROWHAWK
Accipiter nisus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: rapid increase

UK population size

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

Status summary

Sparrowhawks increased strongly in the UK as the population recovered from the crash caused by organochlorine pesticides in the 1950s and 1960s (**Newton 1986**). The species became common enough on CBC plots for annual monitoring in the early 1970s, and many former haunts especially in the Midlands and east of England were reoccupied between the two atlas periods (**Gibbons *et al.* 1993**). Improving breeding performance is likely to have contributed to this remarkable period of success: failure rates at the egg stage (c.44 days from laying the first egg) fell markedly from high initial values, and brood sizes increased throughout. The population seems to have stabilised since the mid 1990s, however, and BBS trends since 1994 indicate shallow decline in the UK and in England separately. Increases in brood sizes have ceased.

Population changes

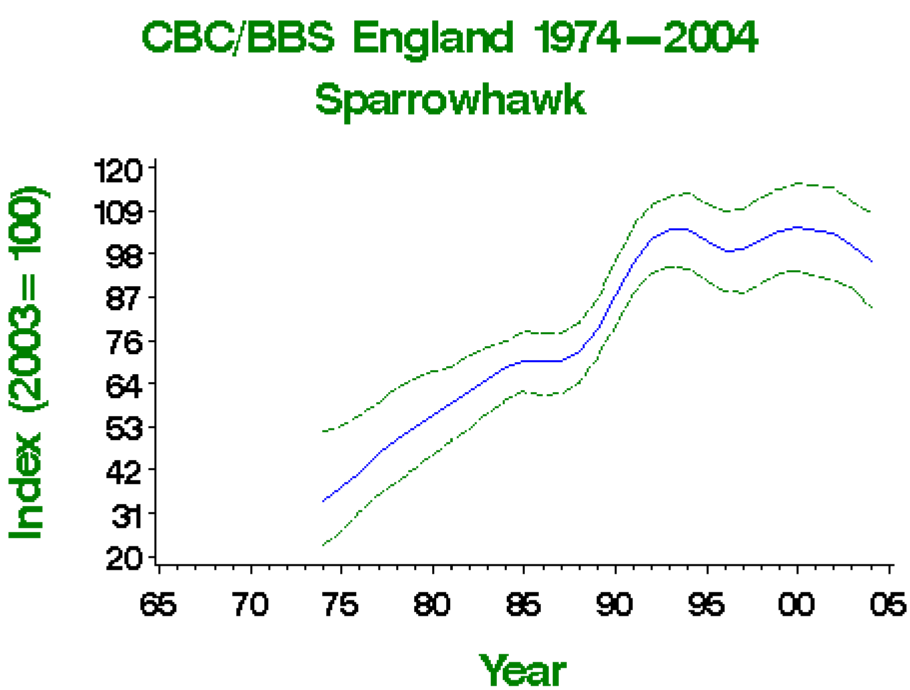
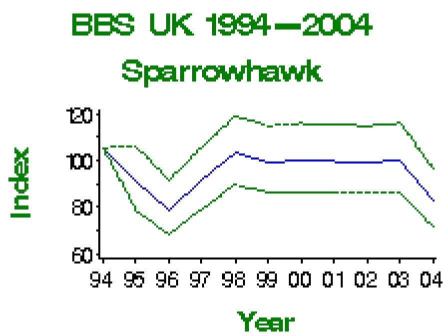


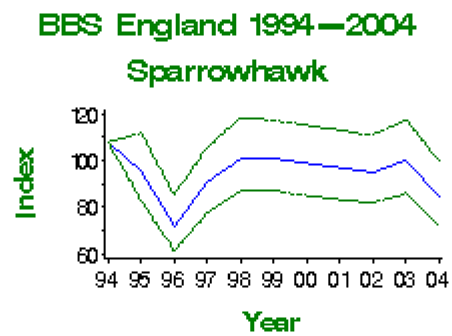
Table of population changes for Sparrowhawk

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	28	1975-2003	109	166	70	337		
	25	1978-2003	120	99	38	201		
	10	1993-2003	245	-4	-17	8		

	5	1998-2003	277	-1	-10	9		
BBS UK	10	1994-2004	277	-21	-32	-8		
BBS England	10	1994-2004	231	-21	-33	-7		

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

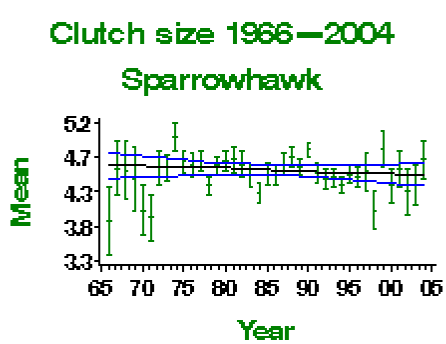


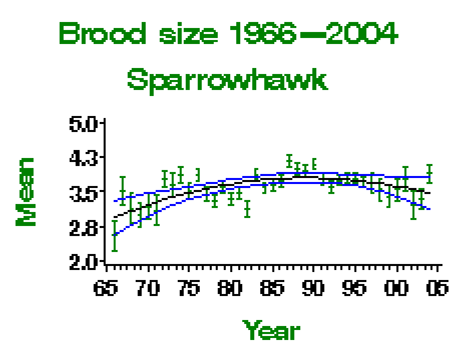


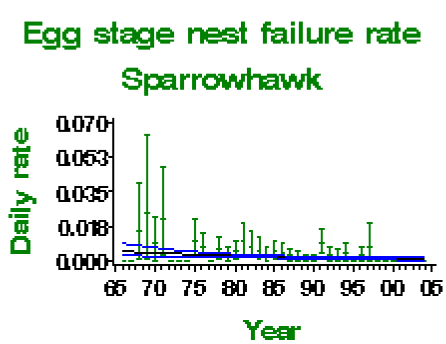
Productivity trends

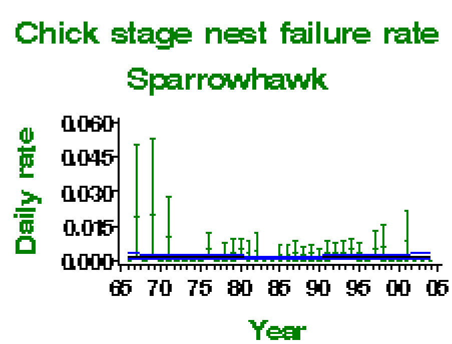
Table of productivity changes for Sparrowhawk

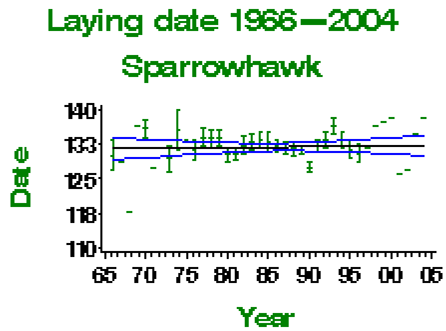
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	40	None				
Brood size	35	1968-2003	78	Curvilinear	3.08 chicks	3.51 chicks	13.8%	
Daily failure rate (eggs)	35	1968-2003	37	Linear decline	0.46% nests/day	0.1% nests/day	-78.3%	
Daily failure rate (chicks)	35	1968-2003	52	None				
Laying date	35	1968-2003	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**
- **Garden BirdWatch results**

BUZZARD
Buteo buteo

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: rapid increase

UK population size

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

Status summary

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

Population changes

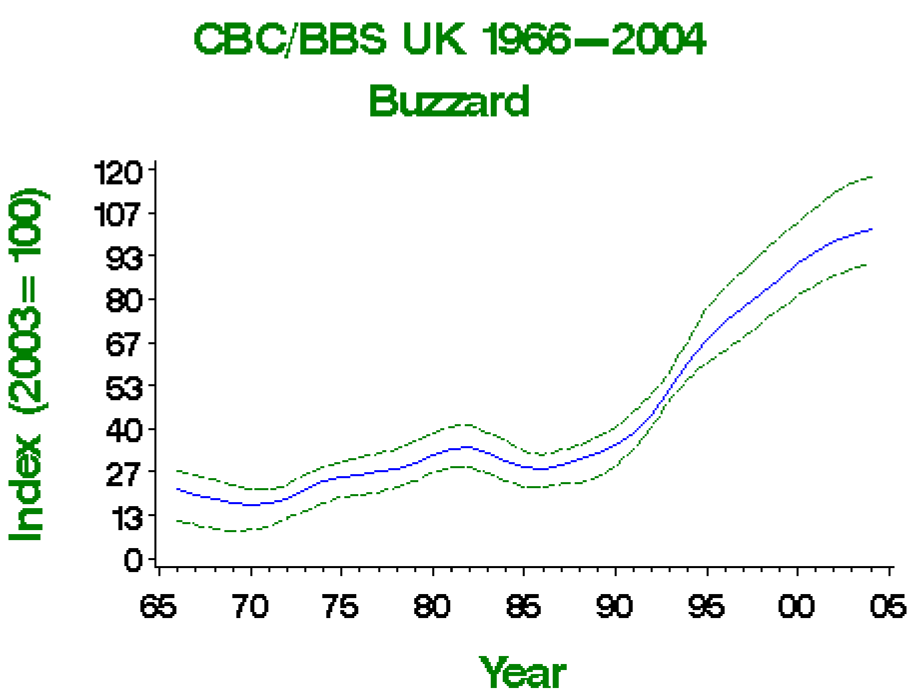
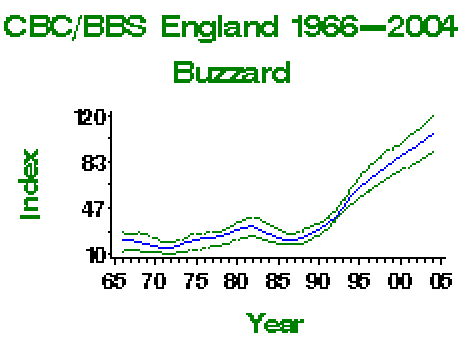


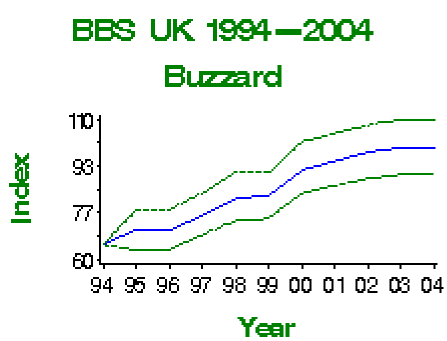
Table of population changes for Buzzard

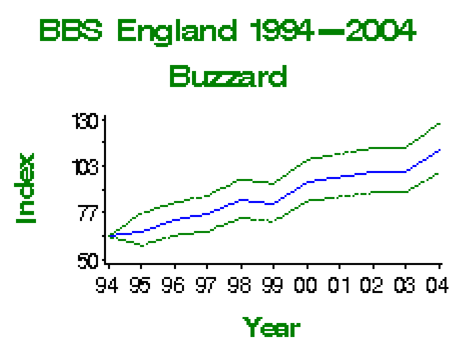
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	87	377	236	765		Small CBC sample

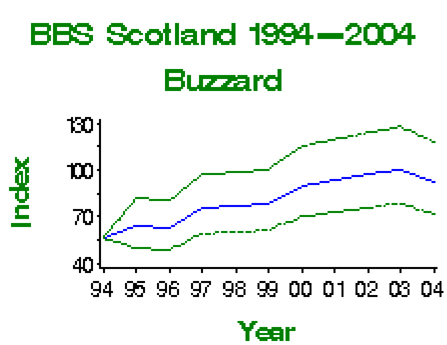
	25	1978-2003	122	314	205	609		
	10	1993-2003	284	112	79	138		
	5	1998-2003	388	26	16	35		
CBC/BBS UK	36	1967-2003	150	414	247	1196		
	25	1978-2003	210	262	158	442		
	10	1993-2003	494	92	72	116		
	5	1998-2003	667	22	16	29		
BBS UK	10	1994-2004	544	53	38	68		
BBS England	10	1994-2004	310	79	58	102		
BBS Scotland	10	1994-2004	101	63	27	109		
BBS Wales	10	1994-2004	118	-5	-22	16		

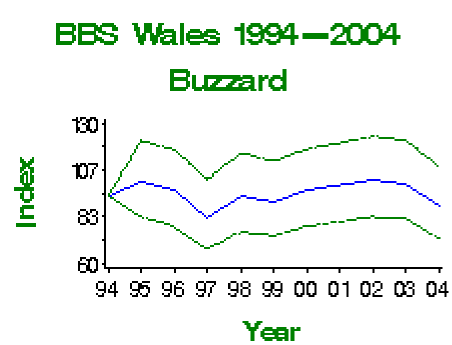
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









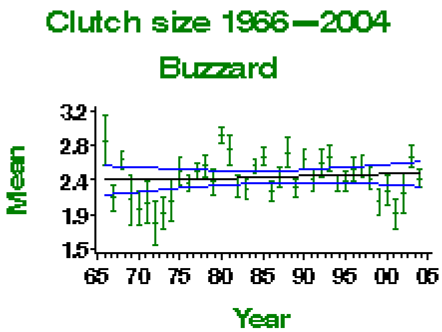


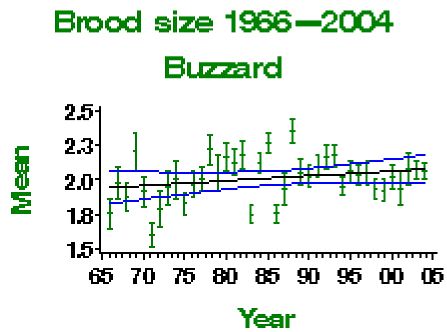
Productivity trends

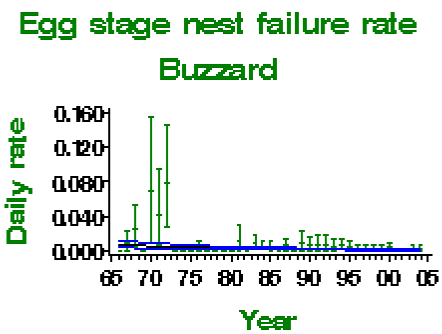
Table of productivity changes for Buzzard

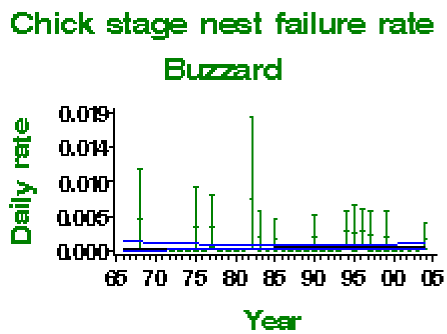
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-	30	None				

		2003						
Brood size	**35**	**1968-2003**	**84**	**None**				
Daily failure rate (eggs)	**35**	**1968-2003**	**23**	**Linear decline**	**0.65% nests/day**	**0.16% nests/day**	**-75.4%**	**Small sample**
Daily failure rate (chicks)	**35**	**1968-2003**	**42**	**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: moderate decline (since mid 1970s)

UK population size

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

Status summary

Kestrels had recovered from the lethal and sublethal effects of organochlorine pesticides by the mid 1970s, the recovery probably driven by improving nesting success, but subsequently entered a decline which has been linked to the effects of agricultural intensification on farmland habitats and small mammal populations (**Gibbons *et al.* 1993**). BBS data reveal that the population decline has shown some reversal since 2000. The failure rate at the egg stage (c.28 days from laying the first egg) has declined substantially since the 1970s, and brood sizes have increased.

Population changes

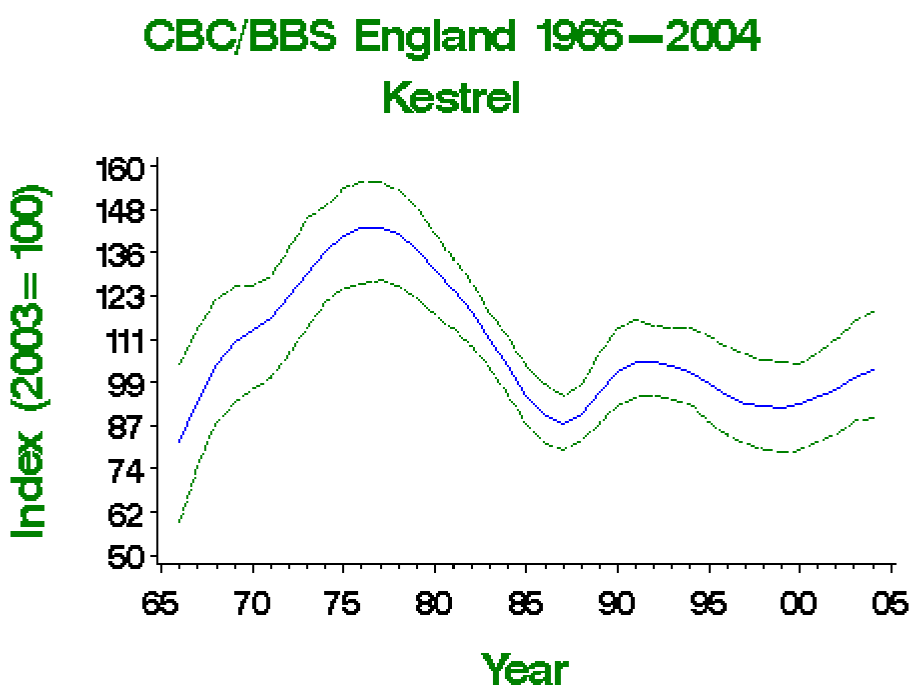
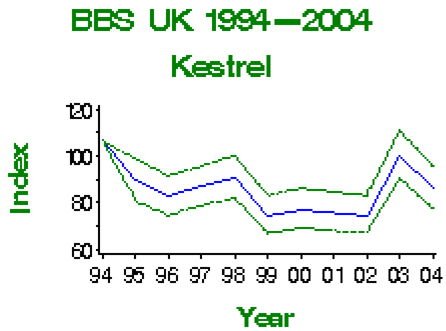


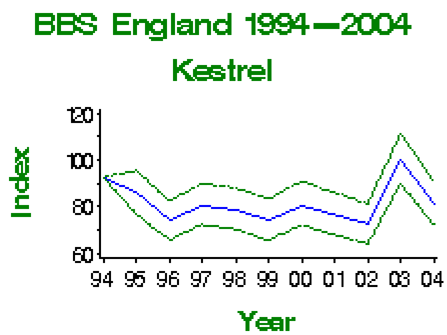
Table of population changes for Kestrel

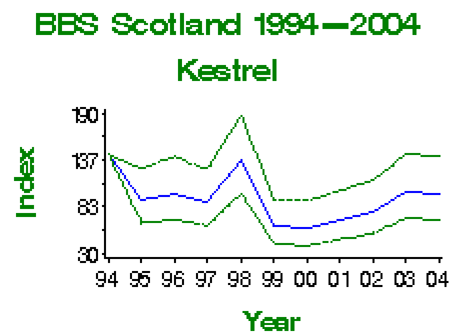
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	181	7	-20	52		
	25	1978-2003	231	-29	-44	-11	>25	
	10	1993-2003	462	-4	-15	9		
	5	1998-2003	527	9	2	19		
BBS UK	10	1994-2004	528	-19	-27	-10		

BBS England	10	1994-2004	455	-12	-22	-2		
BBS Scotland	10	1994-2004	41	-31	-52	-1	(>25)	

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



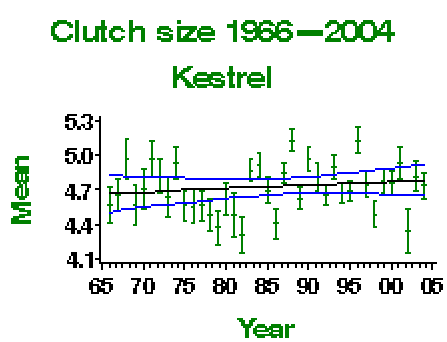


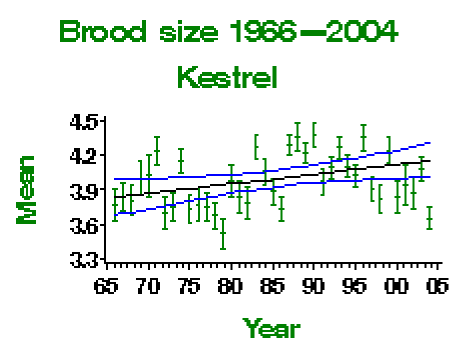


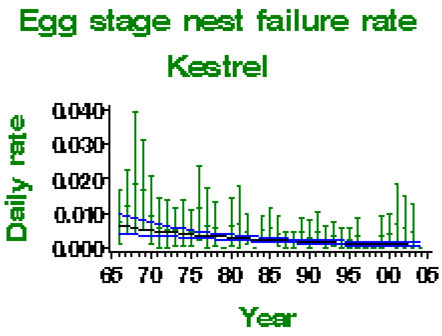
Productivity trends

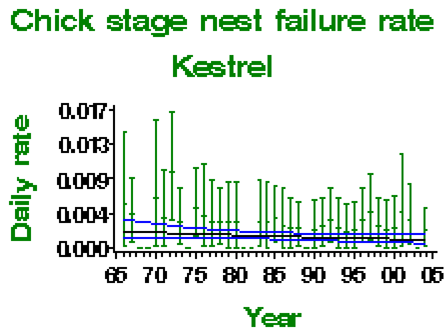
Table of productivity changes for Kestrel

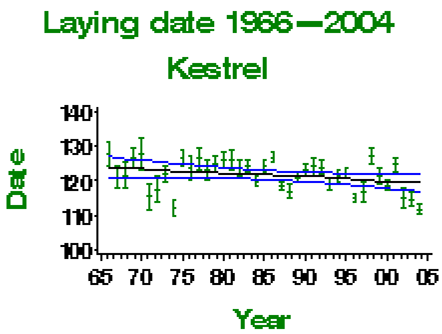
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	51	None				
Brood size	35	1968-2003	110	Linear increase	3.85 chicks	4.14 chicks	7.6%	
Daily failure rate (eggs)	35	1968-2003	39	Linear decline	0.58% nests/day	0.09% nests/day	-84.5%	
Daily failure rate (chicks)	35	1968-2003	61	None				
Laying date	35	1968-2003	20	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**

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. Breeding performance has tended to improve since the 1960s, probably linked to the declining influence of organochlorine pesticides (**Crick 1993**).

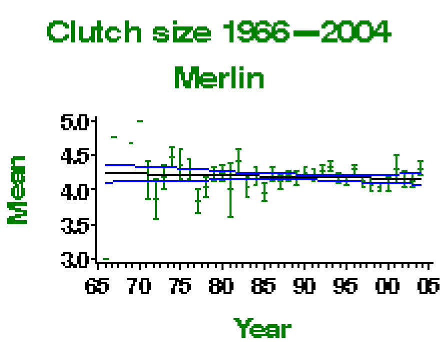
Population changes

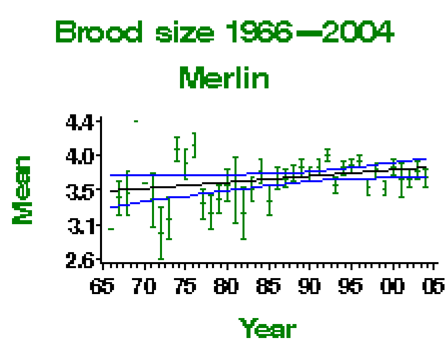
Annual breeding population changes for this species are not currently monitored by BTO

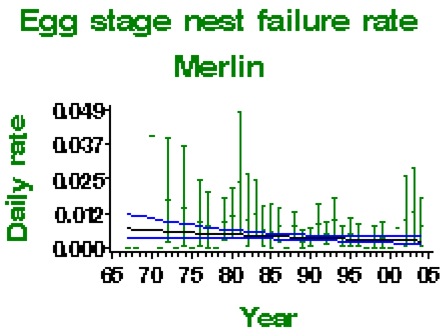
Productivity trends

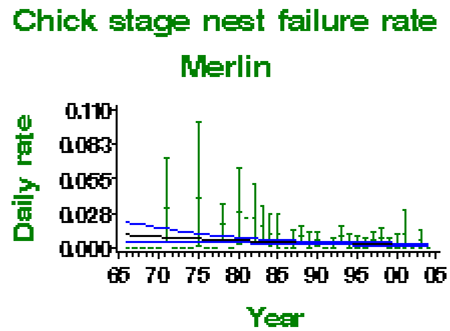
Table of productivity changes for Merlin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	40	None				
Brood size	35	1968-2003	57	Linear increase	3.51 chicks	3.79 chicks	8%	
Daily failure rate (eggs)	35	1968-2003	28	Linear decline	0.67% nests/day	0.26% nests/day	-61.2%	Small sample
Daily failure rate (chicks)	35	1968-2003	30	Linear decline	1% nests/day	0.25% nests/day	-75%	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 that locality. 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. 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 a decreasing dependency on its traditional heathland habitat, but the reasons underlying the increase are still only speculative (**Clements 2001**). Small annual samples of nest record cards permit analysis only of brood size, which appears not to have changed.

Population changes

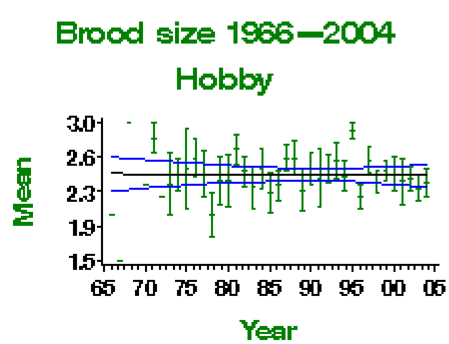
Annual breeding population changes for this species are not currently monitored by BTO

Productivity trends

Table of productivity changes for Hobby

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	16	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

Insufficient data on CES

available for this species

available for this species

Additional information

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

PEREGRINE FALCON
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

UK population size

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

Status summary

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

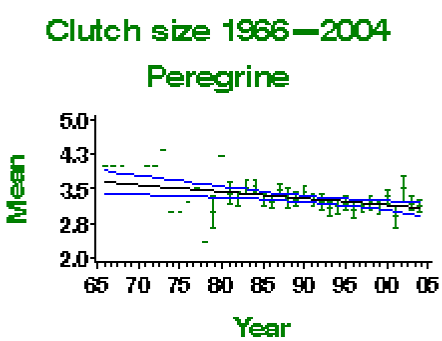
Population changes

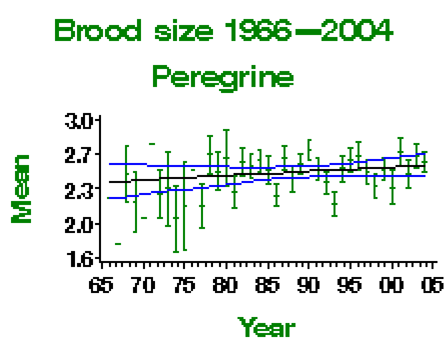
Annual population changes are not monitored for this species

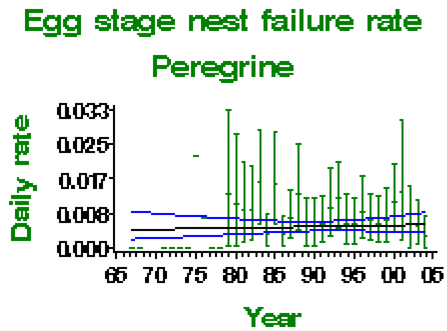
Productivity trends

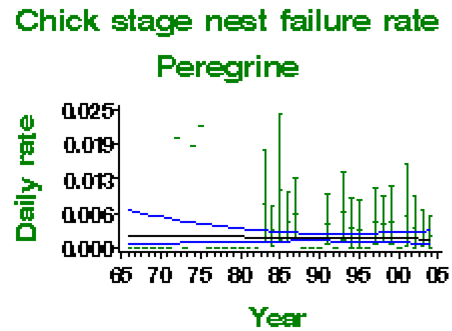
Table of productivity changes for Peregrine

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	15	Linear decline	3.62 eggs	3.09 eggs	-14.6%	Small sample
Brood size	35	1968-2003	39	None				
Daily failure rate (eggs)	35	1968-2003	20	None				Small sample
Daily failure rate (chicks)	35	1968-2003	21	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, England: shallow increase

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

Population changes

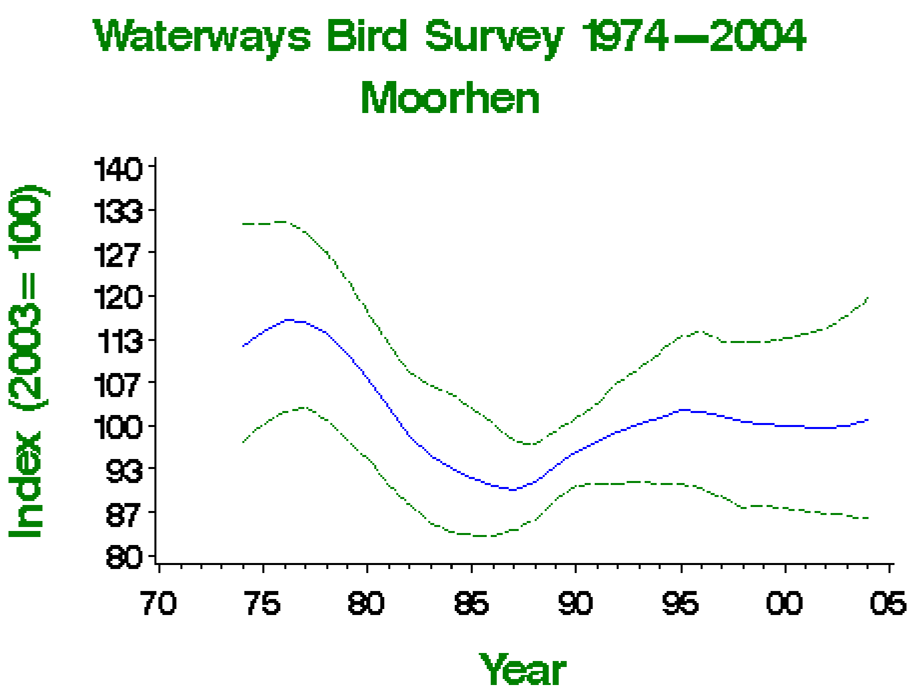


Table of population changes for Moorhen

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	202	40	12	72		
	25	1978-2003	253	11	-5	28		
	10	1993-2003	494	16	7	26		

	5	1998-2003	575	20	13	25		
CBC/BBS UK	36	1967-2003	222	34	2	70		
	25	1978-2003	276	7	-13	28		
	10	1993-2003	537	19	6	32		
	5	1998-2003	628	21	12	28		
WBS waterways	28	1975-2003	75	-13	-34	15		
	25	1978-2003	75	-12	-33	16		
	10	1993-2003	78	0	-13	17		
	5	1998-2003	78	-1	-11	13		
BBS UK	10	1994-2004	526	25	13	38		
BBS England	10	1994-2004	482	17	6	29		

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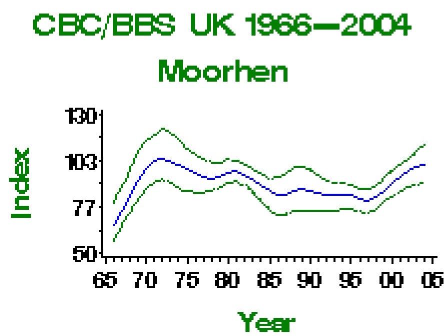
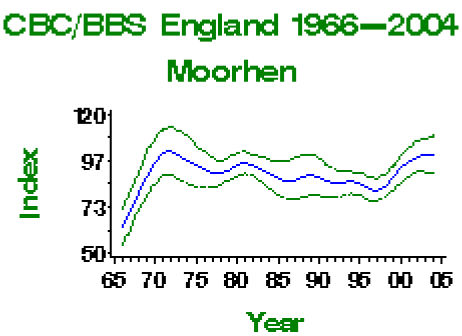
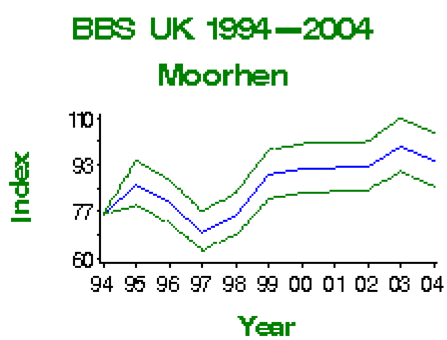
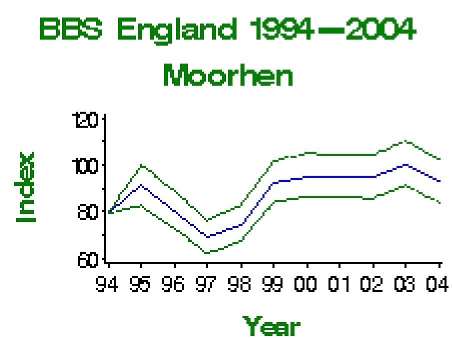




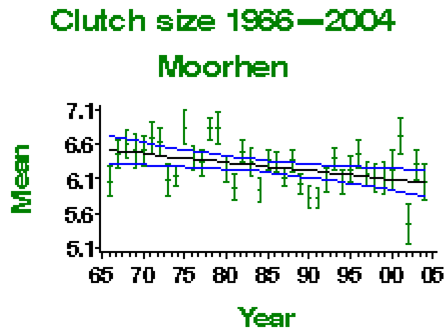


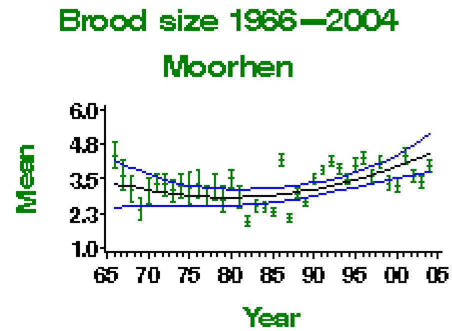


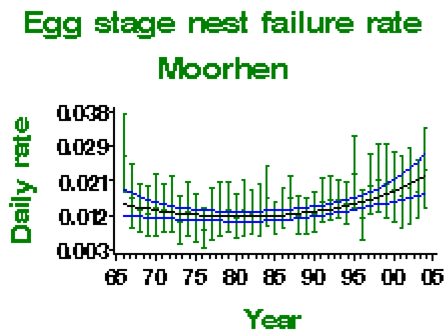
Productivity trends

Table of productivity changes for Moorhen

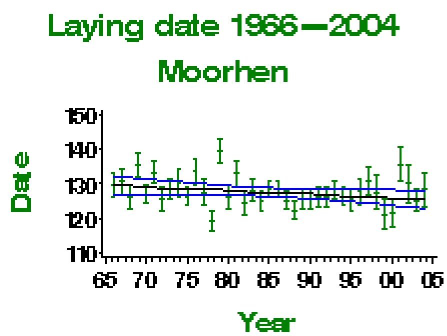
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	93	Linear decline	6.49 eggs	6.06 eggs	-6.6%	
Brood size	35	1968-2003	77	Curvilinear	3.21 chicks	4.28 chicks	33.4%	
Daily failure rate (eggs)	35	1968-2003	109	Curvilinear	1.38% nests/day	2.06% nests/day	49.3%	
Daily failure rate (chicks)	35	1968-2003	33	None				
Laying date	35	1968-2003	69	None				







Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

Additional information

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

COOT *Fulica atra*

- Population changes
- Productivity trends
- Additional information

Conservation listings

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

Long-term trend

UK: shallow increase

UK population size

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

Status summary

WBS and CBC/BBS trends for Coot indicate a long-term increase, although the magnitude of the change is not clear. Small CBC samples, mainly of birds on small water-bodies, suggested a rapid rise in the late 1960s. WBS and BBS both include more birds on larger waters, and so may be more representative of Coot populations, but WBS has not recorded the strong increase found by BBS observers since 1994. The combination of CBC and BBS data suggests that the long-term increase in the UK and England may have been rapid. Winter abundance on large still waters, as monitored by WeBS, has also shown shallow increase since the mid 1980s (**Collier *et al.* 2005**).

Population changes

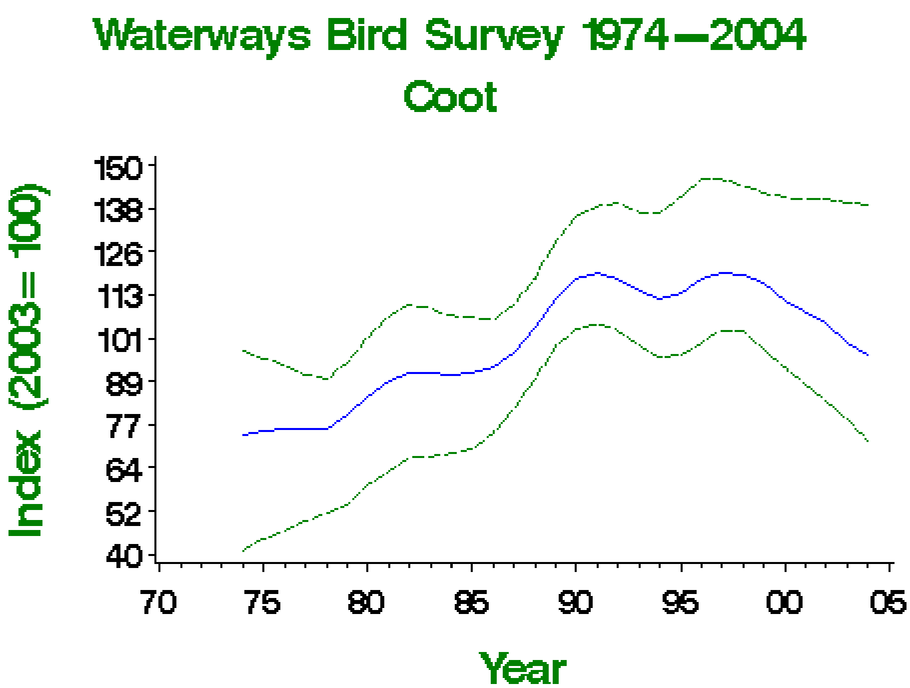


Table of population changes for Coot

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	71	244	95	528		
	25	1978-2003	93	65	9	115		
	10	1993-2003	187	53	23	93		
	5	1998-2003	226	42	22	57		

CBC/BBS UK	36	1967-2003	78	242	137	689		
	25	1978-2003	103	64	22	146		
	10	1993-2003	207	47	20	74		
	5	1998-2003	252	38	23	56		
WBS waterways	28	1975-2003	39	34	-20	247		
	25	1978-2003	40	32	-15	171		
	10	1993-2003	48	-13	-35	25		
	5	1998-2003	44	-16	-33	6		
BBS UK	10	1994-2004	205	77	53	105		
BBS England	10	1994-2004	185	87	60	118		

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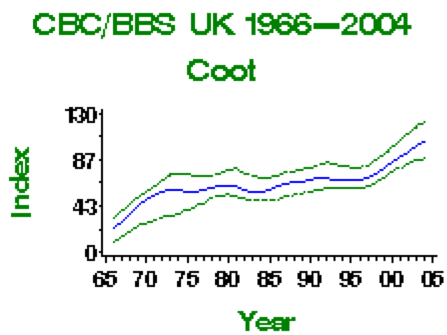

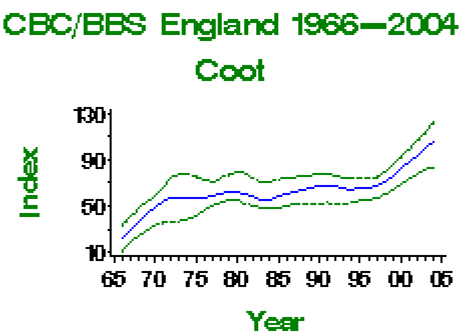

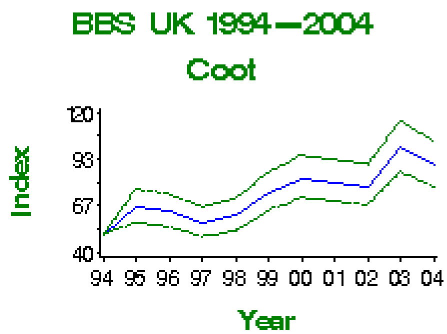

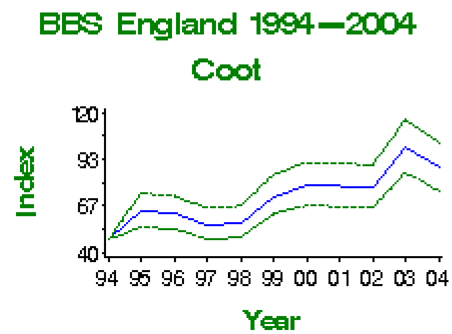

Productivity trends

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**

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 (**Collier *et al.* 2005**). Surveys in England and Wales revealed an increase of 47% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2004**). BBS data since 1994, which include birds in a broader range of locations and habitats, show increase in England but apparently a minor decline in Scotland. The increase in nest failure rates for the 27-day egg stage (25 days for incubation and 2 days for laying) probably results from the spread of the species into less favourable habitats, where predation or trampling may be more likely. The trend towards earlier laying can be partly explained by recent climate change (**Crick & Sparks 1999**).

Population changes

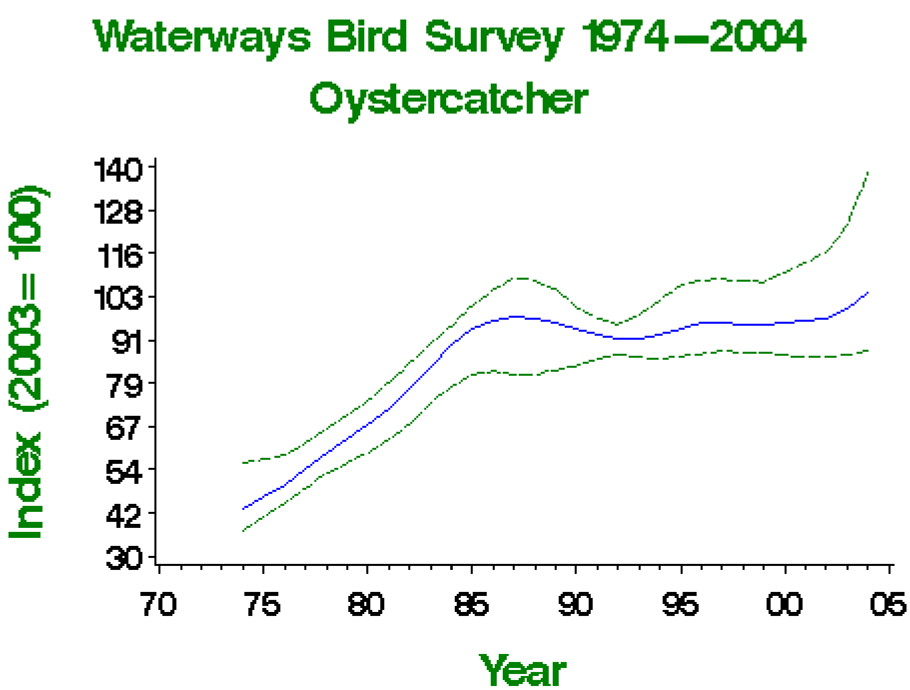

Table of population changes for Oystercatcher

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

WBS waterways	28	1975-2003	23	114	57	209		
	25	1978-2003	24	69	32	147		
	10	1993-2003	29	10	-5	41		
	5	1998-2003	25	5	-8	33		
BBS UK	10	1994-2004	244	-5	-14	4		
BBS England	10	1994-2004	117	36	14	63		
BBS Scotland	10	1994-2004	116	-12	-24	2		

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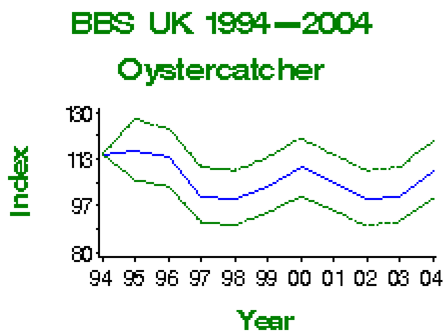
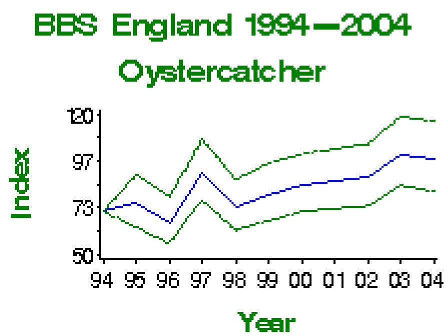
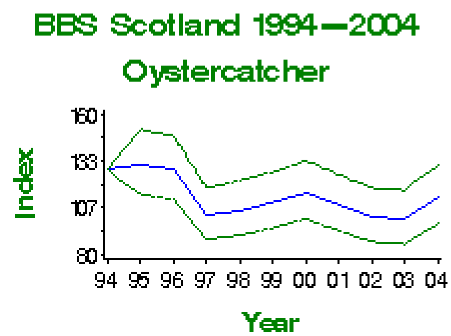




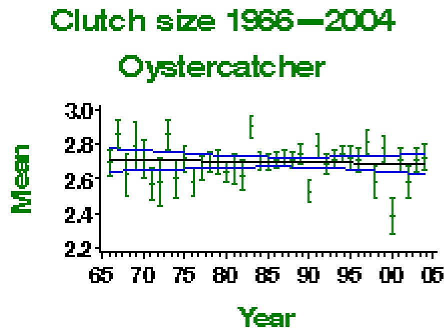


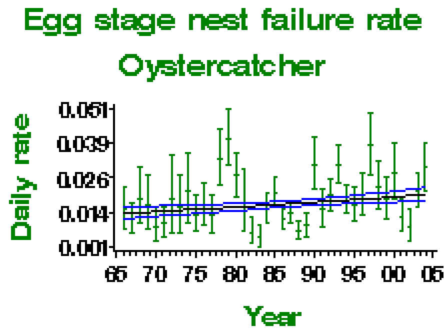
Productivity trends

Table of productivity changes for Oystercatcher

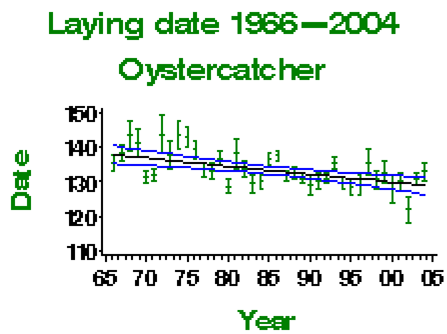
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	102	None				
Daily failure rate (eggs)	35	1968-2003	109	Linear increase	1.36% nests/day	1.98% nests/day	45.6%	
Laying date	35	1968-2003	45	Linear decline	May 17	May 9	-8 days	

Insufficient data on brood size available for this species





Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

Additional information

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

RINGED PLOVER
Charadrius hiaticula

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: uncertain

UK population size

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

Status summary

This species was already amber-listed on the strength of its concentration within UK in the winter, but a recent winter decline adds another 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, where breeding waders have subsequently suffered greatly from predation by introduced hedgehogs (**Jackson *et al.* 2004**). Surveys in England and Wales revealed an increase of 12% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2004**). Ringed Plovers that choose beaches for nesting are especially vulnerable to disturbance, and were in some regions in 1984 largely confined to wardened reserves. The recent marked increase in nest failures at the egg stage is worrying and warrants investigation.

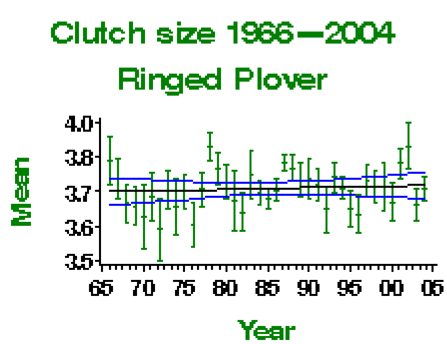
Population changes

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

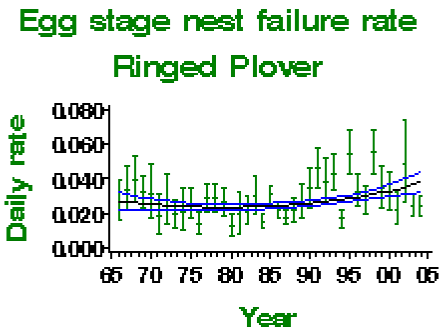
Productivity trends

Table of productivity changes for Ringed Plover

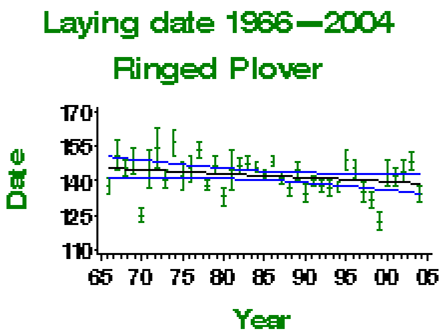
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	85	None				
Daily failure rate (eggs)	35	1968-2003	123	Curvilinear	2.62% nests/day	3.66% nests/day	39.7%	
Laying date	35	1968-2003	40	None				



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 were no annual monitoring data before the inception of BBS. BBS has shown apparent stability in Scotland and the UK since 1994, but this is generally thought to follow an earlier decline (**Gibbons *et al.* 1993**). Nest survival on grass moors, unlike that on heather moors, may have declined over time (**Crick 1992a**), 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.).

Population changes

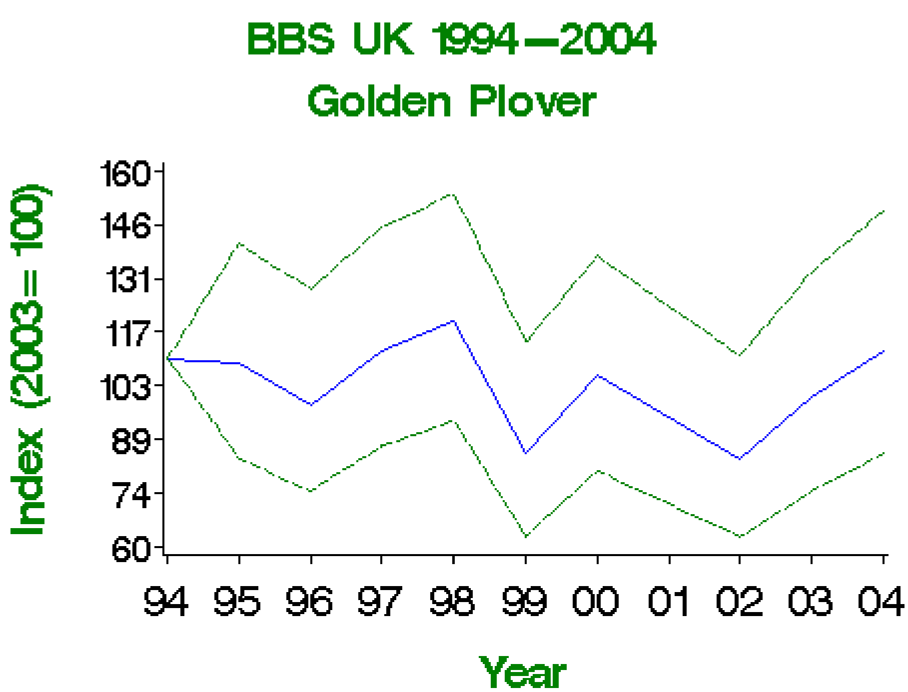


Table of population changes for Golden Plover

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	53	2	-23	36		
BBS Scotland	10	1994-2004	42	-3	-30	33		

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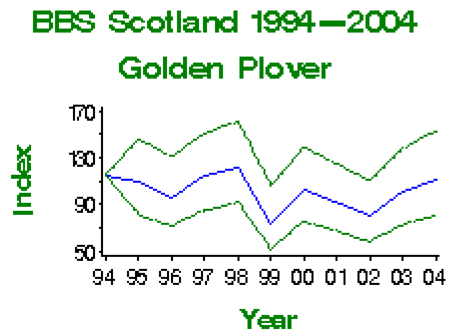
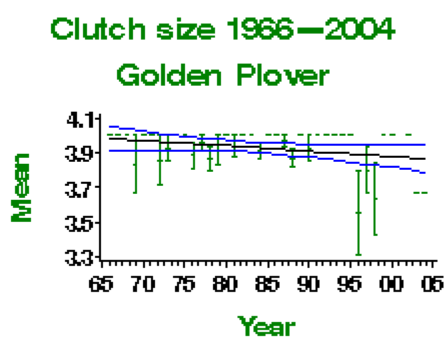


Productivity trends

Table of productivity changes for Golden Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	15	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)

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

The amber listing of this species is now based on UK decline, as well as the original criterion of international importance. CBC recorded some increase in its early years, and on WBS plots increase continued until the mid 1980s. Lapwings declined rapidly on lowland farmland through the 1980s, probably because changes in agricultural practice led to reduced productivity (**Hudson *et al.* 1994**, **Siriwardena *et al.* 2000a**). Adult and first-year survival rates show no trend through time (**Peach *et al.* 1994**, **Catchpole *et al.* 1999**). National surveys in England and Wales showed a 49% population decline between 1987 and 1998 (**Wilson *et al.* 2001**). Population declines in excess of 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**, **2004**). BBS data indicate little change in England since 1994, but steep decline in Scotland. There has been minor increase in mean clutch size as the population has fallen.

Population changes

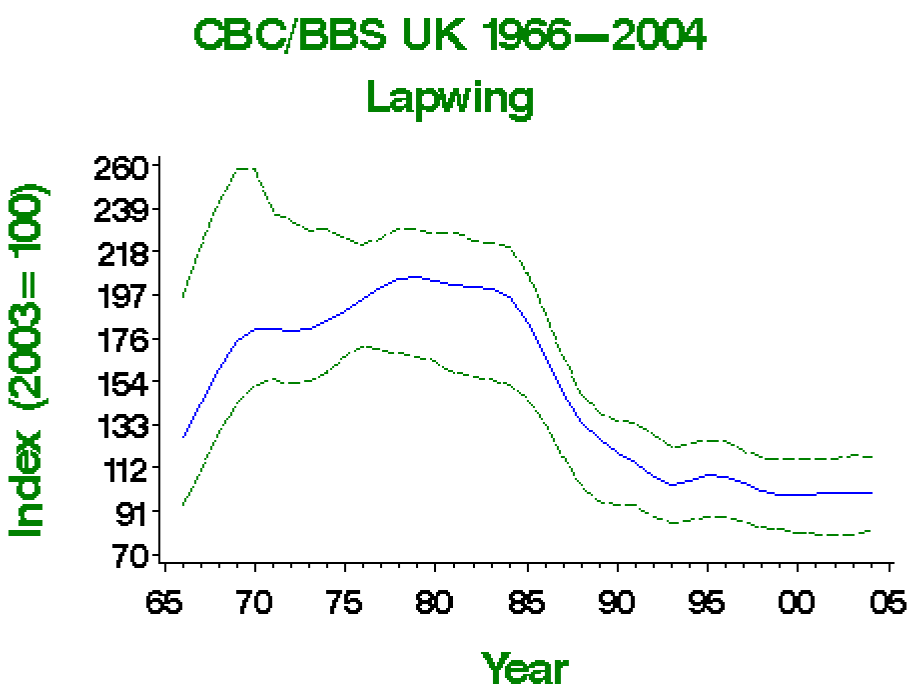


Table of population changes for Lapwing

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	153	-10	-49	29		

	25	1978-2003	198	-44	-59	-30	>25	
	10	1993-2003	426	17	-2	33		
	5	1998-2003	489	13	6	23		
CBC/BBS UK	36	1967-2003	187	-30	-61	0	>25	
	25	1978-2003	243	-51	-65	-32	>50	
	10	1993-2003	525	-3	-17	8		
	5	1998-2003	596	-1	-11	8		
WBS waterways	23	1980-2003	38	-3	-46	82		
	10	1993-2003	38	-12	-33	14		
	5	1998-2003	33	-4	-23	23		
BBS UK	10	1994-2004	559	-13	-20	-6		
BBS England	10	1994-2004	452	11	1	22		
BBS Scotland	10	1994-2004	84	-35	-47	-20	(>25)	

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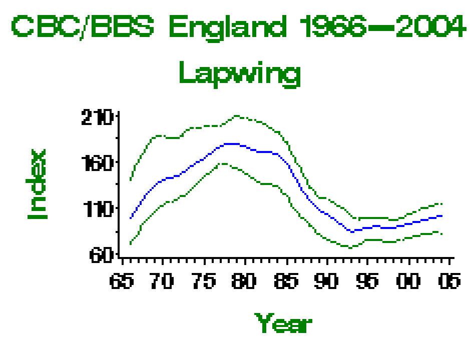
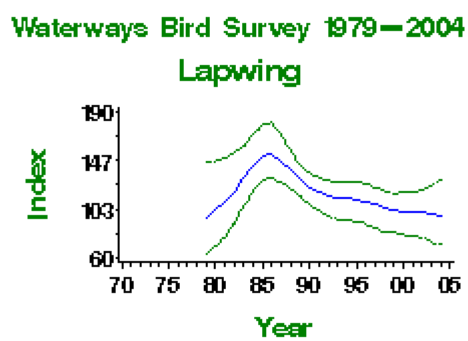
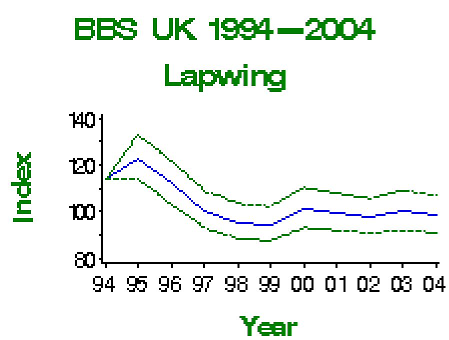
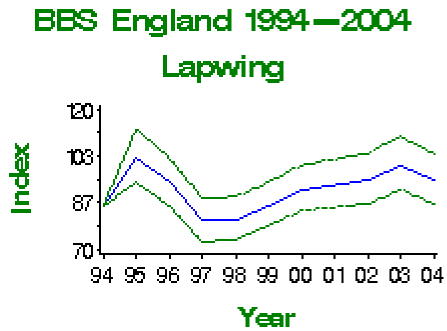
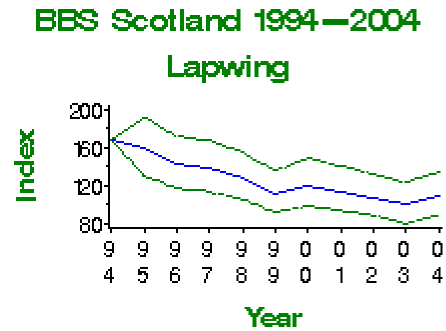






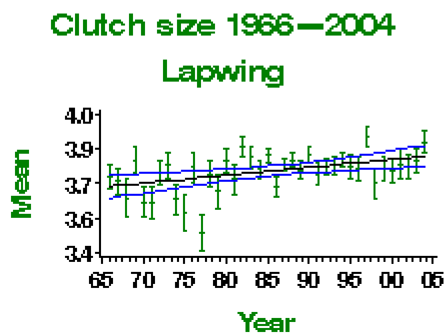




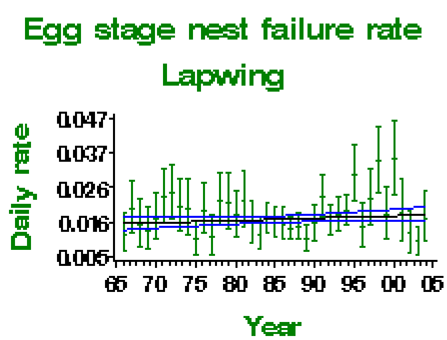
Productivity trends

Table of productivity changes for Lapwing

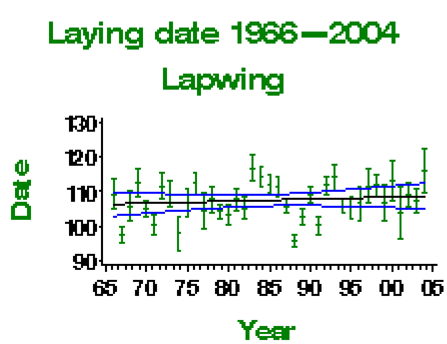
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	125	Linear increase	3.69 eggs	3.81 eggs	3.2%	
Daily failure rate (eggs)	35	1968-2003	136	None				
Laying date	35	1968-2003	31	None				



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

Additional information

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

SNIPE
Gallinago gallinago

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: probable decline

UK population size

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

Status summary

Snipe were monitored by the CBC mainly in lowland England, where numbers have fallen rapidly since the 1970s as farmland has been drained (**Gibbons *et al.* 1993**, **Siriwardena *et al.* 2000a**). The CBC index was discontinued after 1984, when the number of occupied plots became too small (**Marchant *et al*. 1990**), and the graph is not shown here. 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.* 2004**).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 probable. The BBS shows increases in England and especially in Scotland since 1994. Daily nest failure rates at the egg stage appear to have halved. Following declines across much of Europe during the 1990s, this previously 'secure' species is now provisionally evaluated as 'declining' (**BirdLife International 2004**).

Population changes

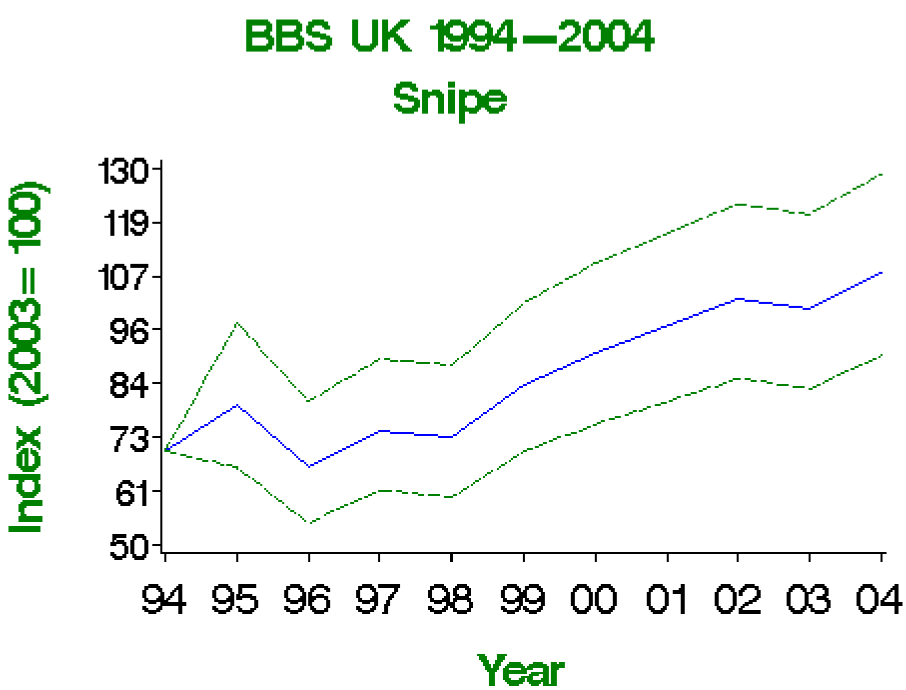
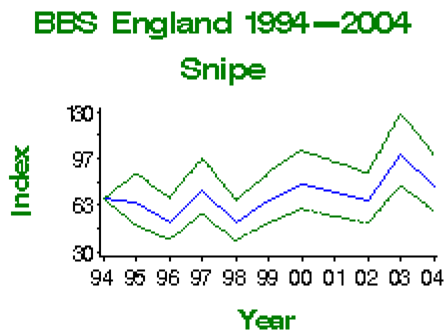


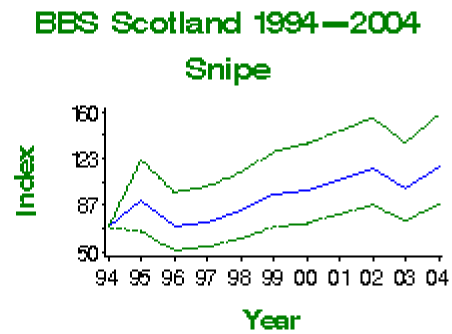
Table of population changes for Snipe

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

BBS UK	10	1994-2004	124	54	29	84		
BBS England	10	1994-2004	56	13	-13	46		
BBS Scotland	10	1994-2004	51	69	26	127		

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

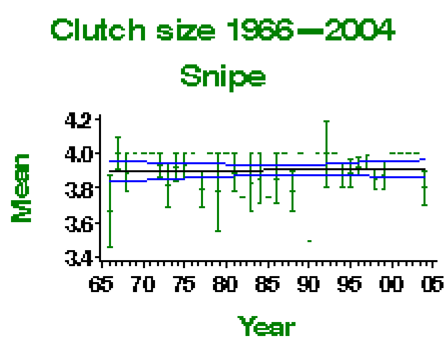




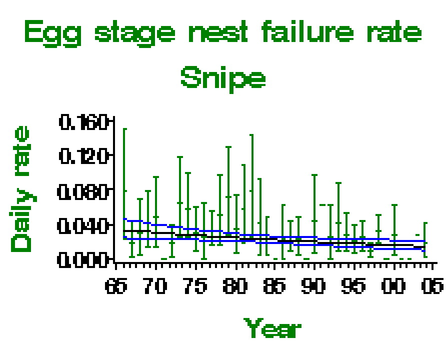
Productivity trends

Table of productivity changes for Snipe

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	13	None				Small sample
Daily failure rate (eggs)	35	1968-2003	17	Linear decline	3.24% nests/day	1.53% nests/day	-52.8%	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**)

Status summary

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

Population changes

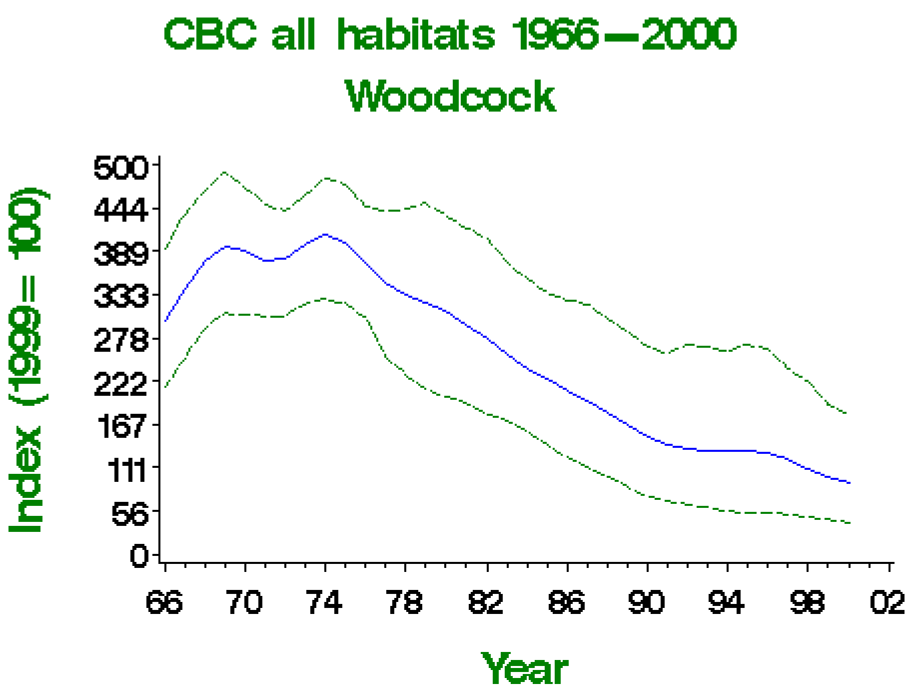


Table of population changes for Woodcock

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)

Long-term trend

England: probable decline

UK population size

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

Status summary

Curlews monitored by CBC were mostly in lowland habitats and may have been affected primarily by drainage of farmland (**Gibbons *et al.* 1993**). Surveys in England and Wales revealed a decrease of 39% in breeding birds in wet meadows between 1982 and 2002 (**Wilson *et al.* 2004**). In Northern Ireland, a rapid breeding decline occurred between the mid 1980s and 1999 (**Henderson *et al.* 2002**). BBS data also show that decline has been widespread. WBS data, in contrast, indicate a moderate increase during the 1980s in Curlews nesting alongside waterways, followed by stability. Wintering Curlew abundance has shown a shallow long-term increase (**Collier *et al.* 2005**). Although samples are small, failure rate of nests at the egg stage have fallen slightly.

Population changes

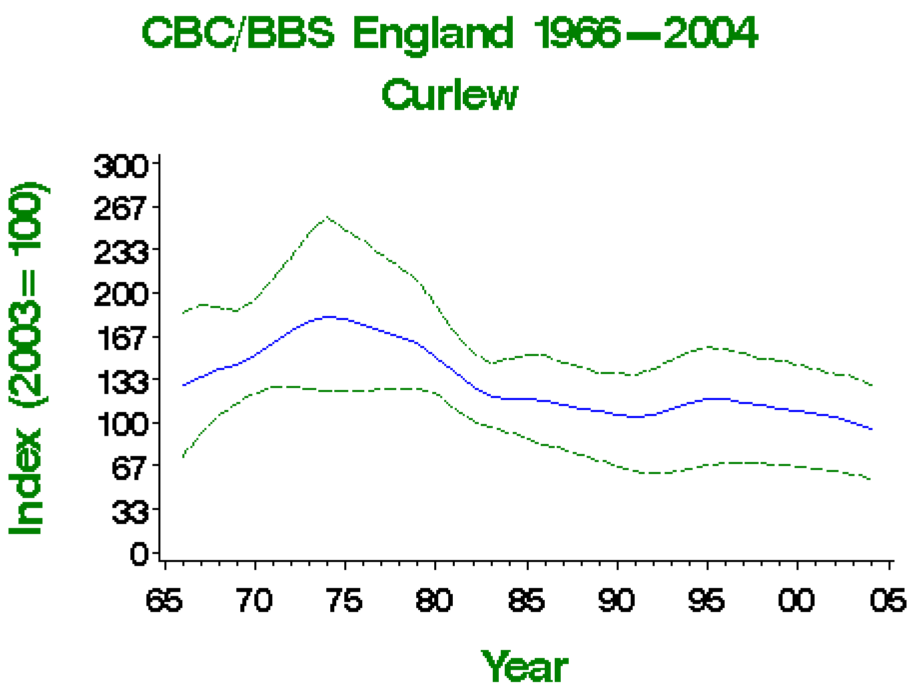


Table of population changes for Curlew

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	77	-26	-74	44		Small CBC sample
	25	1978-2003	105	-40	-78	10		Small CBC sample
	10	1993-2003	238	-9	-20	0		Small CBC sample
	5	1998-2003	276	-12	-18	-5		

WBS waterways	23	1980-2003	22	16	-20	81		
	10	1993-2003	24	3	-19	38		
	5	1998-2003	19	-2	-18	16		Small sample
BBS UK	10	1994-2004	431	-34	-39	-28	(>25)	
BBS England	10	1994-2004	250	-23	-30	-15		
BBS Scotland	10	1994-2004	119	-43	-52	-33	(>25)	
BBS Wales	10	1994-2004	38	-46	-63	-20	(>25)	

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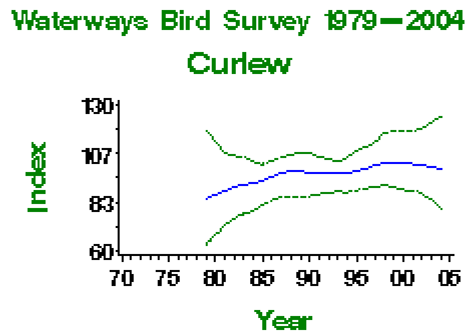
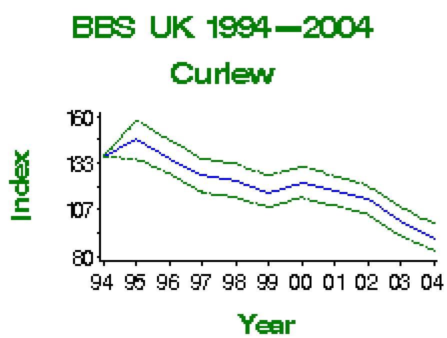
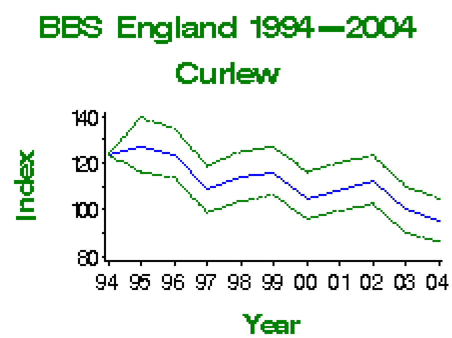
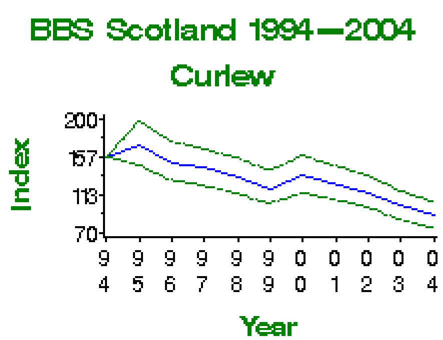
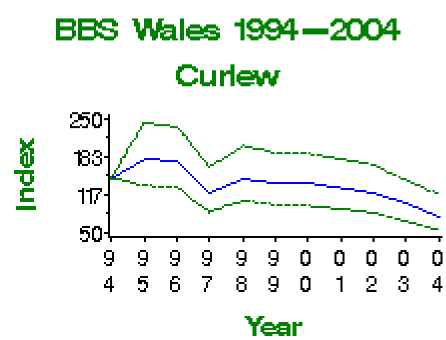






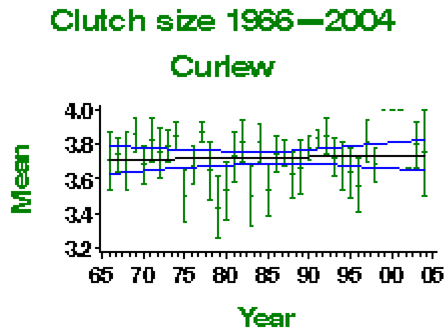




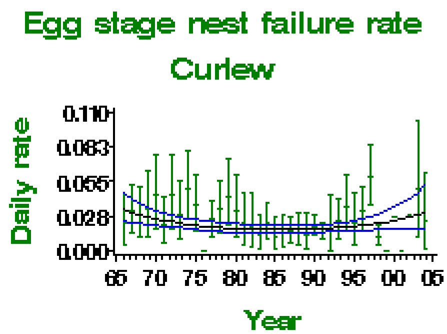
Productivity trends

Table of productivity changes for Curlew

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	23	None				Small sample
Daily failure rate (eggs)	35	1968-2003	25	Curvilinear	2.92% nests/day	2.87% nests/day	-1.7%	Small sample



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

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

COMMON SANDPIPER
Actitis hypoleucos

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: green

Long-term trend

UK: moderate decline

UK population size

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

Status summary

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

Population changes

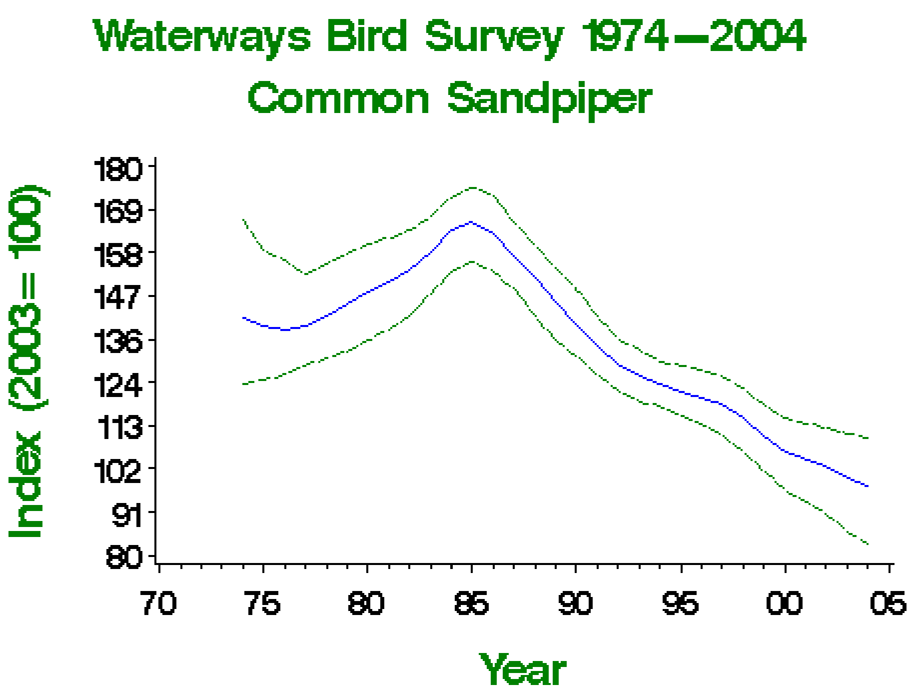


Table of population changes for Common Sandpiper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	26	-28	-44	-13	>25	
	25	1978-2003	27	-29	-43	-14	>25	
	10	1993-2003	25	-21	-33	-10		
	5	1998-2003	21	-13	-23	-4		
BBS UK	10	1994-2004	60	-15	-34	8		

BBS Scotland	10	1994-2004	34	-17	-42	18		

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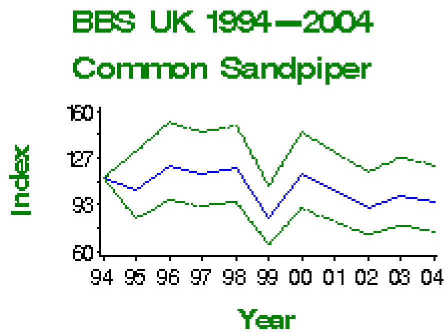
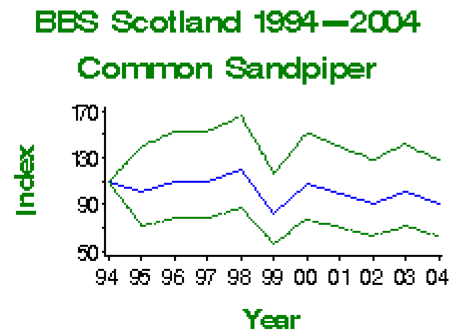
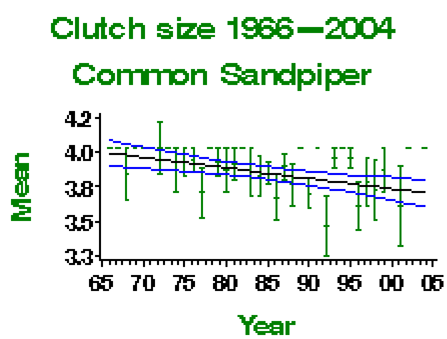




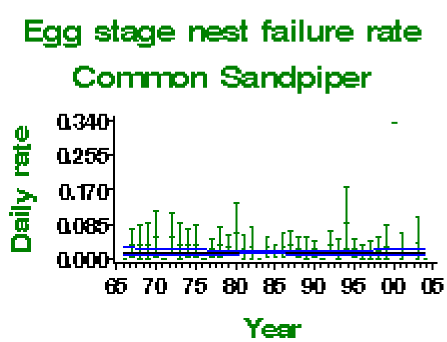
Productivity trends

Table of productivity changes for Common Sandpiper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	12	Linear decline	3.96 eggs	3.72 eggs	-5.9%	Small sample
Daily failure rate (eggs)	35	1968-2003	14	None				Small sample



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

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

REDSHANK
Tringa totanus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: moderate decline

UK population size

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

Status summary

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

Population changes

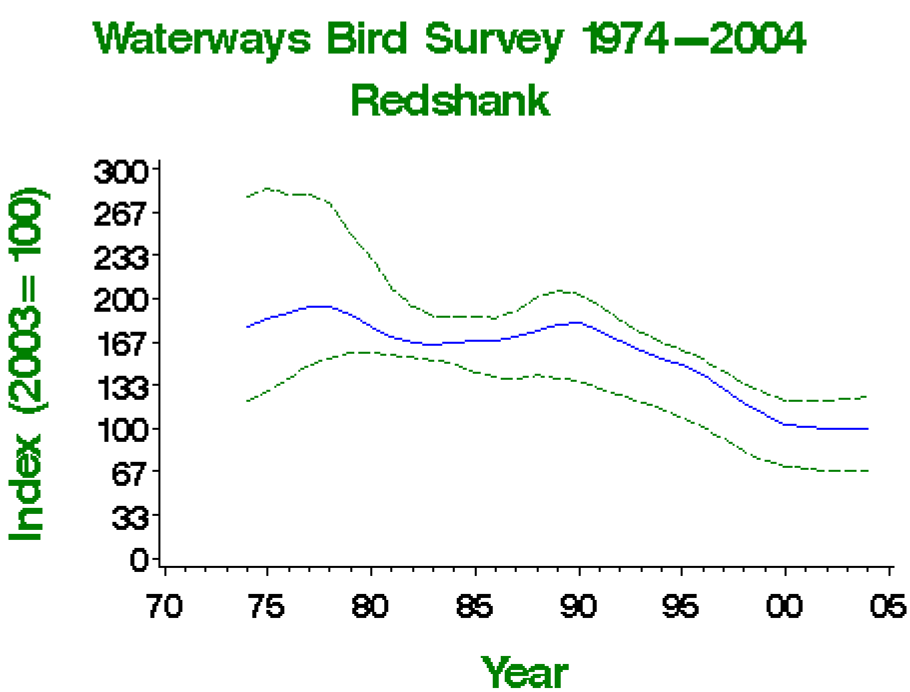


Table of population changes for Redshank

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

WBS waterways	28	1975-2003	19	-46	-80	0	>25	Small sample
	25	1978-2003	19	-49	-79	-20	>25	Small sample
	10	1993-2003	17	-37	-48	-20	>25	Small sample
	5	1998-2003	14	-17	-29	-1		Small sample
BBS UK	10	1994-2004	70	23	-2	54		
BBS England	10	1994-2004	47	33	-1	78		

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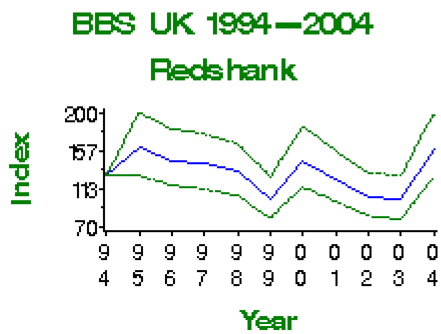
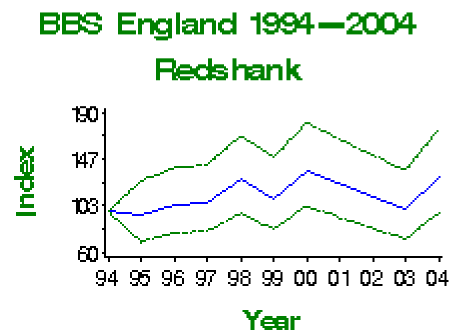
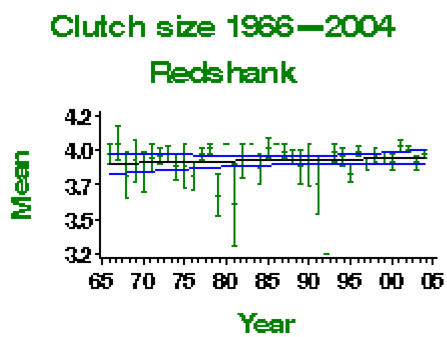




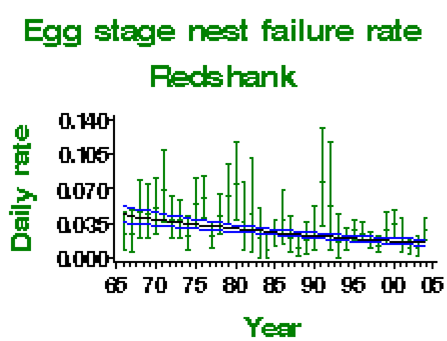
Productivity trends

Table of productivity changes for Redshank

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	29	None				Small sample
Daily failure rate (eggs)	35	1968-2003	33	Linear decline	4.17% nests/day	1.6% nests/day	-61.6%	



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

Population size

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

Status summary

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

Population changes

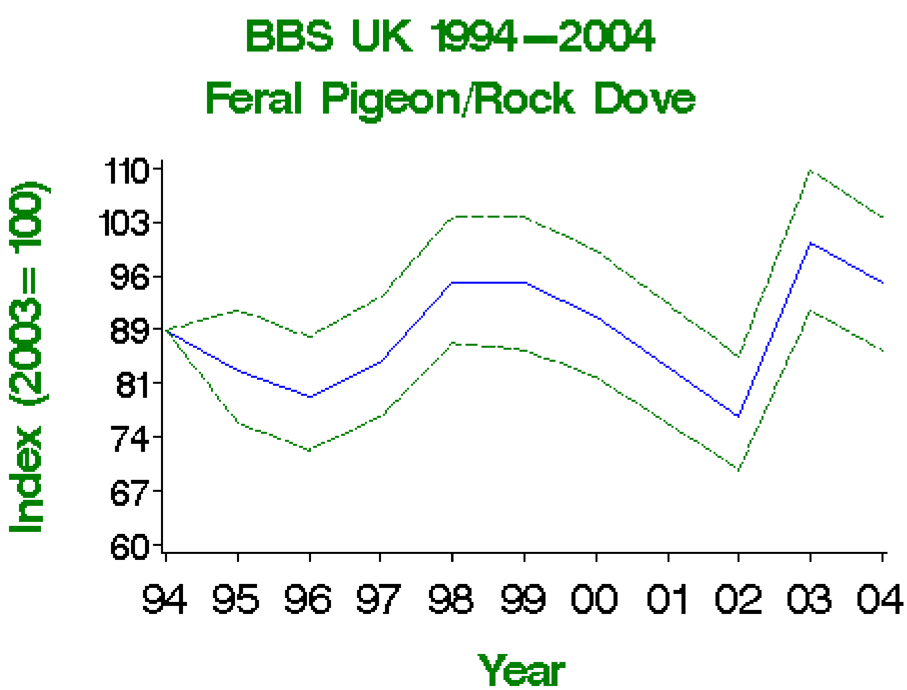


Table of population changes for Feral Pigeon/Rock Dove

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

BBS UK	10	1994-2004	555	7	-3	17		
BBS England	10	1994-2004	466	-2	-11	8		
BBS Scotland	10	1994-2004	51	21	-14	68		

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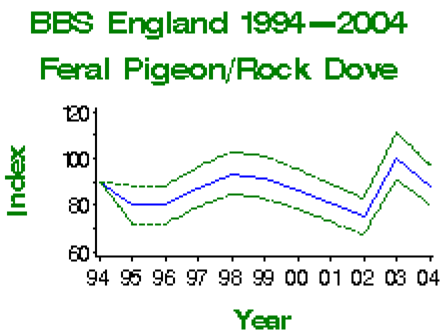

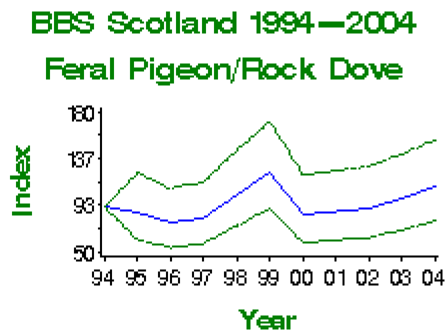

Productivity trends

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

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

Population changes

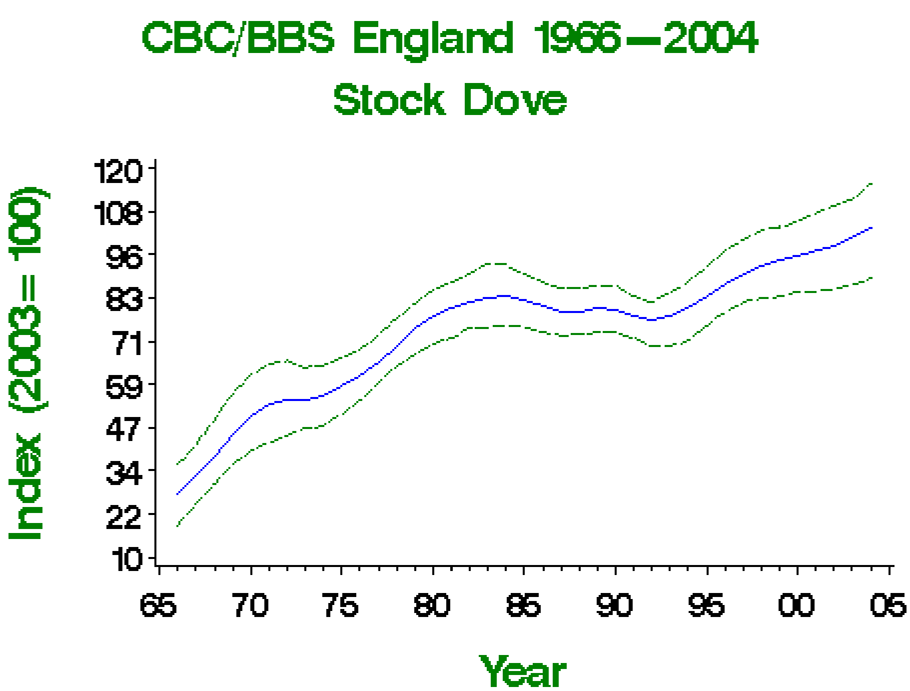

Table of population changes for Stock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	206	206	109	352		
	25	1978-2003	273	43	13	77		
	10	1993-2003	560	28	14	45		
	5	1998-2003	661	8	-1	20		

BBS UK	10	1994-2004	618	30	18	43		
BBS England	10	1994-2004	570	25	13	38		

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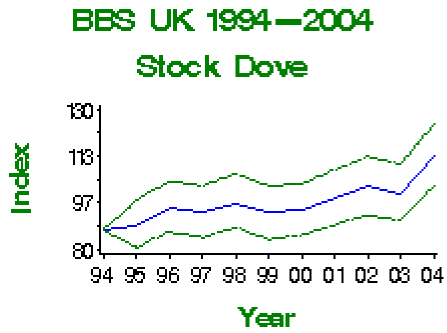
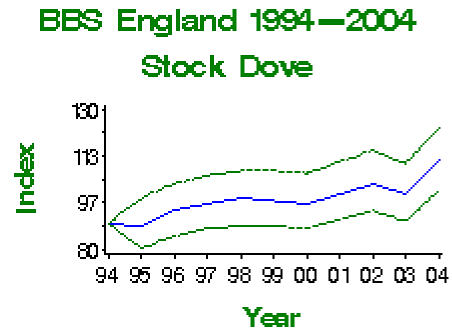
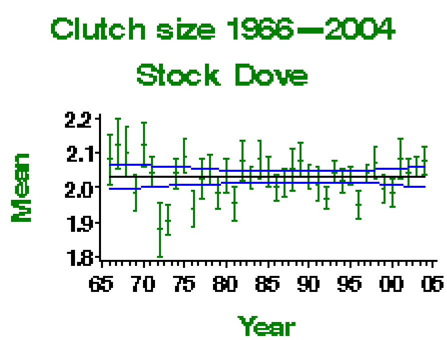


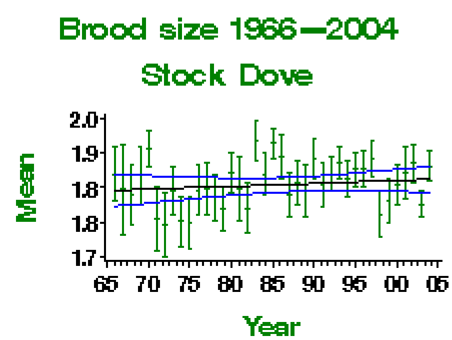


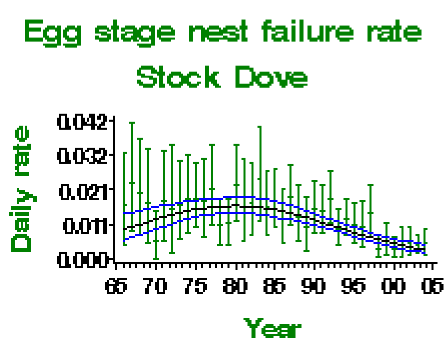
Productivity trends

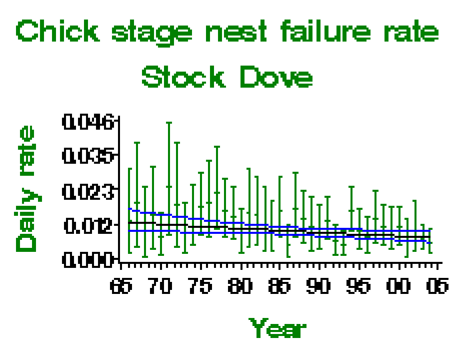
Table of productivity changes for Stock Dove

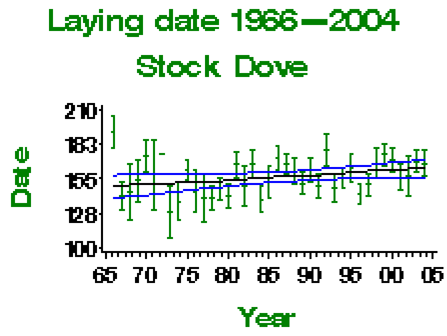
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	66	None				
Brood size	35	1968-2003	88	None				
Daily failure rate (eggs)	35	1968-2003	64	Curvilinear	1.05% nests/day	0.33% nests/day	-68.6%	
Daily failure rate (chicks)	35	1968-2003	48	Linear decline	1.2% nests/day	0.74% nests/day	-38.3%	
Laying date	35	1968-2003	14	Linear increase	May 30	Jun 12	13 days	Small sample











Insufficient data on CES available for this species

Additional information

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

WOODPIGEON
Columba palumbus

- Population changes
- Productivity trends
- Additional information

Conservation listings

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

Long-term trend

UK, England: rapid increase

UK population size

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

Status summary

The CBC/BBS trend for this species is of a steady, steep increase since at least the mid 1970s. The spread of intensive arable cultivation, especially of oilseed rape, which has been shown to promote overwinter survival, may explain the rise in numbers (**Gibbons *et al.* 1993**). Since 1994, BBS has recorded significant increase in the UK, and in England and in Wales separately, but decrease 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. This factor could have led CBC, with fieldwork finishing in early July, to overestimate the rate of increase (**Marchant *et al.* 1990**).

Population changes

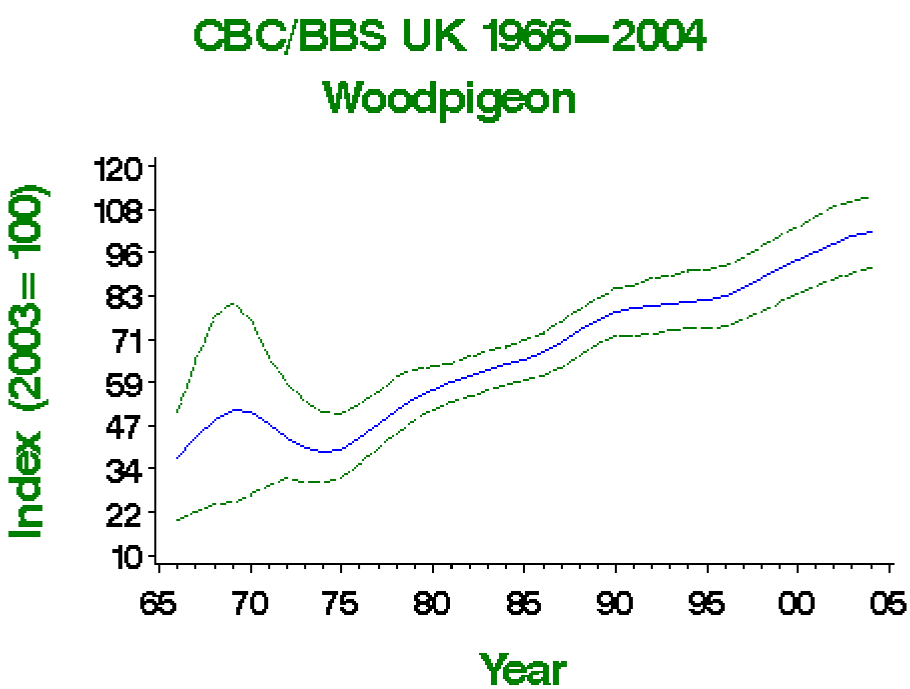


Table of population changes for Woodpigeon

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	453	146	20	482		
	25	1978-2003	642	113	66	195		
	10	1993-2003	1464	26	18	34		

	5	1998-2003	1723	15	11	18		
CBC/BBS UK	36	1967-2003	562	132	17	497		
	25	1978-2003	798	95	49	145		
	10	1993-2003	1821	23	17	29		
	5	1998-2003	2174	13	10	17		
BBS UK	10	1994-2004	1913	12	8	16		
BBS England	10	1994-2004	1527	17	12	22		
BBS Scotland	10	1994-2004	159	-13	-24	0		
BBS Wales	10	1994-2004	156	17	3	33		
BBS N.Ireland	10	1994-2004	62	17	-13	56		

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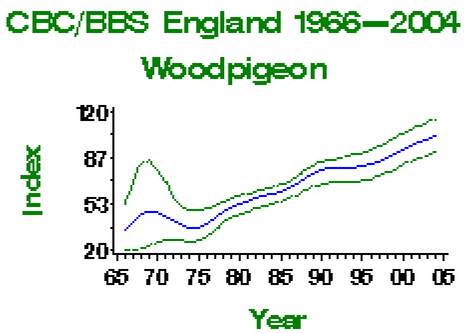

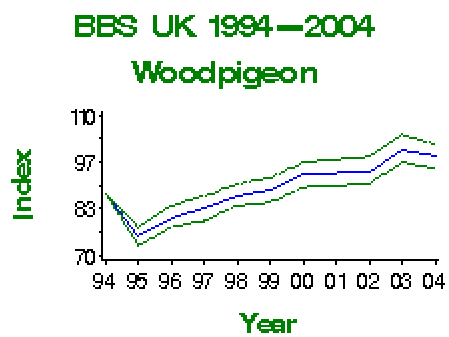

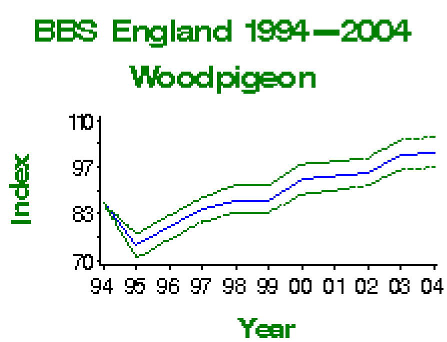

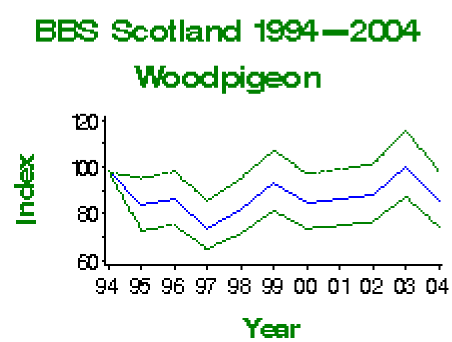

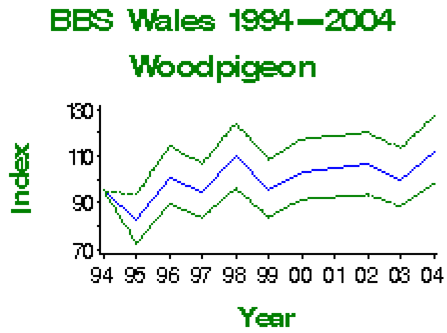

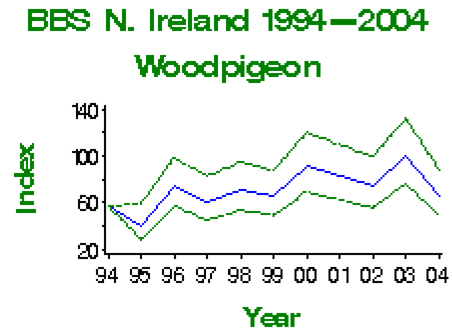

Productivity trends

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, productivity has increased.

Population changes

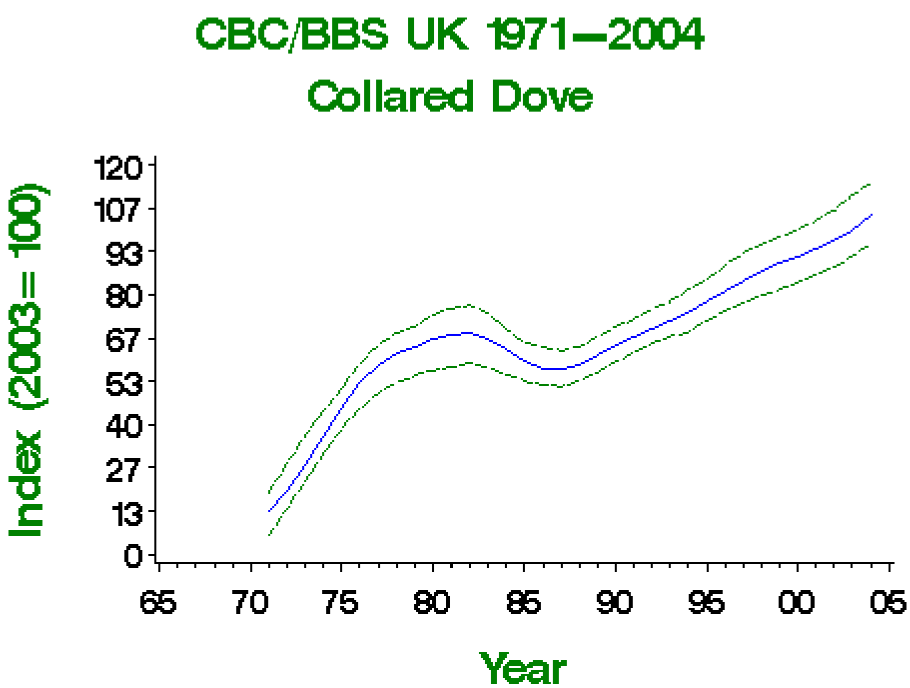

Table of population changes for Collared Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	31	1972-2003	327	434	234	726		
	25	1978-2003	392	60	25	111		
	10	1993-2003	872	40	29	51		
	5	1998-2003	1043	15	9	20		
CBC/BBS UK	31	1972-2003	368	407	221	684		
	25	1978-2003	442	62	30	107		

	10	1993-2003	977	39	29	51		
	5	1998-2003	1178	14	10	20		
BBS UK	10	1994-2004	1044	41	34	49		
BBS England	10	1994-2004	927	43	35	51		
BBS Scotland	10	1994-2004	36	-1	-30	38		
BBS Wales	10	1994-2004	56	35	3	77		

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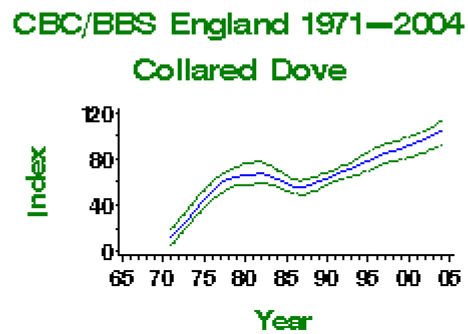
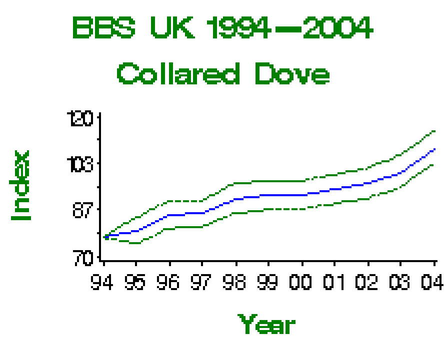
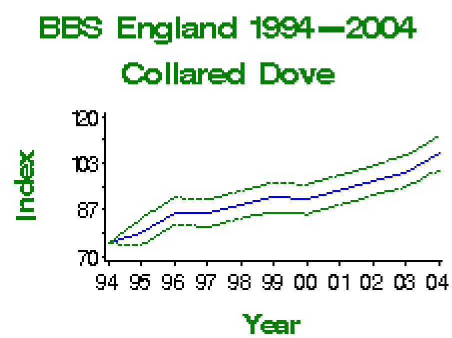
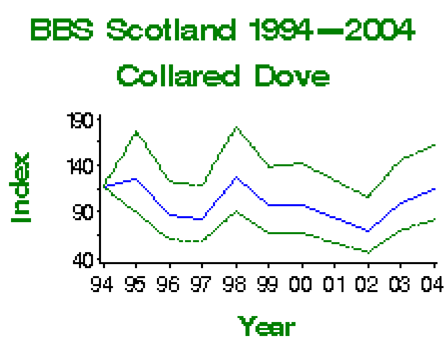
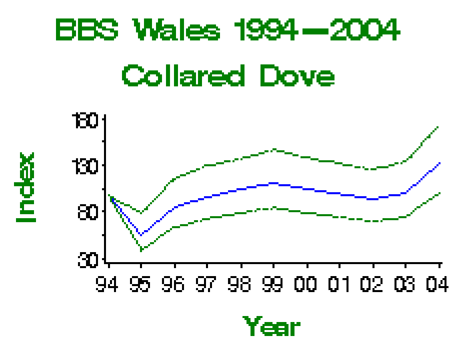








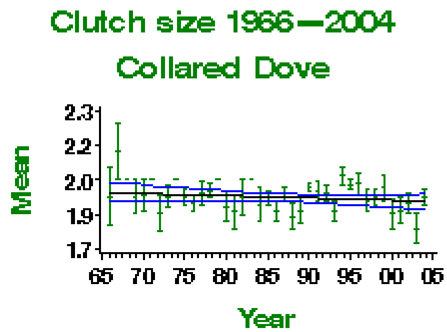


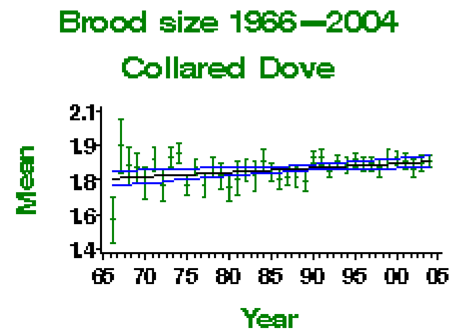
Productivity trends

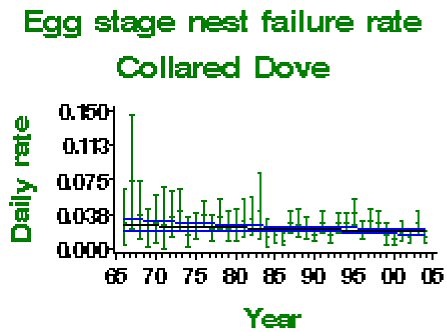
Table of productivity changes for Collared Dove

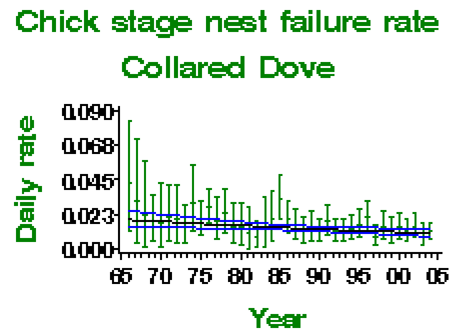
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	42	None				
Brood size	35	1968-2003	68	Linear increase	1.76 chicks	1.84 chicks	4.4%	
Daily failure rate (eggs)	35	1968-2003	58	None				
Daily failure rate (chicks)	35	1968-2003	52	Linear decline	1.86% nests/day	1.07% nests/day	-42.5%	

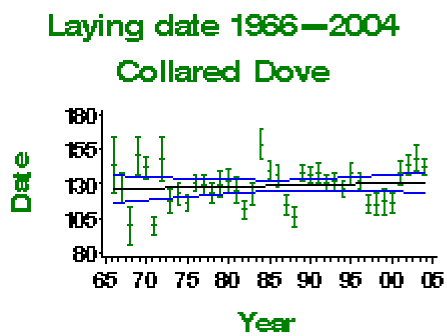
Laying date	35	1968-2003	42	None				











Insufficient data on CES available for this species

Additional information

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

TURTLE DOVE
Streptopelia turtur

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: red (>50% population decline)

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 decline, to add to those related to agricultural intensification that have been postulated for other farmland seed-eaters (O'Connor & Shrubb 1986, Krebs *et al.* 1999). Analysis of nest record cards and ringing data for farmland Turtle Doves suggests, although without statistical significance, that productivity per nesting attempt has increased while annual survival has fallen (Siriwardena *et al.* 2000a, 2000b, Browne *et al.* 2005). Browne & Aebischer (2004, 2005) conclude that Turtle Doves today have a substantially earlier close to the breeding season and consequently produce barely half the number of clutches and young per pair than in the 1960s. Thus, the recovery of Turtle Doves in Britain would benefit from the provision and sympathetic management of nesting as well as foraging habitats.

Population changes

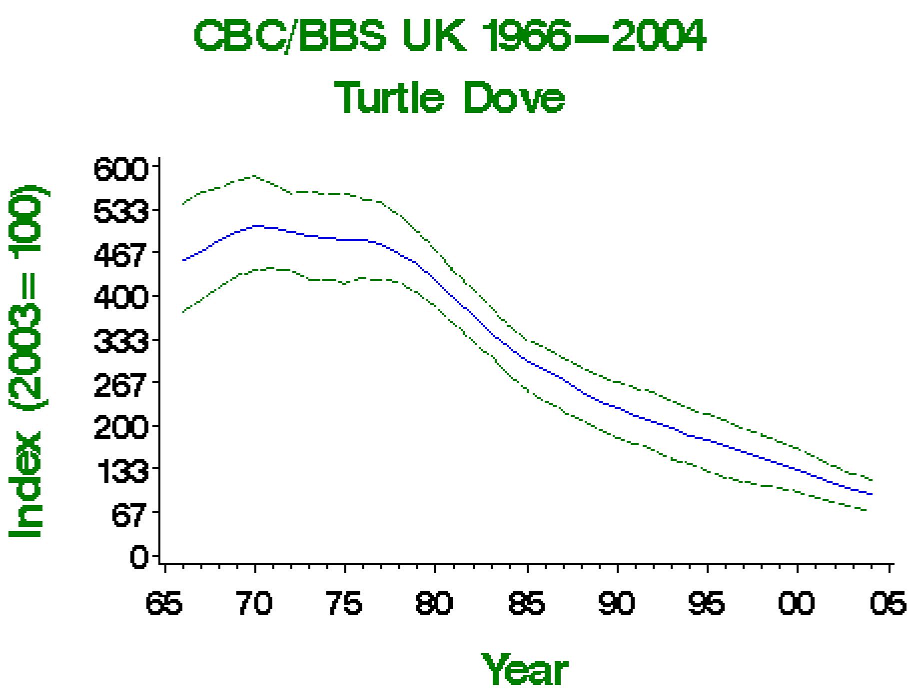


Table of population changes for Turtle Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	101	-79	-87	-69	>50	
	25	1978-2003	115	-79	-86	-71	>50	
	10	1993-2003	192	-49	-59	-41	>25	

	5	1998-2003	206	-33	-42	-26	>25	
CBC/BBS UK	36	1967-2003	101	-79	-86	-66	>50	
	25	1978-2003	116	-79	-86	-70	>50	
	10	1993-2003	194	-49	-57	-34	>25	
	5	1998-2003	209	-33	-39	-26	>25	
BBS UK	10	1994-2004	183	-45	-54	-34	(>25)	
BBS England	10	1994-2004	180	-45	-54	-34	(>25)	

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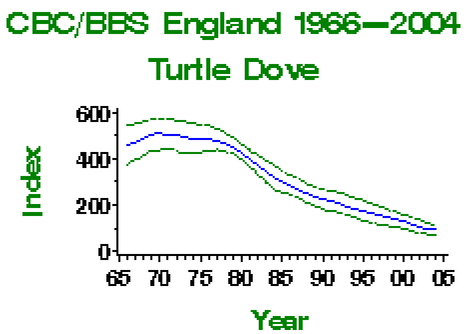
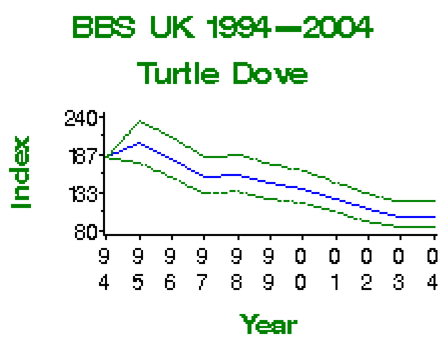
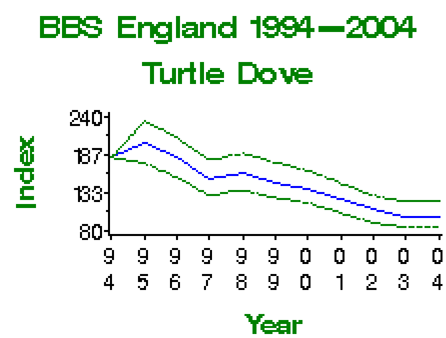


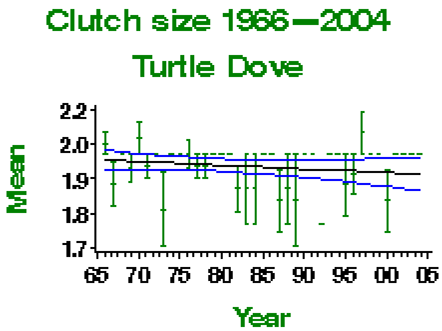


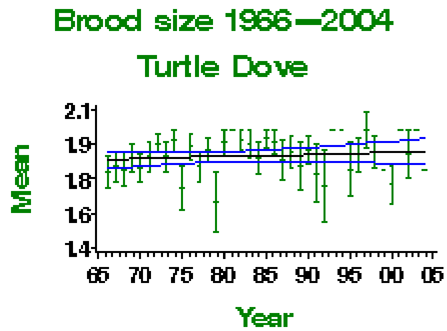


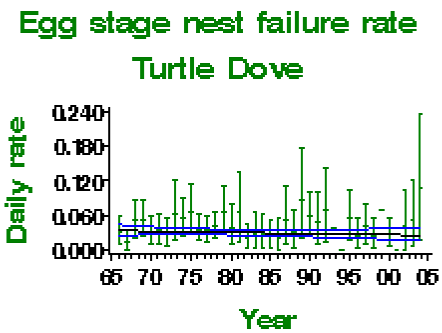
Productivity trends

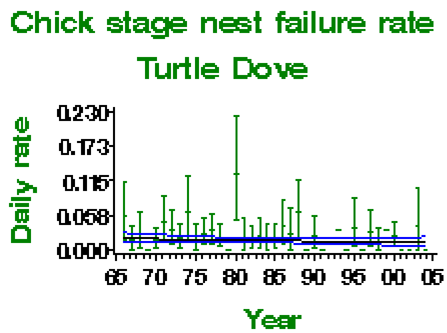
Table of productivity changes for Turtle Dove

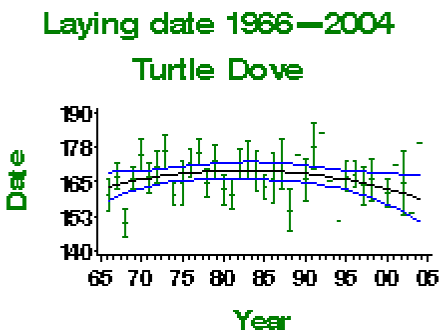
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	12	None				Small sample
Brood size	35	1968-2003	17	None				Small sample
Daily failure rate (eggs)	35	1968-2003	17	None				Small sample
Daily failure rate (chicks)	35	1968-2003	13	None				Small sample
Laying date	35	1968-2003	13	Curvilinear	Jun 14	Jun 9	-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**

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)

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**).

Population changes

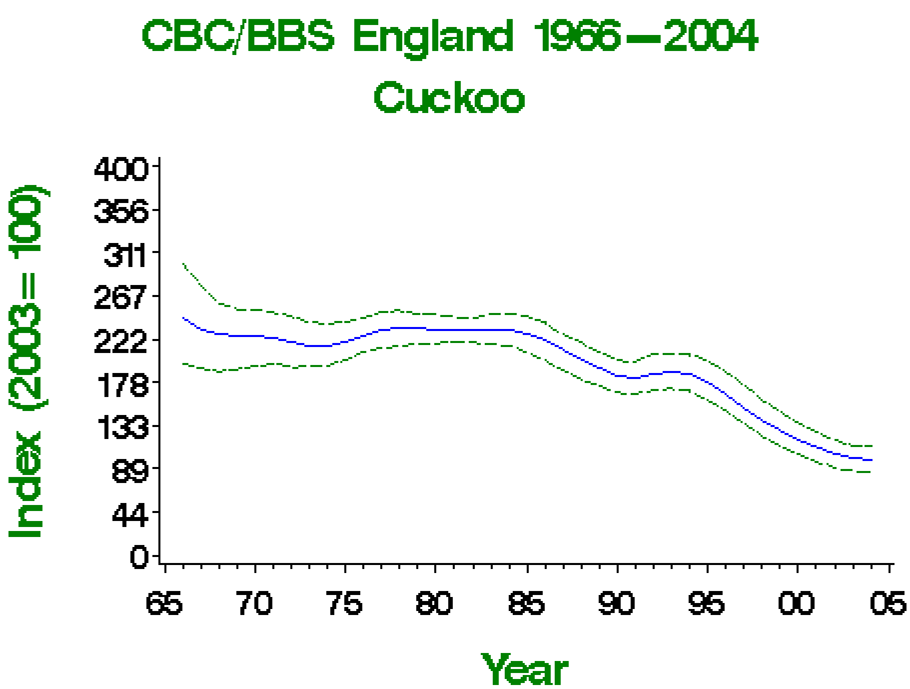


Table of population changes for Cuckoo

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	233	-57	-70	-39	>50	
	25	1978-2003	297	-57	-66	-46	>50	
	10	1993-2003	582	-47	-53	-43	>25	
	5	1998-2003	588	-28	-33	-24	>25	

BBS UK	10	1994-2004	712	-19	-26	-12		
BBS England	10	1994-2004	574	-43	-48	-37	(>25)	
BBS Scotland	10	1994-2004	63	63	23	115		
BBS Wales	10	1994-2004	55	-21	-42	6		

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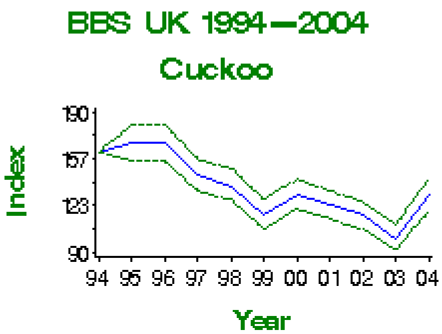
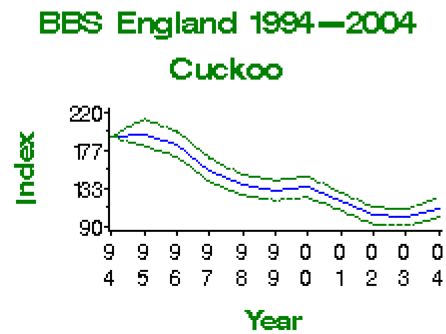
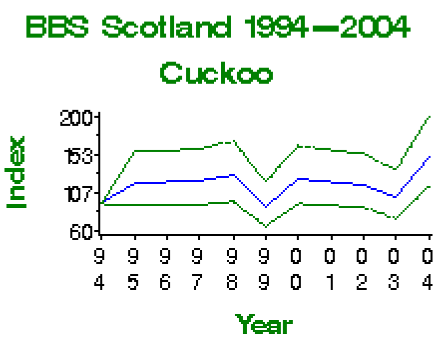
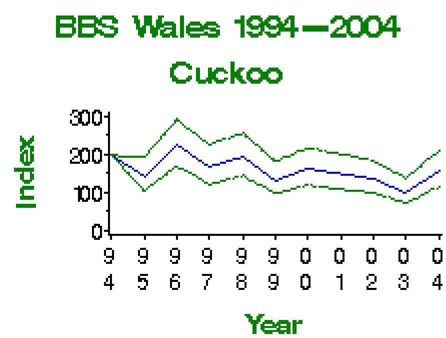








Productivity trends

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**

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

There is good evidence for a decline in this species that lasted throughout the 20th century, although there has been no annual monitoring until 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**). Clutch sizes have risen, and nest failure rates have fallen at both the egg and nestling stages. A national census during 1995–97, organised jointly by Hawk & Owl Trust and BTO, provided a replicable baseline population estimate (**Toms *et al.* 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**, which began in 2000; additional nest record, ringing and biometric information is also being collected through this scheme (**Leech *et al.* 2005**).

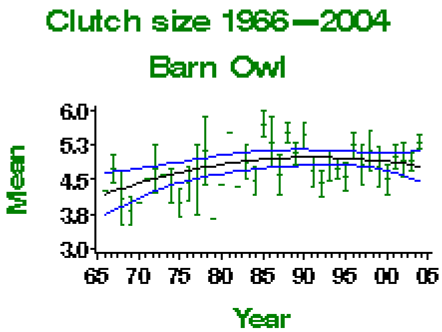
Population changes

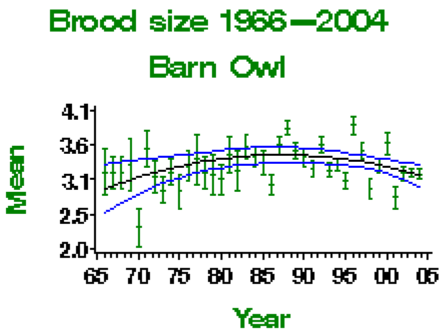
Annual breeding population changes for this species are not currently monitored by BTO

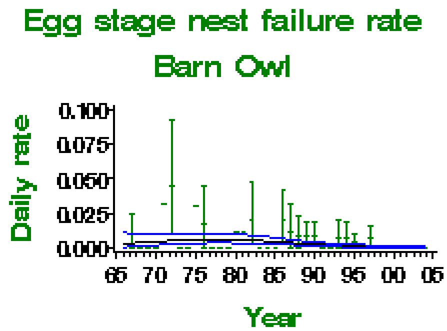
Productivity trends

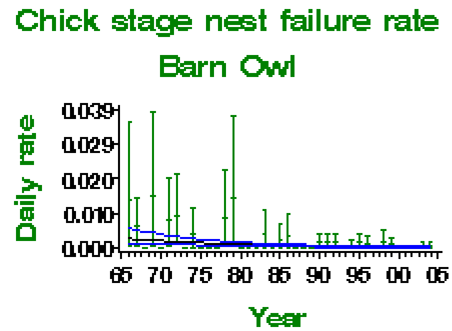
Table of productivity changes for Barn Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	13	Curvilinear	4.32 eggs	4.82 eggs	11.7%	Small sample
Brood size	35	1968-2003	69	Curvilinear	3.01 chicks	3.16 chicks	5%	
Daily failure rate (eggs)	35	1968-2003	11	Curvilinear	0.41% nests/day	0.02% nests/day	-95.1%	Small sample
Daily failure rate (chicks)	35	1968-2003	41	Linear decline	0.24% nests/day	0.02% nests/day	-91.7%	









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**

LITTLE OWL
Athene noctua

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: possible decline

UK population size

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

Status summary

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

Population changes

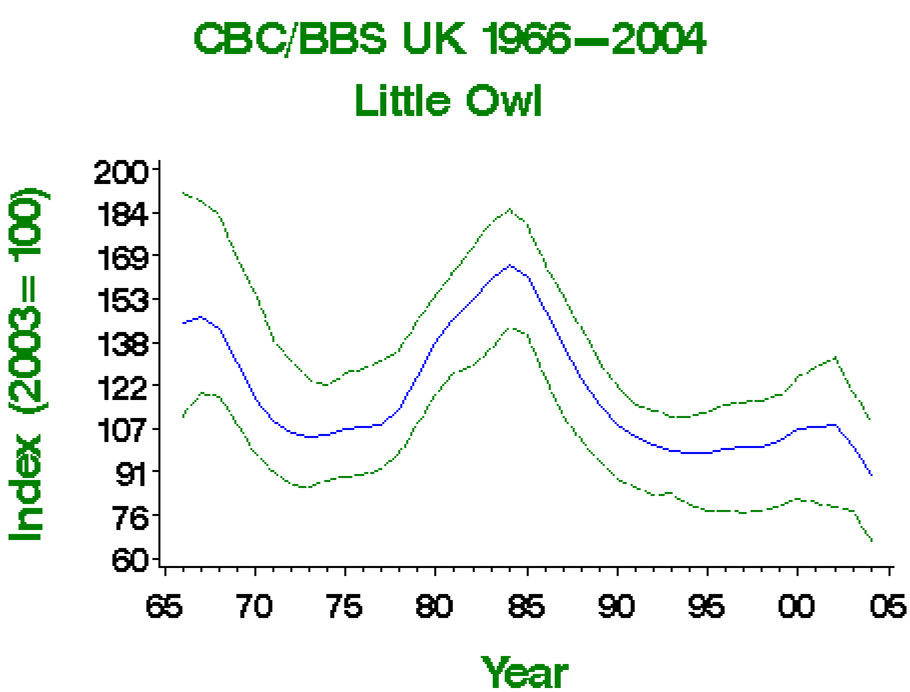


Table of population changes for Little Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	47	-23	-60	28		
	25	1978-2003	57	-5	-42	46		
	10	1993-2003	100	6	-17	39		
	5	1998-2003	106	-1	-19	20		
CBC/BBS UK	36	1967-2003	49	-32	-65	-2	>25	

	25	1978-2003	60	-12	-43	22		
	10	1993-2003	103	1	-17	31		
	5	1998-2003	110	0	-16	20		
BBS UK	10	1994-2004	91	-14	-34	12		
BBS England	10	1994-2004	88	-7	-29	23		

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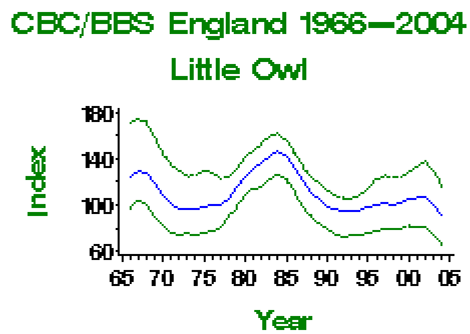
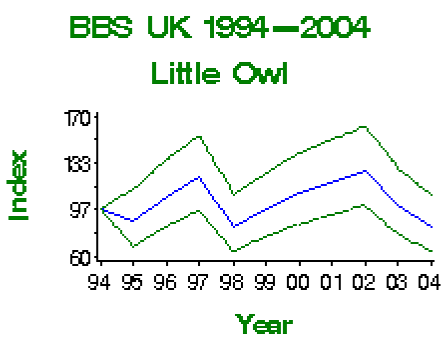
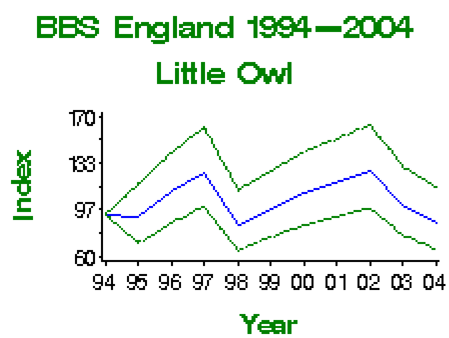


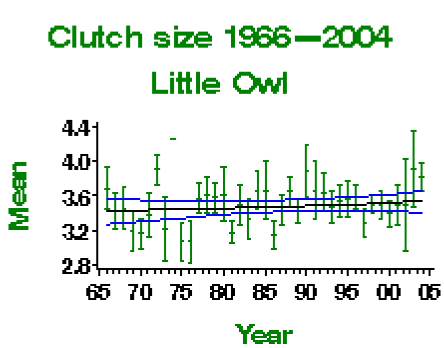


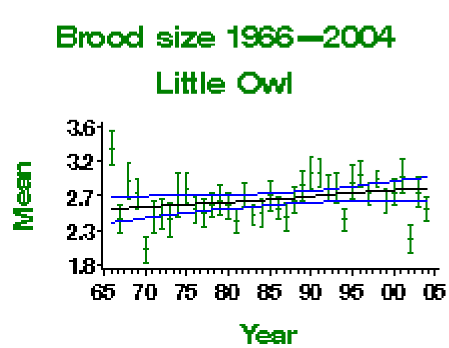


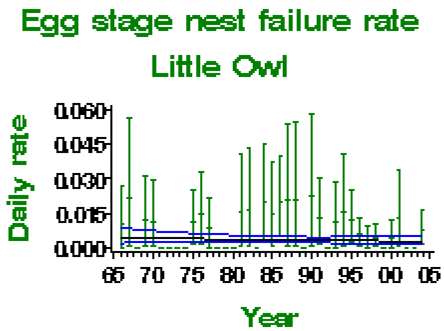
Productivity trends

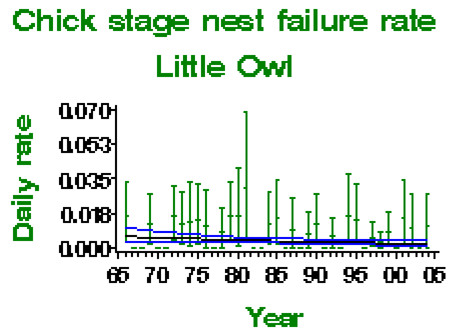
Table of productivity changes for Little Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	16	None				Small sample
Brood size	35	1968-2003	35	None				
Daily failure rate (eggs)	35	1968-2003	15	None				Small sample
Daily failure rate (chicks)	35	1968-2003	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 relatively poorly covered by the BTO's monitoring schemes. The pattern shown by CBC/BBS is a relatively stable one, however, in keeping with the longevity, sedentary behaviour, and slow breeding rate of this species. There is a slight indication from CBC/BBS of a shallow downward trend since the early 1970s, which recent data, for England and for the UK as a whole, suggest has accelerated since 1999. It may be relevant to this possible long-term change that **Gibbons *et al.* (1993)** found evidence for a contraction of the species' UK range between the two atlas periods. The substantial improvements in nest success during the c.29-day egg stage could be linked to the declining impact of organochlorine pesticides, which were banned in the 1960s. Special surveys of this species took place in 2005 (**click here**).

Population changes

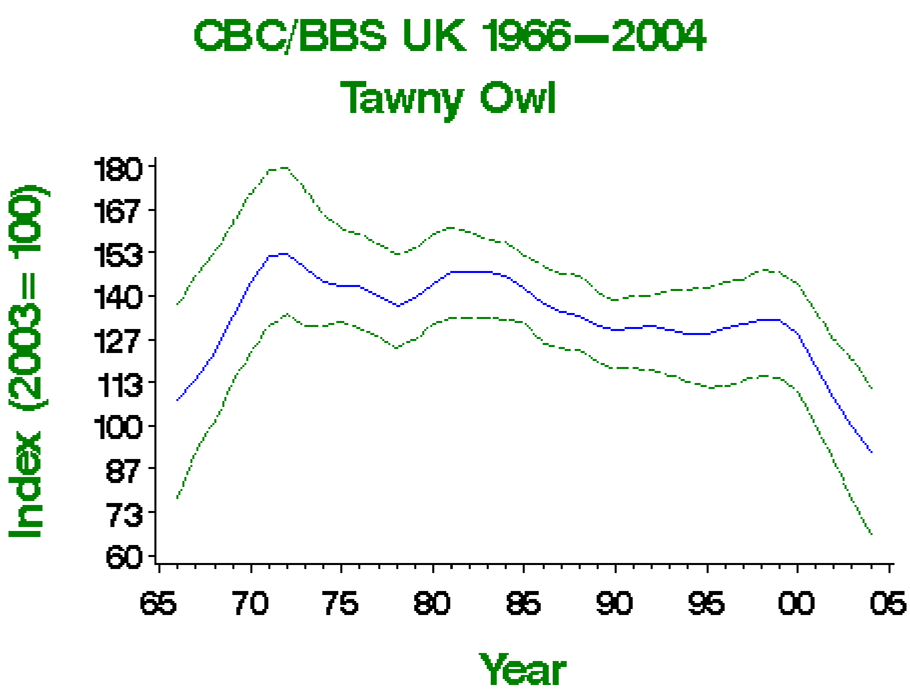


Table of population changes for Tawny Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	63	4	-36	61		
	25	1978-2003	72	-6	-31	21		
	10	1993-2003	96	-5	-28	22		

	5	1998-2003	98	-7	-29	15		
CBC/BBS UK	36	1967-2003	74	-12	-44	24		
	25	1978-2003	85	-27	-49	-8	>25	
	10	1993-2003	113	-23	-42	-5		
	5	1998-2003	113	-25	-40	-9		
BBS UK	10	1994-2004	77	-38	-54	-18	(>25)	Nocturnal species
BBS England	10	1994-2004	65	-13	-36	18		Nocturnal species

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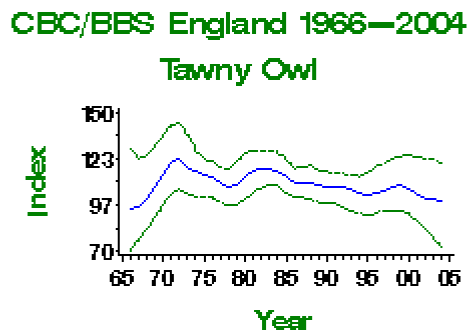
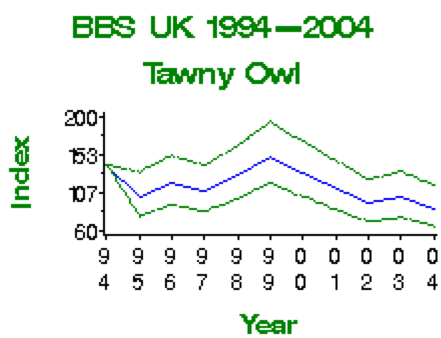
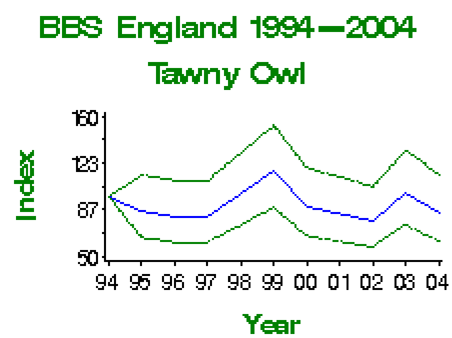


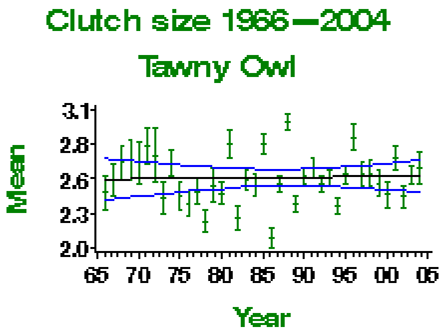


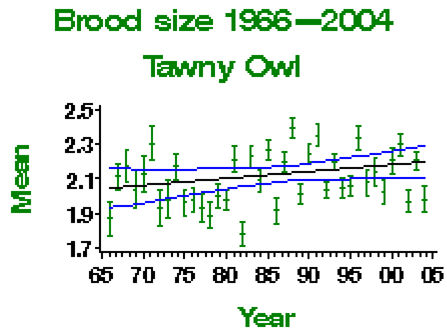


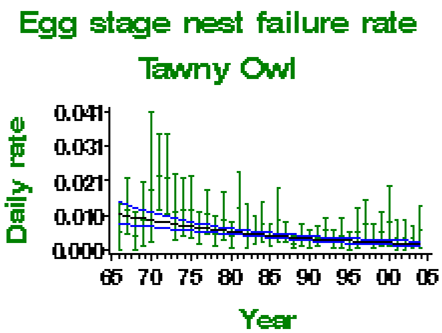
Productivity trends

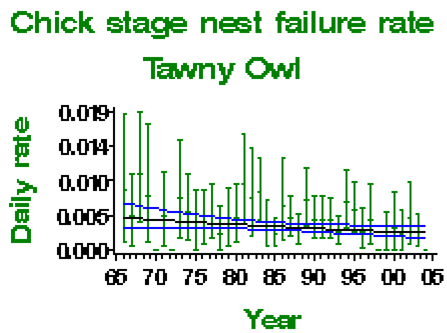
Table of productivity changes for Tawny Owl

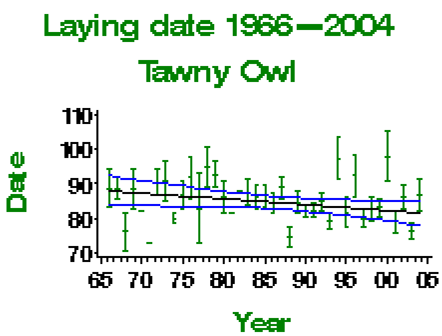
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	76	None				
Brood size	35	1968-2003	131	None				
Daily failure rate (eggs)	35	1968-2003	52	Linear decline	0.97% nests/day	0.19% nests/day	-80.4%	
Daily failure rate (chicks)	35	1968-2003	78	Linear decline	0.43% nests/day	0.24% nests/day	-44.2%	
Laying date	35	1968-2003	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**
- **Garden BirdWatch results**

NIGHTJAR
Caprimulgus europaeus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2, (declining)
UK: red (>50% distribution decline)

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.* in press**)

Status summary

Having suffered a decline in range of more than 50% between breeding atlases, the 1992 national survey revealed a welcome increase of 50% in population size since 1981, probably due to increased availability of young forest habitat as plantations were felled and replanted (**Morris *et al.* 1994**). A new survey in 2004 revealed that further increase had taken place (**Conway *et al.* in press**). The apparent increase in nest failure rates, especially at the chick stage in the period up to 1995, is probably an artefact of very small sample sizes in the early years.

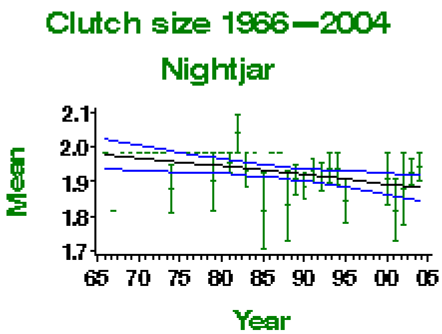
Population changes

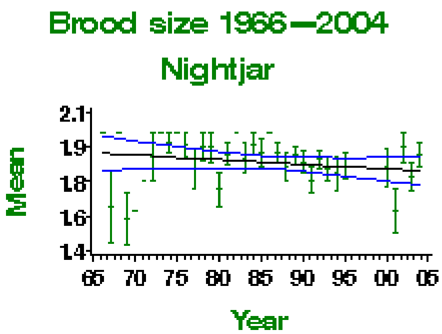
Annual population changes are not monitored for this species

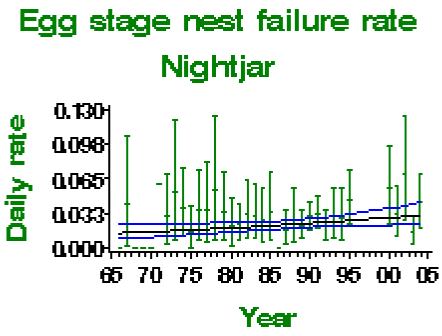
Productivity trends

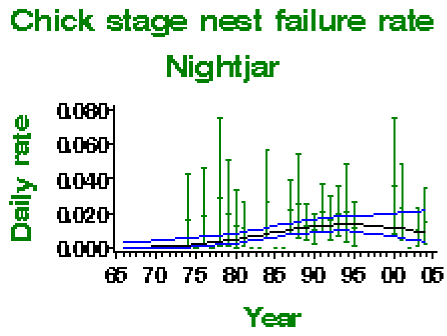
Table of productivity changes for Nightjar

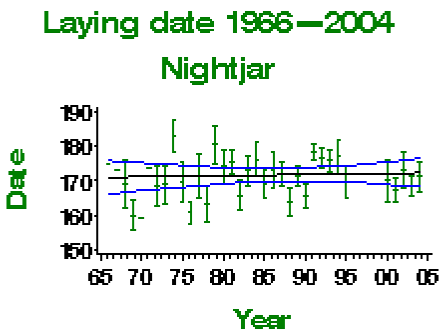
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	15	Linear decline	1.99 eggs	1.89 eggs	-5.3%	Small sample
Brood size	35	1968-2003	23	None				Small sample
Daily failure rate (eggs)	35	1968-2003	20	Linear increase	1.49% nests/day	3.04% nests/day	104%	Small sample
Daily failure rate (chicks)	35	1968-2003	19	Curvilinear	0.05% nests/day	0.97% nests/day	1840%	Small sample
Laying date	35	1968-2003	18	None				Small sample











Insufficient data on CES available for this species

Additional information

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

COMMON SWIFT
Apus apus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: unknown

UK population size

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

Status summary

Swifts were not monitored before the inception of the BBS and, because its results since 1994 show large fluctuations, a long time-series may be needed before population trends can be estimated with confidence. Initial results suggest decline in England and Scotland, and possibly in Wales. Monitoring is complicated by the difficulty of finding occupied nests, by the weather-dependent and sometimes extraordinary distances from the nest at which adults may forage, and by the variable midsummer influx of non-breeding individuals. Since Swifts do not normally begin breeding until they are four years old, non-breeding numbers can be very substantial. **Concern for Swifts**, a small organisation of private individuals, is trying to promote the deliberate provision of nesting sites for this species, as so many suitable cavities are being lost to re-development. It is also gathering information on populations to assess whether the species should be listed as of conservation concern.

Population changes

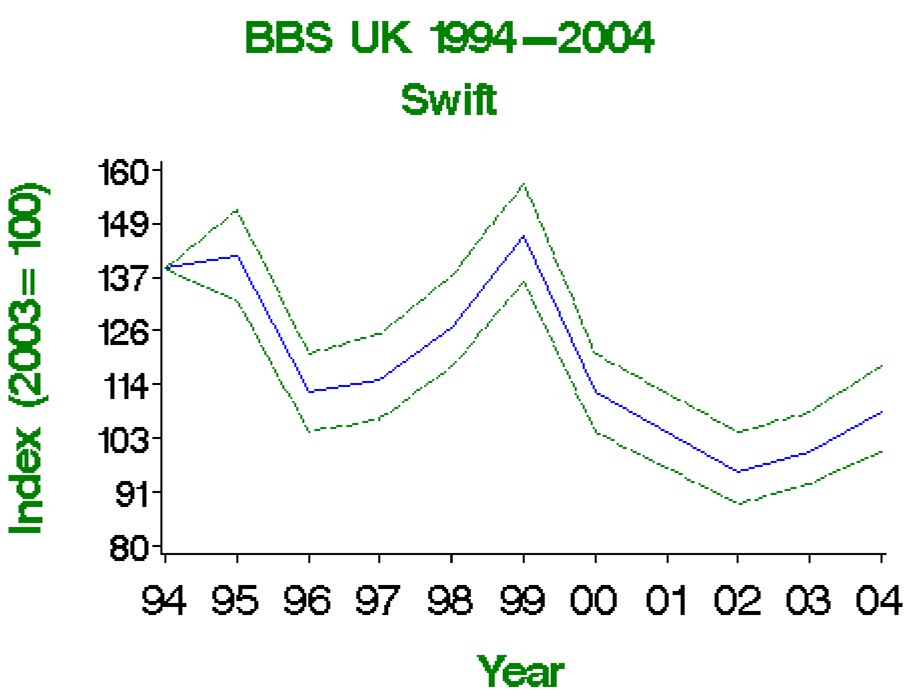


Table of population changes for Swift

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

BBS UK	**10**	**1994-2004**	**870**	**-22**	**-28**	**-15**		
BBS England	**10**	**1994-2004**	**752**	**-22**	**-28**	**-15**		
BBS Scotland	**10**	**1994-2004**	**41**	**-49**	**-64**	**-27**	**(>25)**	
BBS Wales	**10**	**1994-2004**	**60**	**-11**	**-36**	**24**		

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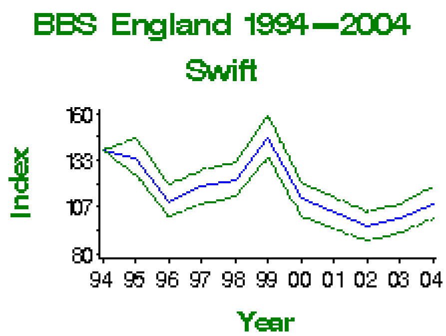

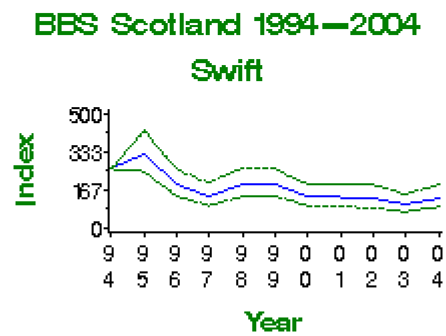

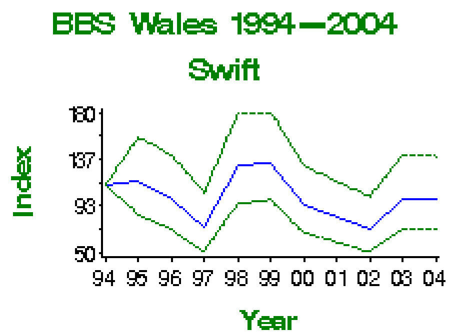

Productivity trends

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, declining
UK: amber (European status)

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

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

Status summary

The Kingfisher declined along linear waterways (its principal habitat) until the mid 1980s, since when it seems to have made a complete recovery. The decline was associated with a contraction of range in England (**Gibbons *et al.* 1993**). Kingfishers suffer severe mortality during harsh winters but, with up to three broods in a season, and up to six chicks in a brood, their potential for rapid recovery is unusually high.

Population changes

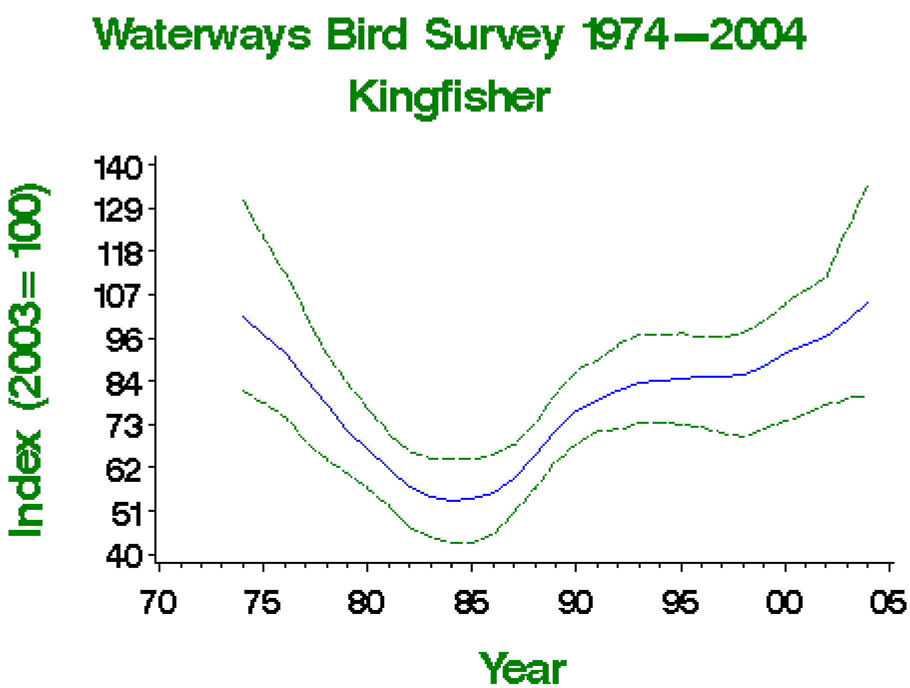

Table of population changes for Kingfisher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	32	4	-36	57		
	25	1978-2003	31	28	-15	90		
	10	1993-2003	37	19	-11	56		
	5	1998-2003	33	16	-5	51		
BBS UK	10	1994-2004	43	-11	-40	32		
BBS England	10	1994-2004	38	-3	-35	44		

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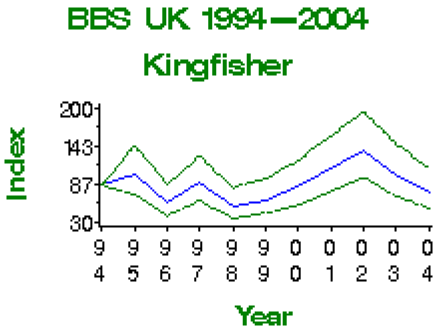

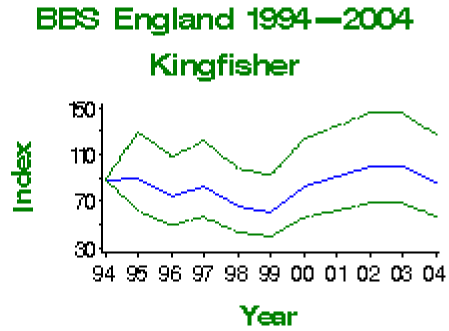

Productivity trends

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.

Population changes

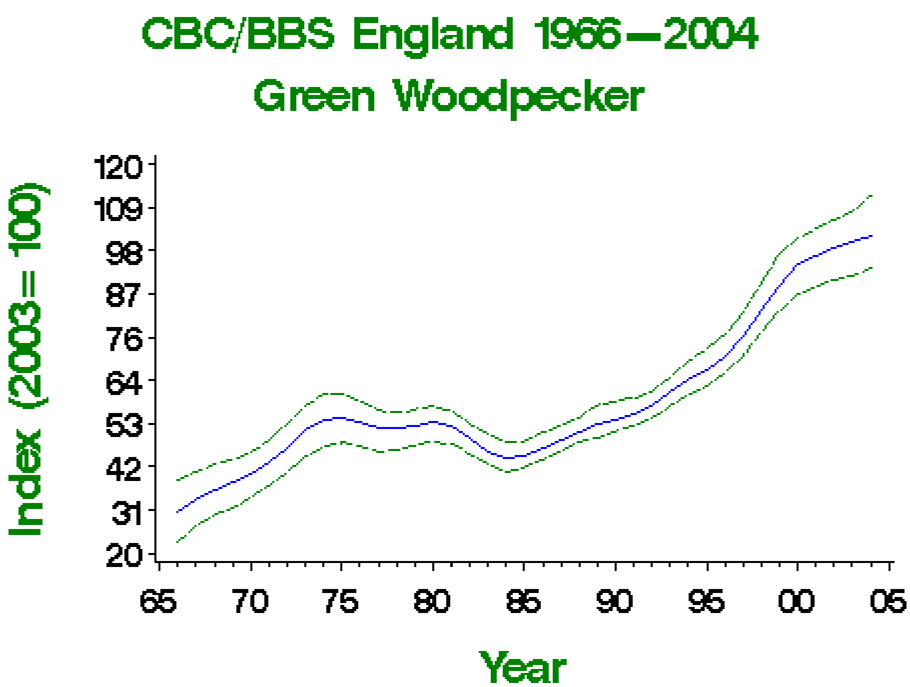

Table of population changes for Green Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	202	197	126	313		
	25	1978-2003	269	92	61	137		
	10	1993-2003	555	63	48	79		

	5	1998-2003	693	22	14	28		
BBS UK	10	1994-2004	592	34	23	47		
BBS England	10	1994-2004	546	42	28	56		
BBS Wales	10	1994-2004	40	61	11	134		

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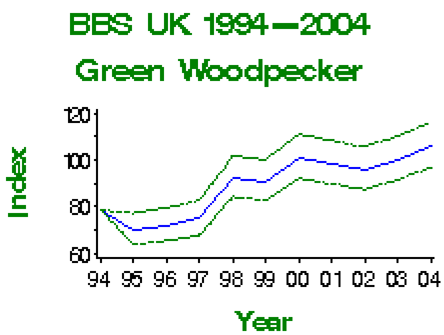

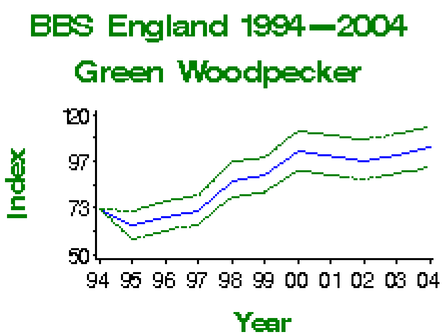

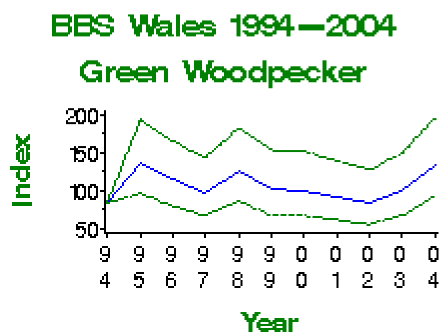

Productivity trends

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 1970s increase (**Marchant *et al.* 1990**). The ecological factors underlying the current increase are not yet known, but the species may be benefiting from the maturation of new forests and from the increasing provision of winter food in gardens. Nest success at chick stage, based on a small sample, has improved greatly.

Population changes

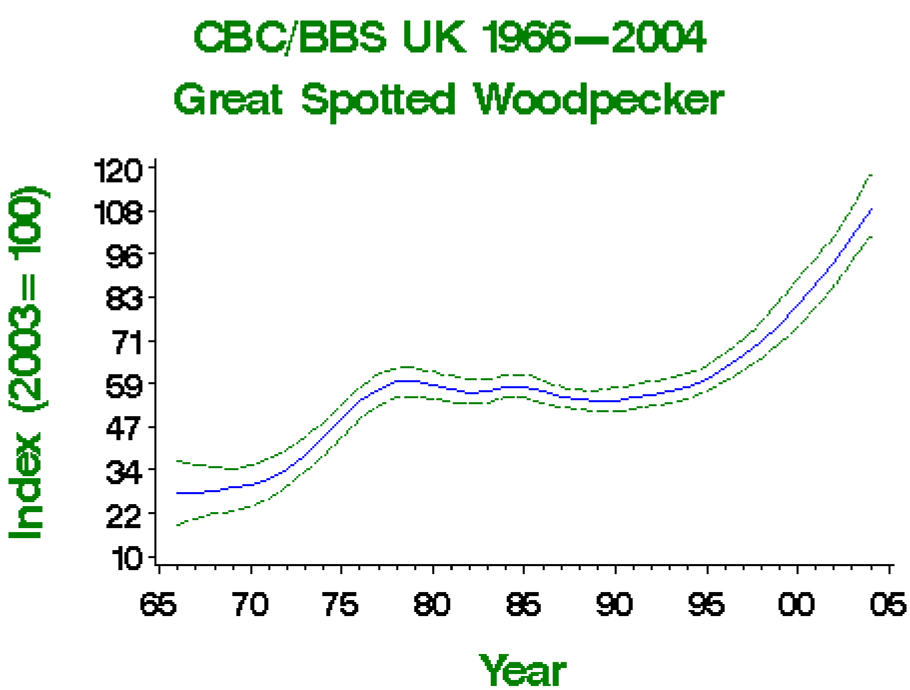

Table of population changes for Great Spotted Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	226	258	168	408		
	25	1978-2003	300	70	46	101		
	10	1993-2003	600	79	65	93		
	5	1998-2003	735	41	34	48		
CBC/BBS UK	36	1967-2003	250	259	158	485		

	25	1978-2003	333	68	44	99		
	10	1993-2003	668	76	64	91		
	5	1998-2003	824	42	36	50		
BBS UK	10	1994-2004	666	108	90	129		
BBS England	10	1994-2004	594	98	80	118		
BBS Wales	10	1994-2004	51	67	18	135		

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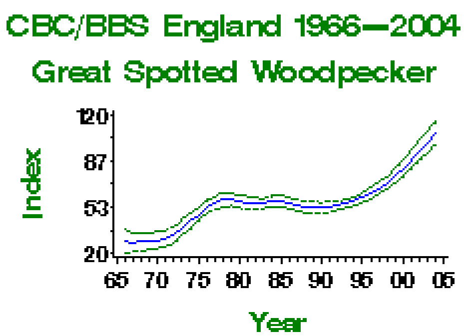
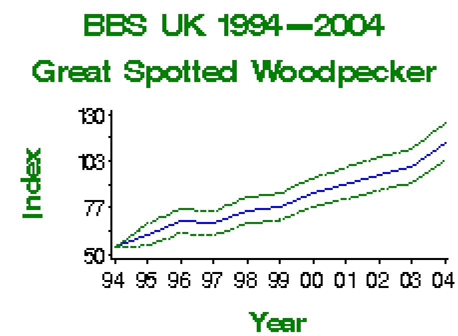
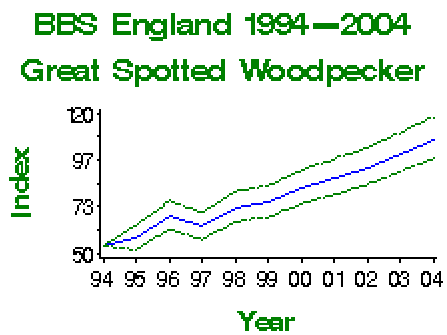
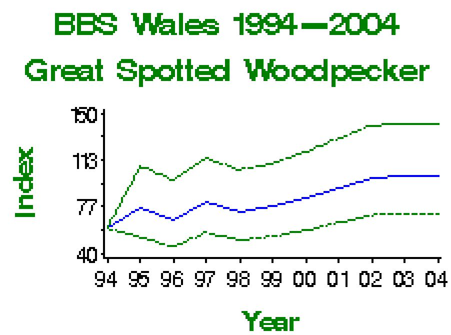






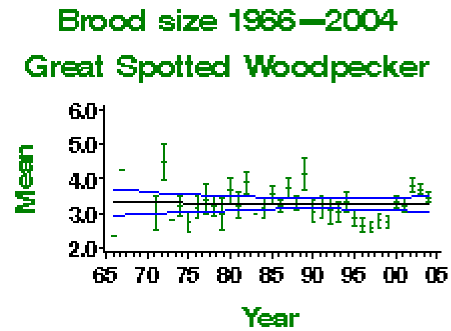


Productivity trends

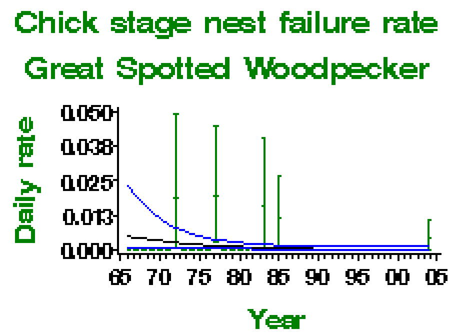
Table of productivity changes for Great Spotted Woodpecker

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	17	None				Small sample
Daily failure rate (chicks)	35	1968-2003	19	Linear decline	0.42% nests/day	0.01% nests/day	-97.6%	Small sample

Insufficient data on clutch size available for this species



Insufficient data on egg nest failure available for this species



Insufficient data on laying date available for this species

Insufficient data on CES available for this species

Additional information

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

LESSER SPOTTED WOODPECKER
Dendrocopos minor

• Population changes • Productivity trends • Additional information

Conservation listings

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

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, and has also contracted in range (Gibbons *et al.* 1993). It easily qualifies for red listing, but has become so rare and localised in recent years that BBS observers have been unable to collect enough data for annual monitoring. 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).

Population changes

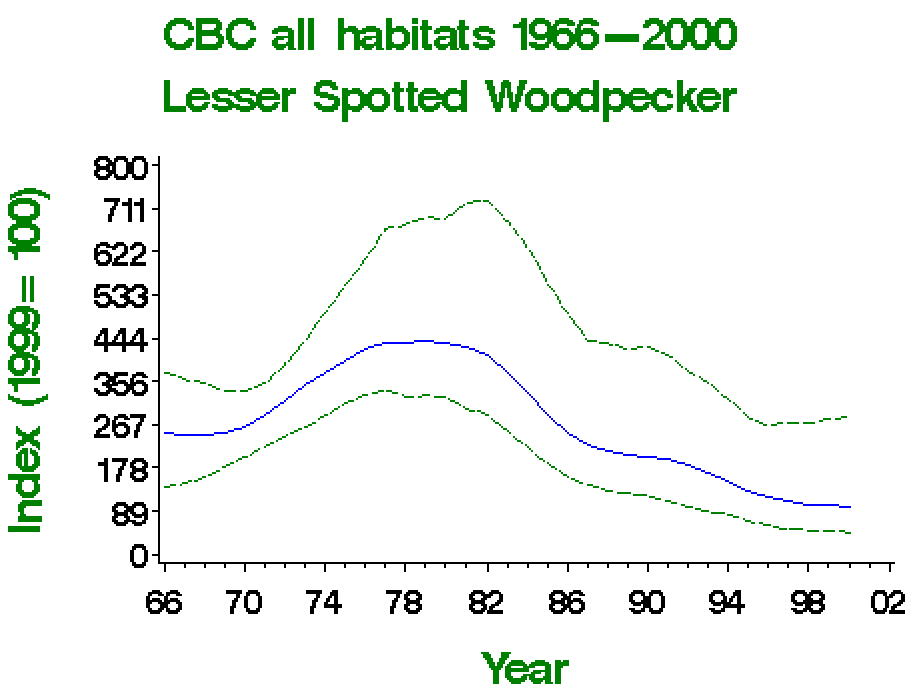


Table of population changes for Lesser Spotted Woodpecker

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)

Long-term trend

UK: increase

UK population size

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

Status summary

This species is too rare and restricted in range for population changes to be monitored annually by BTO observers. A 62% reduction in the number of 10-km squares occupied between 1968–72 and 1988–91 warranted red-listing on grounds of range contraction; the species had ceased to breed in Wales and in several southern English counties over this period (**Gibbons *et al.* 1993**). **Sitters *et al.* (1996)** report that the population increased from c.250 pairs in 1986 to c.600 pairs in 1993, probably helped by recent mild winters and increased habitat availability due to storm damage in plantations, forest restocking, and heathland management. A new 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**). Nest failure rates at the egg stage have declined markedly.

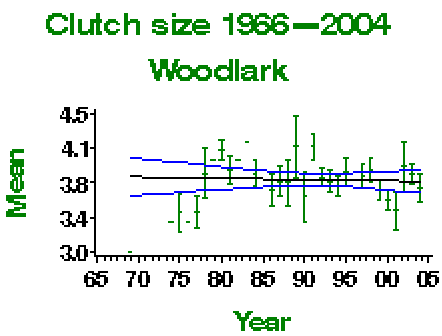
Population changes

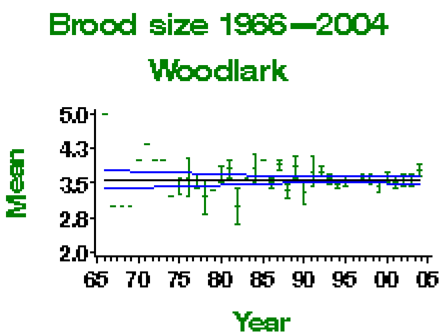
Annual breeding population changes for this species are not currently monitored by BTO

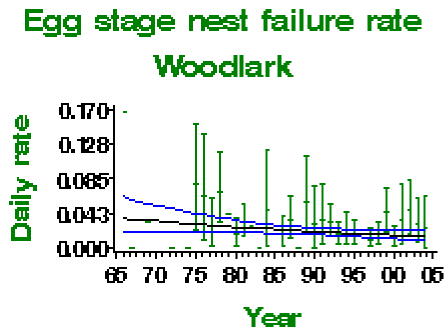
Productivity trends

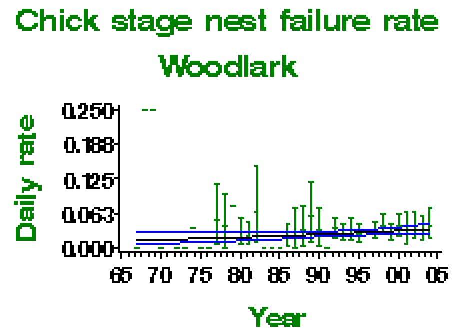
Table of productivity changes for Woodlark

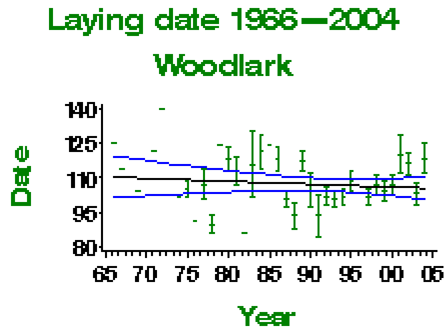
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	15	None				Small sample
Brood size	35	1968-2003	25	None				Small sample
Daily failure rate (eggs)	35	1968-2003	18	Linear decline	3.46% nests/day	1.51% nests/day	-56.4%	Small sample
Daily failure rate (chicks)	35	1968-2003	26	None				Small sample
Laying date	35	1968-2003	17	None				Small sample











Insufficient data on CES available for this species

Additional information

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

SKYLARK
Alauda arvensis

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 3 (depleted)
UK: red (>50% population decline)

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, however, that further decline has occurred, at least in England. Considerable research effort at the BTO and elsewhere in recent years has indicated that the most likely cause of the decline is the increase in the winter sowing of cereals, which restricts opportunities for late-season nesting attempts because of vegetation height, and may reduce overwinter survival by reducing the area of stubbles (**Wilson *et al*. 1997**, **Donald & Vickery 2000**; for more information, **click here**). 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. For a general review of the effects of agricultural practice on Skylark population trends, see **Chamberlain & Siriwardena (2000)**.

Population changes

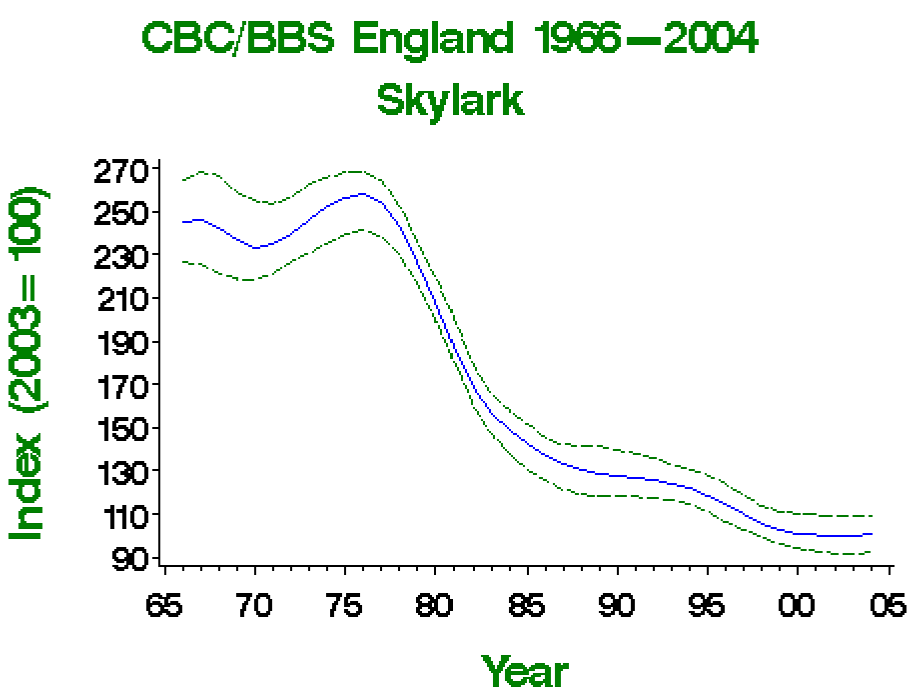


Table of population changes for Skylark

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	372	-59	-65	-52	>50	

	25	1978-2003	487	-59	-63	-52	>50	
	10	1993-2003	1057	-19	-23	-15		
	5	1998-2003	1216	-5	-8	-2		
BBS UK	10	1994-2004	1407	-10	-13	-6		
BBS England	10	1994-2004	1101	-19	-22	-15		
BBS Scotland	10	1994-2004	183	4	-7	16		
BBS Wales	10	1994-2004	90	-8	-20	6		
BBS N.Ireland	10	1994-2004	31	29	-7	80		

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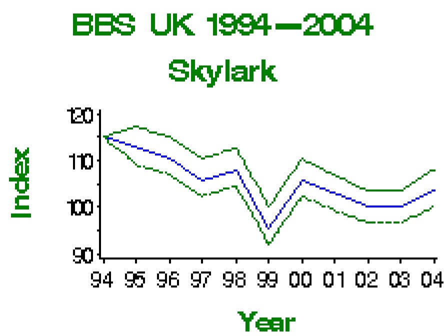
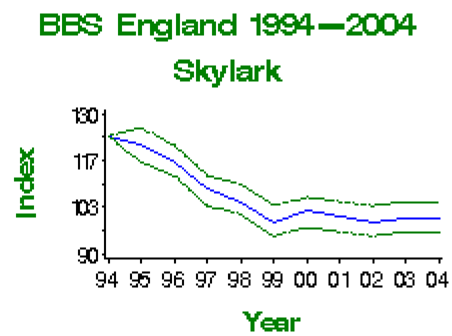
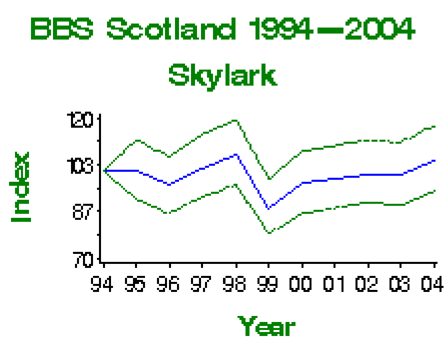
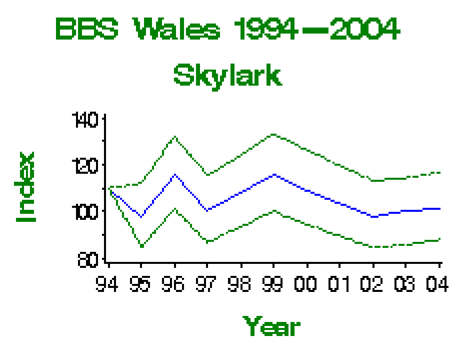




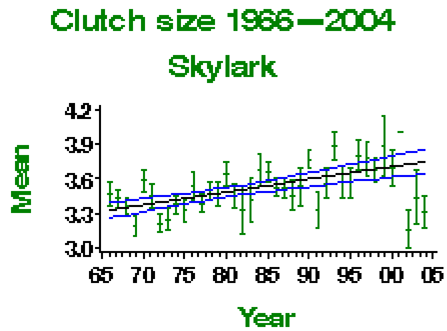


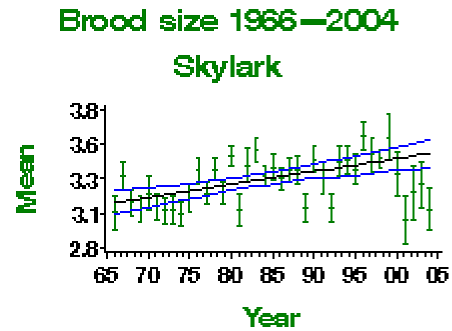


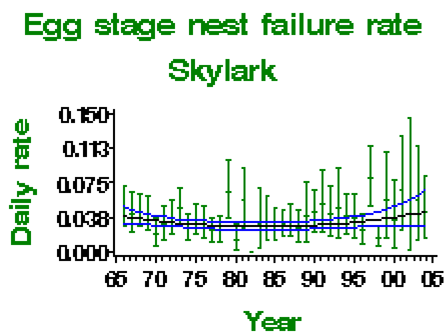
Productivity trends

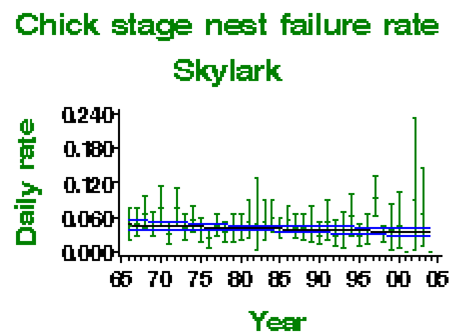
Table of productivity changes for Skylark

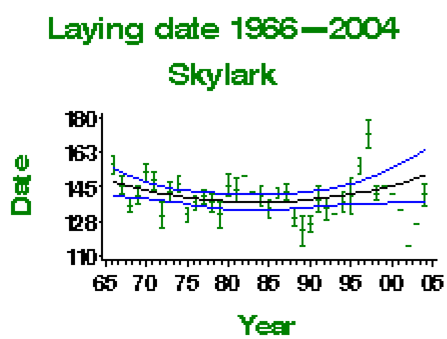
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	39	Linear increase	3.35 eggs	3.74 eggs	11.5%	
Brood size	35	1968-2003	68	Linear increase	3.15 chicks	3.47 chicks	10.3%	
Daily failure rate (eggs)	35	1968-2003	47	Curvilinear	3.64% nests/day	4.23% nests/day	16.2%	
Daily failure rate (chicks)	35	1968-2003	56	None				
Laying date	35	1968-2003	20	Curvilinear	May 25	May 29	4 days	Small sample











Insufficient data on CES
available for this species

Additional information

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

SAND MARTIN

Riparia riparia

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

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

Status summary

This species is conspicuously difficult to monitor, because active and inactive nest holes are difficult to distinguish, and because whole colonies frequently disperse or shift to new locations as suitable sand cliffs are created and destroyed. WBS counts are of apparently occupied nest holes, and suggest a stable or shallowly increasing population, with wide fluctuations, and a decrease since the late 1990s which 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 reveal a clear trend since 1994. Winter rainfall in the species' trans-Saharan wintering grounds has been shown to affect annual survival and thus abundance in the following breeding season (**Szép 1995**). Nest record samples are small, but indicate that nest success has improved enormously since the 1960s, and that clutch size has also increased.

Population changes

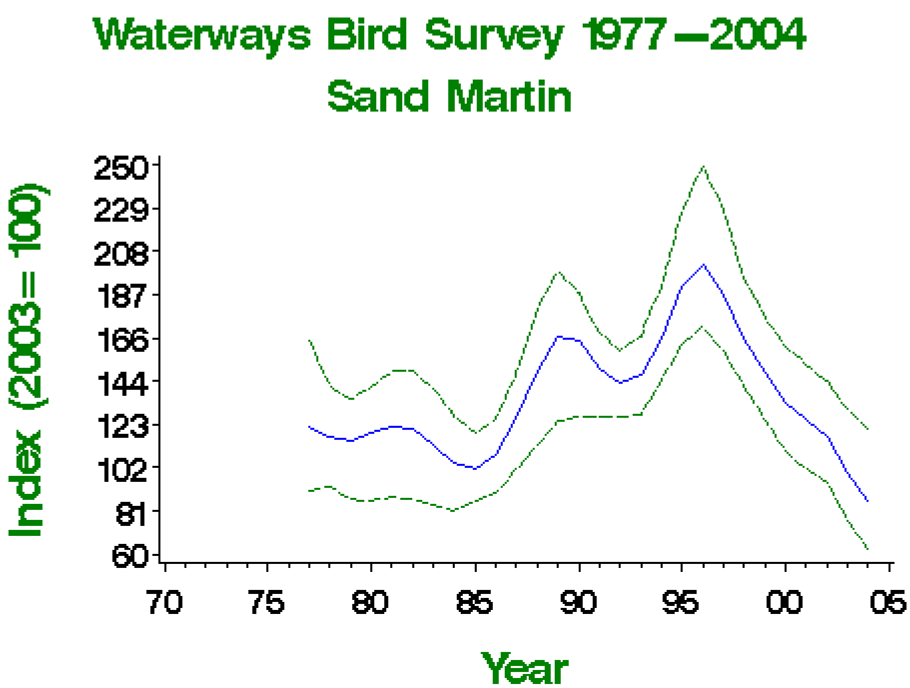


Table of population changes for Sand Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	25	1978-2003	19	-14	-47	56		Small sample
	10	1993-2003	24	-32	-48	-5	>25	

	5	1998-2003	21	-39	-52	-22	>25	
BBS UK	10	1994-2004	99	84	48	127		
BBS England	10	1994-2004	66	56	22	99		

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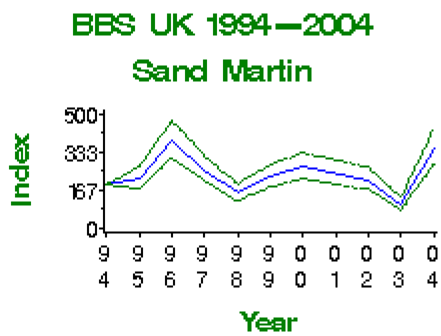
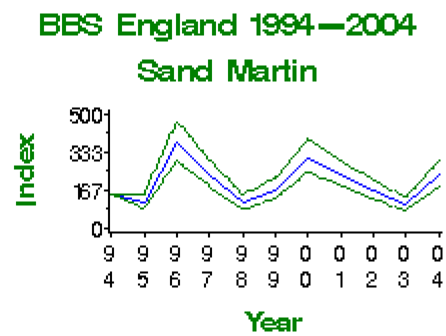
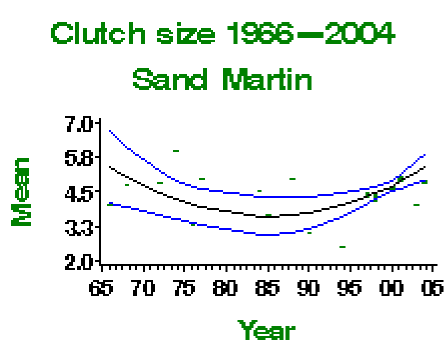


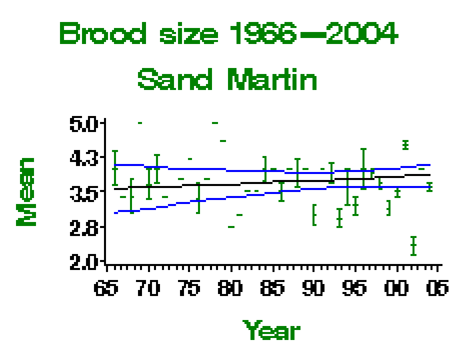


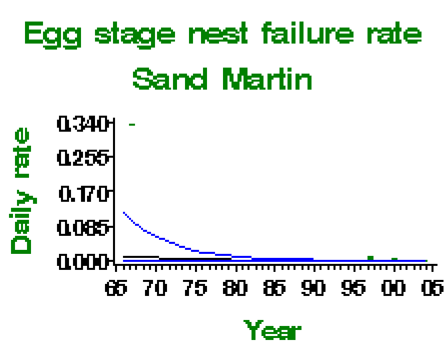
Productivity trends

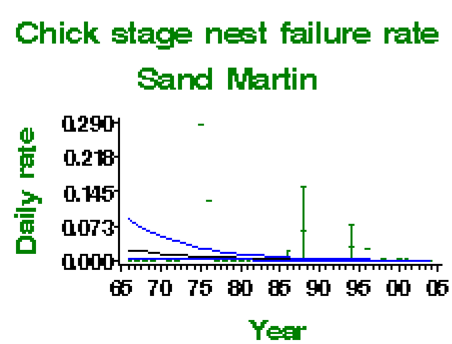
Table of productivity changes for Sand Martin

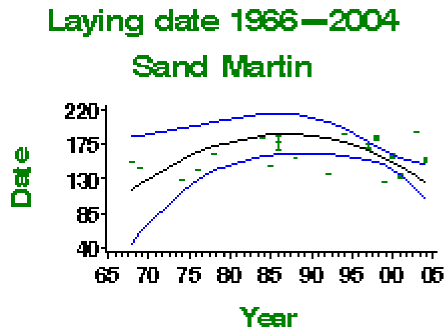
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	24	Curvilinear	5.03 eggs	5.19 eggs	3.2%	Small sample
Brood size	35	1968-2003	19	None				Small sample
Daily failure rate (eggs)	35	1968-2003	11	Linear decline	1.06% nests/day	0.02% nests/day	-98.1%	Small sample
Daily failure rate (chicks)	35	1968-2003	17	Linear decline	1.97% nests/day	0.08% nests/day	-95.9%	Small sample
Laying date	35	1968-2003	21	Curvilinear	Apr 26	May 14	18 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**

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 no long-term decline in the UK (**Robinson *et al.* 2003**). Detailed analysis has shown that the population fluctuations are most strongly related to losses on their wintering grounds (**Baillie & Peach 1992**). More recently, population change has been shown to be correlated with rainfall in the western Sahel prior to the birds' spring passage through West Africa, but with neither cattle numbers nor nest-site availability in the UK (**Robinson *et al.* 2003**). It is likely that, in eastern parts of the UK, the loss of livestock farming and grazed grassland, together with arable intensification, has caused the Swallow population to decline, while an increase in the area of pasture in the west and north has promoted a population increase which has more than compensated for declines elsewhere (**Evans & Robinson 2004**). Recent BBS data suggest widespread increases in the UK since 1994, except in Scotland. Brood sizes increased up to the late 1980s, and may now be falling again. The trend towards earlier laying can be partly explained by recent climate change (**Crick & Sparks 1999**).

Population changes

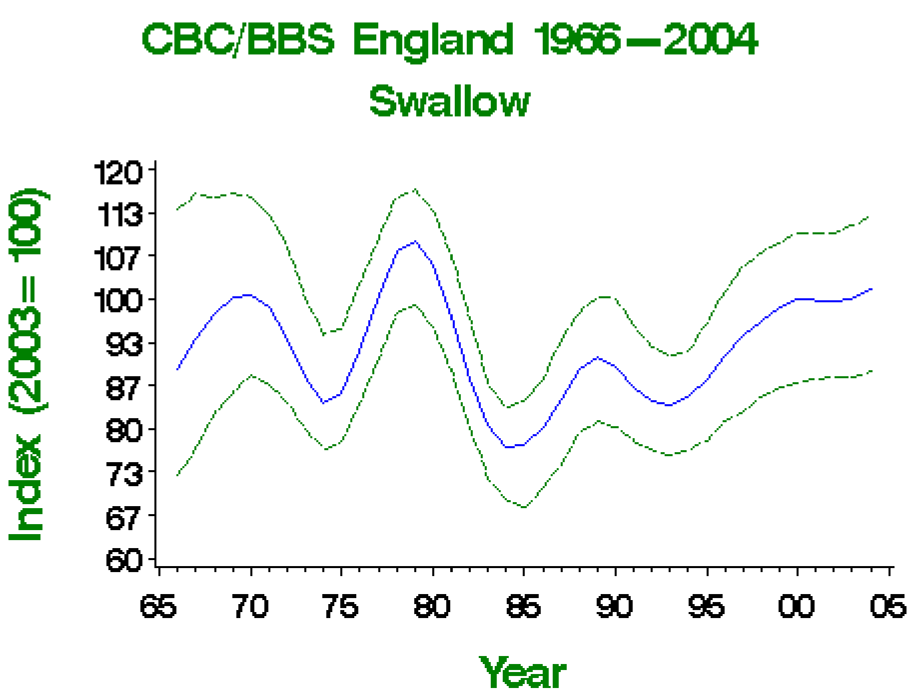


Table of population changes for Swallow

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

CBC/BBS England	36	1967-2003	340	6	-24	43		
	25	1978-2003	463	-7	-26	17		
	10	1993-2003	1059	19	5	32		
	5	1998-2003	1264	3	-1	7		
BBS UK	10	1994-2004	1486	22	16	28		
BBS England	10	1994-2004	1139	18	11	25		
BBS Scotland	10	1994-2004	133	3	-12	22		
BBS Wales	10	1994-2004	140	74	47	105		
BBS N.Ireland	10	1994-2004	64	11	-18	51		

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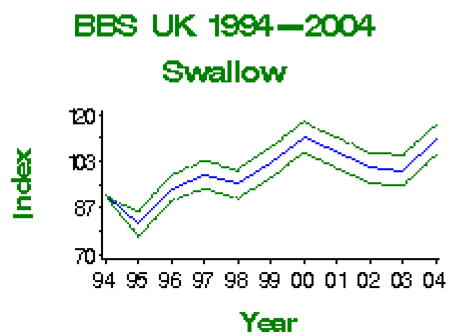
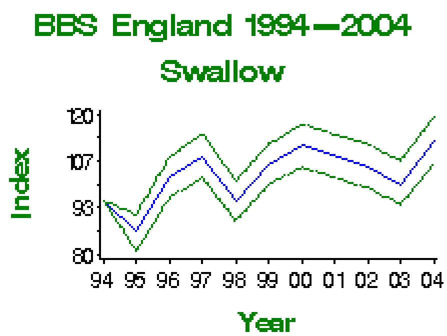
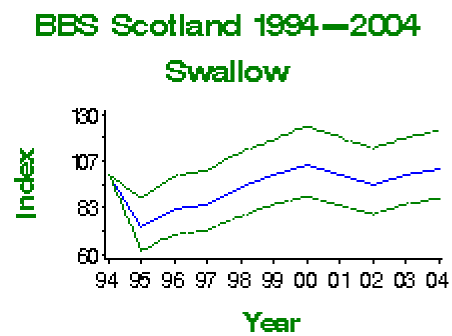
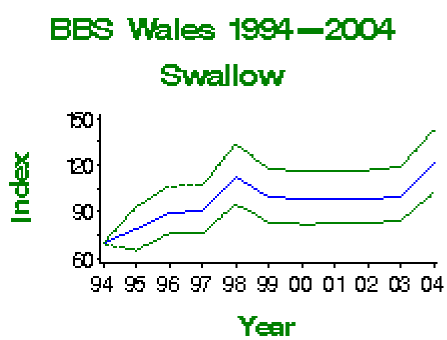
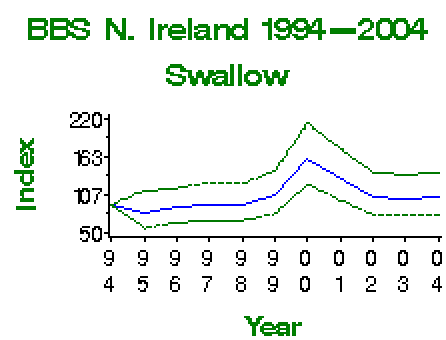








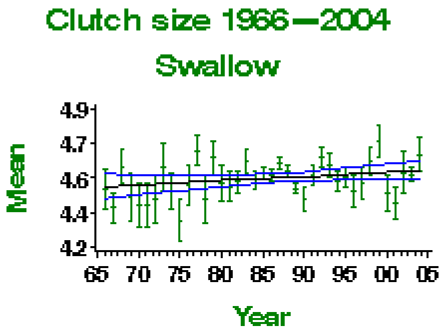


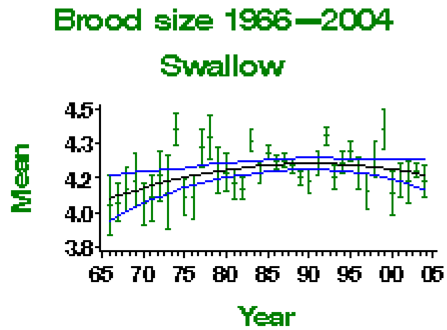
Productivity trends

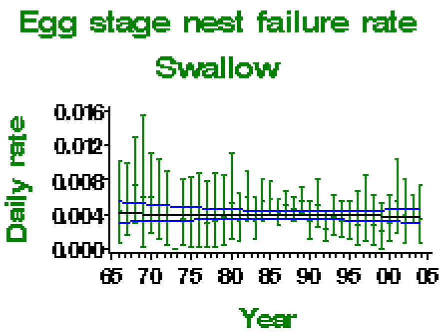
Table of productivity changes for Swallow

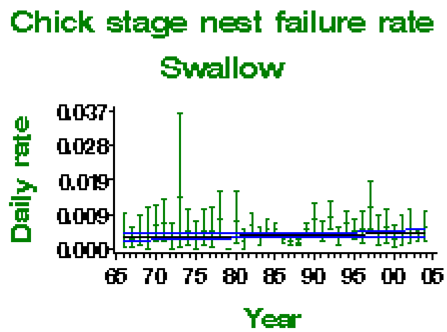
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	174	None				
Brood size	35	1968-2003	282	Curvilinear	4.07 chicks	4.17 chicks	2.4%	
Daily failure rate (eggs)	35	1968-2003	217	None				

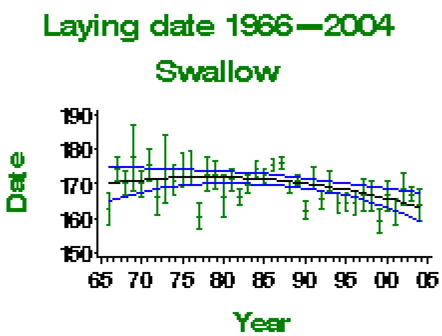
Daily failure rate (chicks)	35	1968-2003	191	None				
Laying date	35	1968-2003	87	Curvilinear	Jun 20	Jun 13	-7 days	











Insufficient data on CES available for this species

Additional information

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

HOUSE MARTIN
Delichon urbicum

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: uncertain

Population size

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

Status summary

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

Population changes

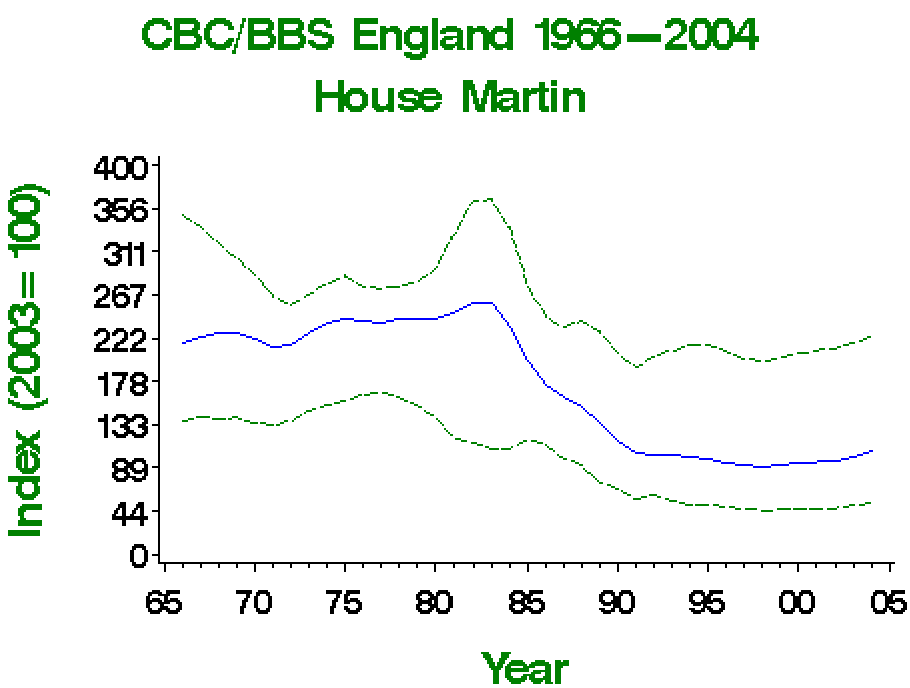
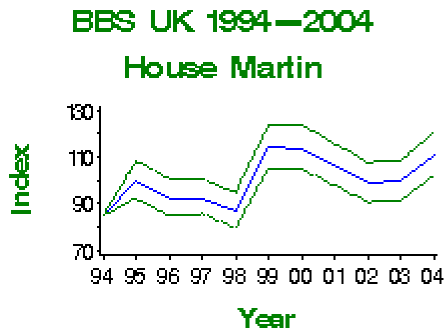


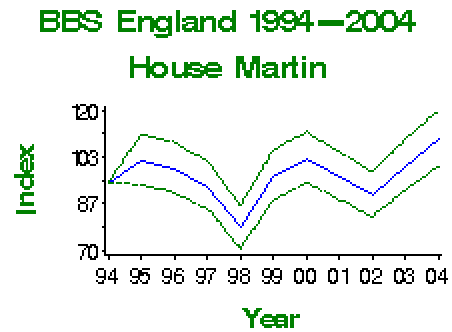
Table of population changes for House Martin

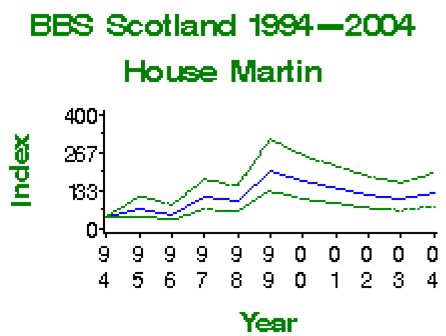
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	167	-55	-85	54		Small CBC sample
	25	1978-2003	231	-58	-82	41		Small CBC sample
	10	1993-2003	550	-2	-18	25		Small CBC sample
	5	1998-2003	654	11	3	20		
BBS UK	10	1994-2004	766	31	20	42		

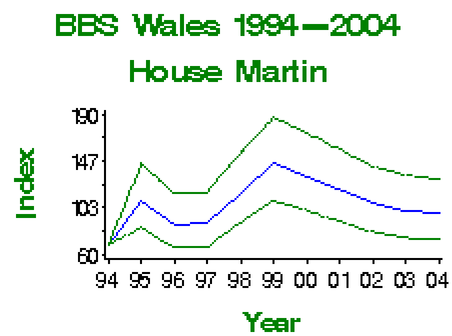
BBS England	10	1994-2004	608	16	6	27		
BBS Scotland	10	1994-2004	45	201	92	374		
BBS Wales	10	1994-2004	78	43	8	89		

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









Productivity trends

Productivity information is not currently available for this species

Additional information

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

TREE PIPIT
Anthus trivialis

• Population changes • Productivity trends • Additional information

Conservation listings

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

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 has recently been moved from the green to the amber list, 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**). Subsequently, CBC/BBS data for England have shown further decrease, levelling off in the late 1990s. Since 1994, the UK index has increased somewhat: shallow decrease in England has been more than offset by increases in Scotland, although no separate trend is available from there. The causes of the population decline are unclear, but may be linked to changing forest structure, as new plantations mature, and reduced management of lowland woods (**Fuller *et al.* 2005**). Improvements have occurred in breeding performance, with an increase in brood size and a substantial decline in failure rates over the 17-day egg stage (13 days incubation and 4 days laying).

Population changes

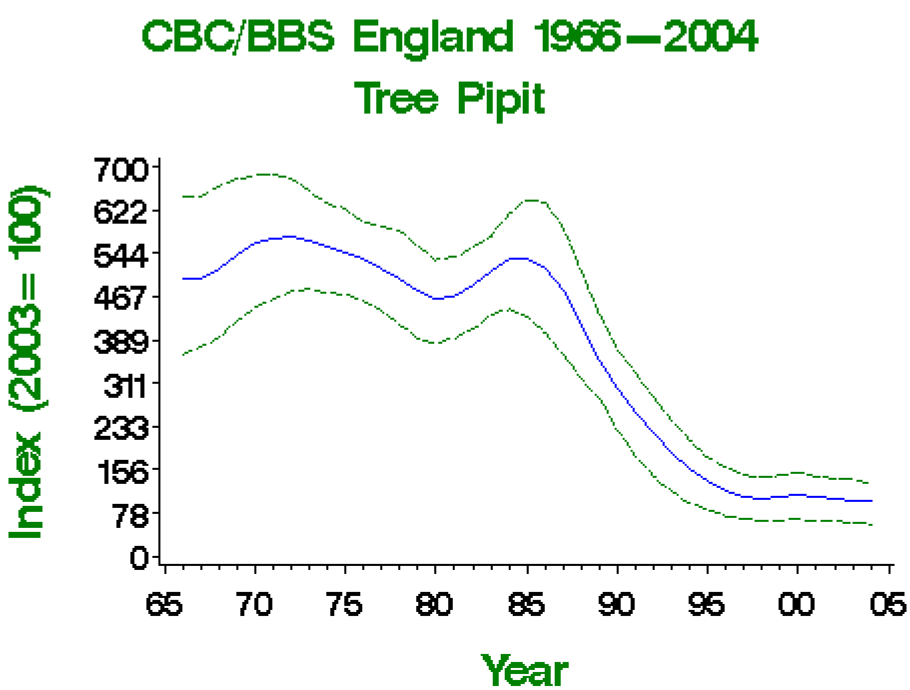


Table of population changes for Tree Pipit

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

CBC/BBS England	36	1967-2003	41	-80	-90	-67	>50	
	25	1978-2003	45	-80	-90	-68	>50	
	10	1993-2003	69	-47	-65	-28	>25	Small CBC sample
	5	1998-2003	72	-4	-25	22		
BBS UK	10	1994-2004	119	16	-4	40		
BBS England	10	1994-2004	64	-20	-37	2		
BBS Wales	10	1994-2004	30	7	-27	56		

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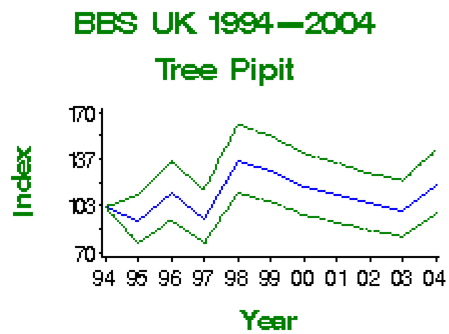
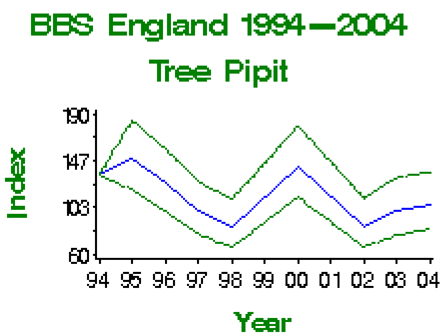
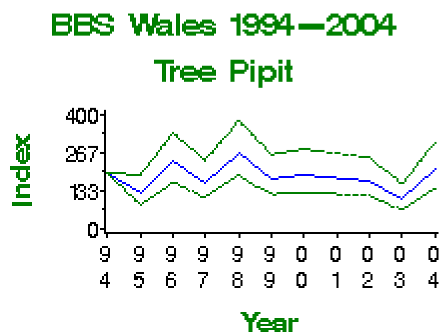


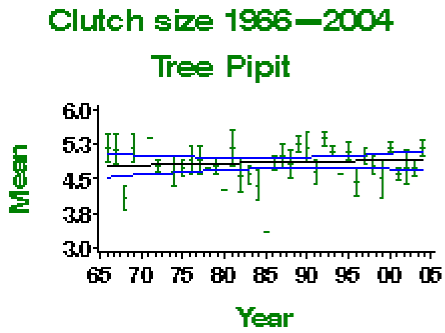


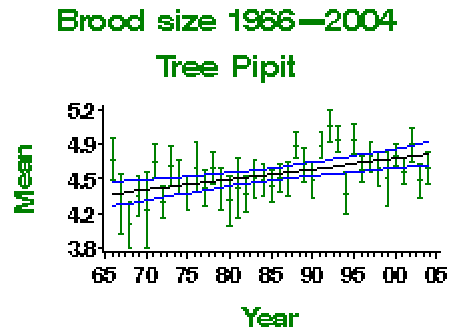


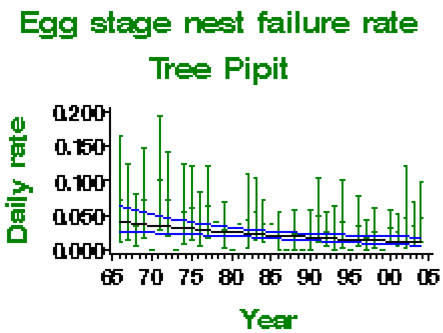
Productivity trends

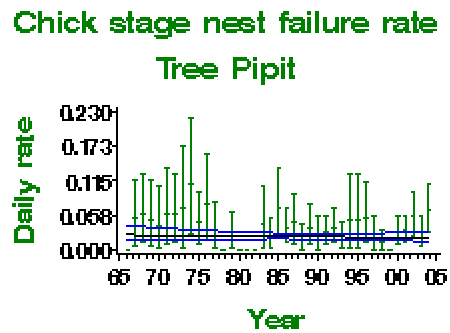
Table of productivity changes for Tree Pipit

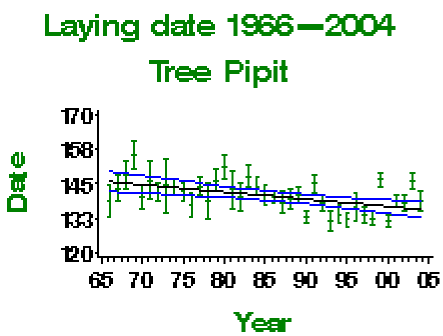
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	10	None				Small sample
Brood size	35	1968-2003	29	Linear increase	4.37 chicks	4.73 chicks	8.4%	Small sample
Daily failure rate (eggs)	35	1968-2003	12	Linear decline	3.88% nests/day	1.2% nests/day	-69.1%	Small sample
Daily failure rate (chicks)	35	1968-2003	19	None				Small sample
Laying date	35	1968-2003	19	Linear decline	May 25	May 16	-9 days	Small sample











Insufficient data on CES available for this species

Additional information

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

MEADOW PIPIT
Anthus pratensis

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: moderate decline

UK population size

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

Status summary

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

Population changes

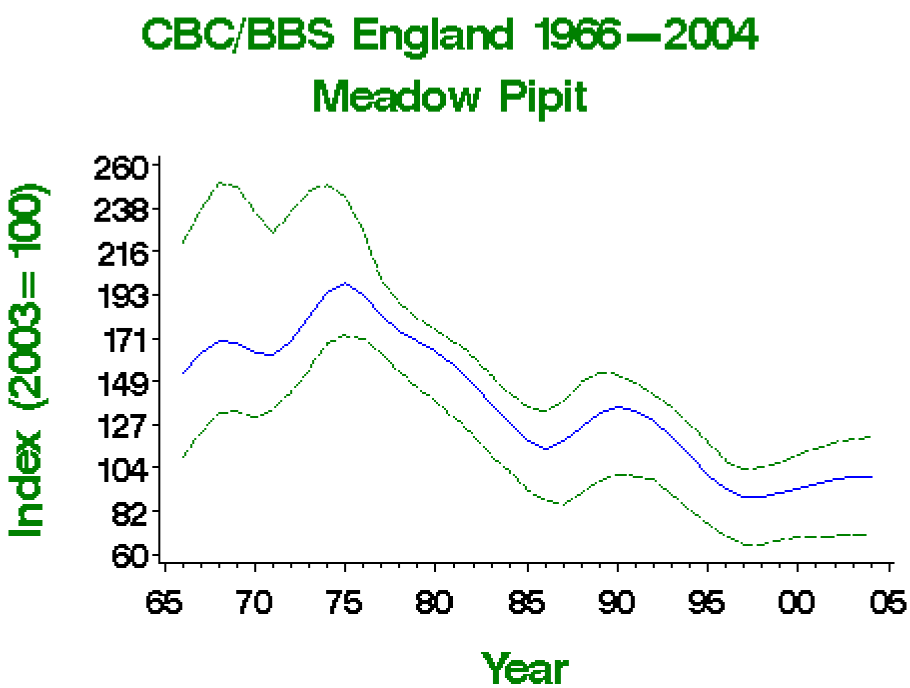


Table of population changes for Meadow Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	108	-39	-73	-4	>25	
	25	1978-2003	141	-43	-61	-23	>25	

	10	1993-2003	302	-17	-30	-5		
	5	1998-2003	346	12	4	21		
BBS UK	10	1994-2004	640	0	-5	5		
BBS England	10	1994-2004	317	-9	-16	-3		
BBS Scotland	10	1994-2004	191	-5	-14	6		
BBS Wales	10	1994-2004	76	27	10	46		
BBS N.Ireland	10	1994-2004	53	49	14	96		

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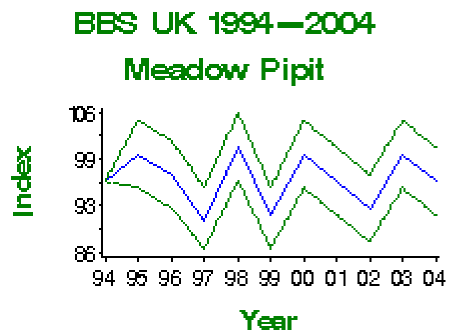
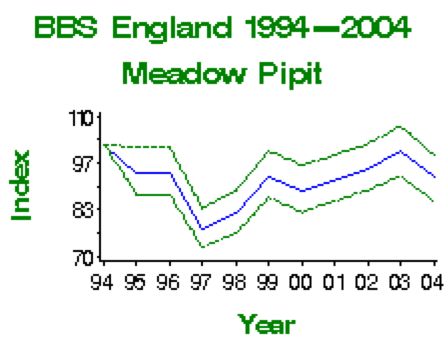
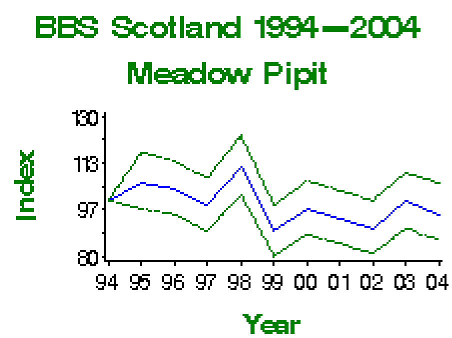
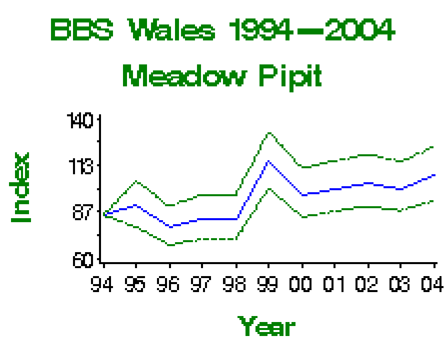
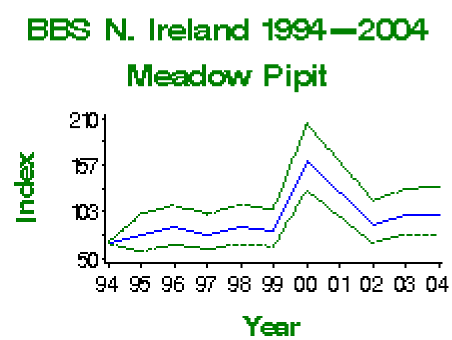








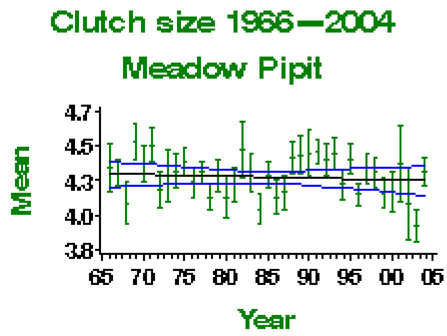


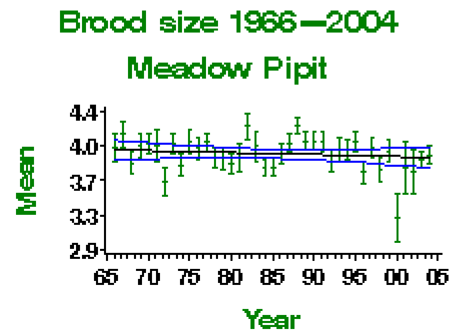
Productivity trends

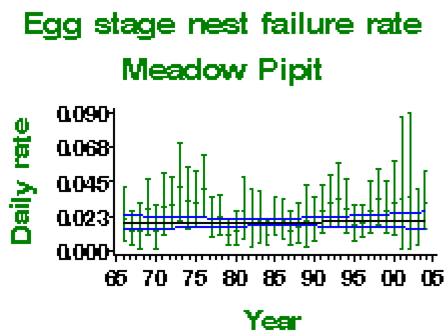
Table of productivity changes for Meadow Pipit

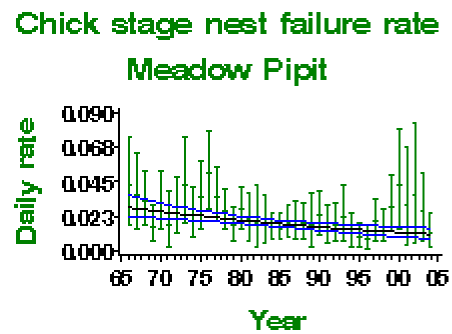
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	38	None				
Brood size	35	1968-2003	71	None				
Daily failure rate (eggs)	35	1968-2003	48	None				
Daily failure rate	35	1968-	65	Linear	2.73%	1.14%	-58.2%	

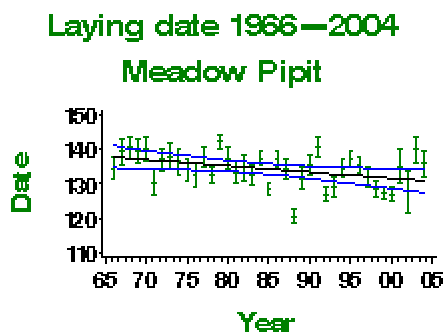
(chicks)		2003		decline	nests/day	nests/day		
Laying date	35	1968-2003	41	Linear decline	May 17	May 11	-6 days	











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

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)

Long-term trend

UK, England: rapid decline

UK population size

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

Status summary

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

Population changes

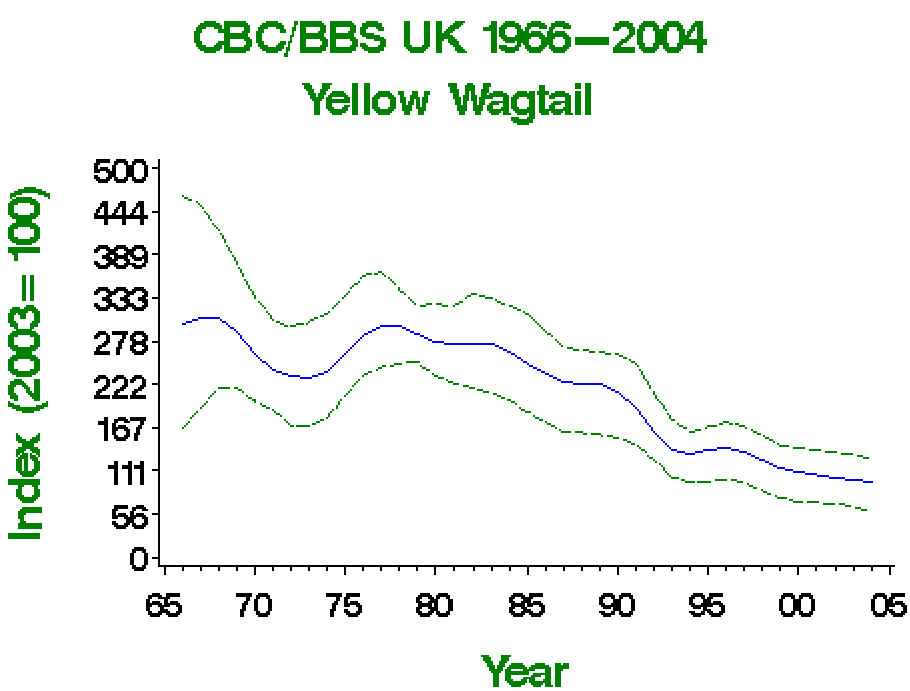


Table of population changes for Yellow Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	62	-65	-85	-24	>50	

	25	1978-2003	75	-64	-79	-40	>50	
	10	1993-2003	147	-28	-47	-15	>25	Small CBC sample
	5	1998-2003	150	-20	-33	-7		
CBC/BBS UK	36	1967-2003	63	-67	-85	-41	>50	
	25	1978-2003	77	-66	-82	-46	>50	
	10	1993-2003	150	-27	-50	-11	>25	Small CBC sample
	5	1998-2003	154	-19	-33	-7		
WBS waterways	28	1975-2003	21	-92	-97	-86	>50	
	25	1978-2003	20	-92	-97	-88	>50	
	10	1993-2003	16	-77	-88	-68	>50	Small sample
	5	1998-2003	13	-57	-68	-44	>50	Small sample
BBS UK	10	1994-2004	152	-27	-38	-14	(>25)	
BBS England	10	1994-2004	148	-26	-37	-12	(>25)	

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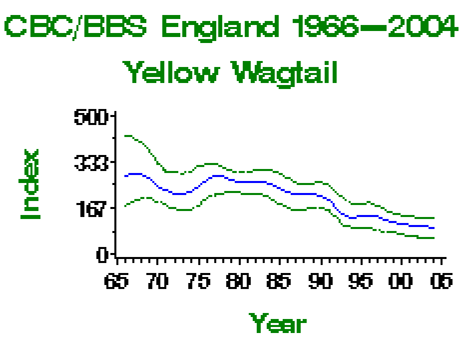
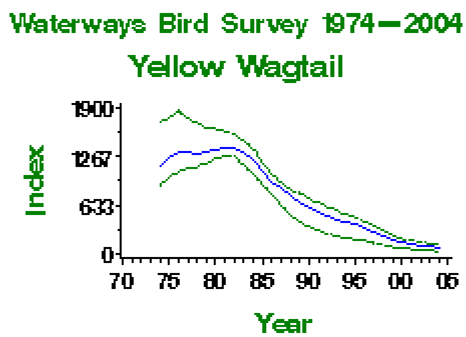
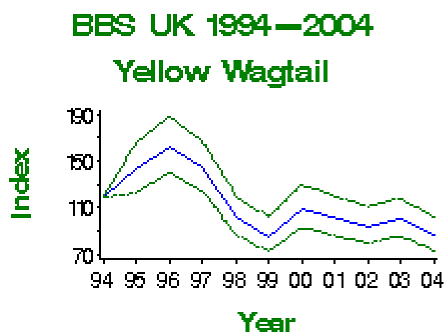
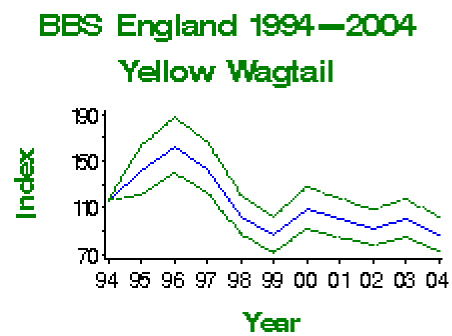






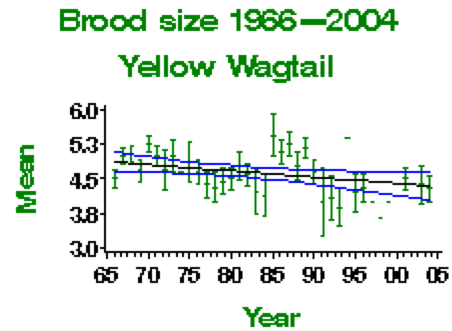


Productivity trends

Table of productivity changes for Yellow Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	13	Linear decline	4.85 chicks	4.36 chicks	-10%	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: shallow decline

UK population size

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

Status summary

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

Population changes

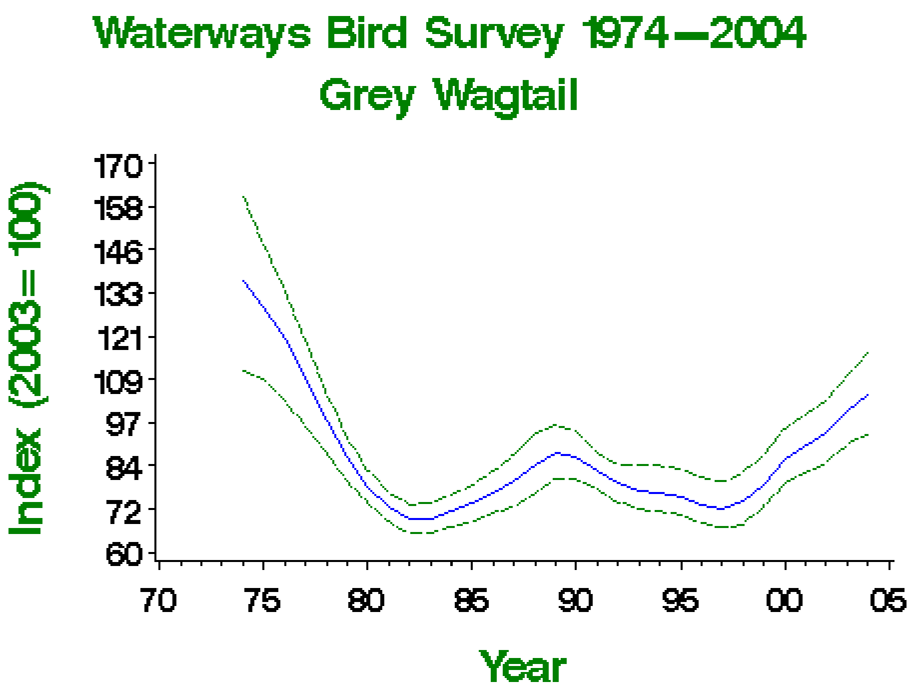


Table of population changes for Grey Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	56	-23	-40	4		
	25	1978-2003	56	3	-14	27		
	10	1993-2003	60	29	14	43		
	5	1998-2003	51	35	25	45		

BBS UK	10	1994-2004	167	14	-6	38		
BBS England	10	1994-2004	107	31	3	65		

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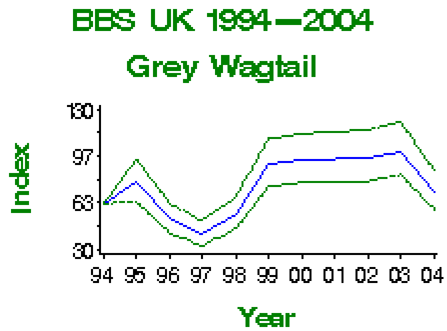
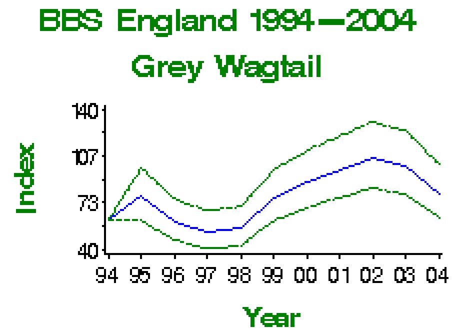
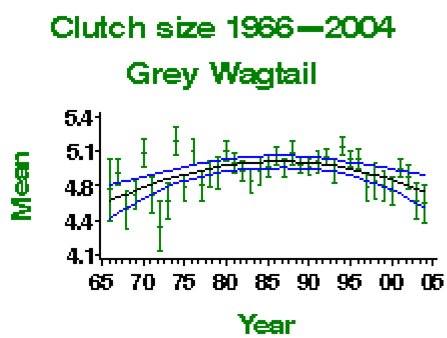


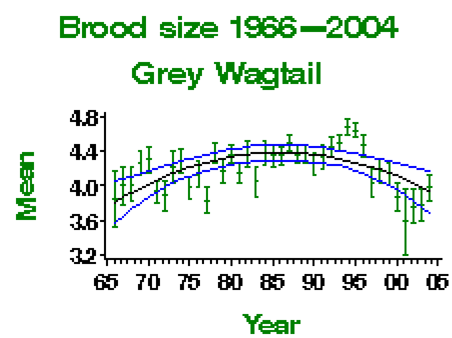


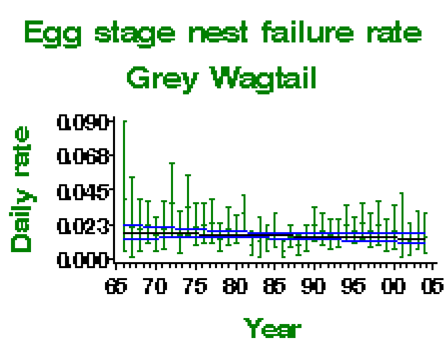
Productivity trends

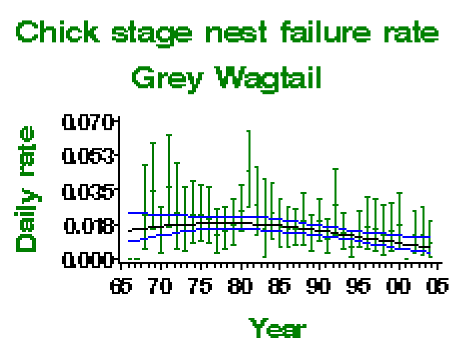
Table of productivity changes for Grey Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	41	Curvilinear	4.67 eggs	4.73 eggs	1.2%	
Brood size	35	1968-2003	85	Curvilinear	3.92 chicks	3.99 chicks	1.8%	
Daily failure rate (eggs)	35	1968-2003	62	None				
Daily failure rate (chicks)	35	1968-2003	61	Curvilinear	1.56% nests/day	0.65% nests/day	-58.3%	
Laying date	35	1968-2003	64	None				

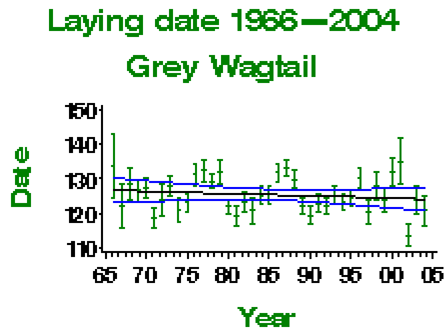








Insufficient data on CES



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 so population changes in the UK are of special significance. The CBC shows that a strong increase occurred up to the mid 1970s, such that populations have increased overall since 1966. Results of monitoring conflict somewhat since 1974, however: 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). Changes in breeding performance measures have been conflicting and do not help explain the population trends. Although average clutch and brood sizes have declined a little, failure rates at the egg stage (17 days, comprising 13 days incubation and 4 days laying) have also fallen.

Population changes

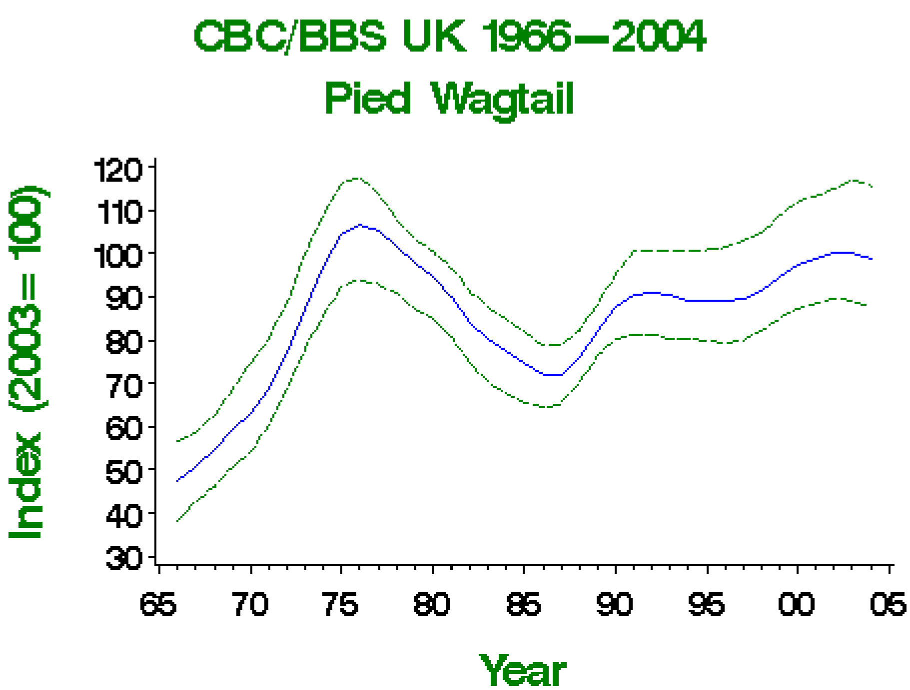


Table of population changes for Pied Wagtail

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

CBC/BBS England	36	1967-2003	253	100	54	232		
	25	1978-2003	333	-4	-24	32		
	10	1993-2003	730	10	1	21		
	5	1998-2003	889	9	3	14		
CBC/BBS UK	36	1967-2003	327	97	50	175		
	25	1978-2003	435	-2	-19	30		
	10	1993-2003	957	11	3	22		
	5	1998-2003	1170	9	2	16		
WBS waterways	28	1975-2003	65	-51	-63	-37	>50	
	25	1978-2003	64	-42	-55	-27	>25	
	10	1993-2003	65	-21	-29	-11		
	5	1998-2003	55	-6	-14	3		
BBS UK	10	1994-2004	1015	21	13	30		
BBS England	10	1994-2004	767	18	8	28		
BBS Scotland	10	1994-2004	115	30	5	60		
BBS Wales	10	1994-2004	99	24	0	54		
BBS N.Ireland	10	1994-2004	31	-4	-47	74		

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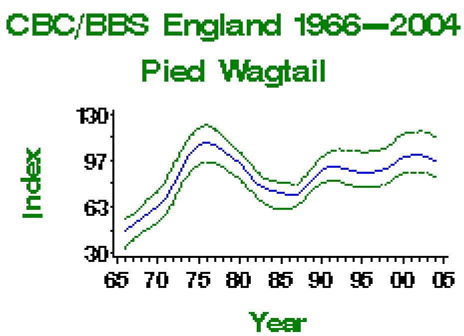
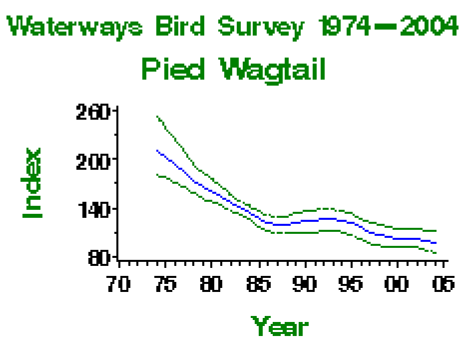
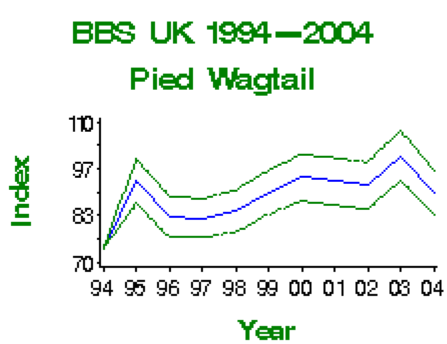
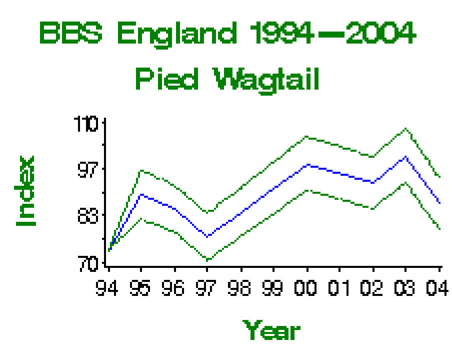
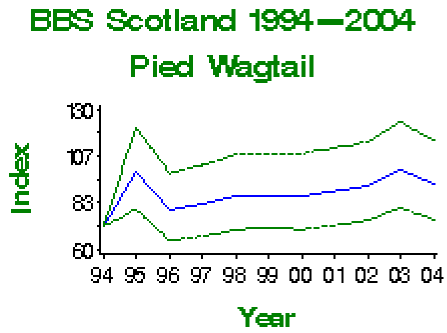
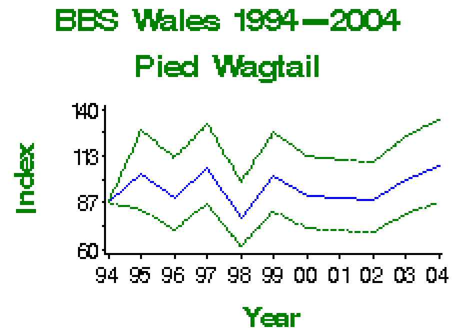








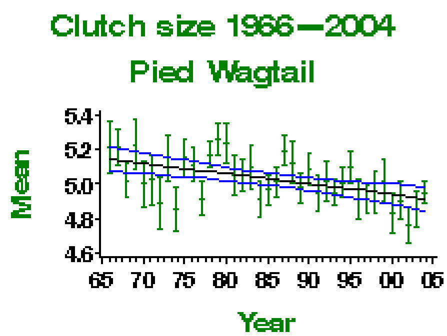


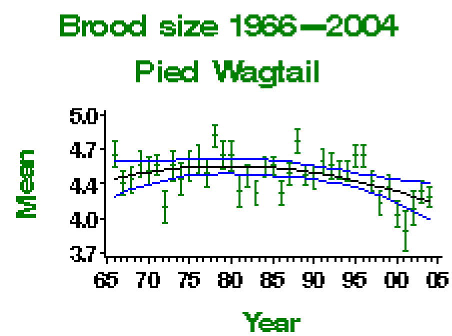


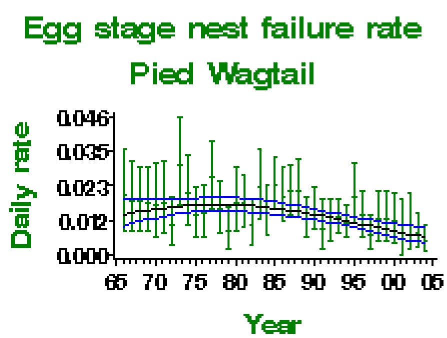
Productivity trends

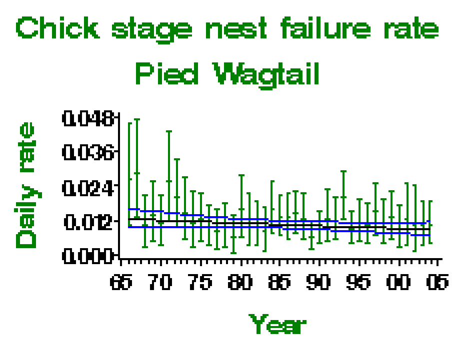
Table of productivity changes for Pied Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	59	Linear decline	5.13 eggs	4.93 eggs	-4%	
Brood size	35	1968-2003	110	Curvilinear	4.43 chicks	4.21 chicks	-5%	
Daily failure rate (eggs)	35	1968-2003	81	Curvilinear	1.44% nests/day	0.65% nests/day	-54.9%	
Daily failure rate (chicks)	35	1968-2003	89	None				
Laying date	35	1968-2003	78	None				

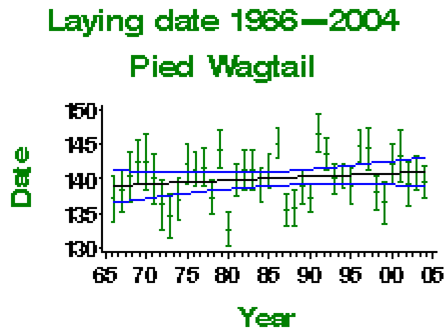








Insufficient data on CES available for this species



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 a good indicator of acidity and other water pollution (Ormerod & Tyler 1989, 1990), so warrants careful monitoring. Breeding performance has improved strongly over time, and laying dates have become earlier, perhaps because of climate change (Crick & Sparks 1999). Broods now average larger, and there has been substantial reduction in failure rates of nests at the egg stage.

Population changes

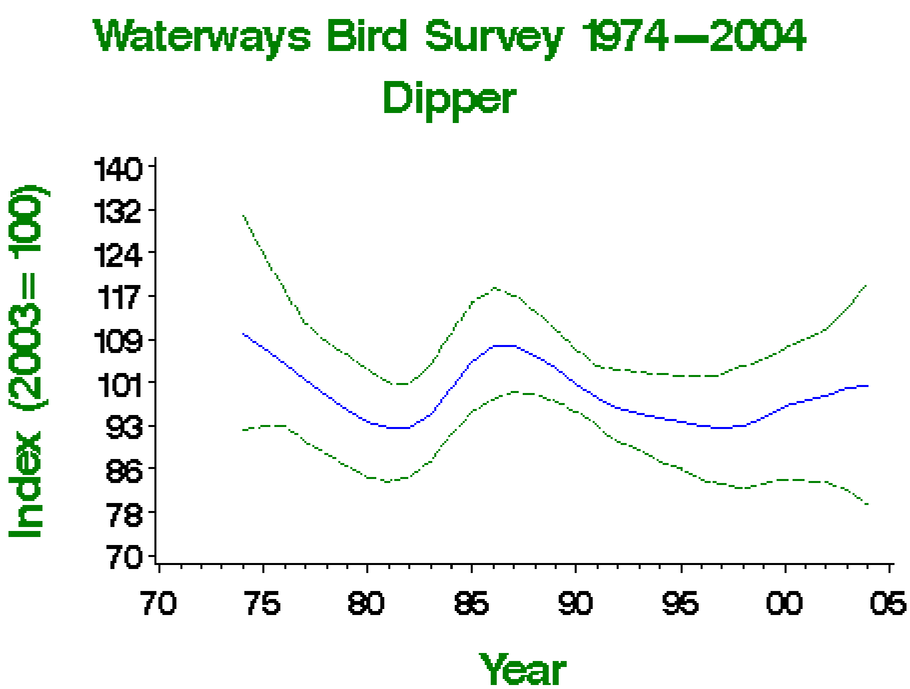


Table of population changes for Dipper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	28	1975-2003	36	-7	-32	21		
	25	1978-2003	36	1	-24	32		
	10	1993-2003	34	5	-16	22		
	5	1998-2003	30	7	-6	20		
BBS UK	10	1994-2004	46	4	-29	52		

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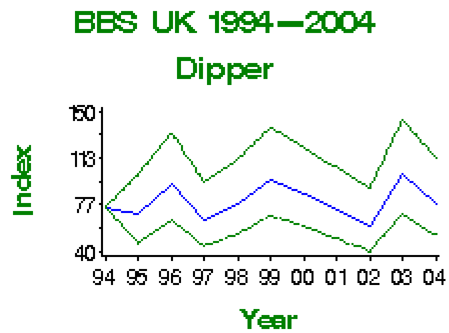
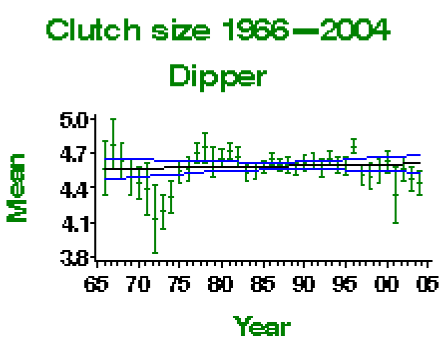
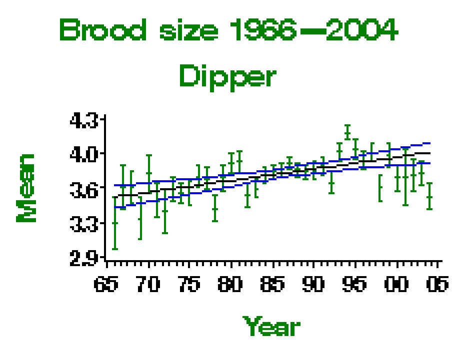


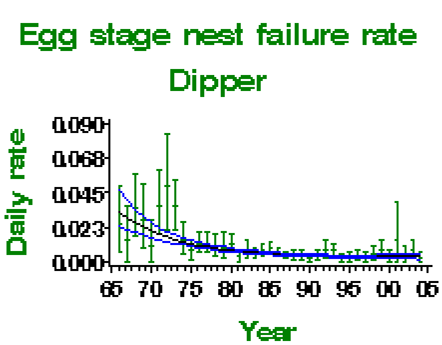
Productivity trends

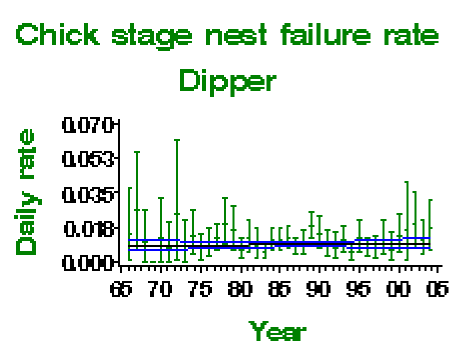
Table of productivity changes for Dipper

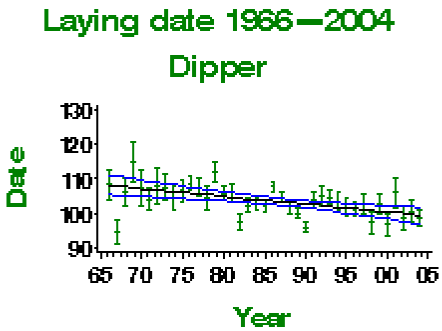
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	74	None				
Brood size	35	1968-2003	141	Linear increase	3.53 chicks	3.94 chicks	11.6%	
Daily failure rate (eggs)	35	1968-2003	104	Curvilinear	2.59% nests/day	0.36% nests/day	-86.1%	
Daily failure rate (chicks)	35	1968-2003	81	None				
Laying date	35	1968-2003	62	Linear decline	Apr 18	Apr 10	-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**

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

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, influenced by mortality rates that may be very high in severe winters and by the species' high breeding potential (**Peach *et al.* 1995b**), as is evident in the unsmoothed trends presented here for CES and BBS. 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 confined to Scotland and Northern Ireland. Brood size appears to have shown a small improvement in the long term.

Population changes

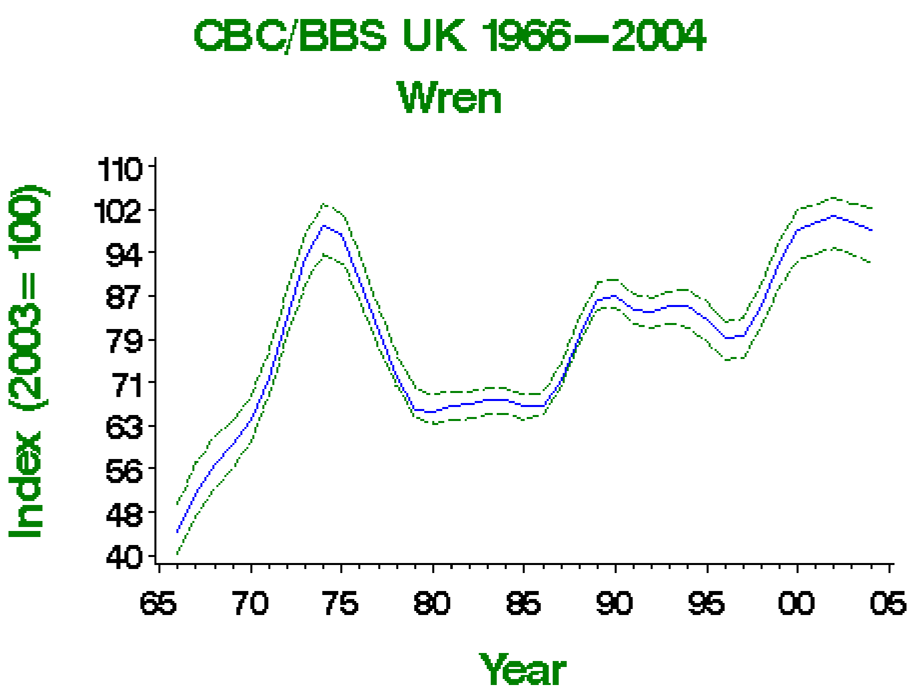


Table of population changes for Wren

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	535	94	66	116		
	25	1978-2003	694	36	20	45		
	10	1993-2003	1440	15	8	18		

	5	1998-2003	1691	19	15	21		
CBC/BBS UK	36	1967-2003	667	97	66	121		
	25	1978-2003	871	39	23	47		
	10	1993-2003	1833	18	13	22		
	5	1998-2003	2182	18	13	19		
CES adults	19	1984-2003	94	63	44	91		
	10	1993-2003	109	24	13	36		
	5	1998-2003	107	20	10	31		
CES juveniles	19	1984-2003	93	46	22	75		
	10	1993-2003	108	7	-2	16		
	5	1998-2003	106	15	6	26		
BBS UK	10	1994-2004	1879	14	11	18		
BBS England	10	1994-2004	1457	0	-3	4		
BBS Scotland	10	1994-2004	178	87	63	113		
BBS Wales	10	1994-2004	164	6	-4	16		
BBS N.Ireland	10	1994-2004	70	63	28	108		

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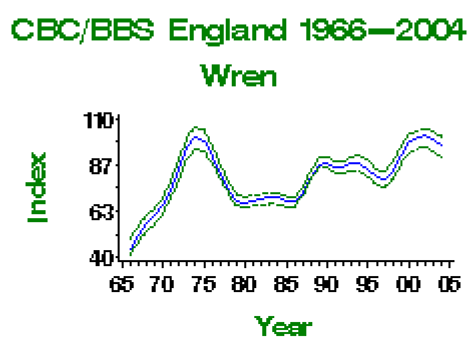
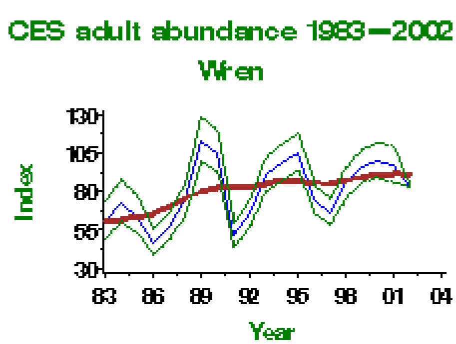
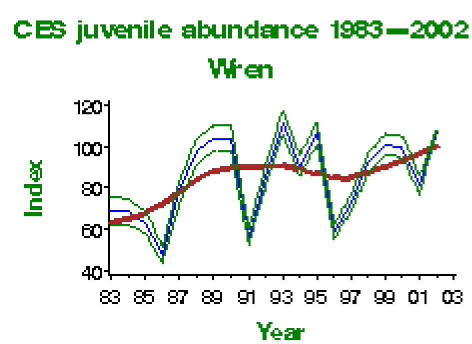
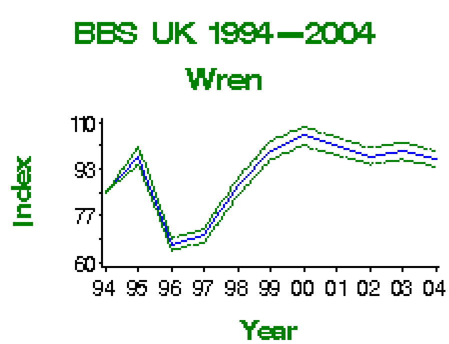
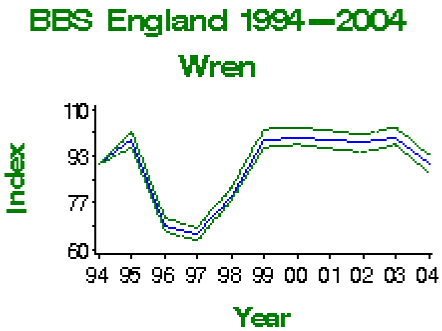
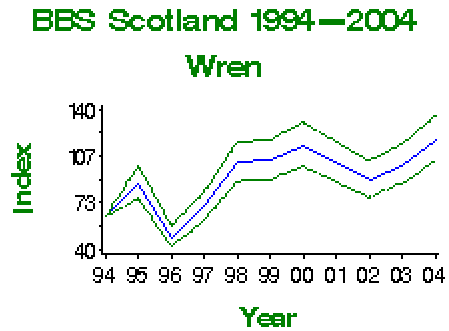


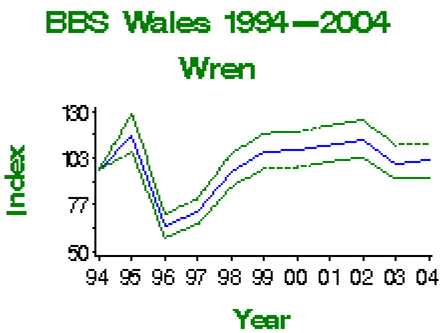


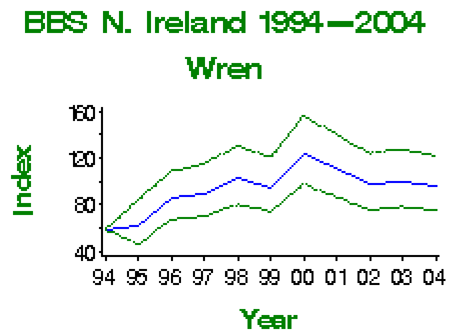








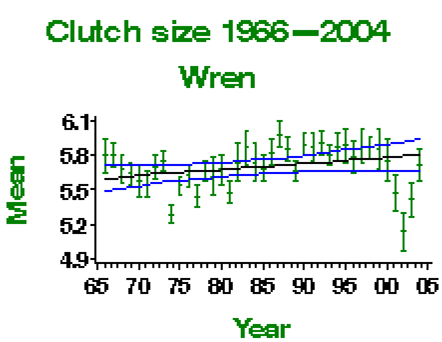


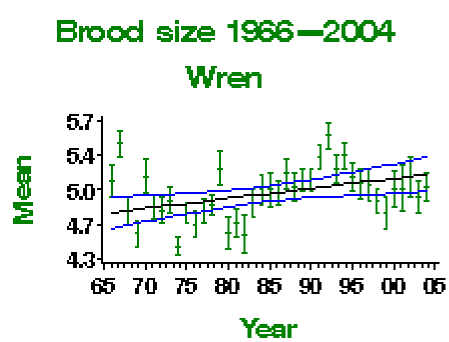


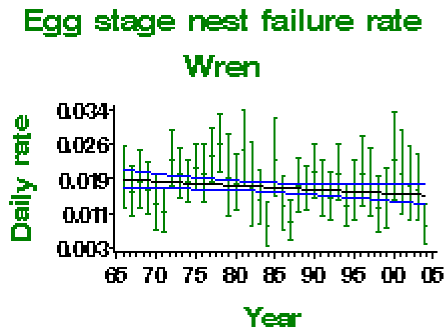
Productivity trends

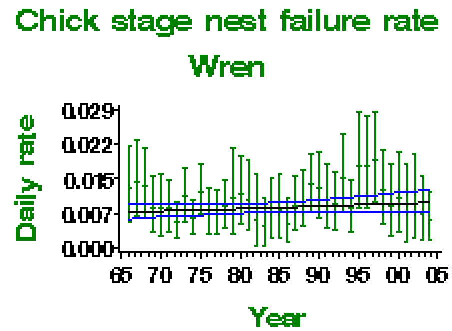
Table of productivity changes for Wren

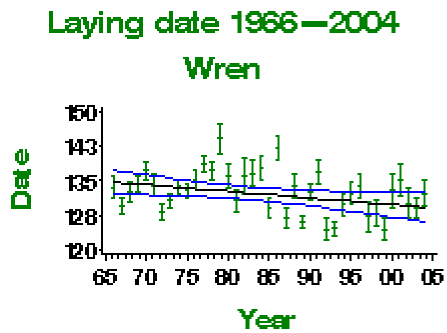
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	96	None				
Brood size	35	1968-2003	96	Linear increase	4.79 chicks	5.14 chicks	7.5%	
Daily failure rate (eggs)	35	1968-2003	143	None				
Daily failure rate (chicks)	35	1968-2003	99	None				
Laying date	35	1968-2003	88	Linear decline	May 14	May 9	-5 days	
Juvenile to Adult ratio (CES)	19	1984-2003	98	Smoothed trend	103 Index value	103 Index value	-3%	
Juvenile to Adult ratio (CES)	10	1993-2003	112	Smoothed trend	115 Index value	103 Index value	-13%	
Juvenile to Adult ratio (CES)	5	1998-2003	110	Smoothed trend	100 Index value	103 Index value	0%	

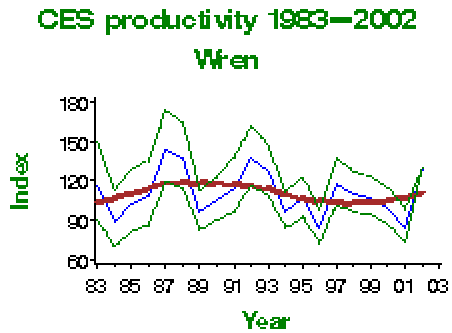












Additional information

- **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)

Long-term trend

UK, England: moderate decline

UK population size

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

Status summary

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

Population changes

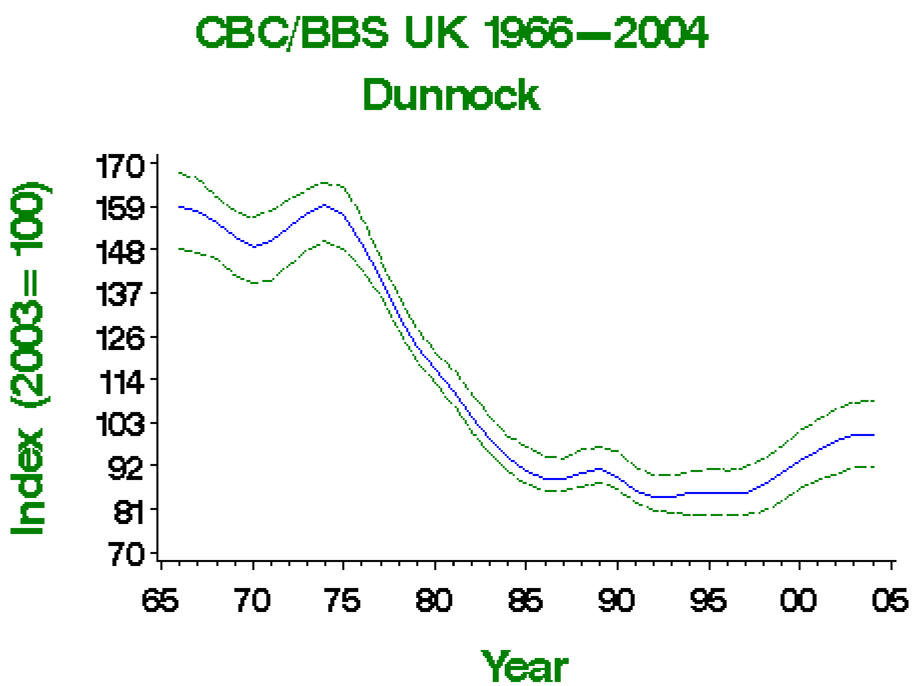


Table of population changes for Dunnock

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	480	-39	-48	-29	>25	
	25	1978-2003	617	-27	-36	-18	>25	
	10	1993-2003	1264	17	11	22		
	5	1998-2003	1481	15	11	18		

CBC/BBS UK	36	1967-2003	576	-36	-45	-27	>25	
	25	1978-2003	743	-23	-32	-13		
	10	1993-2003	1535	19	11	26		
	5	1998-2003	1831	15	11	19		
CES adults	19	1984-2003	93	3	-9	17		
	10	1993-2003	106	24	14	34		
	5	1998-2003	104	21	13	29		
CES juveniles	19	1984-2003	90	-8	-27	20		
	10	1993-2003	105	0	-12	13		
	5	1998-2003	104	18	5	34		
BBS UK	10	1994-2004	1568	13	8	19		
BBS England	10	1994-2004	1279	8	3	14		
BBS Scotland	10	1994-2004	104	20	-5	51		
BBS Wales	10	1994-2004	124	41	20	66		
BBS N.Ireland	10	1994-2004	51	152	60	297		

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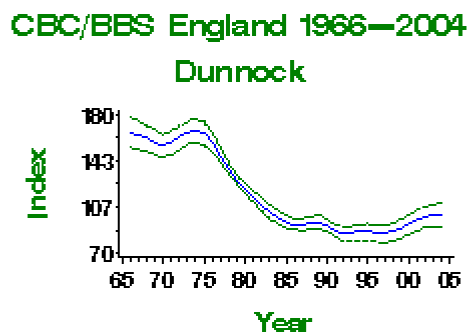
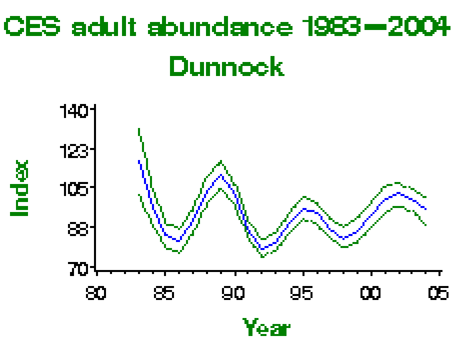
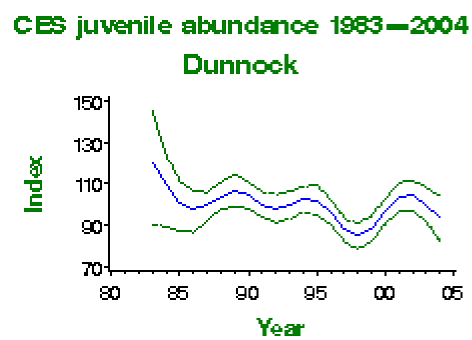
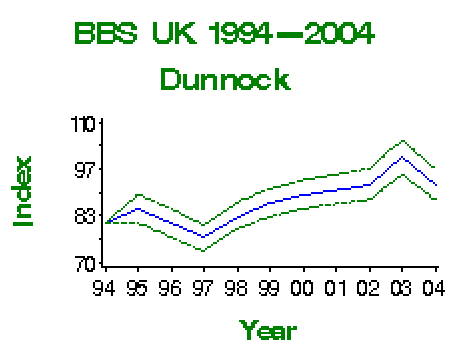
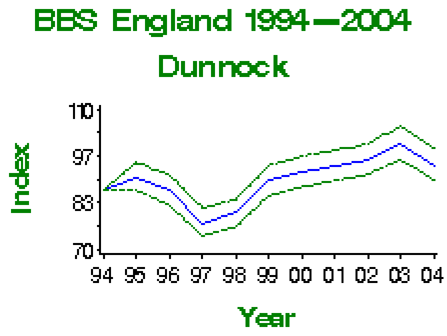
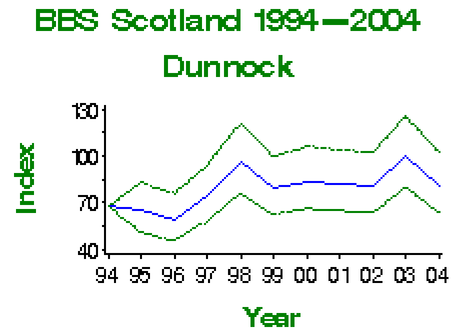


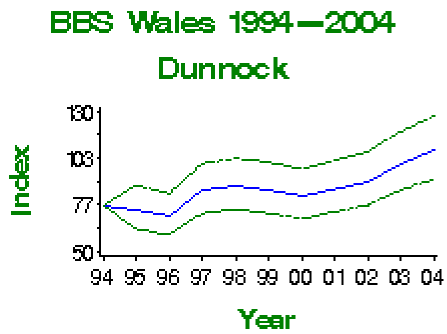


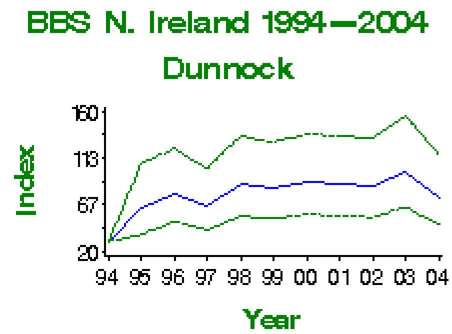








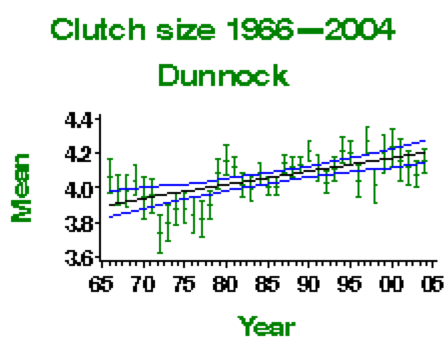


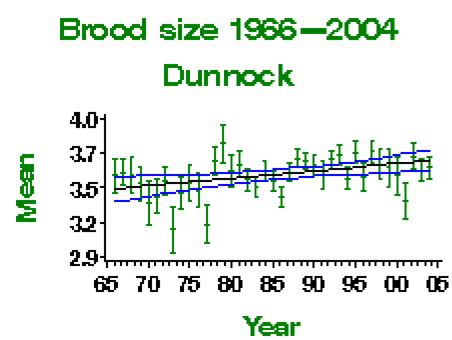


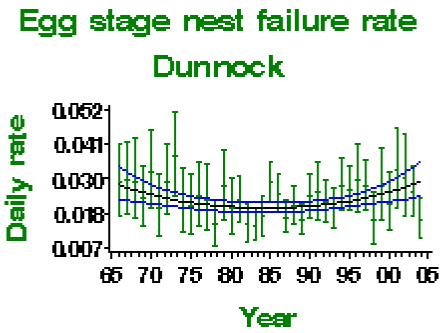
Productivity trends

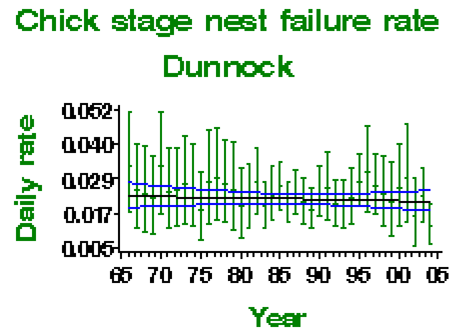
Table of productivity changes for Dunnock

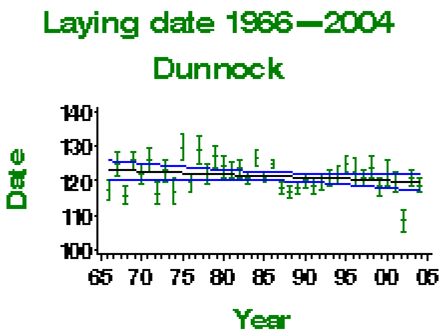
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	99	Linear increase	3.92 eggs	4.19 eggs	7%	
Brood size	35	1968-2003	104	Linear increase	3.46 chicks	3.67 chicks	6.1%	
Daily failure rate (eggs)	35	1968-2003	139	Curvilinear	2.6% nests/day	2.78% nests/day	6.9%	
Daily failure rate (chicks)	35	1968-2003	110	None				
Laying date	35	1968-2003	79	None				
Juvenile to Adult ratio (CES)	19	1984-2003	97	Smoothed trend	103 Index value	103 Index value	-2%	
Juvenile to Adult ratio (CES)	10	1993-2003	111	Smoothed trend	113 Index value	103 Index value	-12%	
Juvenile to Adult ratio (CES)	5	1998-2003	109	Smoothed trend	104 Index value	103 Index value	-3%	

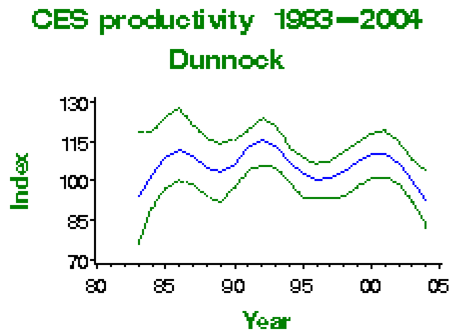












Additional information

- **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: shallow increase
England: moderate increase

UK population size

5,895,0000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

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

Population changes

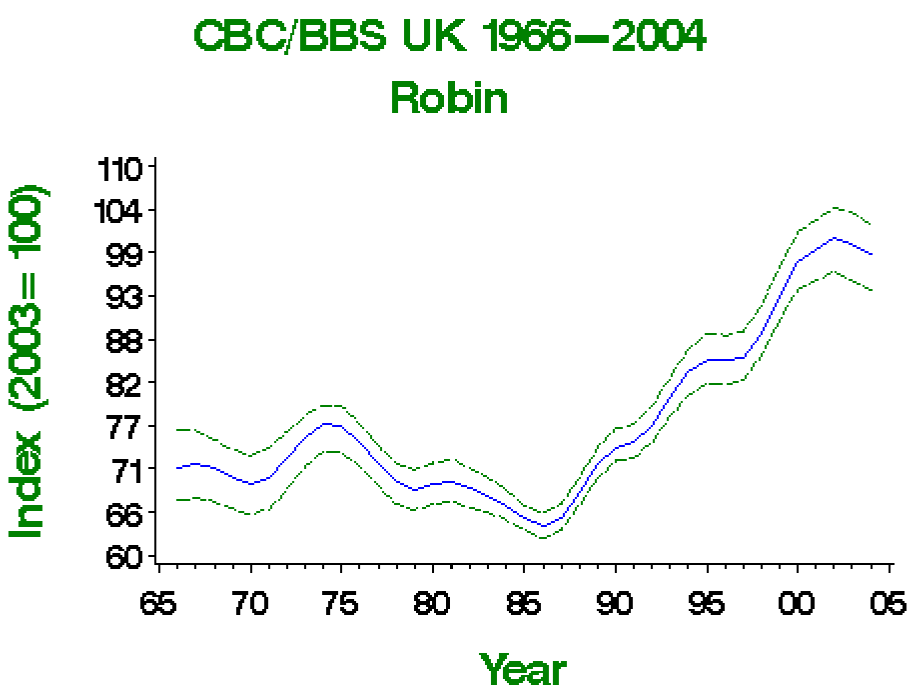


Table of population changes for Robin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	524	51	33	66		
	25	1978-2003	679	55	41	65		
	10	1993-2003	1408	32	26	36		

	5	1998-2003	1647	19	15	21		
CBC/BBS UK	36	1967-2003	647	40	27	53		
	25	1978-2003	845	44	33	57		
	10	1993-2003	1770	25	19	28		
	5	1998-2003	2099	13	9	14		
CES adults	19	1984-2003	88	61	43	88		
	10	1993-2003	103	26	16	36		
	5	1998-2003	102	30	21	43		
CES juveniles	19	1984-2003	93	23	5	46		
	10	1993-2003	108	1	-7	10		
	5	1998-2003	106	0	-7	8		
BBS UK	10	1994-2004	1813	15	11	19		
BBS England	10	1994-2004	1424	20	16	24		
BBS Scotland	10	1994-2004	152	8	-6	25		
BBS Wales	10	1994-2004	161	9	-1	20		
BBS N.Ireland	10	1994-2004	67	5	-17	33		

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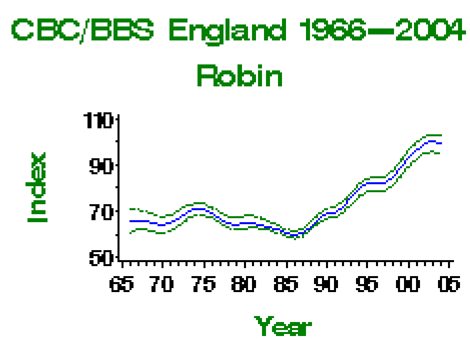
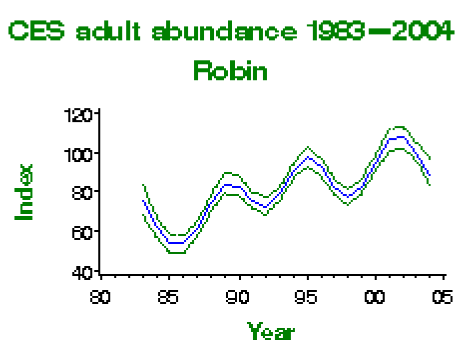
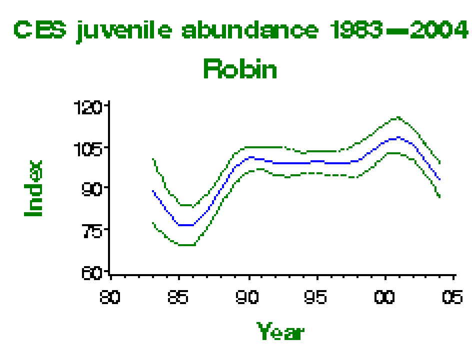
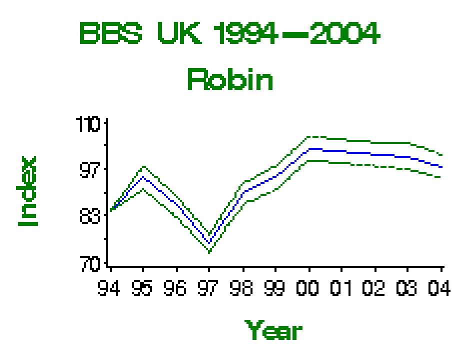
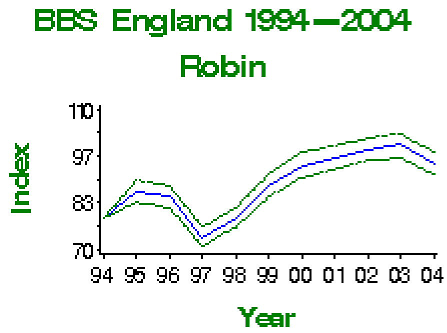
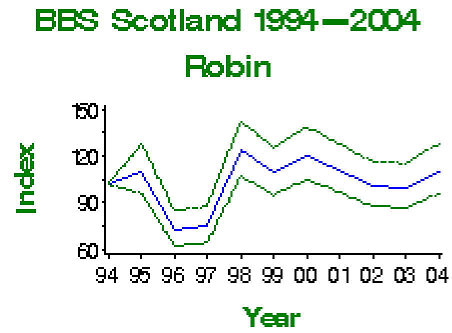


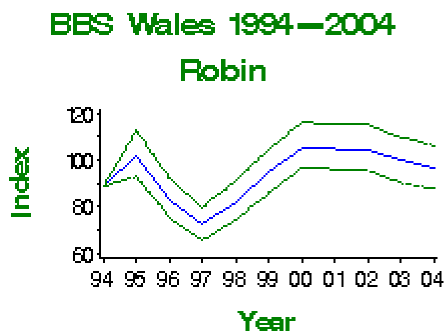


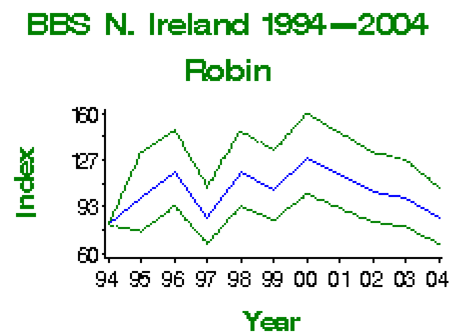








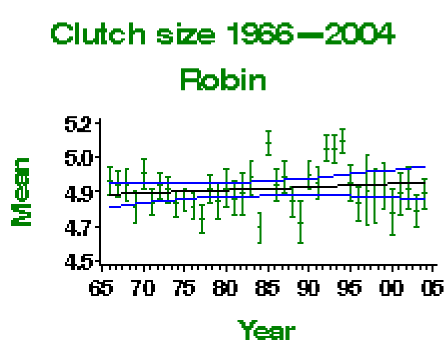


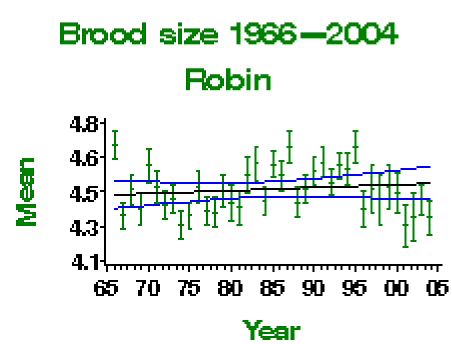


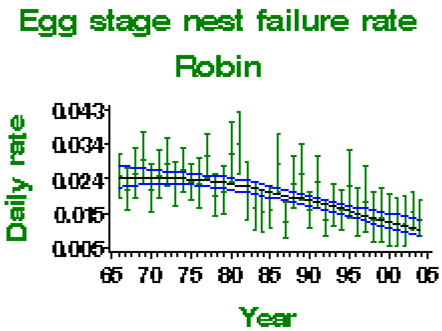
Productivity trends

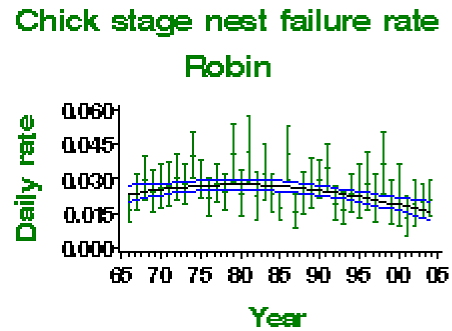
Table of productivity changes for Robin

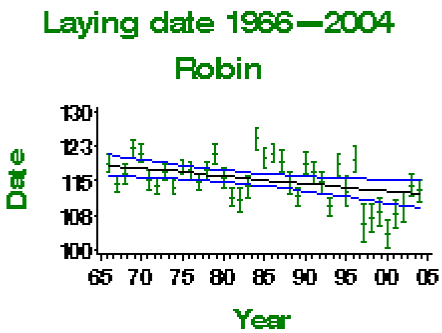
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	118	None				
Brood size	35	1968-2003	158	None				
Daily failure rate (eggs)	35	1968-2003	176	Curvilinear	2.45% nests/day	1.08% nests/day	-55.9%	
Daily failure rate (chicks)	35	1968-2003	148	Curvilinear	2.44% nests/day	1.68% nests/day	-31.1%	
Laying date	35	1968-2003	116	Linear decline	Apr 28	Apr 22	-6 days	
Juvenile to Adult ratio (CES)	19	1984-2003	97	Smoothed trend	125 Index value	103 Index value	-20%	
Juvenile to Adult ratio (CES)	10	1993-2003	112	Smoothed trend	136 Index value	103 Index value	-26% >25	
Juvenile to Adult ratio (CES)	5	1998-2003	110	Smoothed trend	148 Index value	103 Index value	-32% >25	

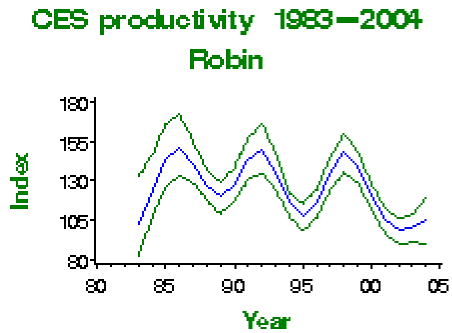












Additional information

- 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 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**). 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 similar pattern, at least until 1997. **Fuller *et al.* (2005)** suggest the likely causes of Nightingale decline relate to pressures on migration and in winter, perhaps compounded by habitat loss and reduced habitat quality in Britain. CES indicates a sharp decline in productivity during the 1980s, perhaps because Nightingale nesting success may be adversely affected by cold and wet springs.

Population changes

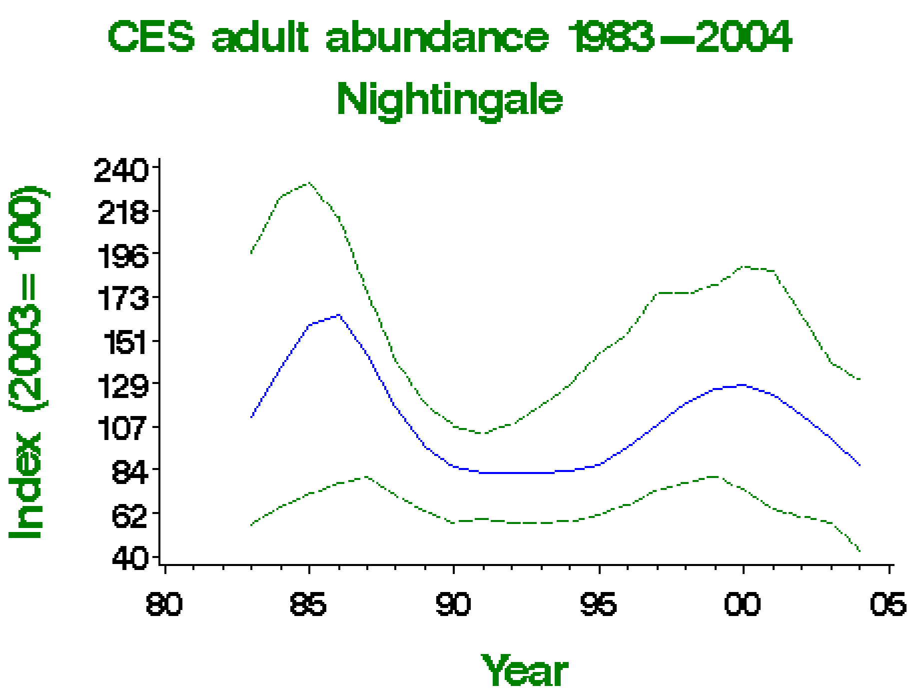


Table of population changes for Nightingale

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

CES adults	10	1994-2004	10	8	-62	99		Small sample

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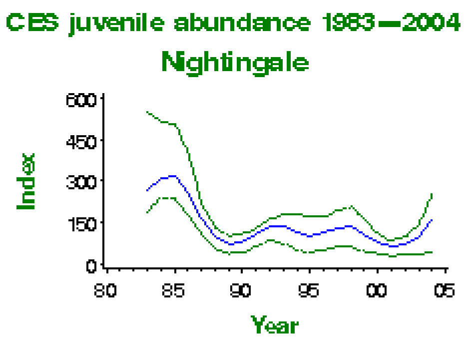


Productivity trends

Table of productivity changes for Nightingale

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Juvenile to Adult ratio (CES)	19	1984-2003	11	Smoothed trend	2130 Index value	103 Index value	-95% >50	Small sample
Juvenile to Adult ratio (CES)	10	1993-2003	13	Smoothed trend	628 Index value	103 Index value	-84% >50	Small sample
Juvenile to Adult ratio (CES)	5	1998-2003	11	Smoothed trend	256 Index value	103 Index value	-61%	Small sample

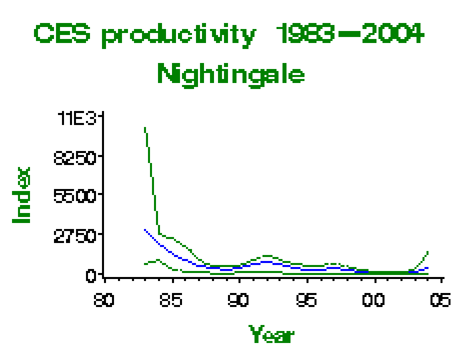
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



Additional information

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

REDSTART
Phoenicurus phoenicurus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

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

UK population size

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

Status summary

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

Population changes

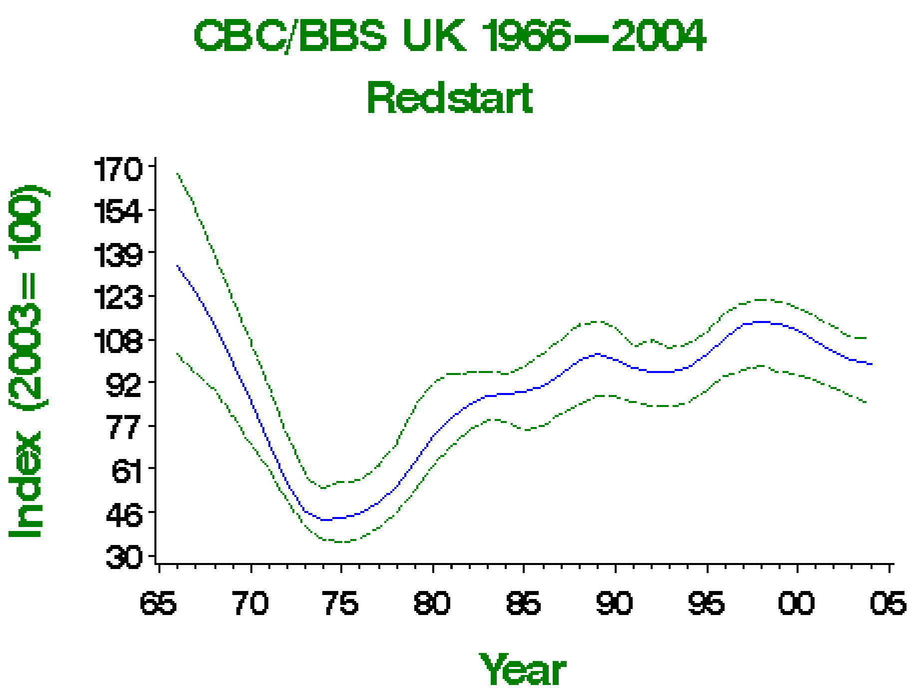


Table of population changes for Redstart

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	34	-13	-42	46		Small CBC sample
	25	1978-2003	43	93	23	168		Small CBC sample
	10	1993-2003	80	12	-8	36		
	5	1998-2003	85	-9	-21	4		
CBC/BBS UK	36	1967-2003	55	-20	-43	12		

	25	1978-2003	69	83	24	143		
	10	1993-2003	139	4	-10	20		
	5	1998-2003	155	-12	-20	-3		
BBS UK	10	1994-2004	132	30	10	55		
BBS England	10	1994-2004	70	53	19	95		
BBS Wales	10	1994-2004	51	-6	-27	20		

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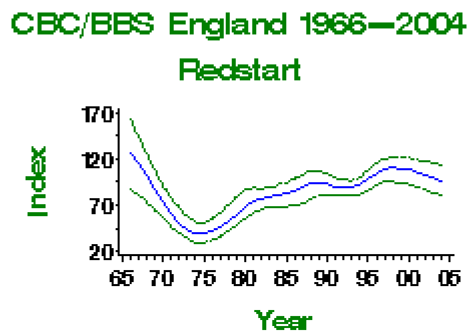
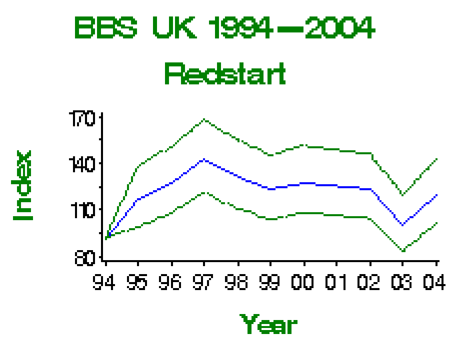
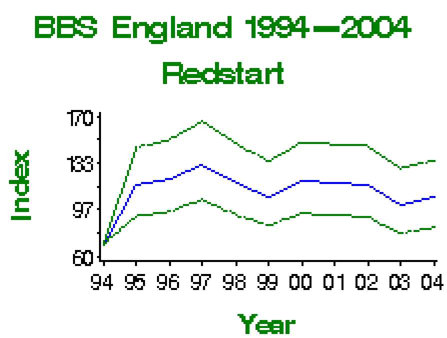
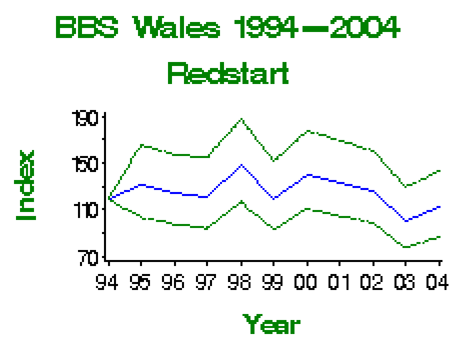






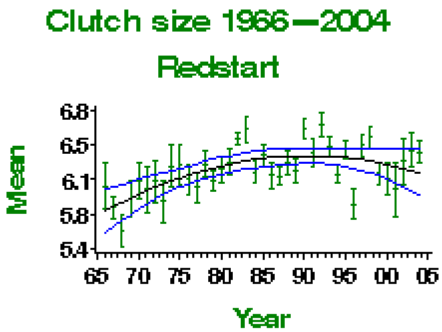


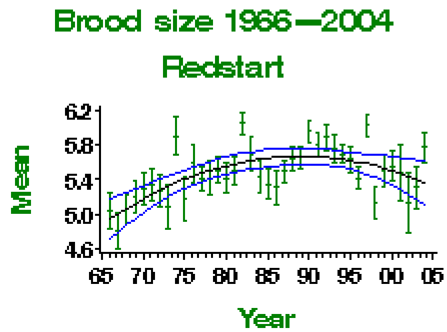
Productivity trends

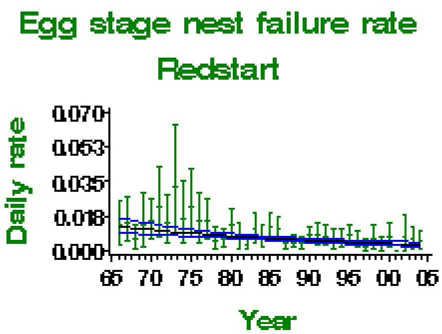
Table of productivity changes for Redstart

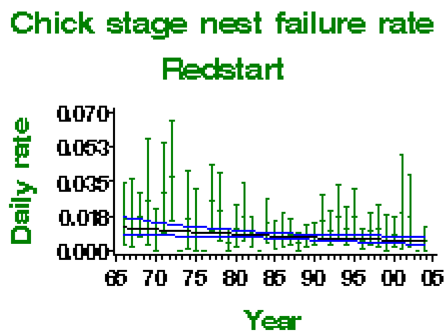
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	50	Curvilinear	5.87 eggs	6.2 eggs	5.6%	
Brood size	35	1968-2003	88	Curvilinear	5.06 chicks	5.4 chicks	6.7%	
Daily failure rate (eggs)	35	1968-2003	75	Linear decline	1.16% nests/day	0.35% nests/day	-69.8%	
Daily failure rate (chicks)	35	1968-2003	53	Linear decline	1.13% nests/day	0.51% nests/day	-54.9%	
Laying date	35	1968-	63	Curvilinear	May 20	May 10	-10 days	

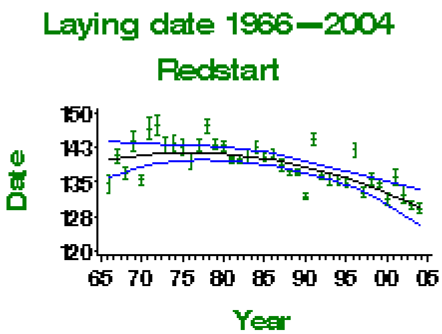
		2003						











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: probable decline

UK population size

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

Status summary

Whinchats were not monitored until the BBS began in 1994. By then, however, **Gibbons *et al.* (1993)** had identified a major range contraction, mainly from lowland England, that was probably at least partly due to the loss of marginal farmland habitats. Further extinctions have occurred since then among remaining pockets of lowland breeders. BBS data suggest that some population decline took place during the 1990s, especially in England, provisionally raising a BTO alert there. There has been no clear trend in breeding performance in the period since 1968.

Population changes

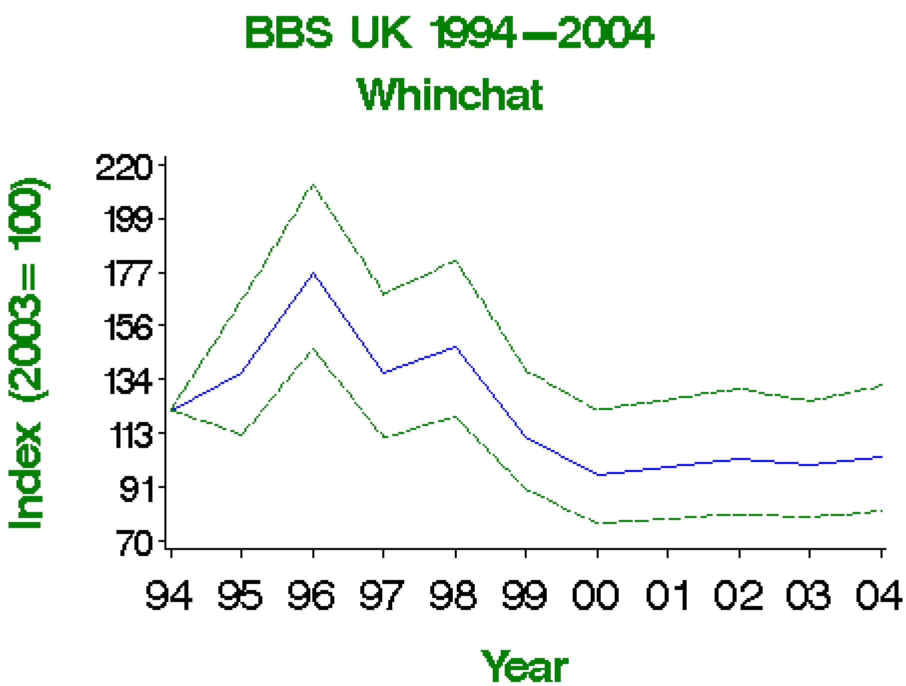


Table of population changes for Whinchat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	74	-15	-33	8		
BBS England	10	1994-2004	30	-32	-51	-6	(>25)	

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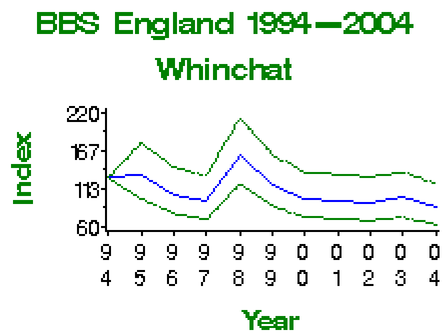
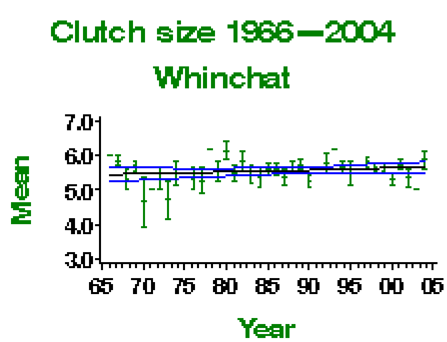
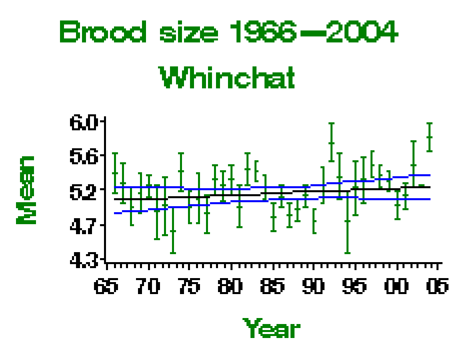


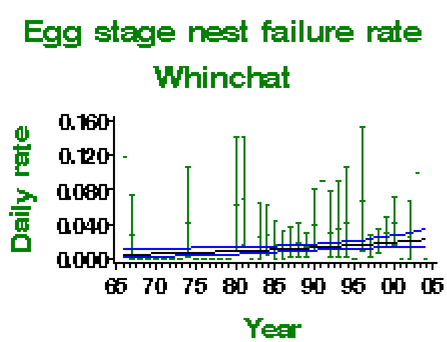
Productivity trends

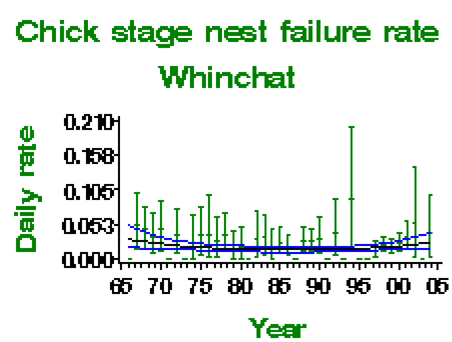
Table of productivity changes for Whinchat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	13	None				Small sample
Brood size	35	1968-2003	42	None				
Daily failure rate (eggs)	35	1968-2003	16	Linear increase	0.59% nests/day	2.18% nests/day	269.5%	Small sample
Daily failure rate (chicks)	35	1968-2003	29	Curvilinear	2.66% nests/day	2.38% nests/day	-10.5%	Small sample
Laying date	35	1968-2003	31	Linear decline	May 30	May 26	-4 days	

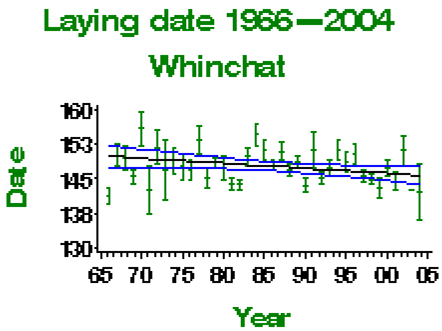








Insufficient data on CES



available for this species

Additional information

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

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

Breeding atlas data showed a substantial contraction in the Stonechat's range between the early 1970s and late 1980s (**Gibbons *et al.* 1993**), but the species was not monitored sufficiently well before the start of the BBS for long-term numerical trends to be investigated. Abundance appears to be linked to severe winter weather, and suitable breeding habitat has become scarce and fragmented in many inland regions (**Marchant *et al.* 1990**). Clutch sizes have increased over the long term, and nest failure rates have fallen substantially. Since 1994, numbers have increased markedly, at least in England. Following similar increases widely across Europe, the species is now provisionally categorised as 'secure' (**BirdLife International 2004**). The UK amber listing rests on the earlier European decline, so a change to green may be warranted at the next review.

Population changes

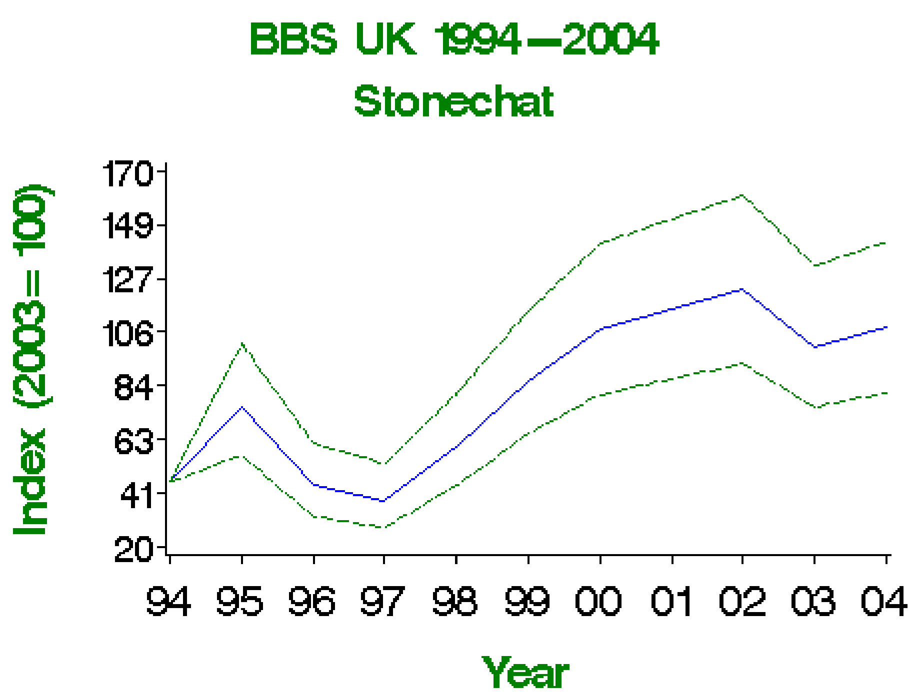


Table of population changes for Stonechat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	94	134	78	209		
BBS England	10	1994-2004	37	184	88	331		

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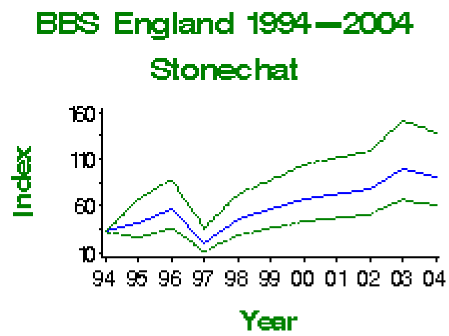
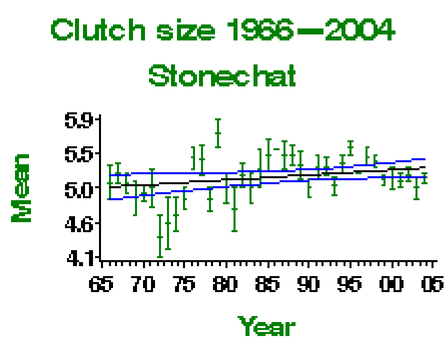
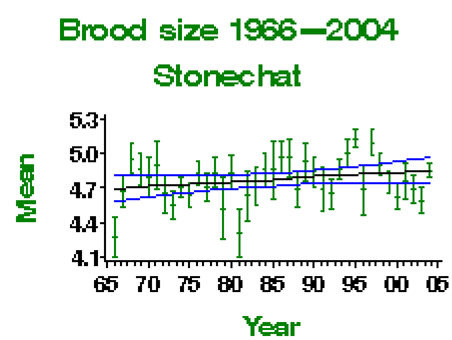


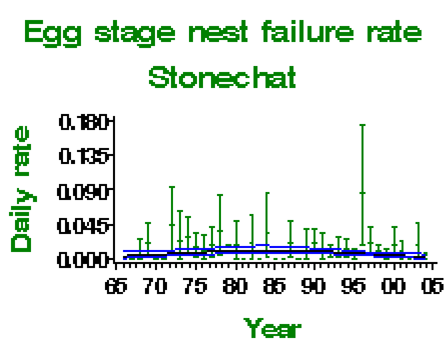
Productivity trends

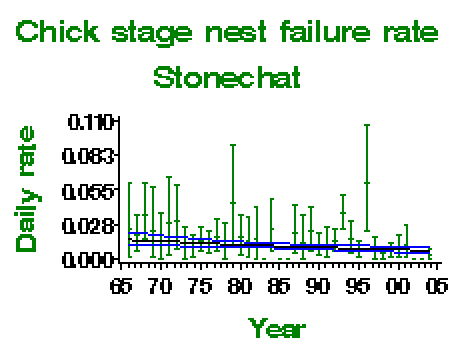
Table of productivity changes for Stonechat

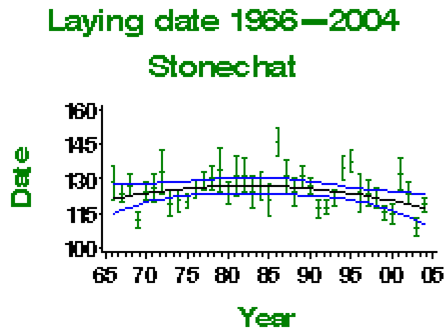
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	26	Linear increase	5.03 eggs	5.25 eggs	4.5%	Small sample
Brood size	35	1968-2003	54	None				
Daily failure rate (eggs)	35	1968-2003	29	Curvilinear	0.49% nests/day	0.35% nests/day	-28.6%	Small sample
Daily failure rate (chicks)	35	1968-2003	48	Linear decline	1.49% nests/day	0.72% nests/day	-51.7%	
Laying date	35	1968-2003	31	Curvilinear	May 3	Apr 28	-5 days	











Insufficient data on CES available for this species

Additional information

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

WHEATEAR
Oenanthe oenanthe

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: green

Long-term trend

UK: possible decline

UK population size

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

Status summary

Although it is a common breeding species in many upland areas, the Wheatear was not monitored until the BBS began in 1994. **Gibbons *et al.* (1993)** had by then identified range contractions from lowland Britain, perhaps due to losses of suitable grassland and declines in rabbit abundance. BBS shows wide fluctuations but as yet no clear trend in abundance since 1994 in either England, Scotland or Wales. Failure rates at the egg stage (18 days, comprising 14 days incubation and 4 days laying) have fallen substantially, but there has also been a minor drop in average brood size. Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

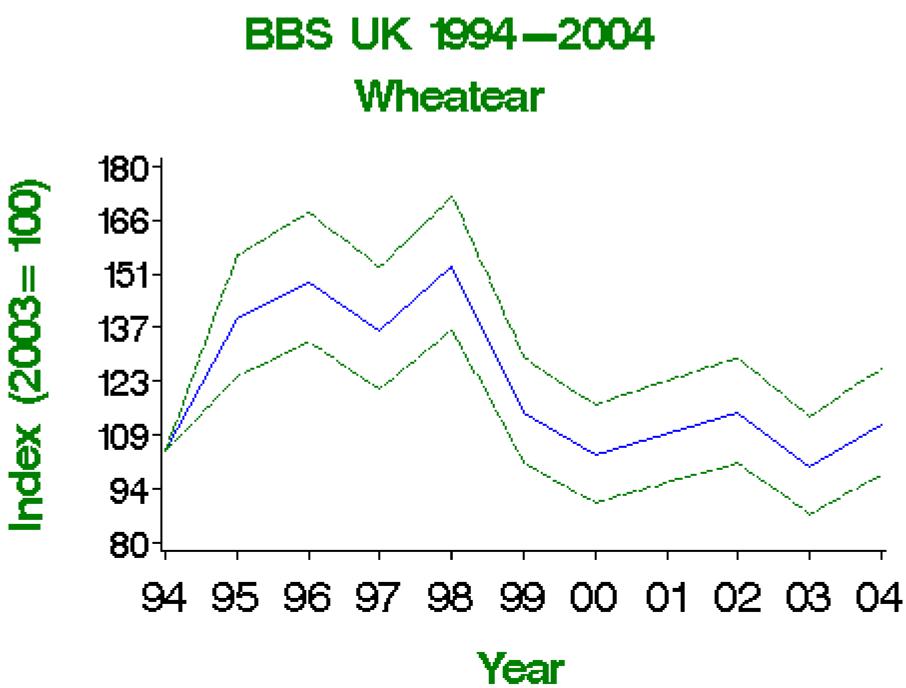


Table of population changes for Wheatear

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	243	7	-6	21		
BBS England	10	1994-2004	117	11	-8	32		
BBS Scotland	10	1994-2004	71	10	-14	41		
BBS Wales	10	1994-2004	44	-12	-36	22		

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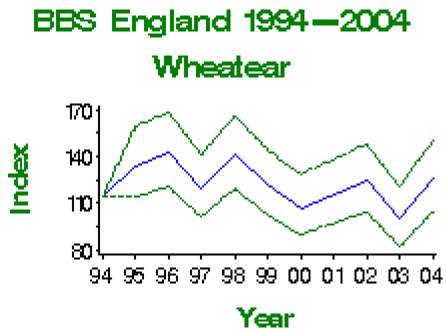
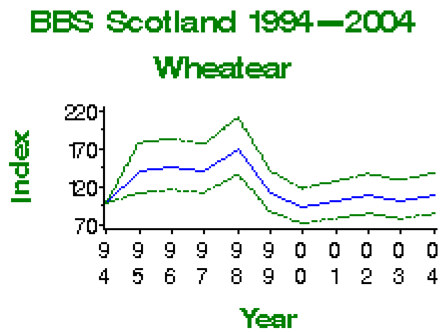
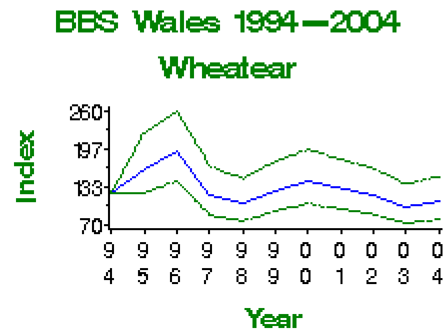


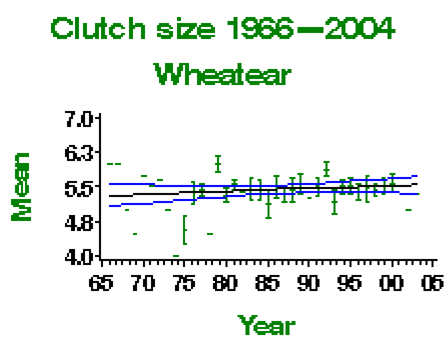


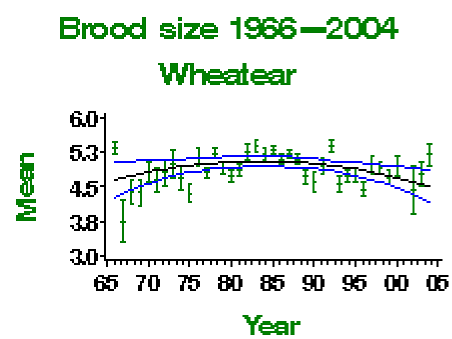


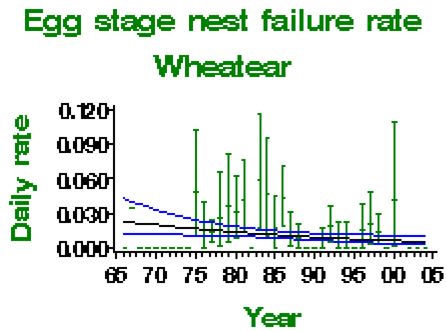
Productivity trends

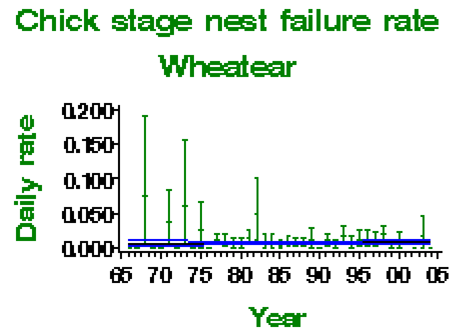
Table of productivity changes for Wheatear

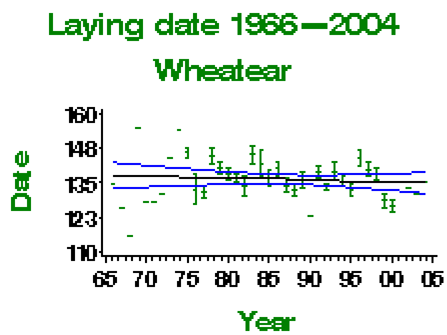
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	14	None				Small sample
Brood size	35	1968-2003	64	Curvilinear	4.75 chicks	4.57 chicks	-3.6%	
Daily failure rate (eggs)	35	1968-2003	21	Linear decline	2.17% nests/day	0.6% nests/day	-72.4%	Small sample
Daily failure rate (chicks)	35	1968-2003	44	None				
Laying date	35	1968-2003	15	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)

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 second breeding atlas 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 sites during 1970–98 that matches the estimated UK breeding decline, but no decline at eastern sites 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: the earlier timing of spring migration for UK birds, and their more westerly route, gives them greater exposure to hunting pressures, particularly in southwest France. Reasons for decline linked to the breeding grounds have proved elusive (**Buchanan *et al.* 2003**).

Population changes

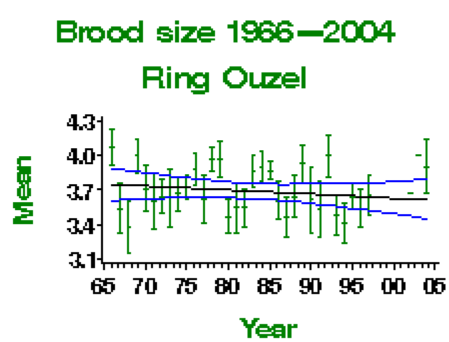
Annual breeding population changes for this species are not currently monitored by BTO

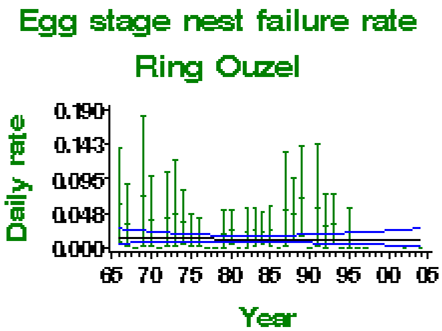
Productivity trends

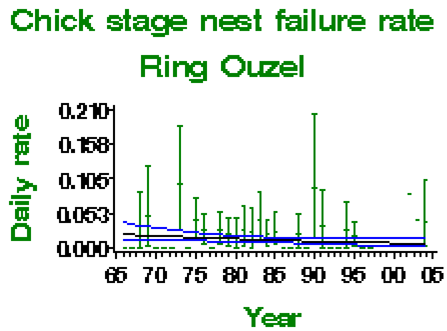
Table of productivity changes for Ring Ouzel

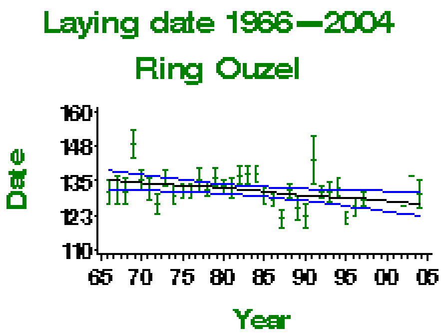
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	24	None				Small sample
Daily failure rate (eggs)	35	1968-2003	12	None				Small sample
Daily failure rate (chicks)	35	1968-2003	16	None				Small sample
Laying date	35	1968-2003	26	Linear decline	May 15	May 7	-8 days	Small sample

Insufficient data on clutch size available for this species









Insufficient data on CES available for this species

Additional information

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

BLACKBIRD
Turdus merula

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: shallow decline

UK population size

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

Status summary

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

Population changes

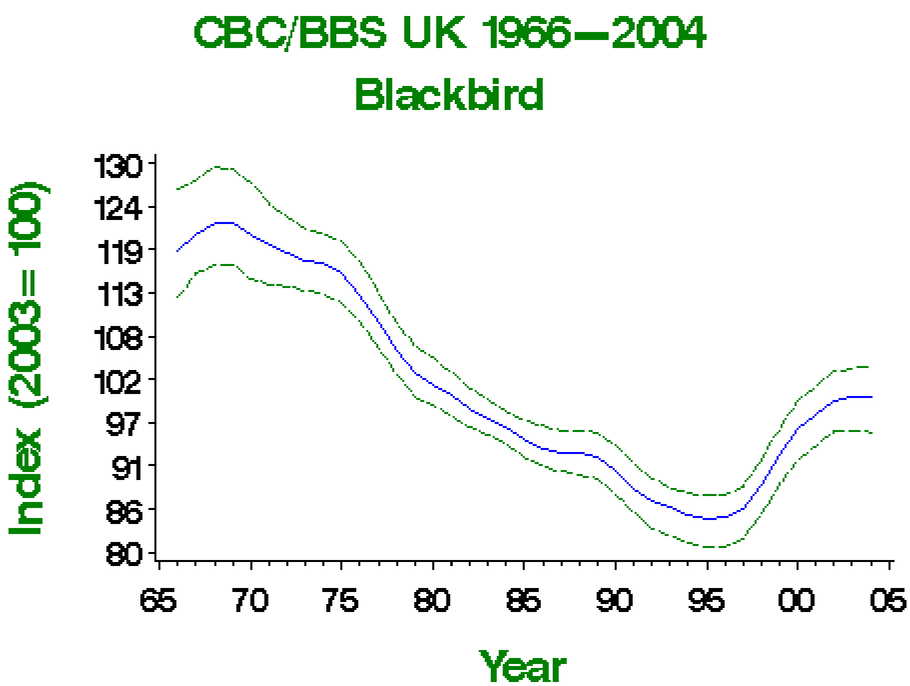
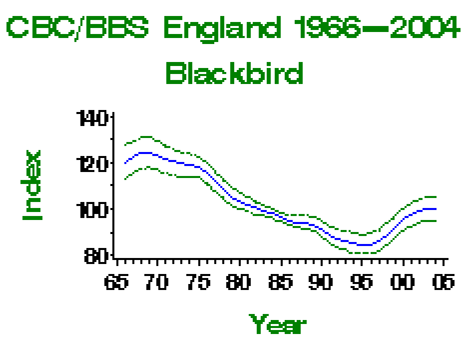


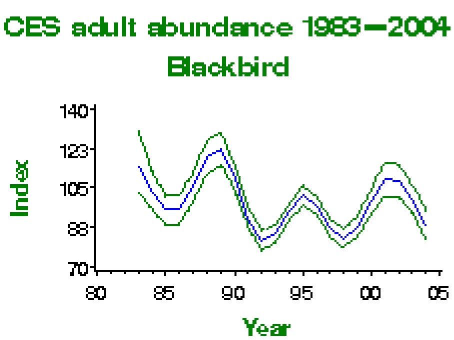
Table of population changes for Blackbird

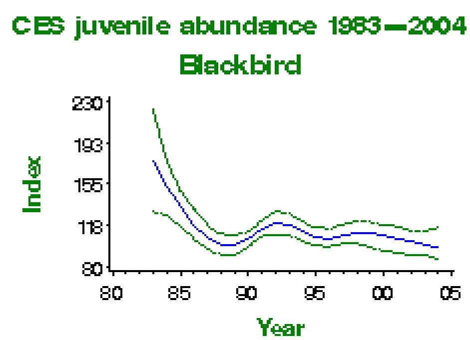
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	553	-18	-26	-8		
	25	1978-2003	716	-8	-16	1		
	10	1993-2003	1489	16	12	20		
	5	1998-2003	1735	13	10	15		

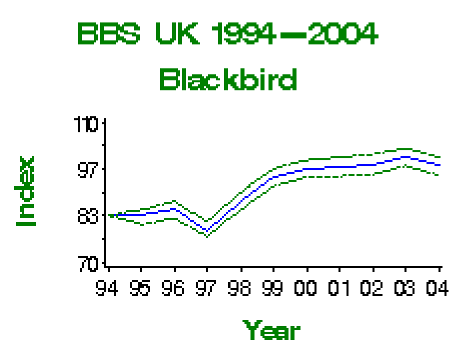
CBC/BBS UK	**36**	**1967-2003**	**676**	**-17**	**-26**	**-11**		
	25	**1978-2003**	**882**	**-6**	**-13**	**1**		
	10	**1993-2003**	**1850**	**17**	**13**	**20**		
	5	**1998-2003**	**2191**	**13**	**10**	**15**		
CES adults	**19**	**1984-2003**	**95**	**-2**	**-16**	**13**		
	10	**1993-2003**	**109**	**18**	**8**	**29**		
	5	**1998-2003**	**107**	**21**	**12**	**31**		
CES juveniles	**19**	**1984-2003**	**84**	**-35**	**-49**	**-11**	**>25**	
	10	**1993-2003**	**98**	**-15**	**-27**	**-2**		
	5	**1998-2003**	**95**	**-9**	**-19**	**3**		
BBS UK	**10**	**1994-2004**	**1896**	**17**	**14**	**20**		
BBS England	**10**	**1994-2004**	**1510**	**15**	**12**	**18**		
BBS Scotland	**10**	**1994-2004**	**148**	**11**	**-1**	**25**		
BBS Wales	**10**	**1994-2004**	**162**	**37**	**25**	**50**		
BBS N.Ireland	**10**	**1994-2004**	**66**	**48**	**17**	**87**		

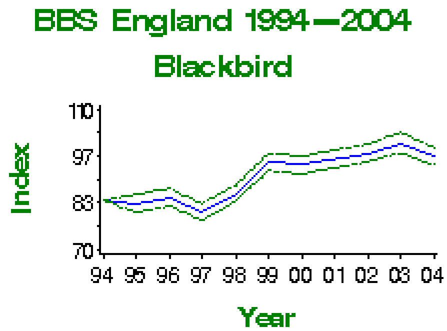
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

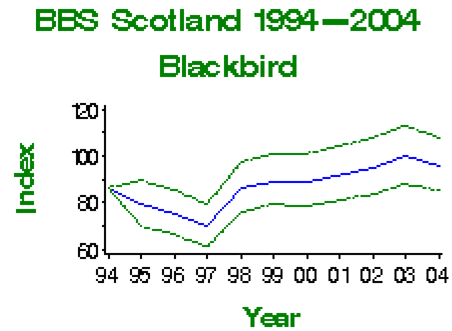


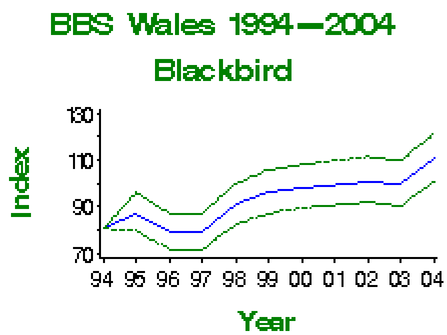


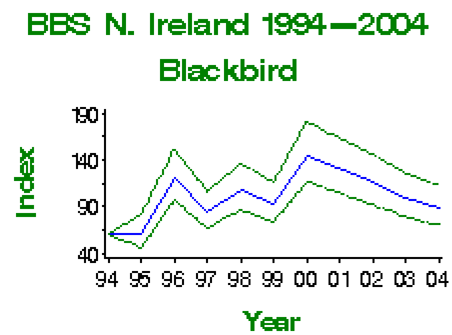








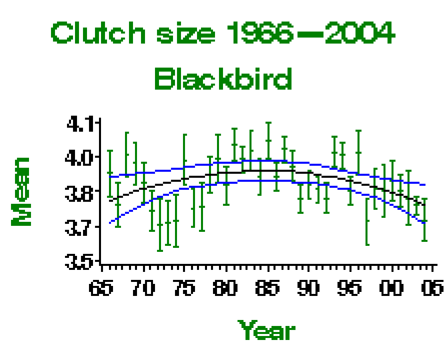


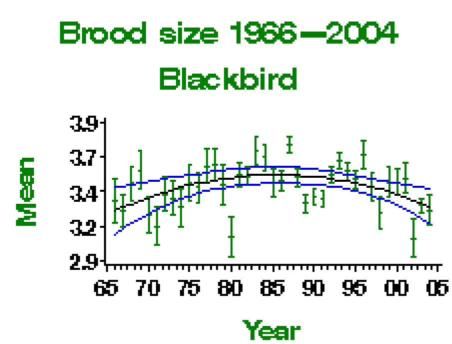


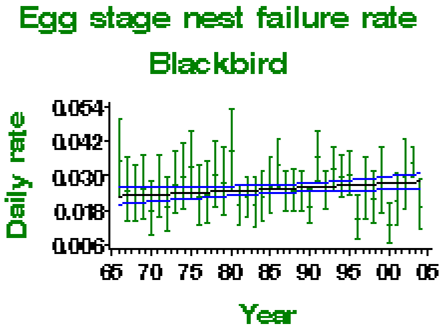
Productivity trends

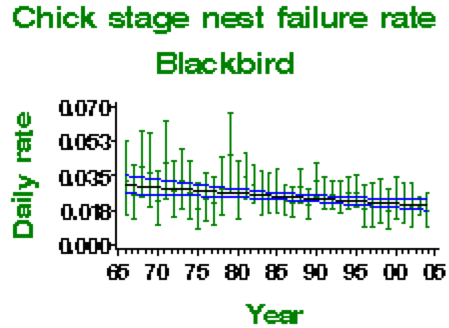
Table of productivity changes for Blackbird

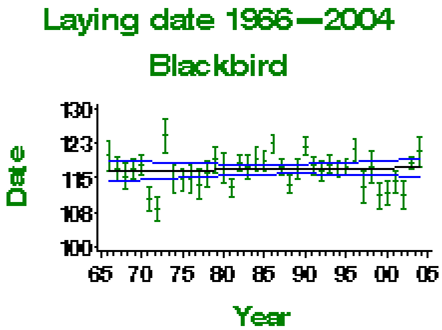
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	93	Curvilinear	3.79 eggs	3.76 eggs	-0.8%	
Brood size	35	1968-2003	117	Curvilinear	3.31 chicks	3.32 chicks	0.2%	
Daily failure rate (eggs)	35	1968-2003	133	None				
Daily failure rate (chicks)	35	1968-2003	113	Linear decline	2.98% nests/day	2.04% nests/day	-31.5%	
Laying date	35	1968-2003	113	None				
Juvenile to Adult ratio (CES)	19	1984-2003	97	Smoothed trend	145 Index value	103 Index value	-31% >25	
Juvenile to Adult ratio (CES)	10	1993-2003	111	Smoothed trend	134 Index value	103 Index value	-25% >25	
Juvenile to Adult ratio (CES)	5	1998-2003	109	Smoothed trend	130 Index value	103 Index value	-23%	

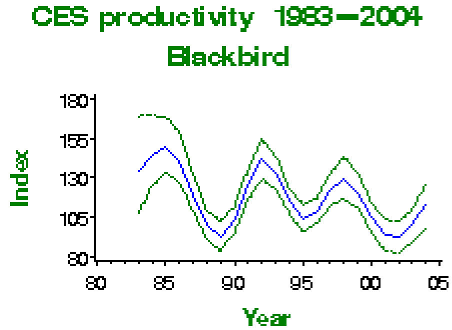












Additional information

- 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)

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

The CBC 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 stability, and NRS data indicate that breeding performance has improved during this period. Changes in survival of juveniles in their first year of life probably drove the decline (**Thomson *et al.* 1997**, **Siriwardena *et al.* 1998a**). Recent CBC/BBS data suggest that the decline has at least levelled off, and may now be reversing. Decreasing Song Thrush abundance has been linked to agricultural intensification (**Fuller *et al.* 1995**), but 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**). 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

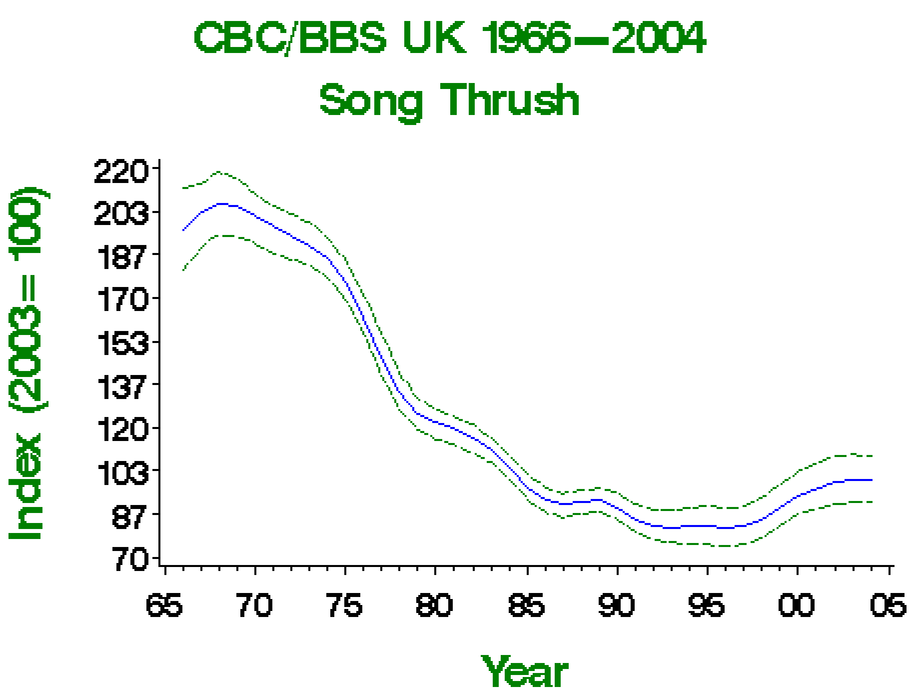


Table of population changes for Song Thrush

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	444	-53	-59	-44	>50	

	25	1978-2003	564	-30	-40	-21	>25	
	10	1993-2003	1141	21	14	27		
	5	1998-2003	1344	19	14	23		
CBC/BBS UK	36	1967-2003	553	-51	-58	-43	>50	
	25	1978-2003	710	-25	-35	-13	>25	
	10	1993-2003	1456	23	16	30		
	5	1998-2003	1744	18	13	22		
CES adults	19	1984-2003	79	-20	-34	-5		
	10	1993-2003	90	3	-9	19		
	5	1998-2003	87	22	5	40		
CES juveniles	19	1984-2003	64	-48	-62	-30	>25	
	10	1993-2003	74	-1	-15	16		
	5	1998-2003	73	13	-5	30		
BBS UK	10	1994-2004	1488	14	8	20		
BBS England	10	1994-2004	1152	11	5	17		
BBS Scotland	10	1994-2004	134	22	2	47		
BBS Wales	10	1994-2004	137	18	1	37		
BBS N.Ireland	10	1994-2004	57	35	-3	88		

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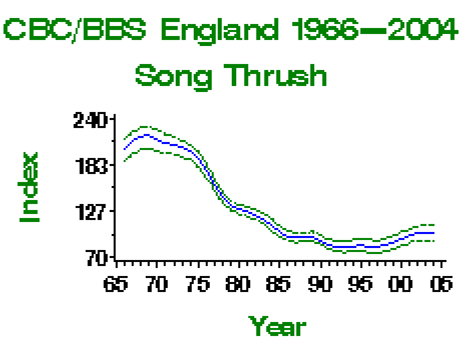
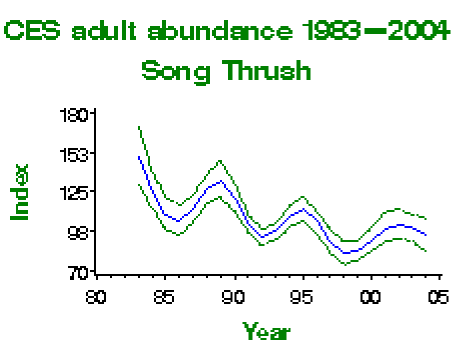
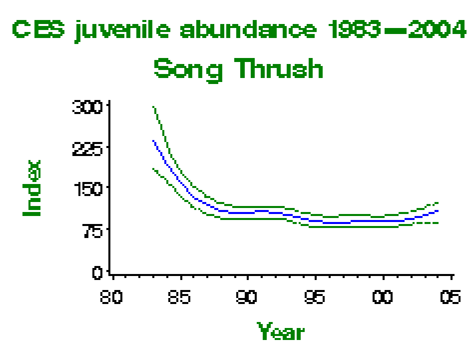
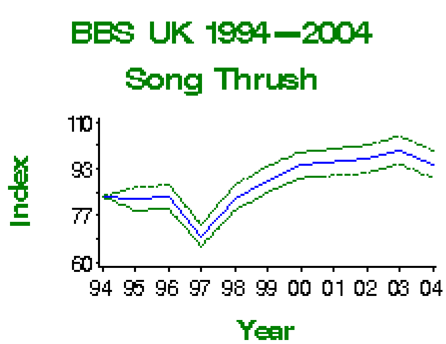
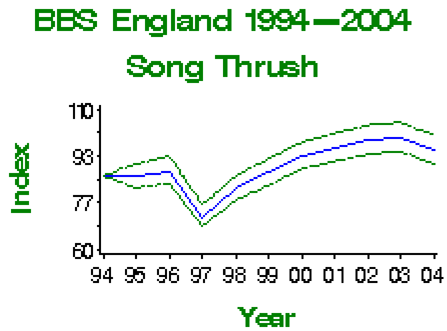
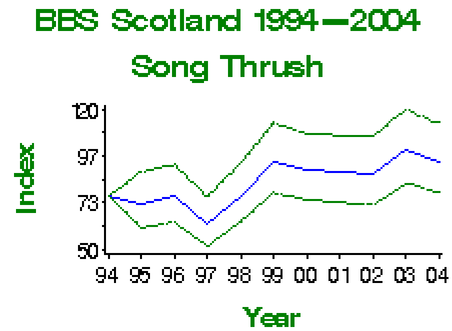


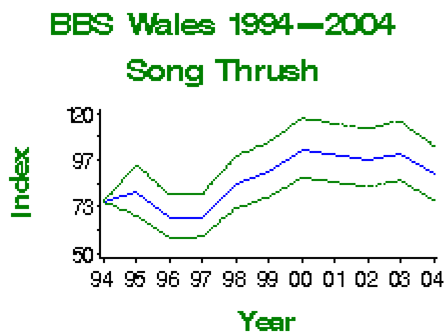


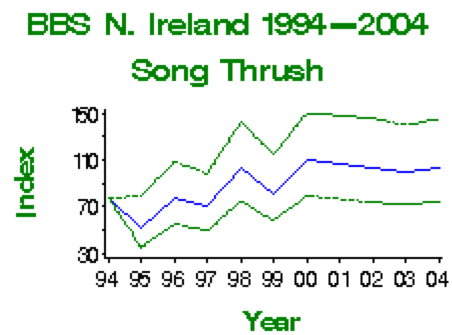








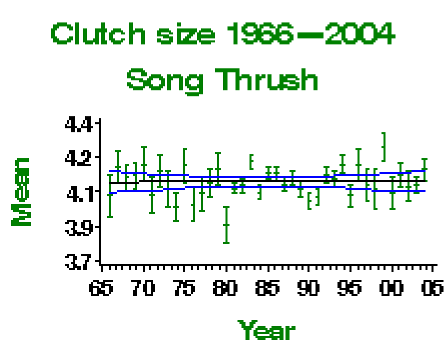


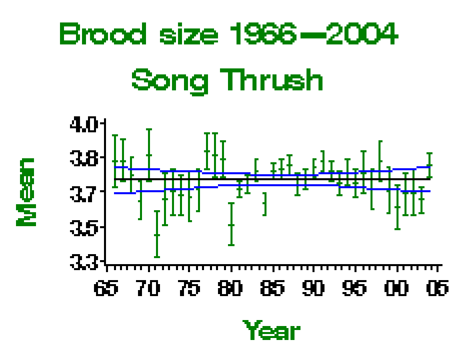


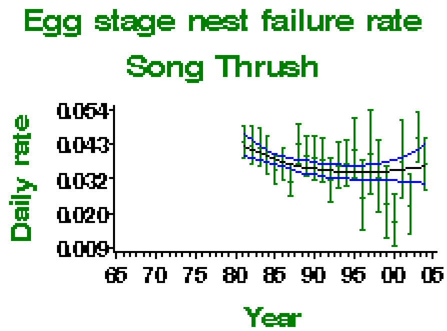
Productivity trends

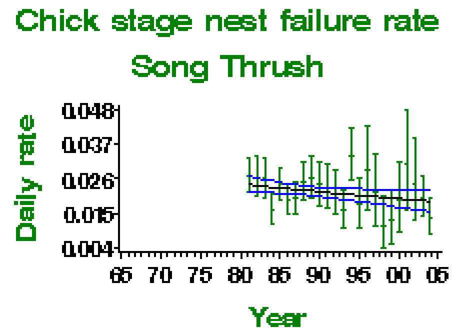
Table of productivity changes for Song Thrush

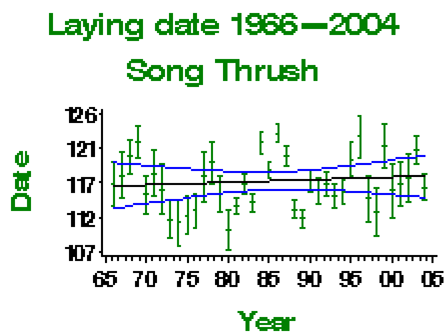
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	168	None				
Brood size	35	1968-2003	187	None				
Daily failure rate (eggs)	22	1981-2003	324	Curvilinear	4.25% nests/day	3.53% nests/day	-16.9%	
Daily failure rate (chicks)	22	1981-2003	240	Linear decline	2.42% nests/day	1.9% nests/day	-21.5%	
Laying date	35	1968-2003	195	None				
Juvenile to Adult ratio (CES)	19	1984-2003	87	Smoothed trend	149 Index value	103 Index value	-33% >25	
Juvenile to Adult ratio (CES)	10	1993-2003	99	Smoothed trend	84 Index value	103 Index value	18%	
Juvenile to Adult ratio (CES)	5	1998-2003	98	Smoothed trend	101 Index value	103 Index value	-1%	

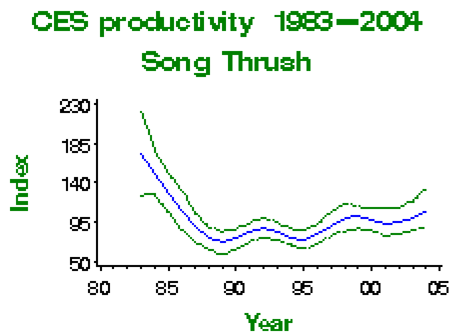












Additional information

- 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 has recently been moved from the green to the amber list because of population decline, but recent BBS data suggest that this decline may now have ceased. The Scottish BBS trend is of strong increase since the late 1990s. There have been no strong trends in breeding performance, and the decline is likely to have been driven by reduced annual survival (**Siriwardena *et al.* 1998**).

Population changes

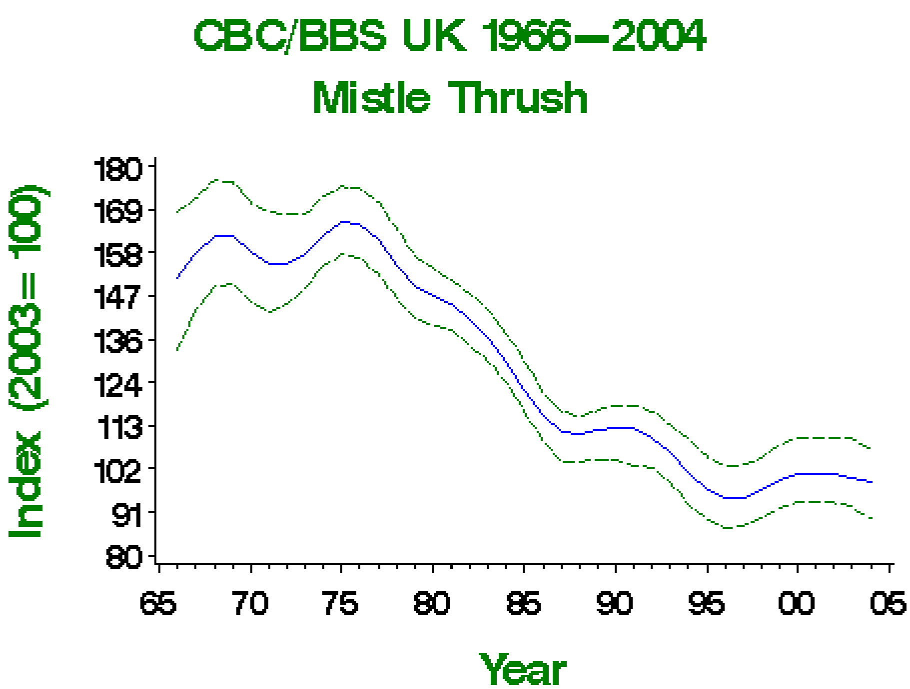


Table of population changes for Mistle Thrush

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	313	-42	-52	-29	>25	
	25	1978-2003	399	-41	-48	-32	>25	
	10	1993-2003	799	-16	-22	-10		
	5	1998-2003	932	-6	-10	-1		
CBC/BBS UK	36	1967-2003	377	-36	-48	-24	>25	

	25	1978-2003	483	-35	-42	-26	>25	
	10	1993-2003	979	-6	-13	4		
	5	1998-2003	1168	3	-3	9		
BBS UK	10	1994-2004	992	-2	-9	6		
BBS England	10	1994-2004	797	-21	-27	-13		
BBS Scotland	10	1994-2004	60	80	31	149		
BBS Wales	10	1994-2004	86	12	-14	45		
BBS N.Ireland	10	1994-2004	45	8	-29	65		

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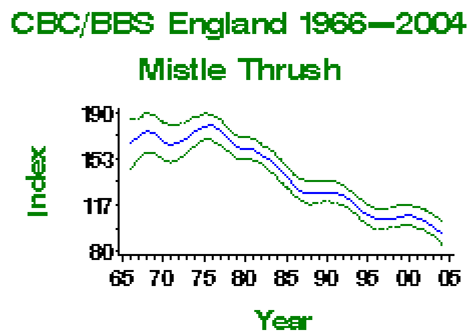
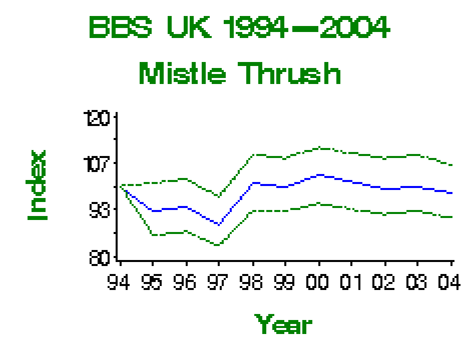
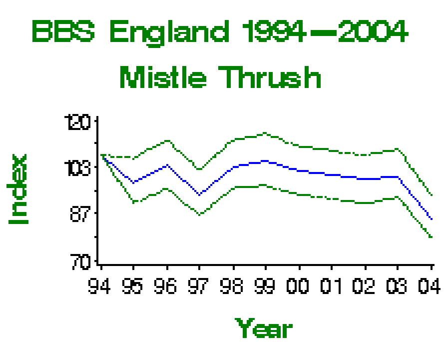
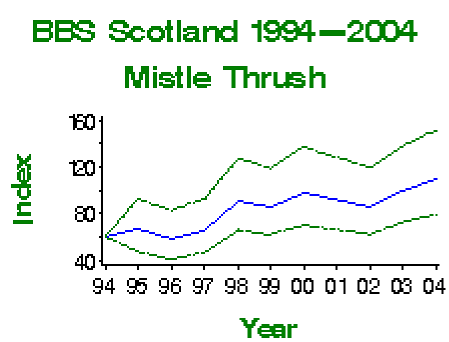
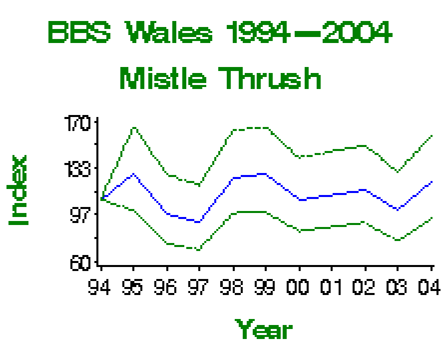
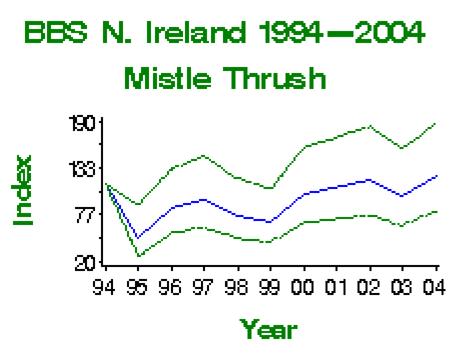








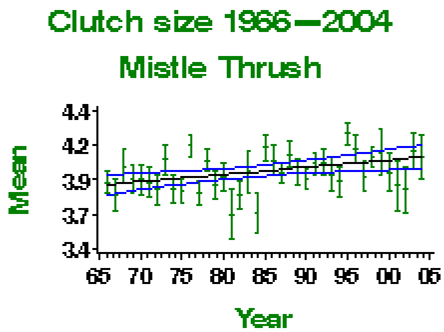


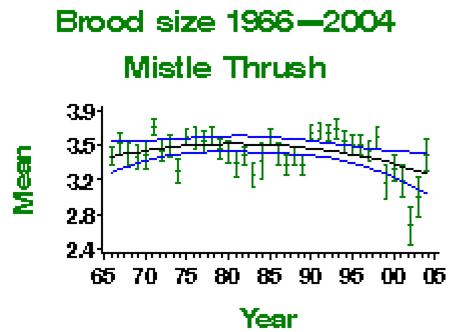


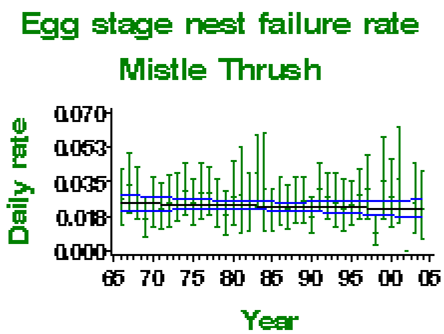
Productivity trends

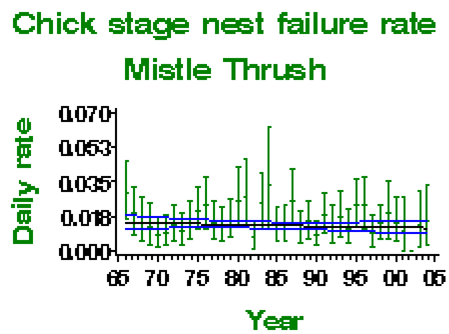
Table of productivity changes for Mistle Thrush

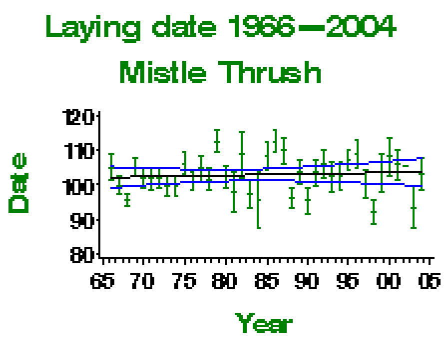
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	37	Linear increase	3.88 eggs	4.06 eggs	4.7%	
Brood size	35	1968-2003	71	Curvilinear	3.44 chicks	3.25 chicks	-5.4%	
Daily failure rate (eggs)	35	1968-2003	61	None				
Daily failure rate (chicks)	35	1968-2003	63	None				
Laying date	35	1968-2003	31	None				











Insufficient data on CES available for this species

Additional information

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

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**). CBC data suffer from small and severely dwindling sample sizes, but the available data indicate a rapid population decline between the mid 1960s and mid 1980s, when numbers became too small for annual monitoring (**Marchant *et al.* 1990**). On this basis, the species is now red-listed. The BBS shows wide fluctuations in abundance since 1994, and currently an overall moderate increase. Given suitable habitat and conditions, the species has high reproductive potential, as demonstrated by analysis of nest record data (**Glue 1990**).

Population changes

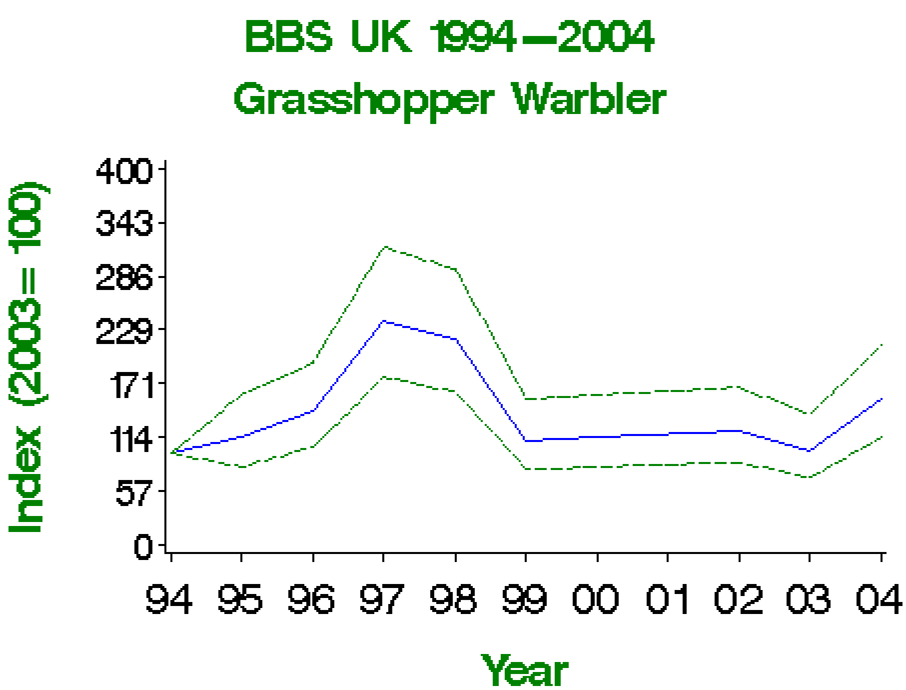


Table of population changes for Grasshopper Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	60	59	17	118		

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Productivity trends

No productivity information available for this species

Additional information

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

SEDGE WARBLER
Acrocephalus schoenobaenus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: fluctuating, with no long-term trend

UK population size

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

Status summary

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

Population changes

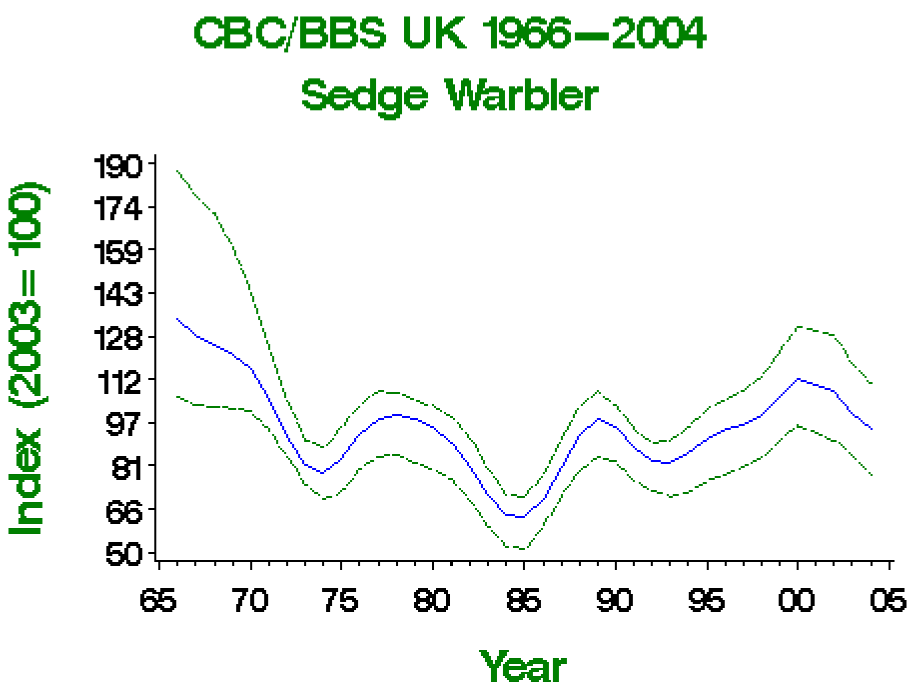
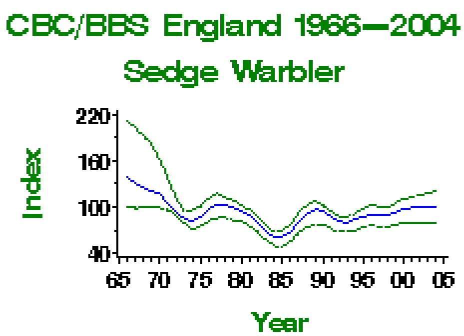


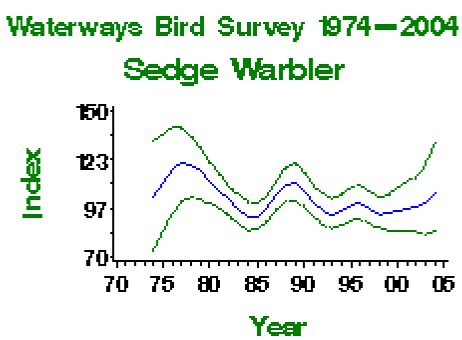
Table of population changes for Sedge Warbler

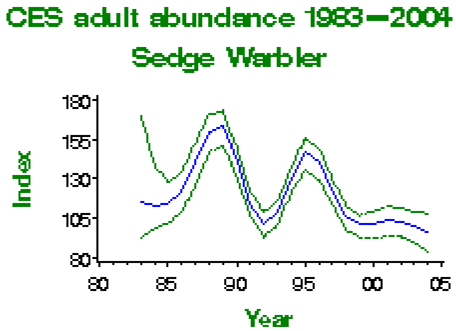
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	71	-24	-62	12		
	25	1978-2003	85	-2	-27	22		

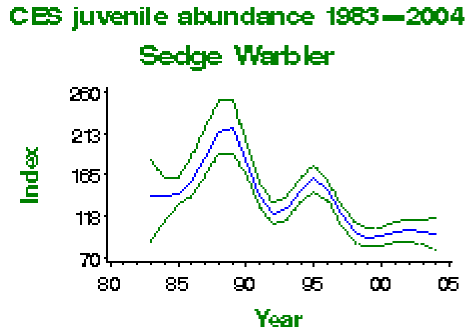
	10	1993-2003	163	25	4	54		
	5	1998-2003	182	12	-3	29		
CBC/BBS UK	36	1967-2003	103	-22	-55	10		
	25	1978-2003	127	1	-22	47		
	10	1993-2003	252	22	9	47		
	5	1998-2003	286	1	-8	13		
WBS waterways	28	1975-2003	43	-10	-39	42		
	25	1978-2003	44	-17	-39	19		
	10	1993-2003	51	7	-14	31		
	5	1998-2003	45	7	-8	26		
CES adults	19	1984-2003	63	-11	-38	12		
	10	1993-2003	77	-8	-21	6		
	5	1998-2003	74	-6	-14	2		
CES juveniles	19	1984-2003	60	-29	-45	-5	>25	
	10	1993-2003	74	-21	-39	-4		
	5	1998-2003	71	1	-15	22		
BBS UK	10	1994-2004	248	15	2	31		
BBS England	10	1994-2004	158	31	13	53		
BBS Scotland	10	1994-2004	47	-1	-29	36		

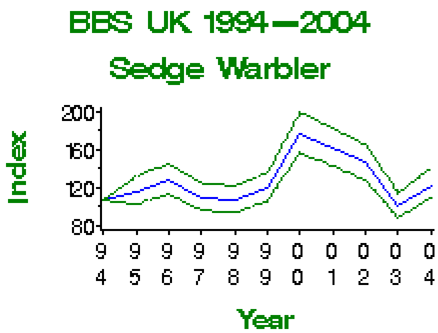
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

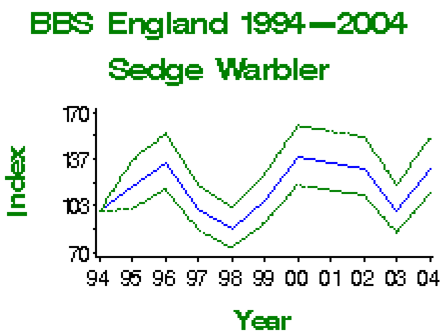


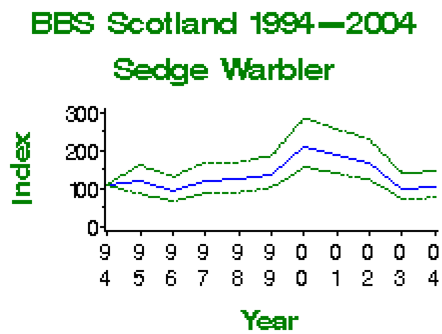








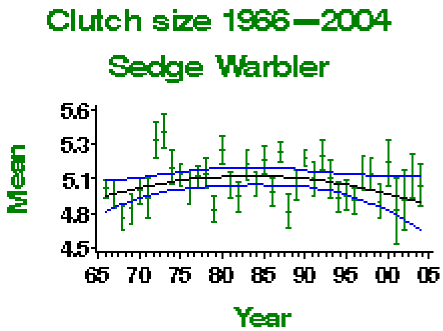


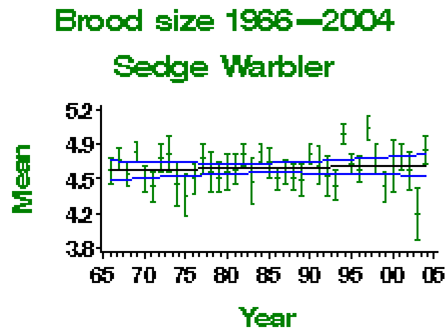


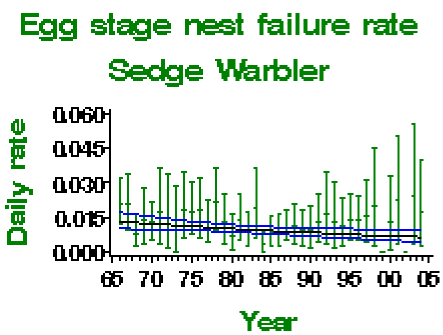
Productivity trends

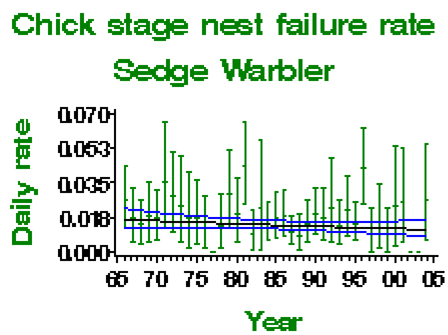
Table of productivity changes for Sedge Warbler

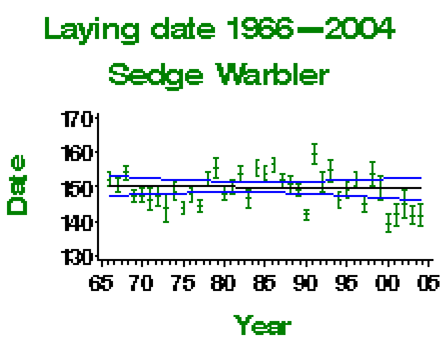
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	39	Curvilinear	4.95 eggs	4.88 eggs	-1.3%	
Brood size	35	1968-2003	61	None				
Daily failure rate (eggs)	35	1968-2003	46	Linear decline	1.28% nests/day	0.67% nests/day	-47.7%	
Daily failure rate (chicks)	35	1968-2003	52	None				
Laying date	35	1968-2003	52	None				
Juvenile to Adult ratio (CES)	19	1984-2003	68	Smoothed trend	218 Index value	103 Index value	-54% >50	
Juvenile to Adult ratio (CES)	10	1993-2003	83	Smoothed trend	122 Index value	103 Index value	-18%	
Juvenile to Adult ratio (CES)	5	1998-2003	81	Smoothed trend	97 Index value	103 Index value	3%	

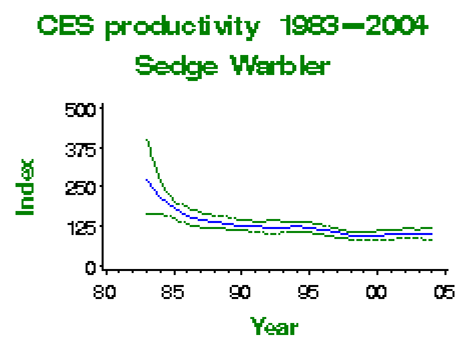












Additional information

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

REED WARBLER
Acrocephalus scirpaceus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: uncertain

UK population size

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

Status summary

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

Population changes

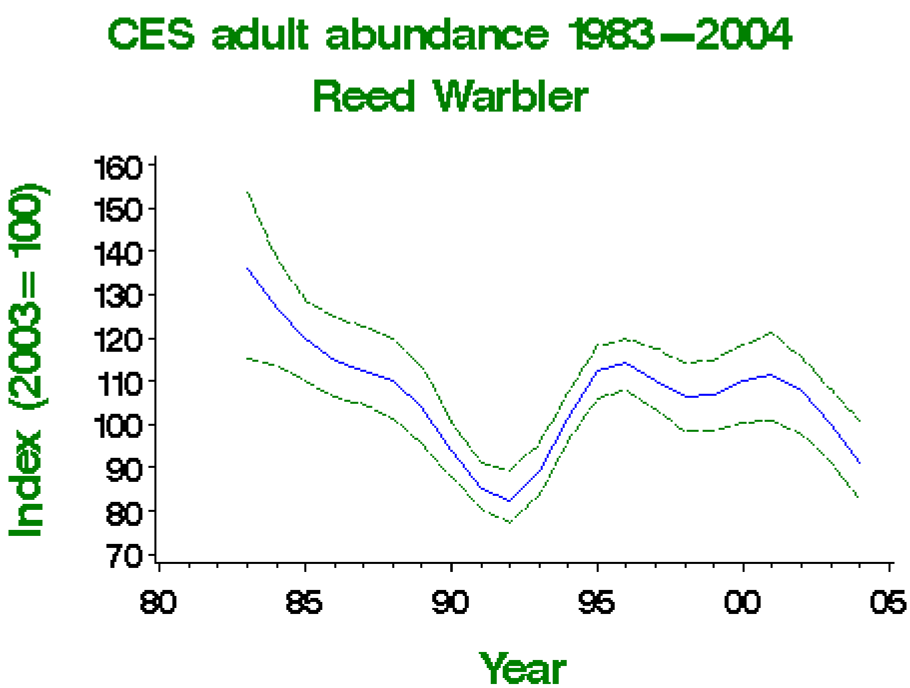


Table of population changes for Reed Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	43	71	8	207		
	25	1978-2003	54	62	4	190		

	10	1993-2003	99	42	19	71		
	5	1998-2003	113	5	-8	18		
CBC/BBS UK	36	1967-2003	45	96	31	315		
	25	1978-2003	56	88	35	170		
	10	1993-2003	103	49	21	80		
	5	1998-2003	118	8	-11	27		
WBS waterways	22	1981-2003	22	66	19	127		
	10	1993-2003	27	42	13	75		
	5	1998-2003	25	23	1	53		
CES adults	19	1984-2003	52	-21	-34	-4		
	10	1993-2003	62	12	-3	27		
	5	1998-2003	60	-6	-14	3		
CES juveniles	19	1984-2003	53	-8	-30	15		
	10	1993-2003	64	18	-3	41		
	5	1998-2003	61	1	-12	18		
BBS UK	10	1994-2004	92	48	22	78		
BBS England	10	1994-2004	89	41	17	71		

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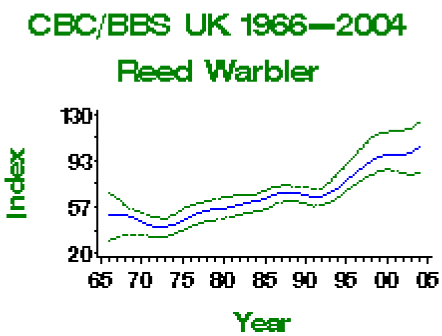
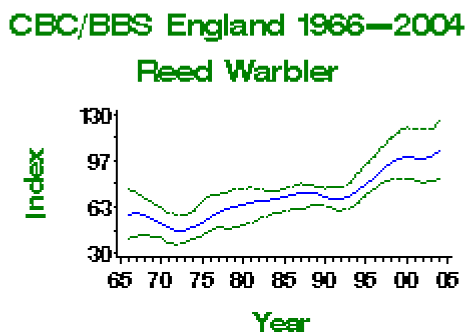
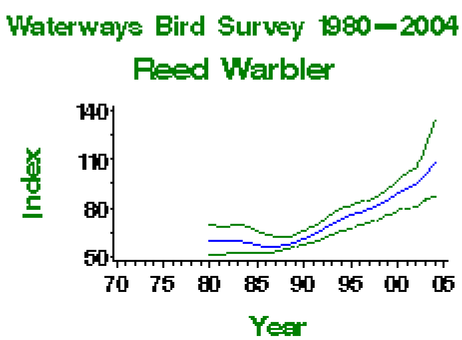
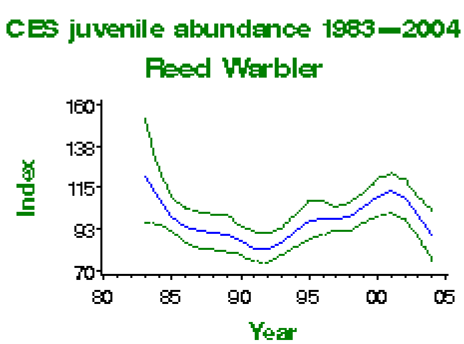
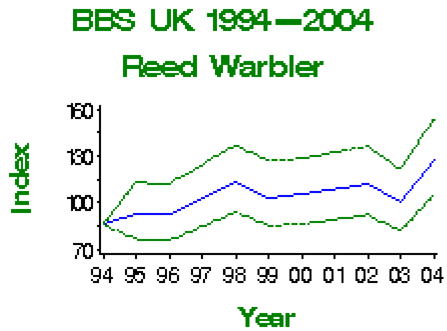
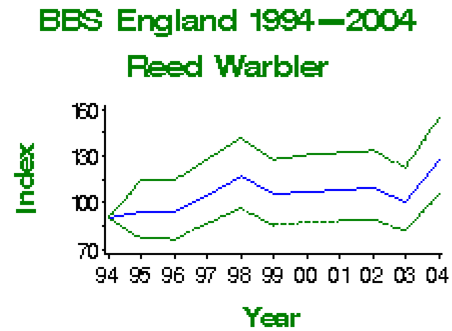








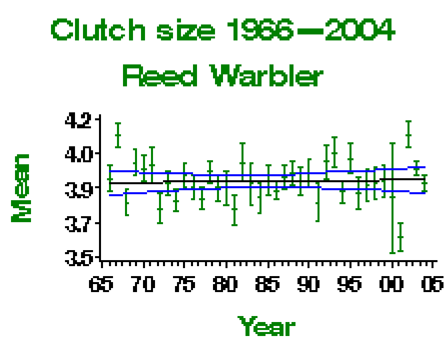


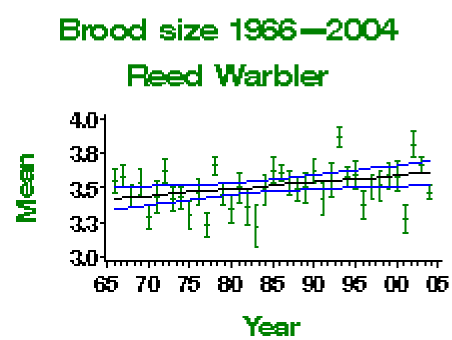


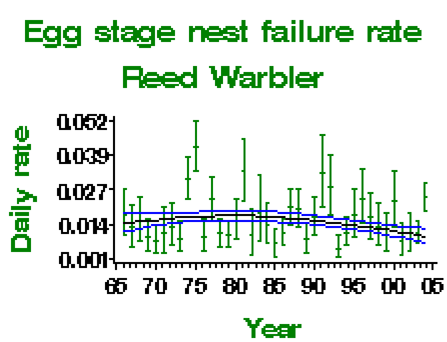
Productivity trends

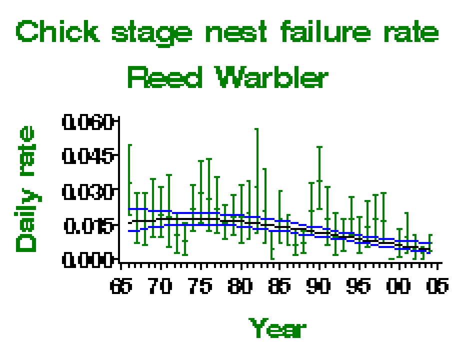
Table of productivity changes for Reed Warbler

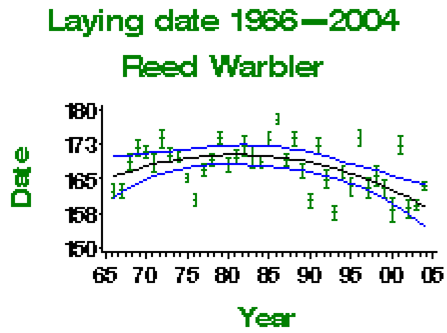
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	97	None				
Brood size	35	1968-2003	111	Linear increase	3.43 chicks	3.6 chicks	4.8%	
Daily failure rate (eggs)	35	1968-2003	124	Curvilinear	1.48% nests/day	0.99% nests/day	-33.1%	
Daily failure rate (chicks)	35	1968-2003	89	Curvilinear	1.67% nests/day	0.48% nests/day	-71.3%	
Laying date	35	1968-2003	141	Curvilinear	Jun 16	Jun 9	-7 days	
Juvenile to Adult ratio (CES)	19	1984-2003	59	Smoothed trend	82 Index value	103 Index value	22%	
Juvenile to Adult ratio (CES)	10	1993-2003	70	Smoothed trend	122 Index value	103 Index value	-18%	
Juvenile to Adult ratio (CES)	5	1998-2003	67	Smoothed trend	99 Index value	103 Index value	1%	

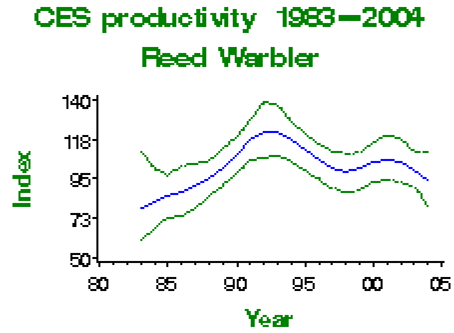












Additional information

- **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**).

Population changes

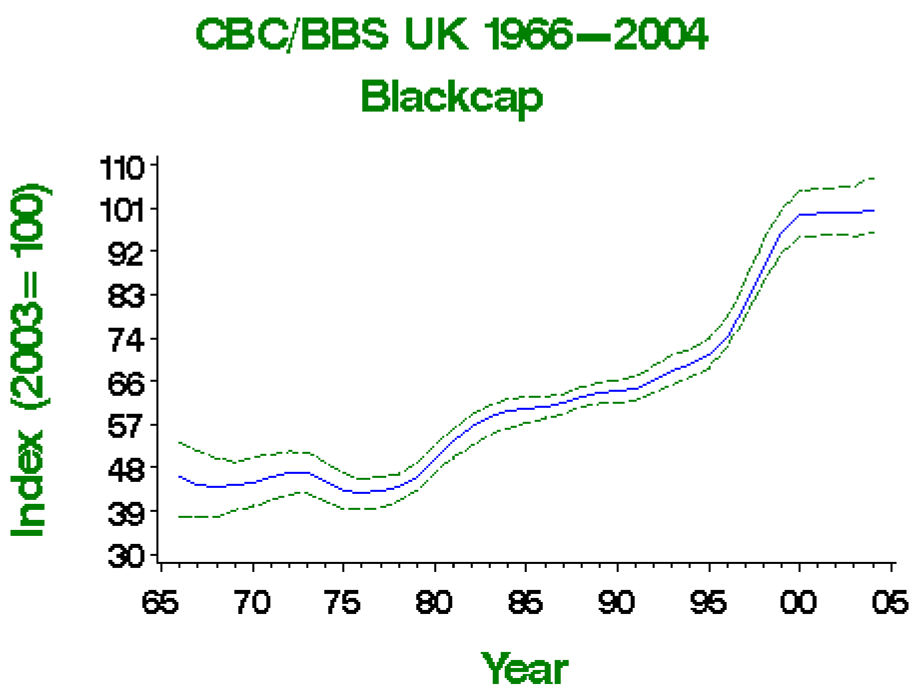
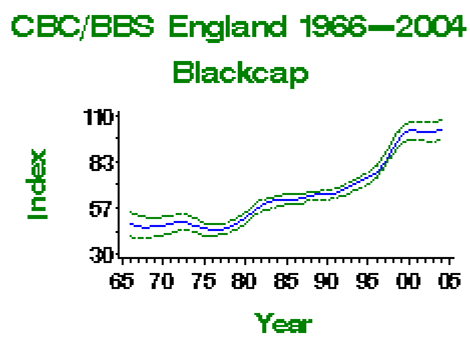


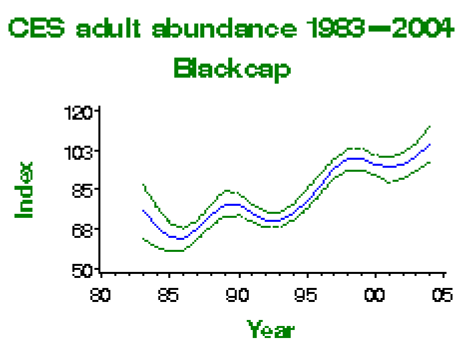
Table of population changes for Blackcap

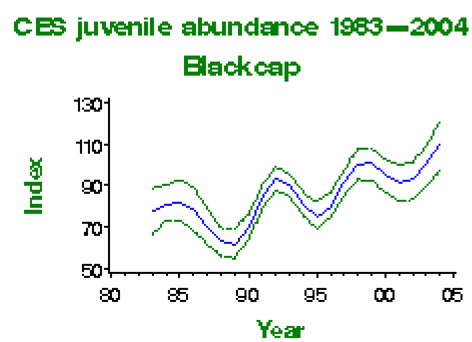
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	370	116	74	169		
	25	1978-2003	484	121	97	149		
	10	1993-2003	982	44	39	52		
	5	1998-2003	1192	10	6	13		
CBC/BBS UK	36	1967-2003	418	125	88	185		
	25	1978-2003	549	129	105	159		

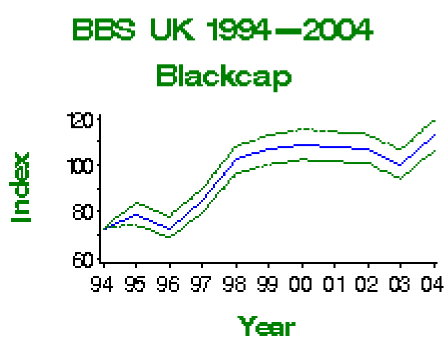
	10	1993-2003	1123	48	41	56		
	5	1998-2003	1381	12	7	15		
CES adults	19	1984-2003	85	46	20	76		
	10	1993-2003	99	40	27	53		
	5	1998-2003	98	1	-7	9		
CES juveniles	19	1984-2003	86	23	-2	51		
	10	1993-2003	102	11	-6	29		
	5	1998-2003	100	-1	-10	12		
BBS UK	10	1994-2004	1123	54	45	63		
BBS England	10	1994-2004	975	50	41	59		
BBS Scotland	10	1994-2004	31	77	13	177		
BBS Wales	10	1994-2004	95	62	31	100		

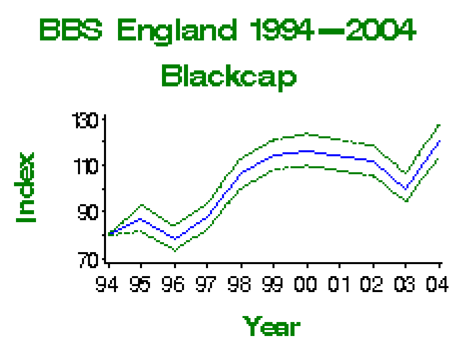
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

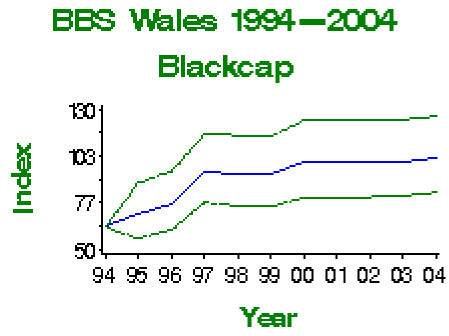








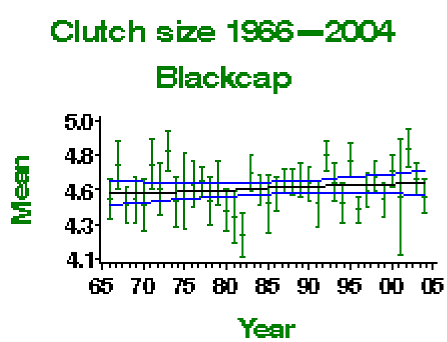


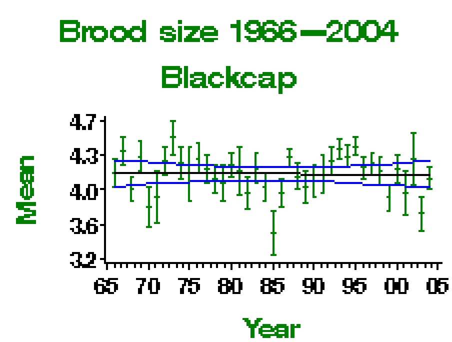


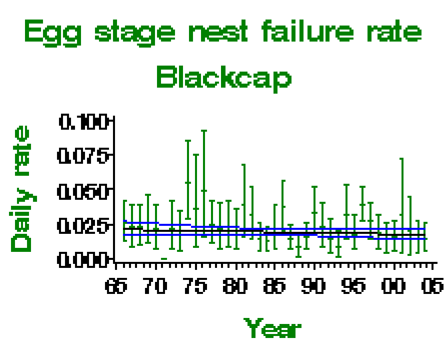
Productivity trends

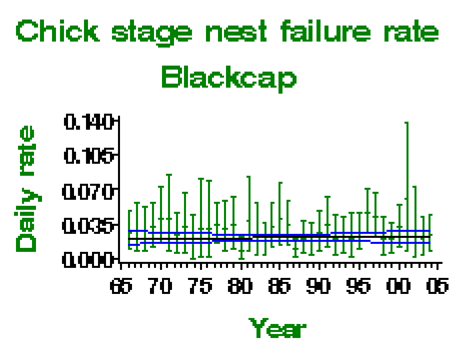
Table of productivity changes for Blackcap

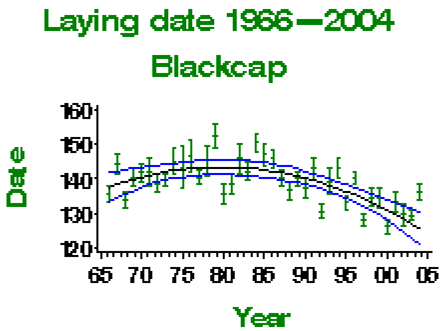
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	34	None				
Brood size	35	1968-2003	41	None				
Daily failure rate (eggs)	35	1968-2003	44	None				
Daily failure rate (chicks)	35	1968-2003	34	None				
Laying date	35	1968-2003	35	Curvilinear	May 19	May 7	-12 days	
Juvenile to Adult ratio (CES)	19	1984-2003	93	Smoothed trend	143 Index value	103 Index value	-30% >25	
Juvenile to Adult ratio (CES)	10	1993-2003	108	Smoothed trend	141 Index value	103 Index value	-29% >25	
Juvenile to Adult ratio (CES)	5	1998-2003	107	Smoothed trend	100 Index value	103 Index value	0%	

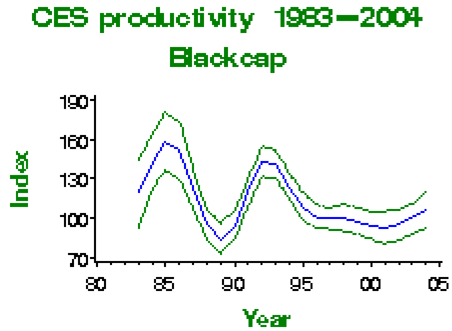












Additional information

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

GARDEN WARBLER
Sylvia borin

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: shallow decline

UK population size

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

Status summary

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

Population changes

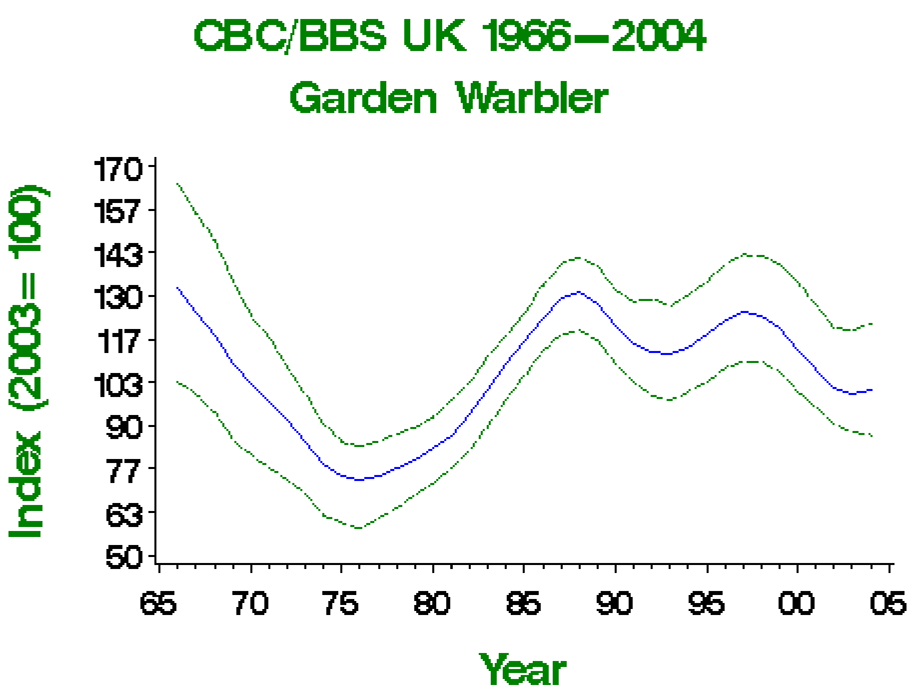
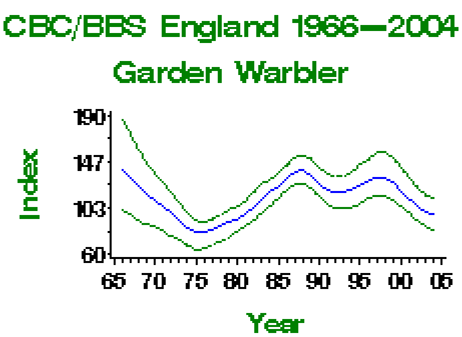


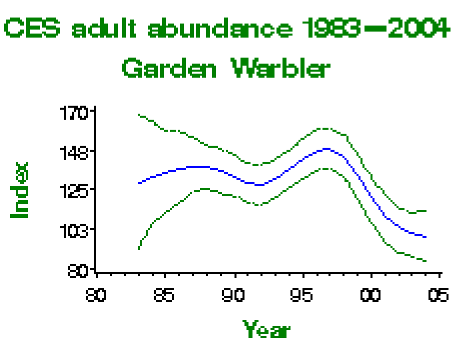
Table of population changes for Garden Warbler

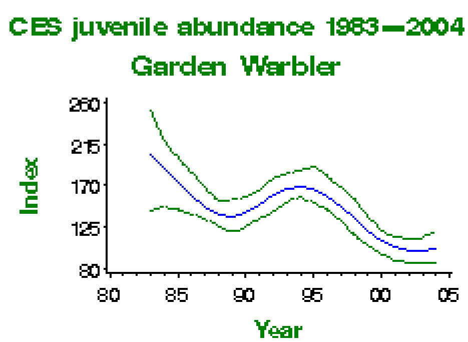
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	147	-24	-51	17		
	25	1978-2003	186	15	-9	60		
	10	1993-2003	341	-15	-25	-6		
	5	1998-2003	375	-24	-30	-16		
CBC/BBS UK	36	1967-2003	173	-20	-43	22		

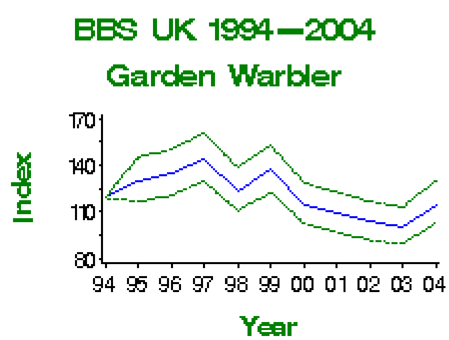
	25	1978-2003	219	30	6	85		
	10	1993-2003	411	-11	-18	0		
	5	1998-2003	457	-19	-26	-11		
CES adults	19	1984-2003	64	-24	-48	6		
	10	1993-2003	73	-24	-36	-11		
	5	1998-2003	67	-31	-40	-23	>25	
CES juveniles	19	1984-2003	63	-47	-60	-25	>25	
	10	1993-2003	71	-40	-51	-28	>25	
	5	1998-2003	65	-25	-40	-8	>25	
BBS UK	10	1994-2004	373	-4	-14	9		
BBS England	10	1994-2004	303	-13	-24	0		
BBS Wales	10	1994-2004	52	-24	-44	2		

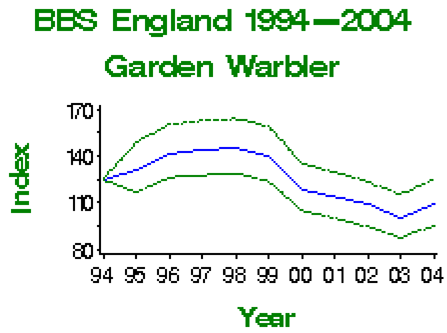
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

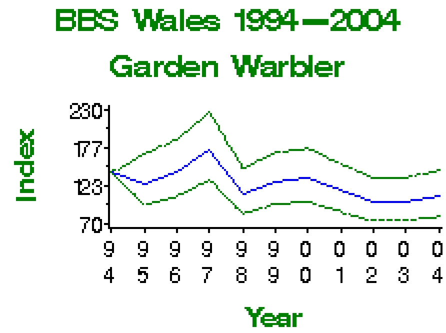








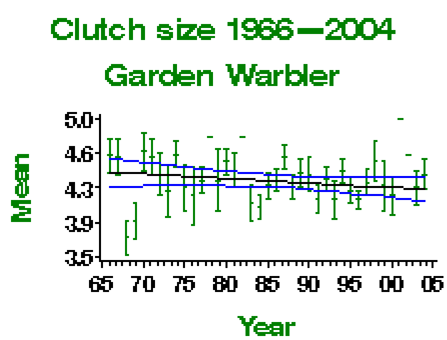


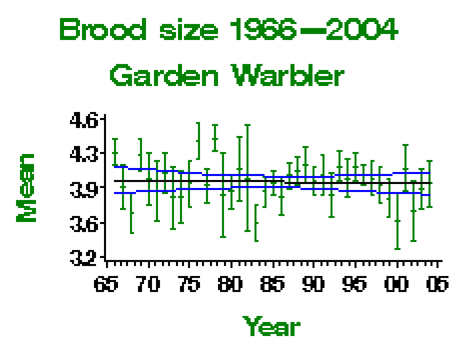


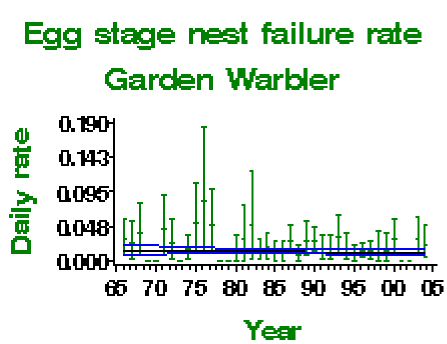
Productivity trends

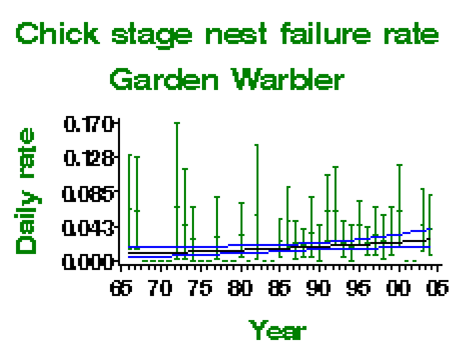
Table of productivity changes for Garden Warbler

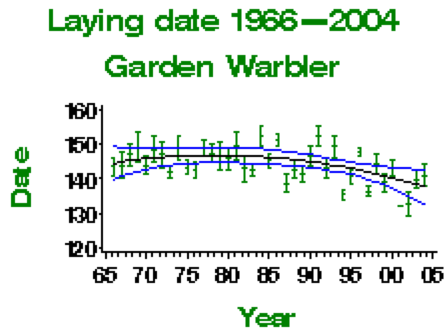
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	16	None				Small sample
Brood size	35	1968-2003	25	None				Small sample
Daily failure rate (eggs)	35	1968-2003	22	None				Small sample
Daily failure rate (chicks)	35	1968-2003	19	Linear increase	0.99% nests/day	2.55% nests/day	157.6%	Small sample
Laying date	35	1968-2003	21	Curvilinear	May 25	May 18	-7 days	Small sample
Juvenile to Adult ratio (CES)	19	1984-2003	77	Smoothed trend	155 Index value	103 Index value	-35%	
Juvenile to Adult ratio (CES)	10	1993-2003	86	Smoothed trend	107 Index value	103 Index value	-7%	
Juvenile to Adult ratio (CES)	5	1998-2003	80	Smoothed trend	81 Index value	103 Index value	24%	

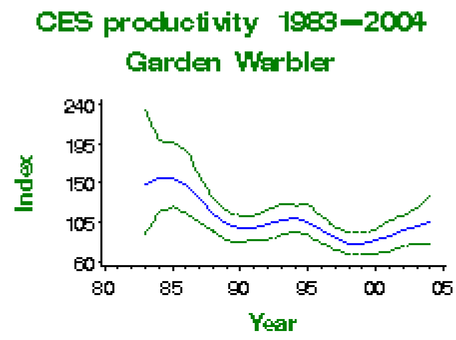












Additional information

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

LESSER WHITETHROAT
Sylvia curruca

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: 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. These changes were statistically significant, and large enough over the relevant periods to trigger BTO alerts. The species would now meet the amber-list criterion of moderate decline. Wide fluctuations in productivity have been recorded by CES ringers, and may be influencing population change, but pressures during migration and in winter are the most likely causes of decline (**Fuller *et al.* 2005**).

Population changes

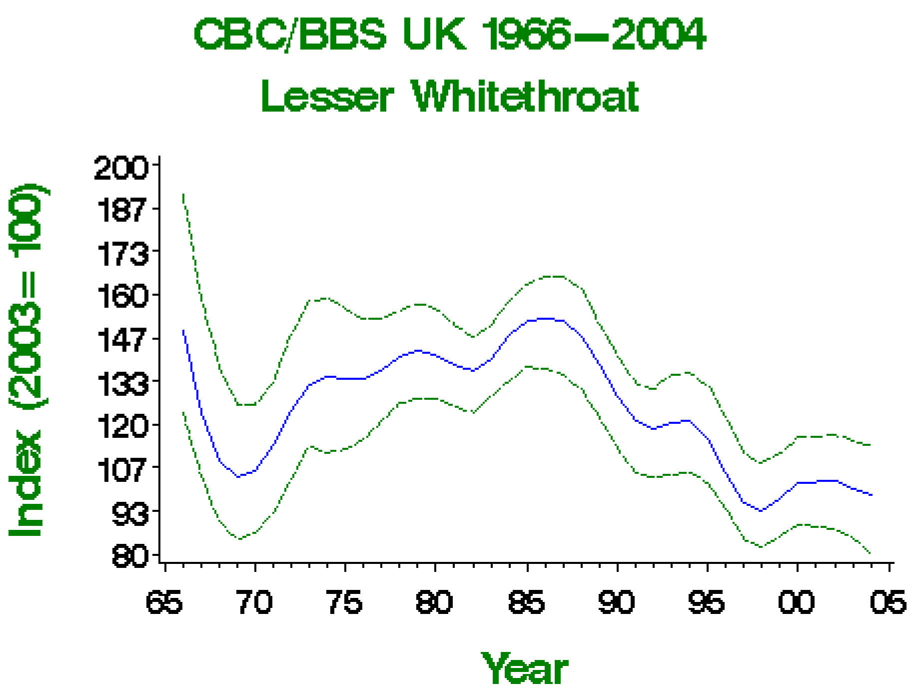


Table of population changes for Lesser Whitethroat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	98	-24	-47	1		
	25	1978-2003	123	-34	-50	-15	>25	
	10	1993-2003	215	-19	-31	-6		
	5	1998-2003	231	8	-8	20		

CBC/BBS UK	36	1967-2003	103	-19	-47	12		
	25	1978-2003	129	-29	-45	-7	>25	
	10	1993-2003	225	-17	-29	-4		
	5	1998-2003	243	7	-6	14		
CES adults	19	1984-2003	41	-52	-75	-32	>50	
	10	1993-2003	43	-48	-60	-37	>25	
	5	1998-2003	34	7	-11	29		
CES juveniles	19	1984-2003	44	-43	-73	-6	>25	
	10	1993-2003	47	-63	-73	-49	>50	
	5	1998-2003	41	16	-6	43		
BBS UK	10	1994-2004	209	-30	-41	-18	(>25)	
BBS England	10	1994-2004	199	-32	-42	-20	(>25)	

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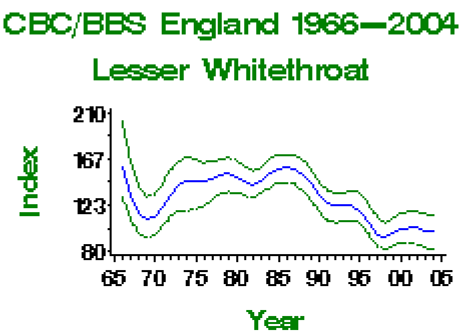
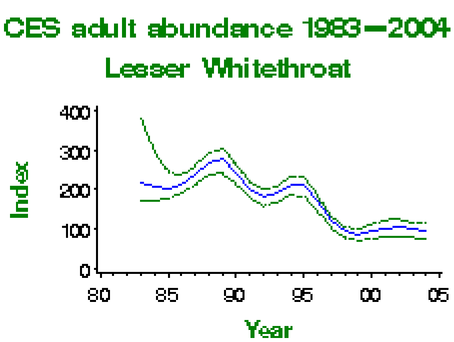
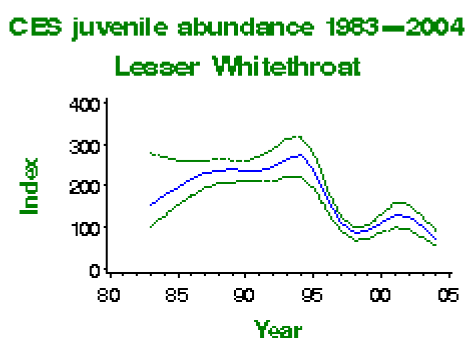
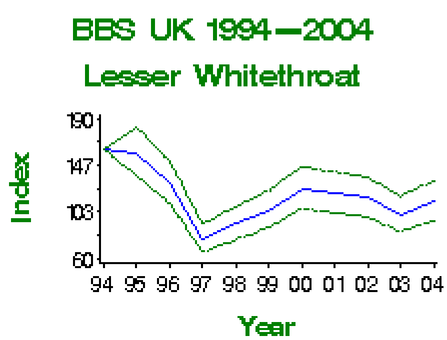
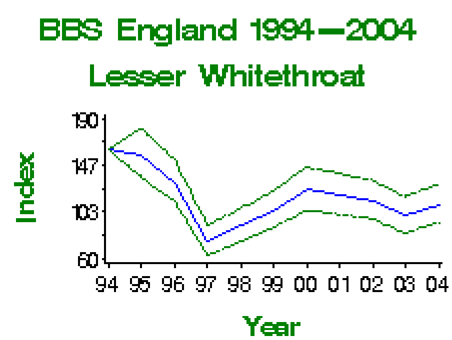










Productivity trends

Table of productivity changes for Lesser Whitethroat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment

Juvenile to Adult ratio (CES)	19	1984-2003	55	Smoothed trend	82 Index value	103 Index value	21%	
Juvenile to Adult ratio (CES)	10	1993-2003	60	Smoothed trend	126 Index value	103 Index value	-21%	
Juvenile to Adult ratio (CES)	5	1998-2003	51	Smoothed trend	80 Index value	103 Index value	26%	

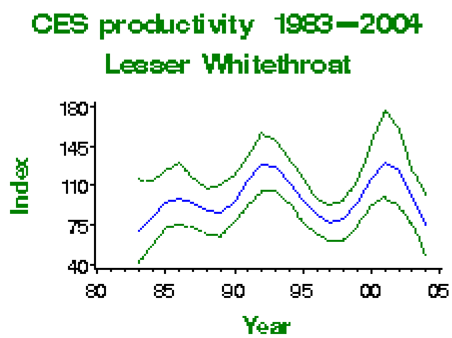
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



Additional information

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

WHITETHROAT
Sylvia communis

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: rapid decline, followed by shallow increase

UK population size

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

Status summary

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

Population changes

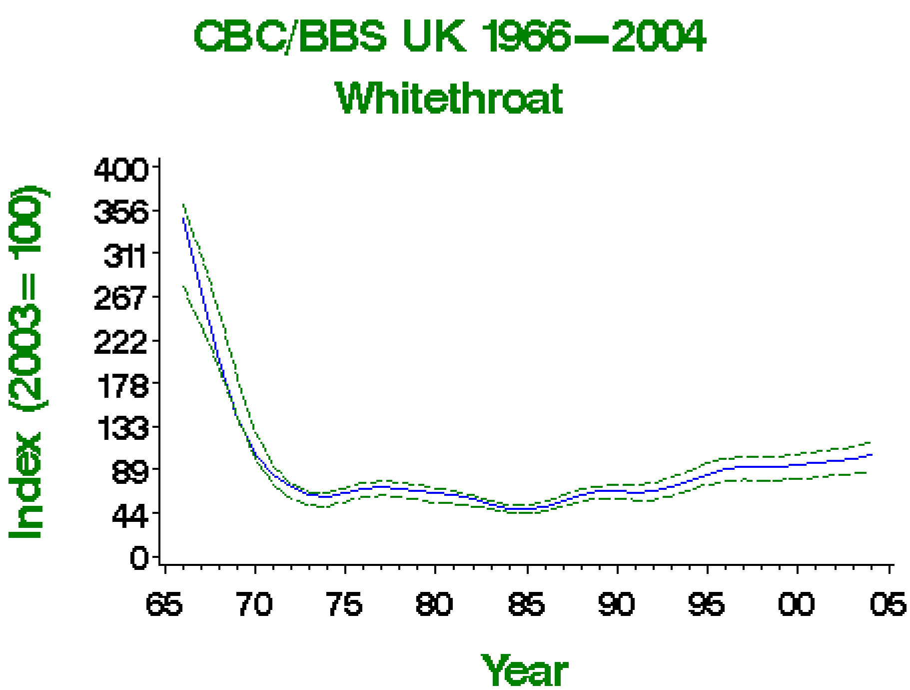
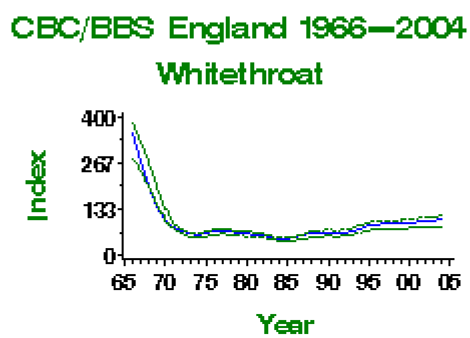


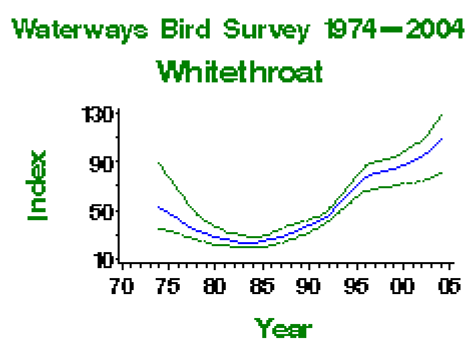
Table of population changes for Whitethroat

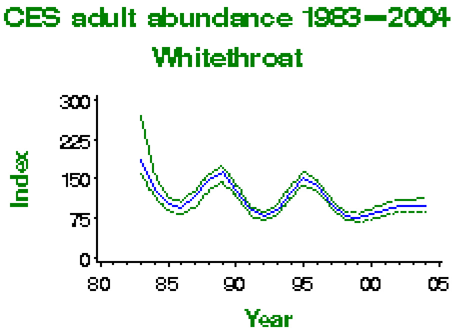
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

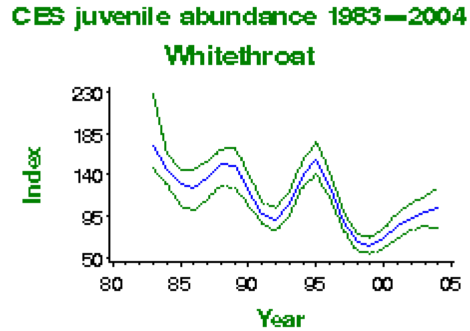
CBC/BBS England	36	1967-2003	317	-63	-75	-51	>50	
	25	1978-2003	408	48	15	82		
	10	1993-2003	867	41	30	49		
	5	1998-2003	1014	11	7	15		
CBC/BBS UK	36	1967-2003	363	-63	-75	-52	>50	
	25	1978-2003	468	43	14	82		
	10	1993-2003	996	41	31	50		
	5	1998-2003	1171	10	5	16		
WBS waterways	28	1975-2003	40	110	-2	269		
	25	1978-2003	42	194	52	384		
	10	1993-2003	57	84	40	118		
	5	1998-2003	52	22	0	38		
CES adults	19	1984-2003	58	-24	-44	-6		
	10	1993-2003	71	10	-9	32		
	5	1998-2003	65	24	11	38		
CES juveniles	19	1984-2003	63	-31	-53	-6	>25	
	10	1993-2003	76	-7	-27	15		
	5	1998-2003	72	52	26	80		
BBS UK	10	1994-2004	1024	39	31	48		
BBS England	10	1994-2004	887	39	30	48		
BBS Scotland	10	1994-2004	57	63	19	123		
BBS Wales	10	1994-2004	65	7	-16	34		

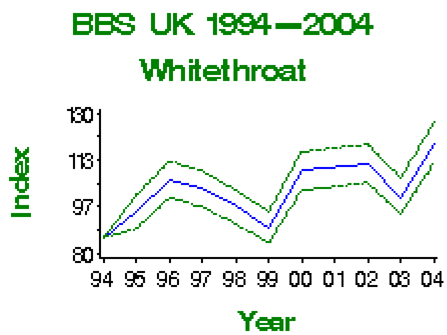
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

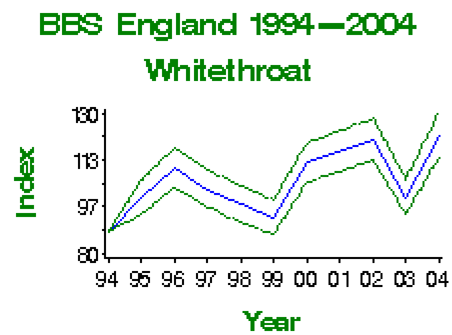


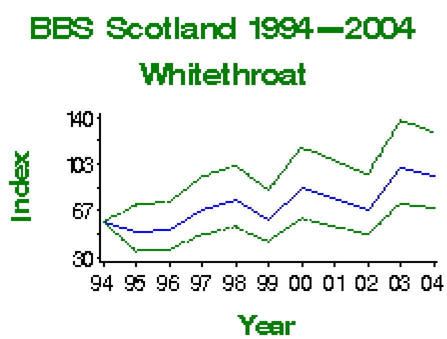


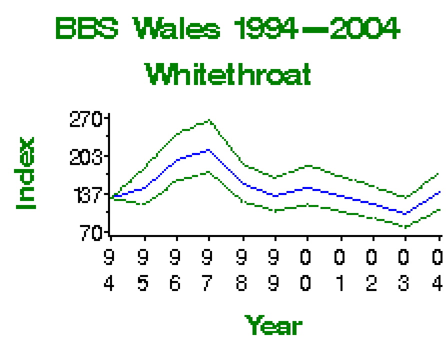








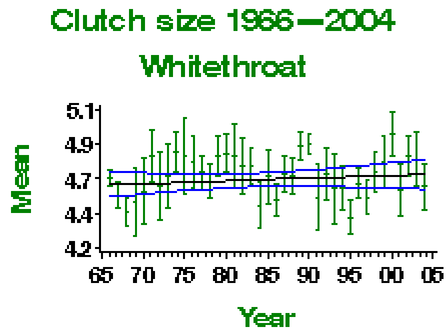


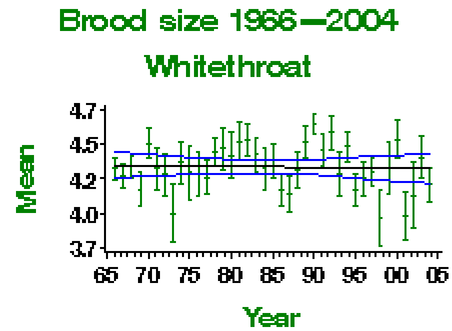


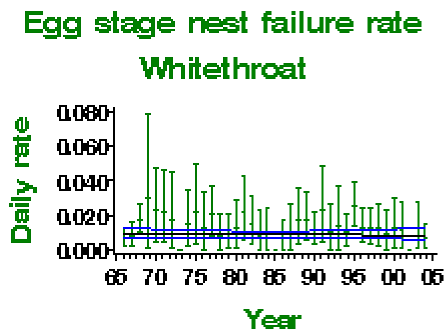
Productivity trends

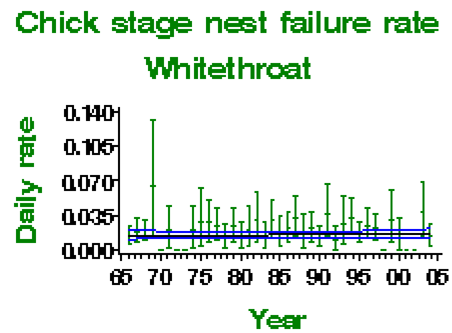
Table of productivity changes for Whitethroat

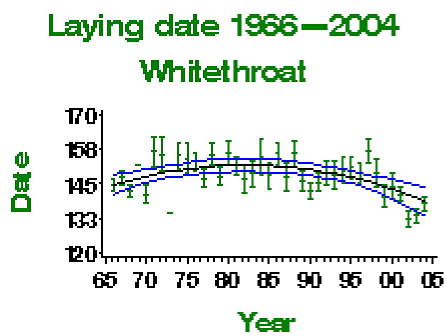
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	25	None				Small sample
Brood size	35	1968-2003	59	None				
Daily failure rate (eggs)	35	1968-2003	36	None				
Daily failure rate (chicks)	35	1968-2003	44	None				
Laying date	35	1968-2003	17	Curvilinear	May 26	May 20	-6 days	Small sample
Juvenile to Adult ratio (CES)	19	1984-2003	73	Smoothed trend	74 Index value	103 Index value	35%	
Juvenile to Adult ratio (CES)	10	1993-2003	88	Smoothed trend	106 Index value	103 Index value	-6%	
Juvenile to Adult ratio (CES)	5	1998-2003	83	Smoothed trend	86 Index value	103 Index value	17%	

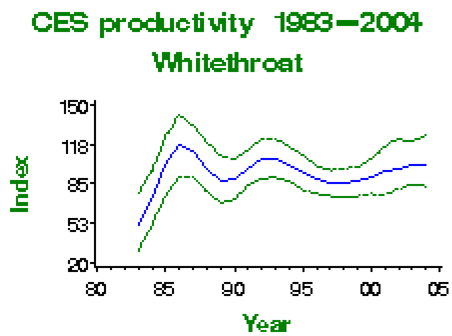












Additional information

- **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)

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 the subject of a special BTO survey in 1984–85 (**Bibby 1989**) but were not monitored annually until BBS began. Little change was apparent at the few CBC plots on which the species occurred (**Crick *et al.* 1998**). The species' range varied little between the two breeding atlas periods (**Gibbons *et al.* 1993**), but has subsequently shown further retreat from southeast England. BBS shows a rapid and significant decline since 1994, and accordingly the species has been moved from the green to the amber list. Nest success has apparently improved considerably at the egg stage, although nest record samples are small. With declines evident across north and west Europe, this previously 'secure' species is now provisionally categorised as 'declining' (**BirdLife International 2004**).

Population changes

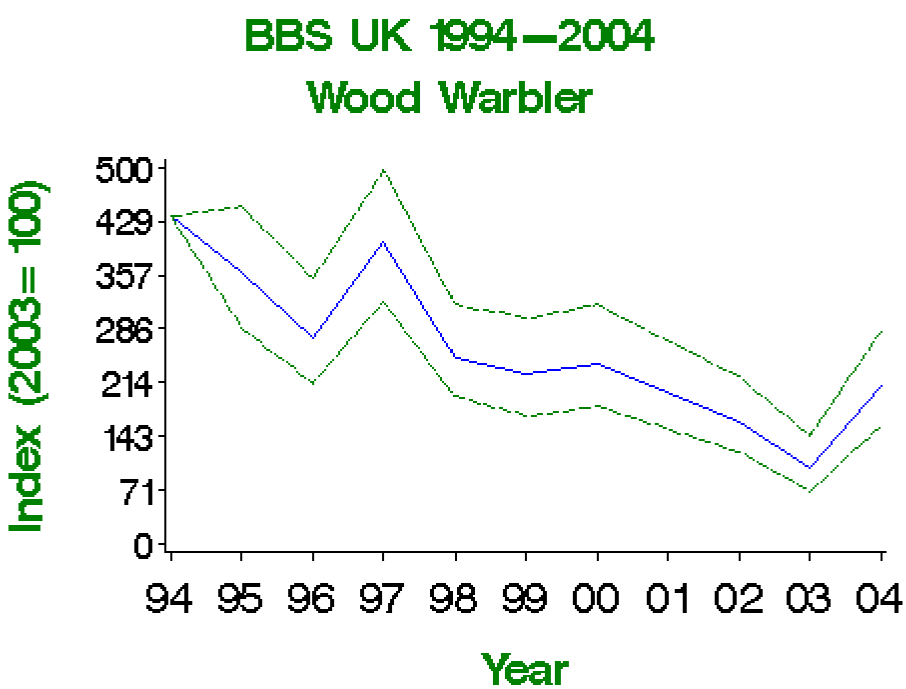


Table of population changes for Wood Warbler

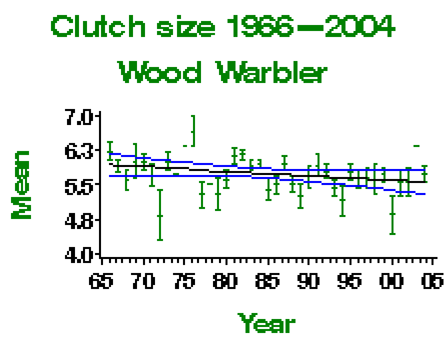
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	53	-52	-64	-35	(>50)	

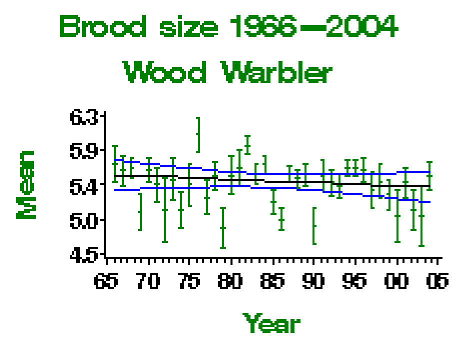
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

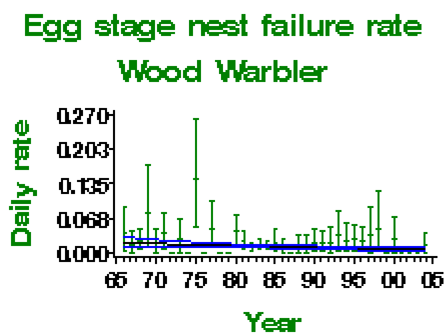
Productivity trends

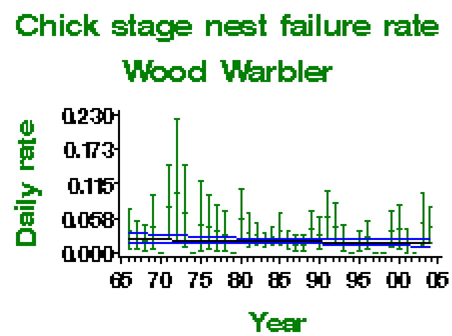
Table of productivity changes for Wood Warbler

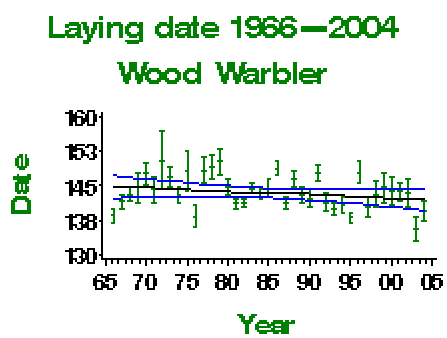
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	17	None				Small sample
Brood size	35	1968-2003	37	None				
Daily failure rate (eggs)	35	1968-2003	21	Linear decline	2.01% nests/day	0.75% nests/day	-62.7%	Small sample
Daily failure rate (chicks)	35	1968-2003	27	None				Small sample
Laying date	35	1968-2003	32	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

CHIFFCHAFF
Phylloscopus collybita

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: shallow increase

UK population size

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

Status summary

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

Population changes

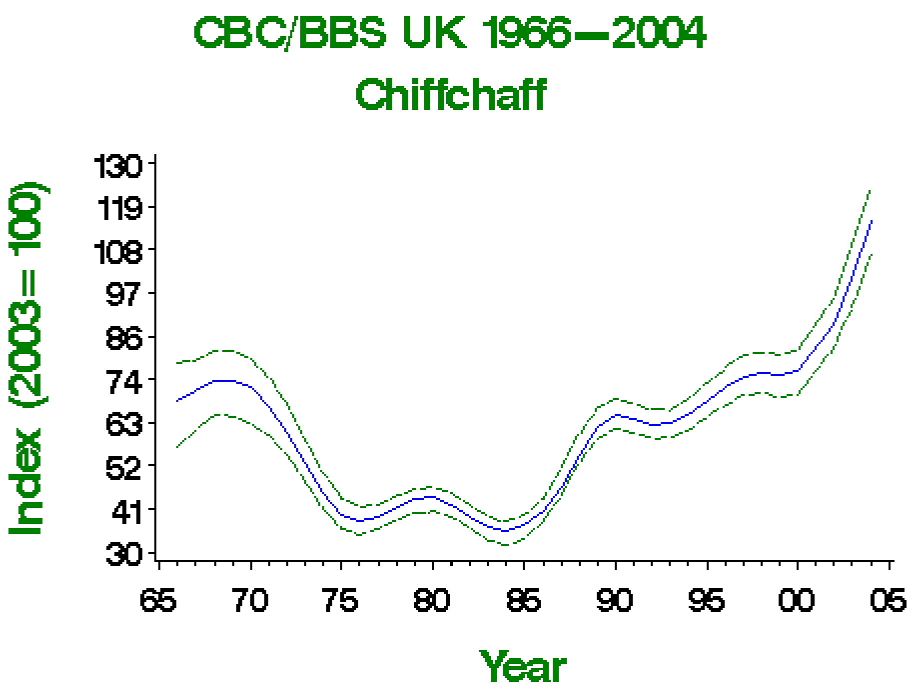
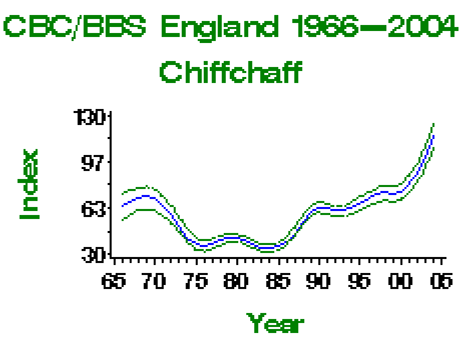


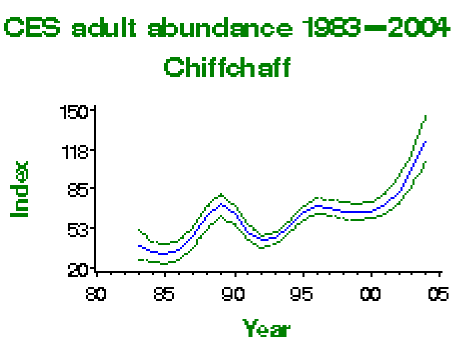
Table of population changes for Chiffchaff

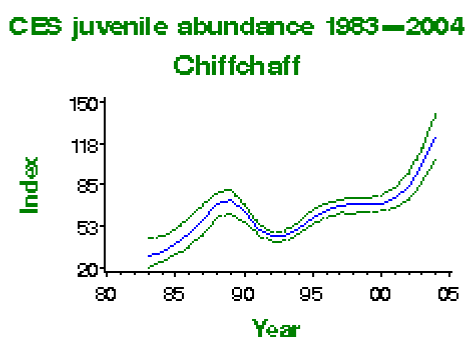
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	322	47	23	94		
	25	1978-2003	420	152	114	202		
	10	1993-2003	876	62	55	73		
	5	1998-2003	1059	34	31	40		

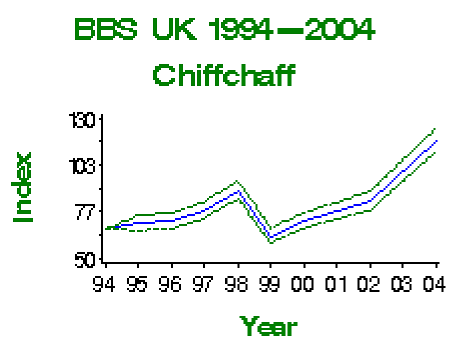
CBC/BBS UK	36	1967-2003	373	40	16	90		
	25	1978-2003	490	139	110	186		
	10	1993-2003	1024	59	51	69		
	5	1998-2003	1254	31	26	37		
CES adults	19	1984-2003	64	201	114	392		
	10	1993-2003	77	125	80	192		
	5	1998-2003	77	50	27	86		
CES juveniles	19	1984-2003	75	205	102	374		
	10	1993-2003	92	124	87	171		
	5	1998-2003	91	44	21	72		
BBS UK	10	1994-2004	1040	76	66	86		
BBS England	10	1994-2004	880	77	67	87		
BBS Wales	10	1994-2004	107	66	41	95		

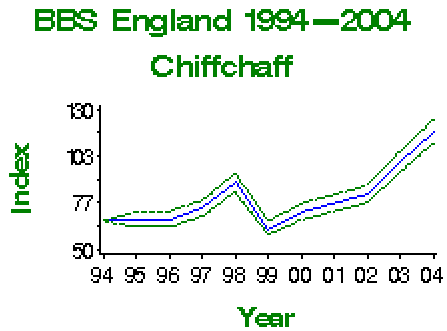
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

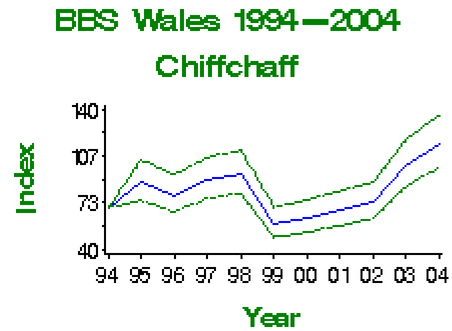








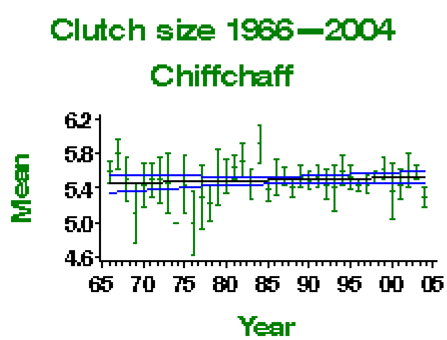


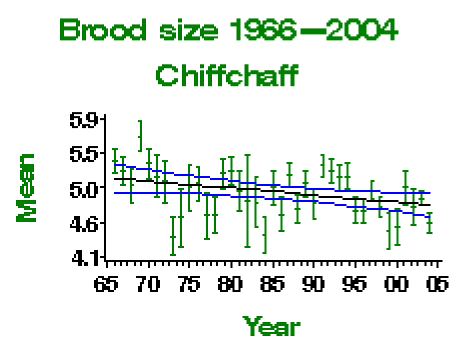


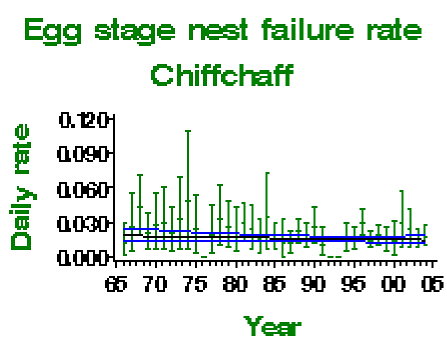
Productivity trends

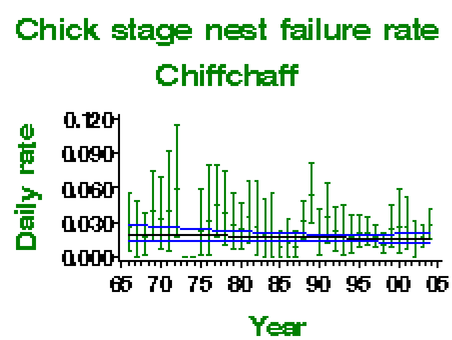
Table of productivity changes for Chiffchaff

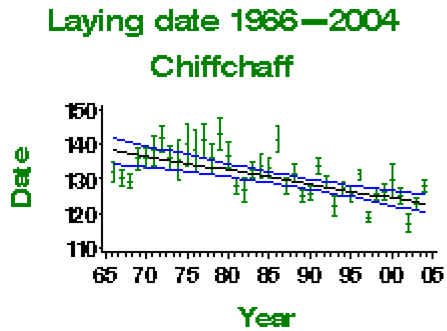
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	26	None				Small sample
Brood size	35	1968-2003	29	Linear decline	5.11 chicks	4.79 chicks	-6.2%	Small sample
Daily failure rate (eggs)	35	1968-2003	33	None				
Daily failure rate (chicks)	35	1968-2003	29	None				Small sample
Laying date	35	1968-2003	39	Linear decline	May 17	May 3	-14 days	
Juvenile to Adult ratio (CES)	19	1984-2003	84	Smoothed trend	124 Index value	103 Index value	-19%	
Juvenile to Adult ratio (CES)	10	1993-2003	99	Smoothed trend	161 Index value	103 Index value	-38% >25	
Juvenile to Adult ratio (CES)	5	1998-2003	98	Smoothed trend	131 Index value	103 Index value	-24%	

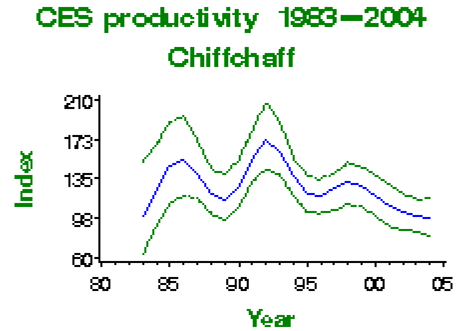












Additional information

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

WILLOW WARBLER
Phylloscopus trochilus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: rapid decline

UK population size

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

Status summary

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

Population changes

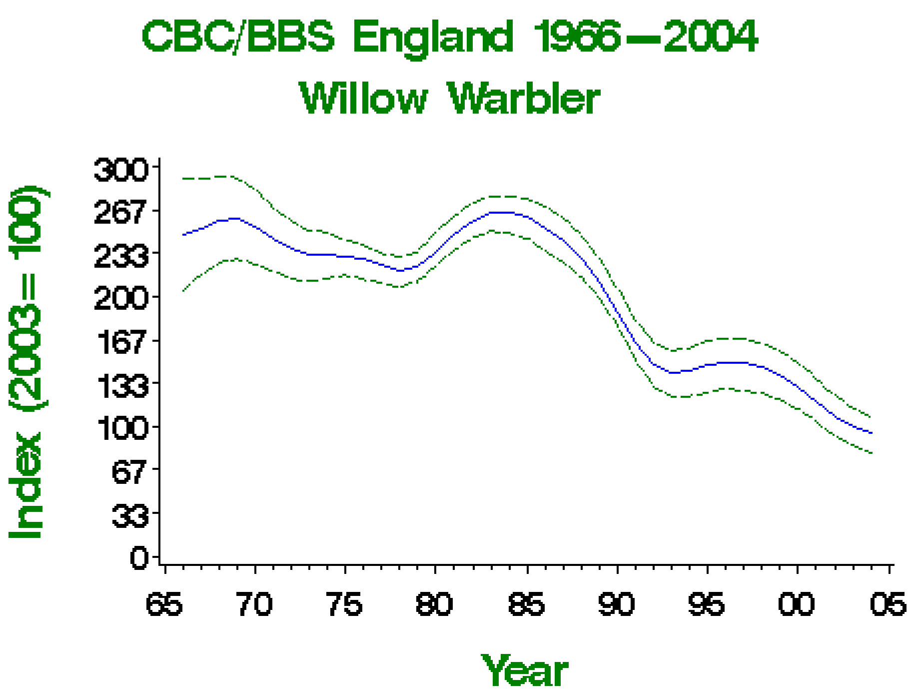


Table of population changes for Willow Warbler

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

CBC/BBS England	36	1967-2003	357	-60	-73	-45	>50	
	25	1978-2003	448	-55	-63	-44	>50	
	10	1993-2003	862	-29	-35	-24	>25	
	5	1998-2003	921	-31	-34	-28	>25	
CES adults	19	1984-2003	88	-61	-70	-52	>50	
	10	1993-2003	98	-44	-50	-37	>25	
	5	1998-2003	90	-47	-52	-43	>25	
CES juveniles	19	1984-2003	89	-67	-77	-58	>50	
	10	1993-2003	103	-43	-56	-29	>25	
	5	1998-2003	98	-37	-50	-21	>25	
BBS UK	10	1994-2004	1205	0	-4	5		
BBS England	10	1994-2004	828	-31	-35	-27	(>25)	
BBS Scotland	10	1994-2004	173	43	26	63		
BBS Wales	10	1994-2004	141	-23	-32	-12		
BBS N.Ireland	10	1994-2004	60	60	18	118		

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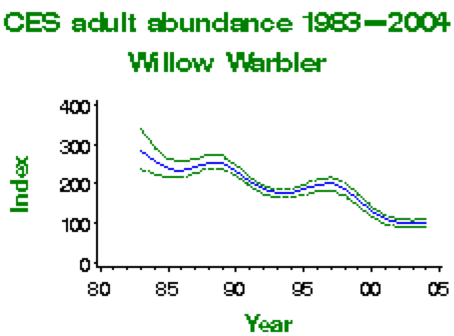
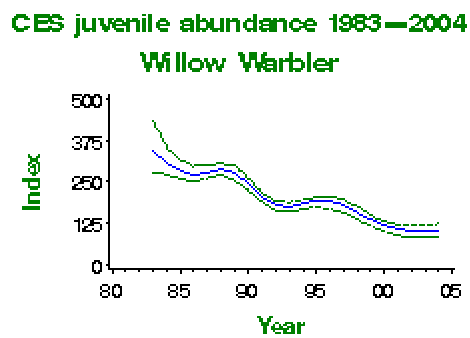
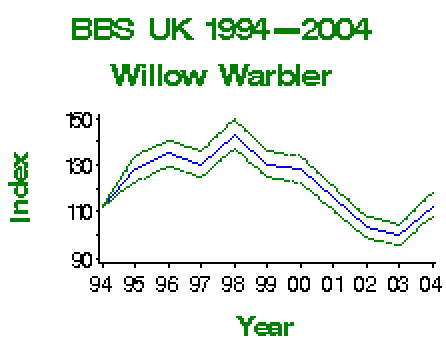
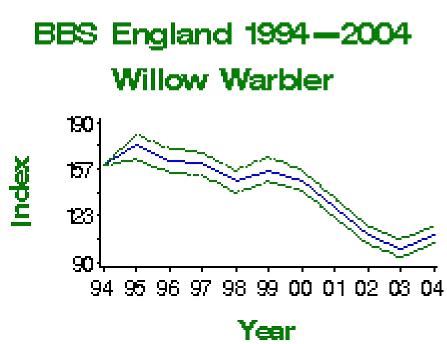
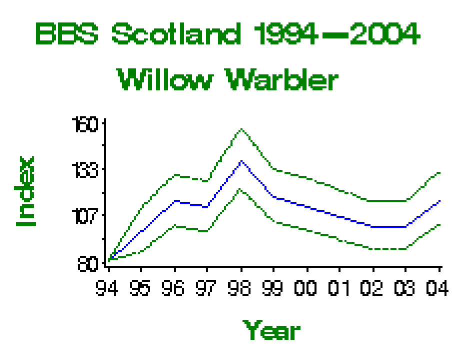
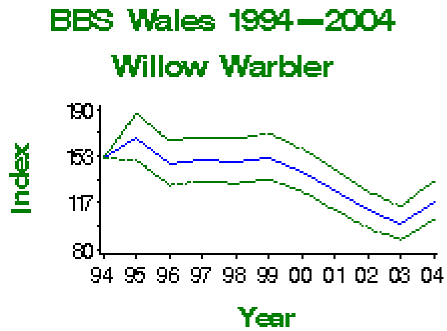


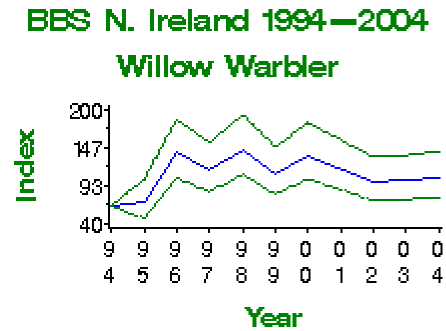








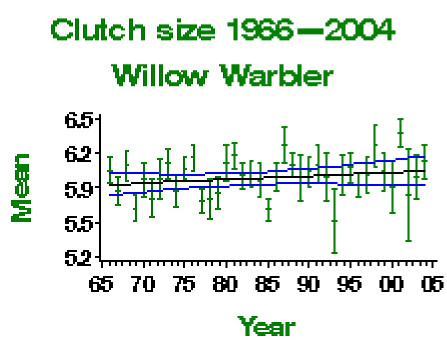


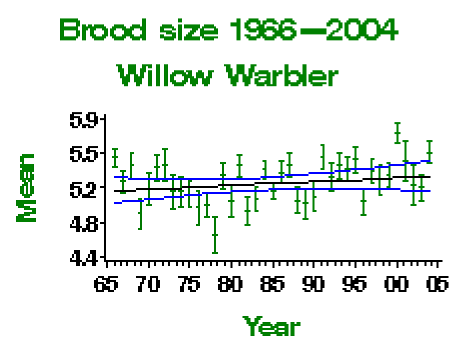


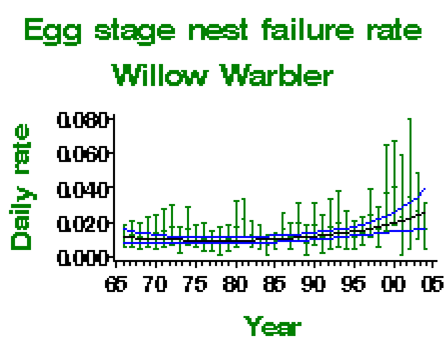
Productivity trends

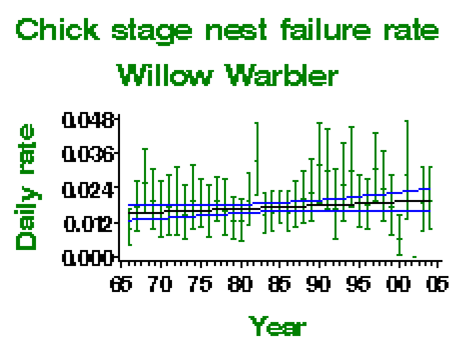
Table of productivity changes for Willow Warbler

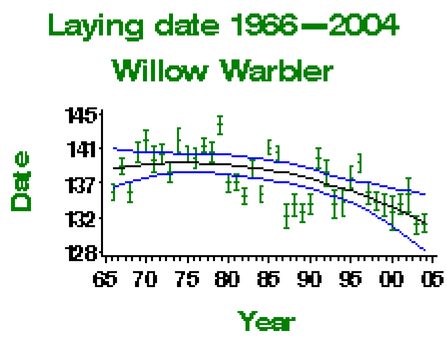
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	50	None				
Brood size	35	1968-2003	134	None				
Daily failure rate (eggs)	35	1968-2003	69	Curvilinear	1.11% nests/day	2.39% nests/day	115.3%	
Daily failure rate (chicks)	35	1968-2003	123	None				
Laying date	35	1968-2003	86	Curvilinear	May 19	May 12	-7 days	
Juvenile to Adult ratio (CES)	19	1984-2003	96	Smoothed trend	133 Index value	103 Index value	-25%	
Juvenile to Adult ratio (CES)	10	1993-2003	109	Smoothed trend	102 Index value	103 Index value	-2%	
Juvenile to Adult ratio (CES)	5	1998-2003	104	Smoothed trend	91 Index value	103 Index value	10%	

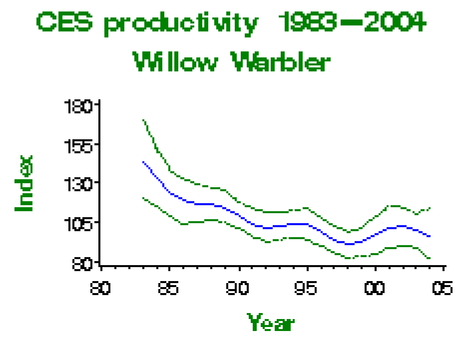












Additional information

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

GOLDCREST
Regulus regulus

- Population changes
- Productivity trends
- Additional information

Conservation listings

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

Long-term trend

England: fluctuating, with no long-term trend

UK population size

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

Status summary

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

Population changes

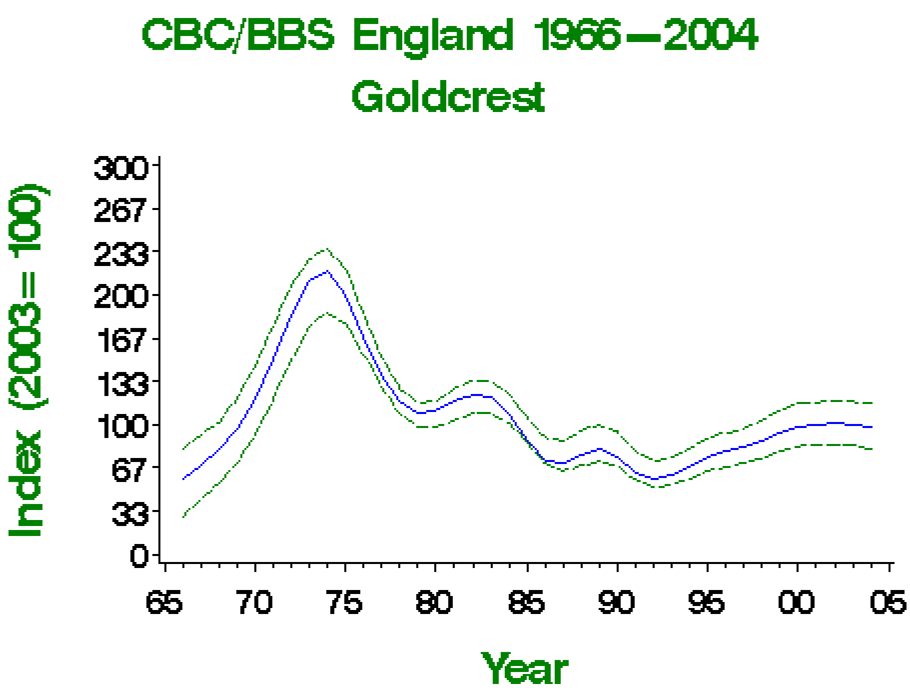


Table of population changes for Goldcrest

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

CBC/BBS England	36	1967-2003	170	46	-8	177		
	25	1978-2003	211	-16	-35	6		
	10	1993-2003	412	63	39	82		
	5	1998-2003	510	15	5	25		
BBS UK	10	1994-2004	582	60	47	74		
BBS England	10	1994-2004	404	49	34	66		
BBS Scotland	10	1994-2004	71	149	91	226		
BBS Wales	10	1994-2004	72	-27	-42	-9	(>25)	
BBS N.Ireland	10	1994-2004	32	30	-28	136		

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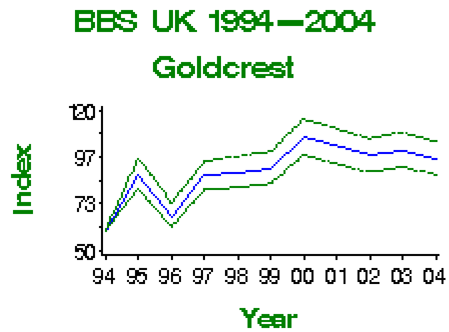

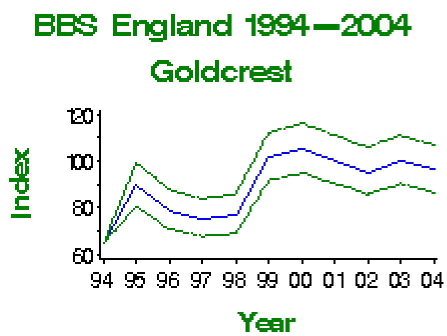

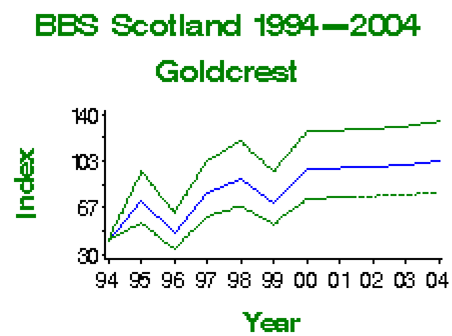

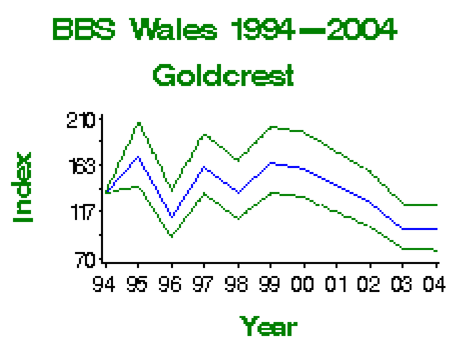

Productivity trends

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)

Long-term trend

UK, England: rapid decline

UK population size

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

Status summary

Spotted Flycatchers have declined rapidly and consistently since the 1960s and the CBC/BBS decline is also reflected in the trend revealed by CES. Breeding performance as measured by NRS and CES has tended to improve over this period, although nest losses at chick stage have increased. 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 woodland habitats, particularly leading to declines in large flying insects, or by conditions either on the wintering grounds or along migration routes (**Fuller *et al.* 2005**). Since trends have been similar across UK regions and habitats, it is more likely that the decline has been driven by factors operating outside the UK.

Population changes

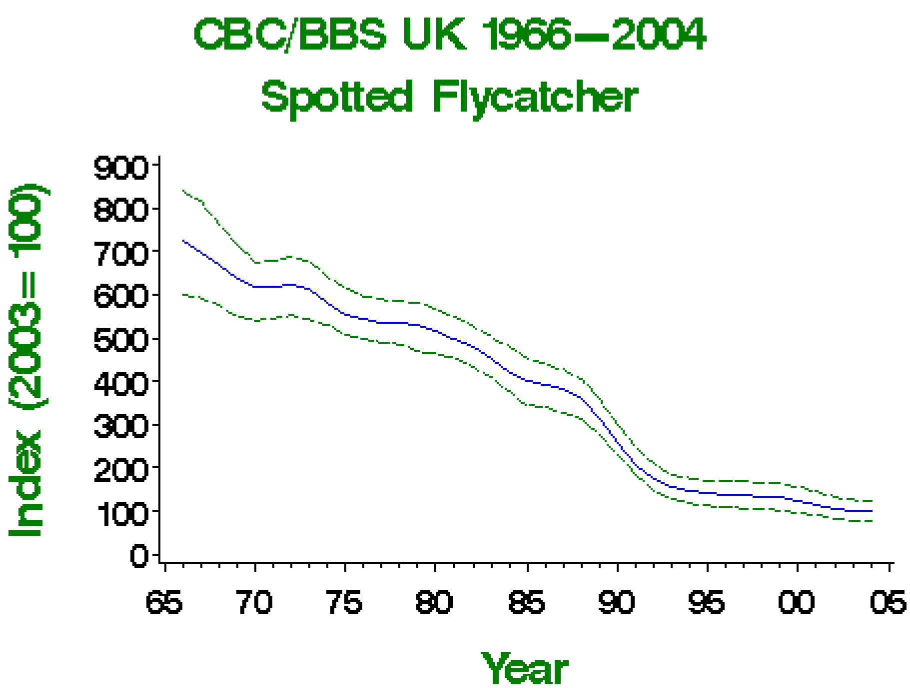

Table of population changes for Spotted Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	88	-86	-91	-81	>50	
	25	1978-2003	98	-82	-87	-76	>50	

	10	1993-2003	151	-34	-48	-21	>25	
	5	1998-2003	159	-21	-31	-12		
CBC/BBS UK	36	1967-2003	113	-86	-90	-79	>50	
	25	1978-2003	128	-81	-87	-75	>50	
	10	1993-2003	204	-36	-47	-23	>25	
	5	1998-2003	218	-25	-34	-17	>25	
CES adults	19	1984-2003	16	-52	-81	-9	>50	Small sample
	10	1993-2003	14	-25	-57	11		Small sample
	5	1998-2003	13	-17	-57	35		Small sample
CES juveniles	19	1984-2003	11	-62	-86	-33	>50	Small sample
	10	1993-2003	10	-37	-72	9		Small sample
	5	1998-2003	10	-7	-57	49		Small sample
BBS UK	10	1994-2004	194	-35	-45	-23	(>25)	
BBS England	10	1994-2004	141	-44	-54	-32	(>25)	

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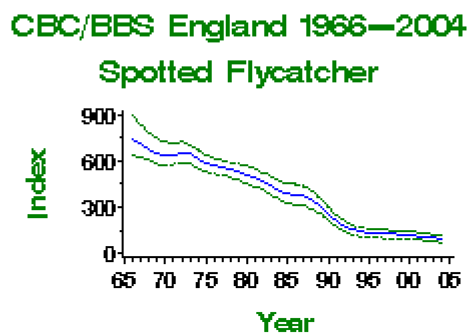
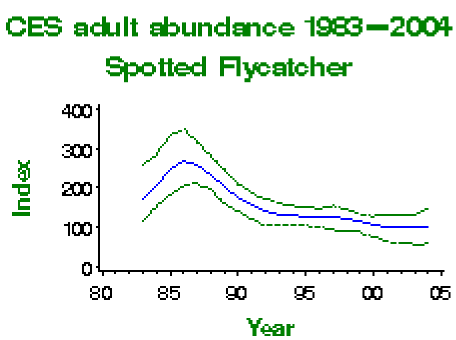
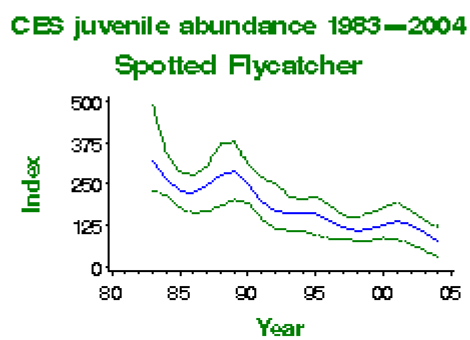
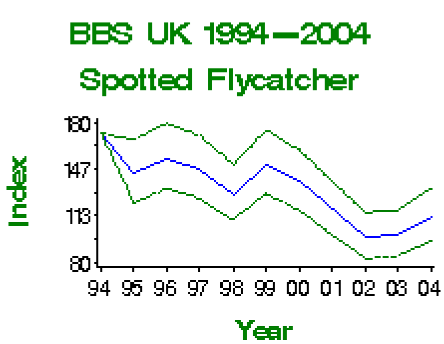
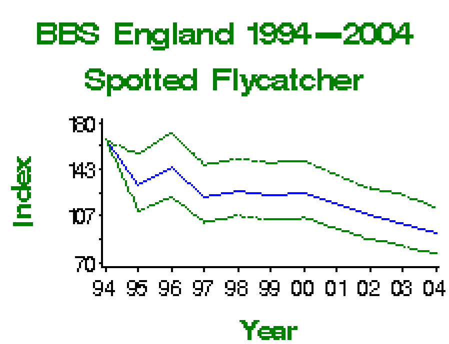






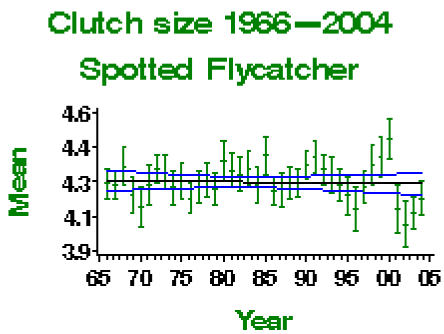


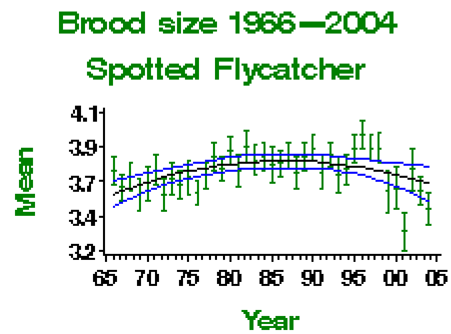


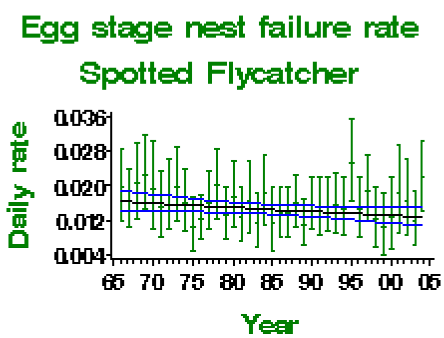
Productivity trends

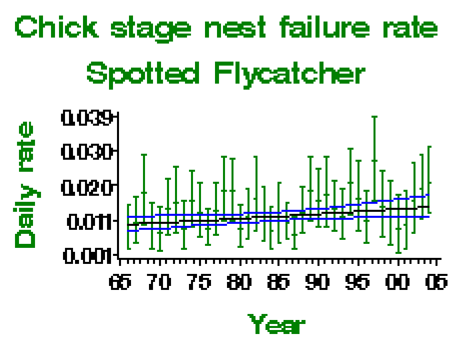
Table of productivity changes for Spotted Flycatcher

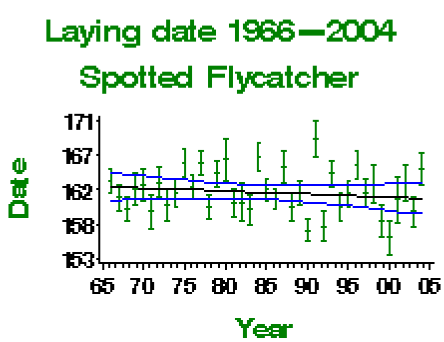
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	81	None				
Brood size	35	1968-2003	131	Curvilinear	3.61 chicks	3.66 chicks	1.3%	
Daily failure rate (eggs)	35	1968-2003	120	None				
Daily failure rate (chicks)	35	1968-2003	108	Linear increase	0.97% nests/day	1.41% nests/day	45.4%	
Laying date	35	1968-2003	72	None				
Juvenile to Adult ratio (CES)	19	1984-2003	22	Smoothed trend	85 Index value	103 Index value	18%	
Juvenile to Adult ratio (CES)	10	1993-2003	20	Smoothed trend	77 Index value	103 Index value	30%	
Juvenile to Adult ratio (CES)	5	1998-2003	18	Smoothed trend	70 Index value	103 Index value	43%	Small sample

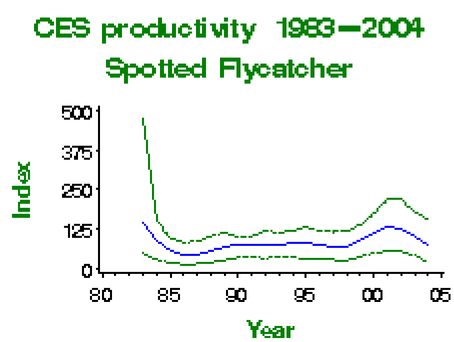












Additional information

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

PIED FLYCATCHER
Ficedula hypoleuca

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: uncertain

UK population size

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

Status summary

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

Population changes

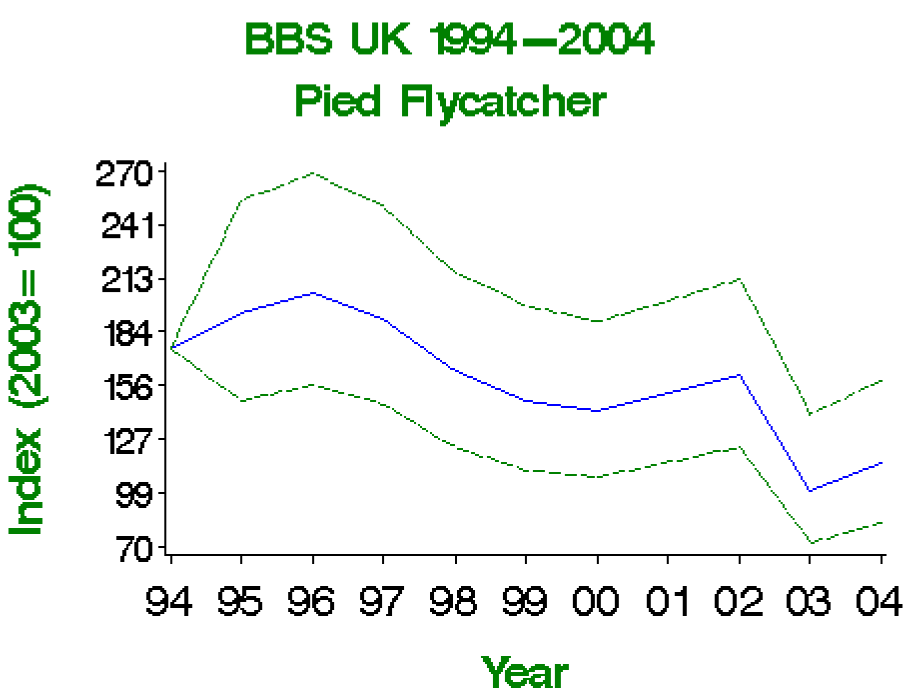


Table of population changes for Pied Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	41	-35	-53	-10	(>25)	

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Productivity trends

Information on productivity not currently available for this species

Additional information

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

LONG-TAILED TIT
Aegithalos caudatus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: moderate increase

UK population size

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

Status summary

This species undergoes wide fluctuations in numbers, suffering heavy mortality when winters are severe, but able to recover quickly by virtue of its high breeding potential. Numbers were low after the severe winters of the early 1960s and again during a series of relatively cold winters beginning in the late 1970s. The current population is similar to that around 1974, so the 'moderate increases' recorded over periods beginning in 1967 and 1978 should be interpreted carefully. Both CBC/BBS and CES index trends show progressive increases in Long-tailed Tit abundance since the mid 1980s. 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

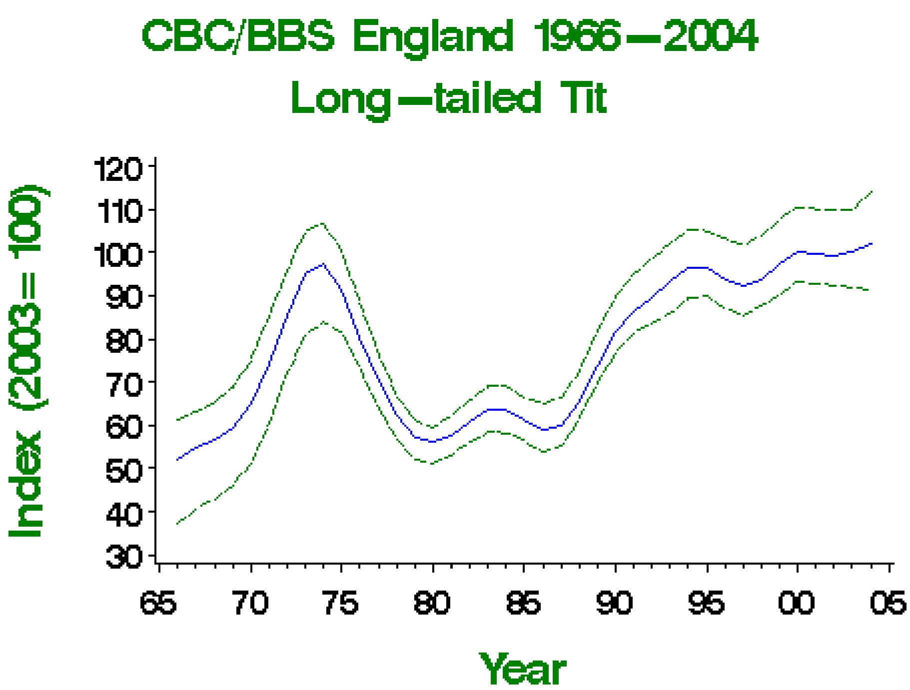

Table of population changes for Long-tailed Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	253	83	48	187		
	25	1978-2003	322	60	35	100		
	10	1993-2003	632	7	-2	16		

	5	1998-2003	730	7	0	12		
CES adults	19	1984-2003	75	46	19	94		
	10	1993-2003	91	15	4	28		
	5	1998-2003	90	14	0	30		
CES juveniles	19	1984-2003	68	12	-22	68		
	10	1993-2003	85	-13	-26	5		
	5	1998-2003	86	1	-13	17		
BBS UK	10	1994-2004	677	12	1	24		
BBS England	10	1994-2004	595	3	-7	14		
BBS Wales	10	1994-2004	48	1	-35	57		

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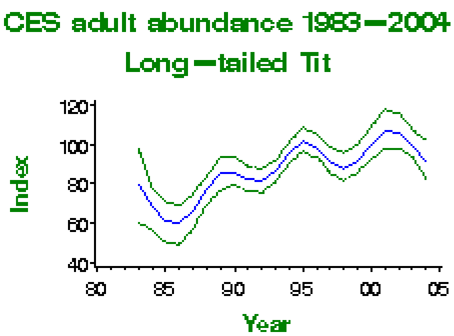
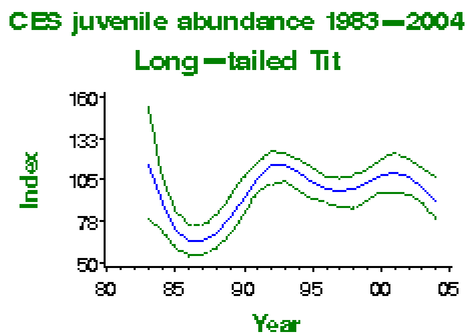
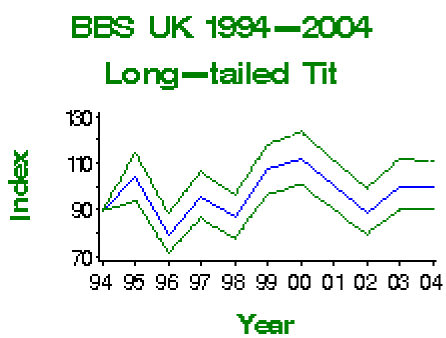
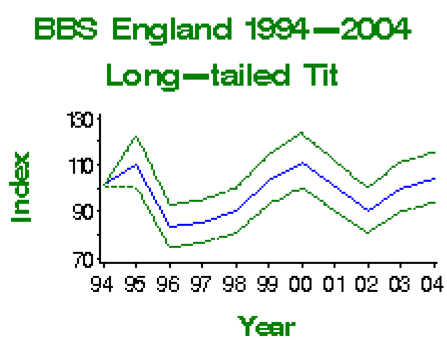
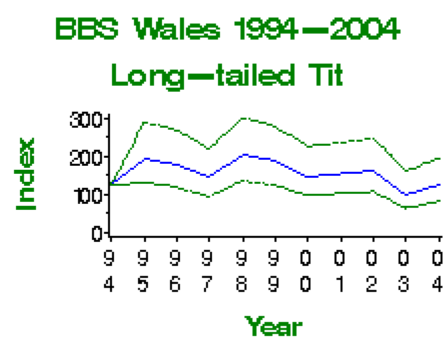








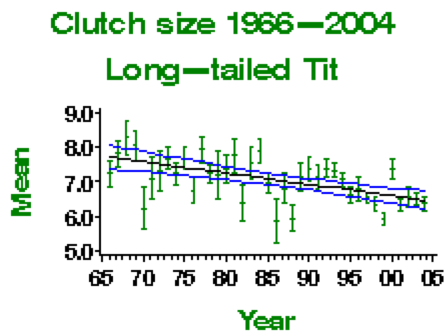


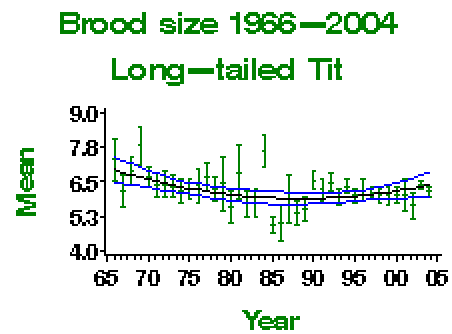
Productivity trends

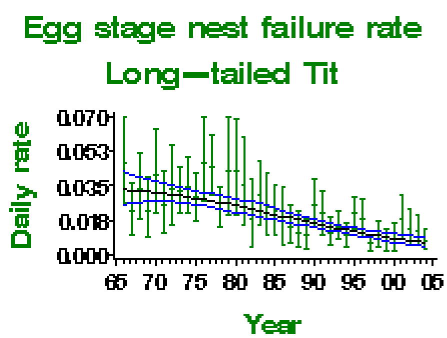
Table of productivity changes for Long-tailed Tit

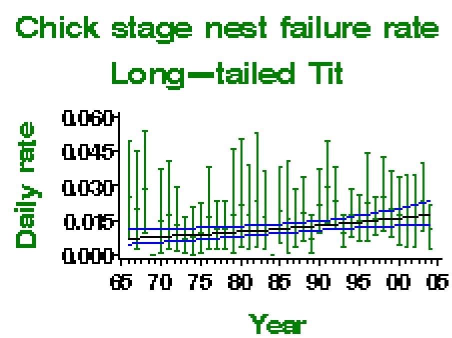
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	32	Linear decline	7.65 eggs	6.51 eggs	-14.9%	
Brood size	35	1968-	26	Curvilinear	6.77 chicks	6.34 chicks	-6.3%	Small

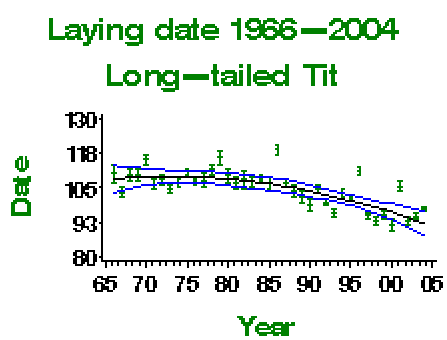
		2003						sample
Daily failure rate (eggs)	35	1968-2003	51	Curvilinear	3.25% nests/day	0.68% nests/day	-79.1%	
Daily failure rate (chicks)	35	1968-2003	35	Linear increase	0.77% nests/day	1.72% nests/day	123.4%	
Laying date	35	1968-2003	42	Curvilinear	Apr 19	Apr 3	-16 days	
Juvenile to Adult ratio (CES)	19	1984-2003	81	Smoothed trend	126 Index value	103 Index value	-21%	
Juvenile to Adult ratio (CES)	10	1993-2003	99	Smoothed trend	125 Index value	103 Index value	-20%	
Juvenile to Adult ratio (CES)	5	1998-2003	97	Smoothed trend	124 Index value	103 Index value	-20%	

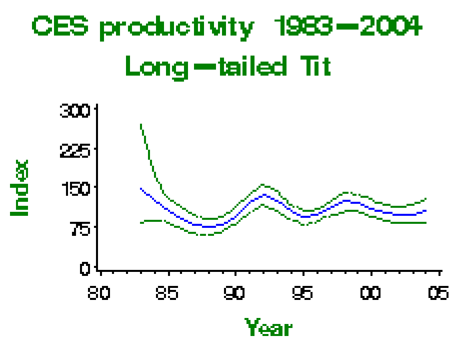












Additional information

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

BLUE TIT
Cyanistes caeruleus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: shallow increase

UK population size

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

Status summary

Blue Tit populations have increased in abundance, in parallel with those of **Great Tits**, with brief pauses in the long-term upward trend. The recent years of the CBC/BBS index show fluctuations but no clear trend. Food provision by humans 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.

Population changes

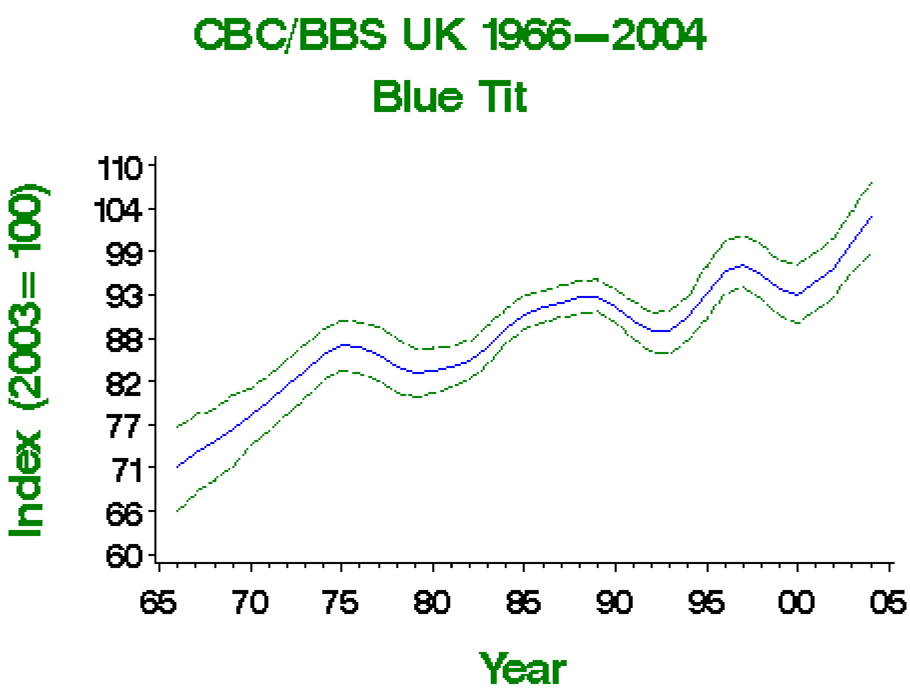


Table of population changes for Blue Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	528	35	19	50		
	25	1978-2003	685	15	6	25		
	10	1993-2003	1422	9	5	12		
	5	1998-2003	1656	2	-1	4		

CBC/BBS UK	36	1967-2003	636	37	25	54		
	25	1978-2003	830	19	9	30		
	10	1993-2003	1735	13	9	17		
	5	1998-2003	2051	4	2	7		
CES adults	19	1984-2003	94	4	-11	22		
	10	1993-2003	108	13	4	24		
	5	1998-2003	105	-7	-15	2		
CES juveniles	19	1984-2003	93	-24	-40	-1		
	10	1993-2003	108	-10	-22	1		
	5	1998-2003	105	8	-4	19		
BBS UK	10	1994-2004	1772	17	13	22		
BBS England	10	1994-2004	1437	10	6	15		
BBS Scotland	10	1994-2004	123	46	23	72		
BBS Wales	10	1994-2004	148	30	14	47		
BBS N.Ireland	10	1994-2004	57	80	32	146		

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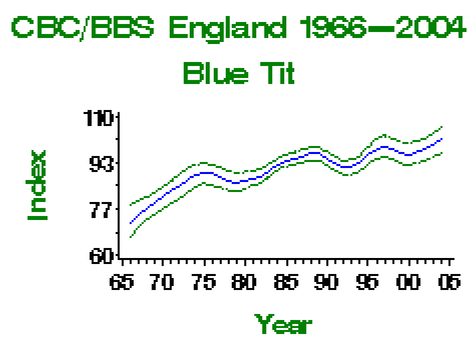
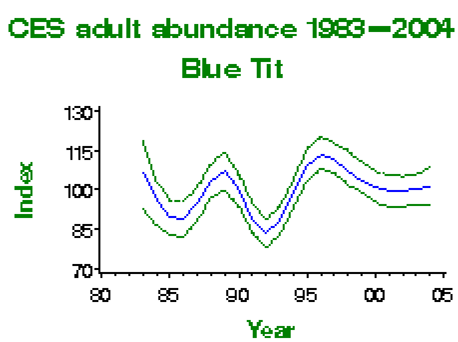
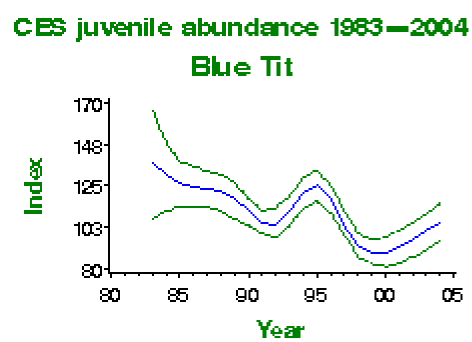
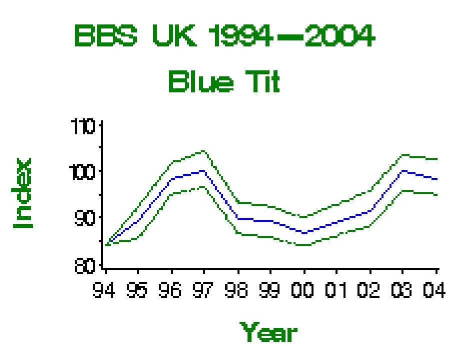
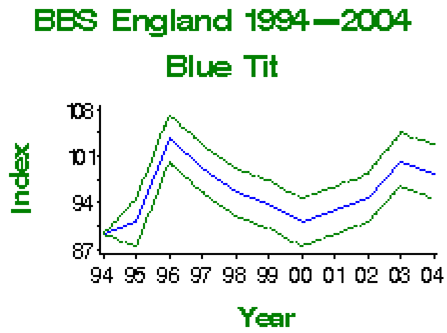
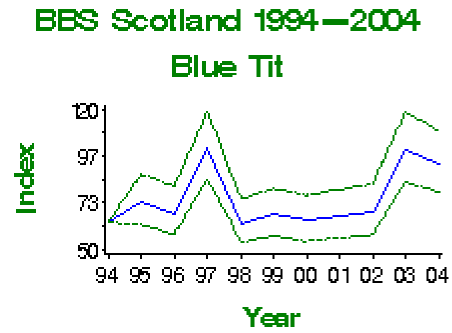


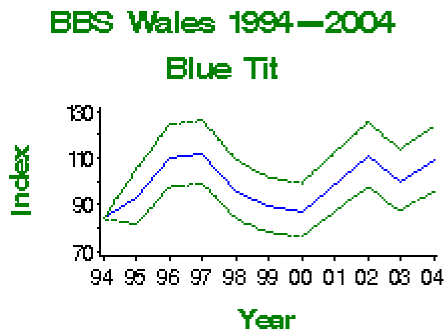


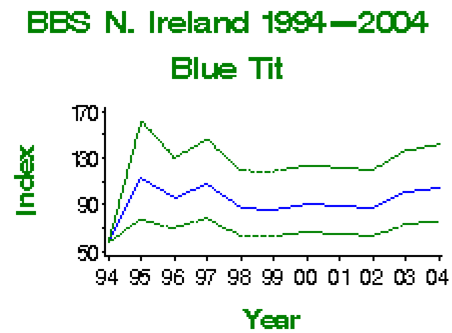








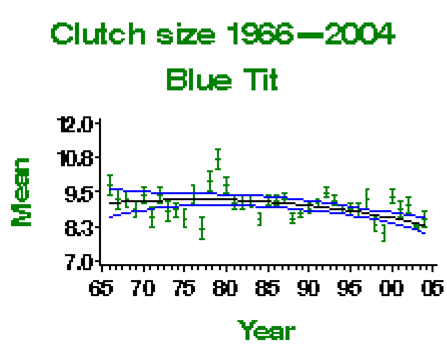


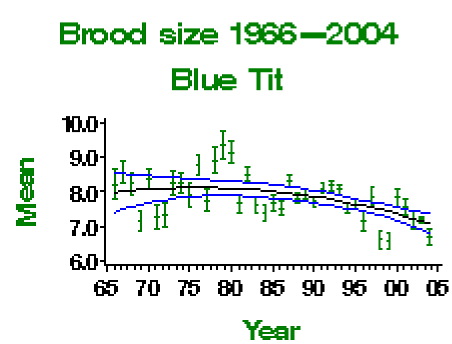


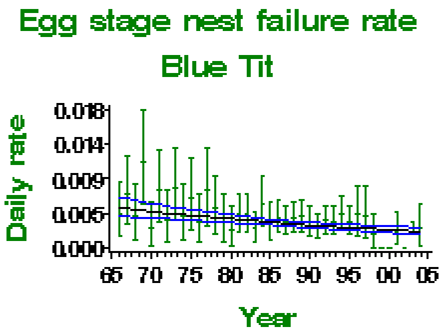
Productivity trends

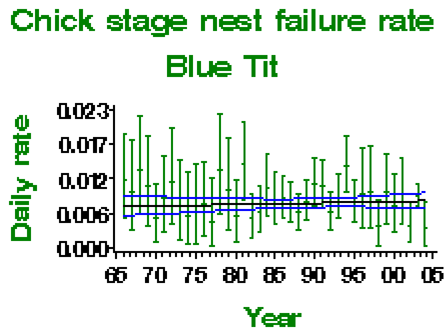
Table of productivity changes for Blue Tit

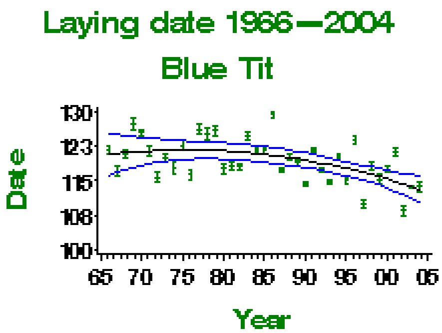
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	83	Curvilinear	9.14 eggs	8.39 eggs	-8.2%	
Brood size	35	1968-2003	135	Curvilinear	8.04 chicks	7.17 chicks	-10.8%	
Daily failure rate (eggs)	35	1968-2003	134	Linear decline	0.5% nests/day	0.22% nests/day	-56%	
Daily failure rate (chicks)	35	1968-2003	115	None				
Laying date	35	1968-2003	116	Curvilinear	May 1	Apr 24	-7 days	
Juvenile to Adult ratio (CES)	19	1984-2003	98	Smoothed trend	152 Index value	103 Index value	-34% >25	
Juvenile to Adult ratio (CES)	10	1993-2003	112	Smoothed trend	130 Index value	103 Index value	-23%	
Juvenile to Adult ratio (CES)	5	1998-2003	110	Smoothed trend	90 Index value	103 Index value	11%	

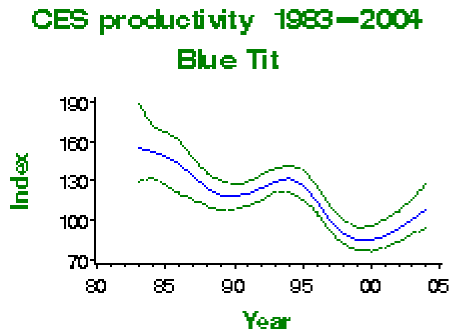












Additional information

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

GREAT TIT
Parus major

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: moderate increase

UK population size

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

Status summary

Great Tits have increased steadily since the 1960s, with the exception of two brief periods of stability or shallow decline during the mid 1970s and late 1980s. Recent CBC/BBS and BBS results suggest that this increase is continuing, in all UK countries. A positive effect of more food provision in gardens during winter is one possible explanation for the increase. Changes in different aspects of breeding performance are contradictory: CES productivity has fluctuated, brood size has decreased, and nest success at the egg stage has improved.

Population changes

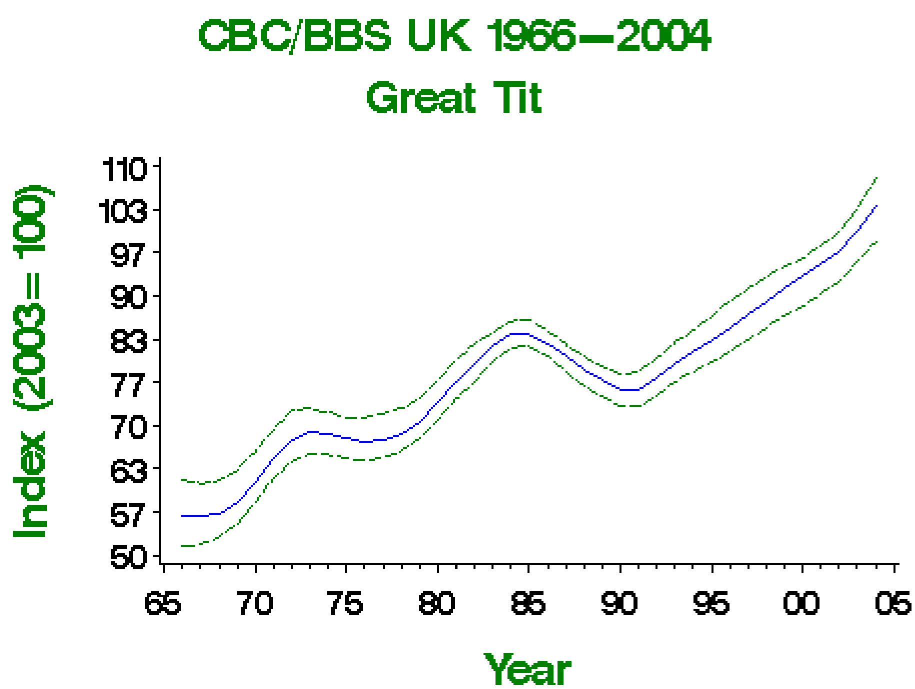


Table of population changes for Great Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	495	74	49	103		
	25	1978-2003	641	43	27	58		
	10	1993-2003	1316	24	19	28		
	5	1998-2003	1549	14	10	16		
CBC/BBS UK	36	1967-2003	595	79	55	99		

	25	1978-2003	775	45	31	58		
	10	1993-2003	1603	26	21	30		
	5	1998-2003	1915	12	9	15		
CES adults	19	1984-2003	87	15	-3	39		
	10	1993-2003	101	25	13	40		
	5	1998-2003	99	5	-6	18		
CES juveniles	19	1984-2003	90	2	-23	28		
	10	1993-2003	105	-4	-19	12		
	5	1998-2003	103	9	-8	27		
BBS UK	10	1994-2004	1632	35	29	41		
BBS England	10	1994-2004	1325	30	24	36		
BBS Scotland	10	1994-2004	109	64	33	101		
BBS Wales	10	1994-2004	139	42	22	67		
BBS N.Ireland	10	1994-2004	50	78	19	165		

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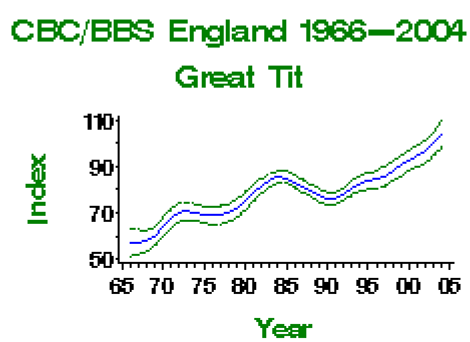
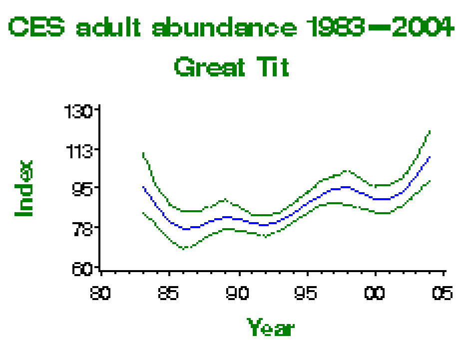
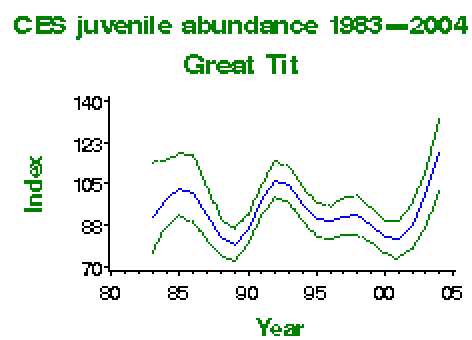
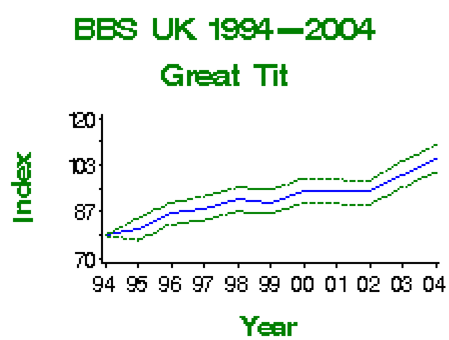
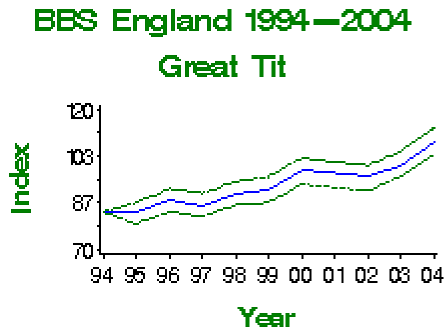
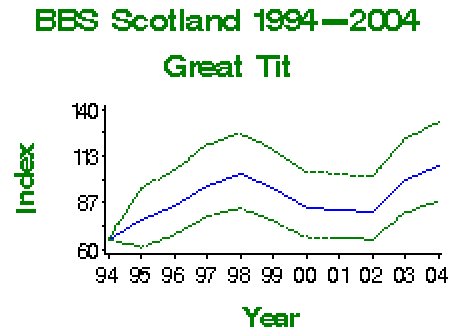


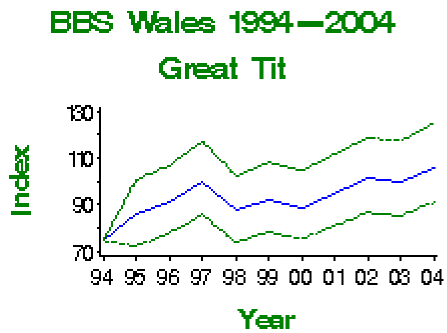


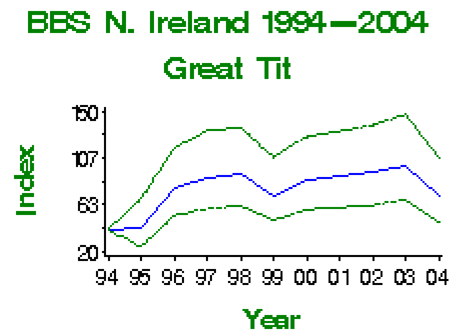








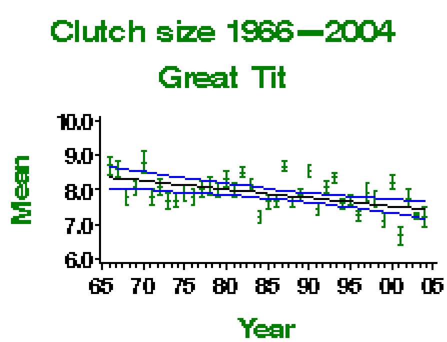


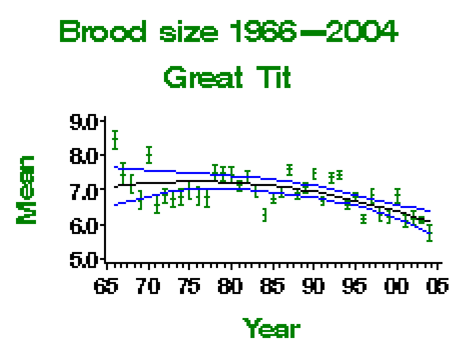


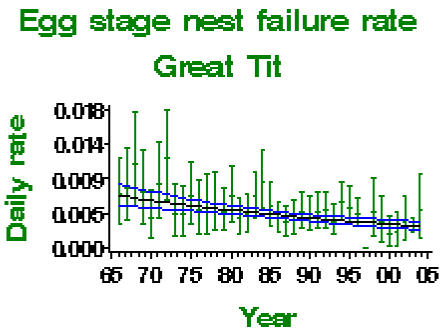
Productivity trends

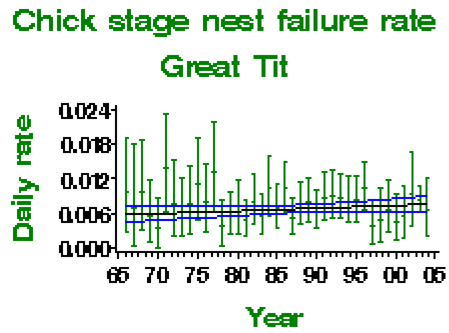
Table of productivity changes for Great Tit

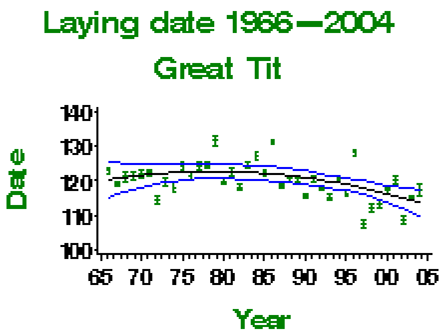
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	92	Linear decline	8.32 eggs	7.46 eggs	-10.3%	
Brood size	35	1968-2003	158	Curvilinear	7.15 chicks	6.16 chicks	-13.9%	
Daily failure rate (eggs)	35	1968-2003	151	Linear decline	0.65% nests/day	0.29% nests/day	-55.4%	
Daily failure rate (chicks)	35	1968-2003	124	None				
Laying date	35	1968-2003	113	Curvilinear	May 1	Apr 24	-7 days	
Juvenile to Adult ratio (CES)	19	1984-2003	96	Smoothed trend	127 Index value	103 Index value	-21%	
Juvenile to Adult ratio (CES)	10	1993-2003	111	Smoothed trend	124 Index value	103 Index value	-20%	
Juvenile to Adult ratio (CES)	5	1998-2003	109	Smoothed trend	99 Index value	103 Index value	1%	

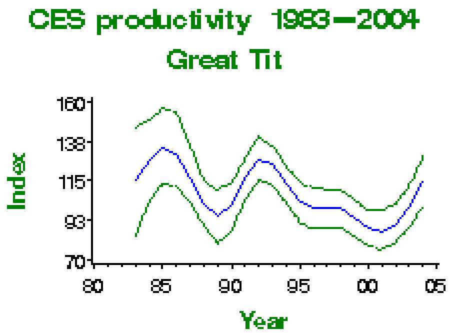












Additional information

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

COAL TIT
Periparus ater

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: probable 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

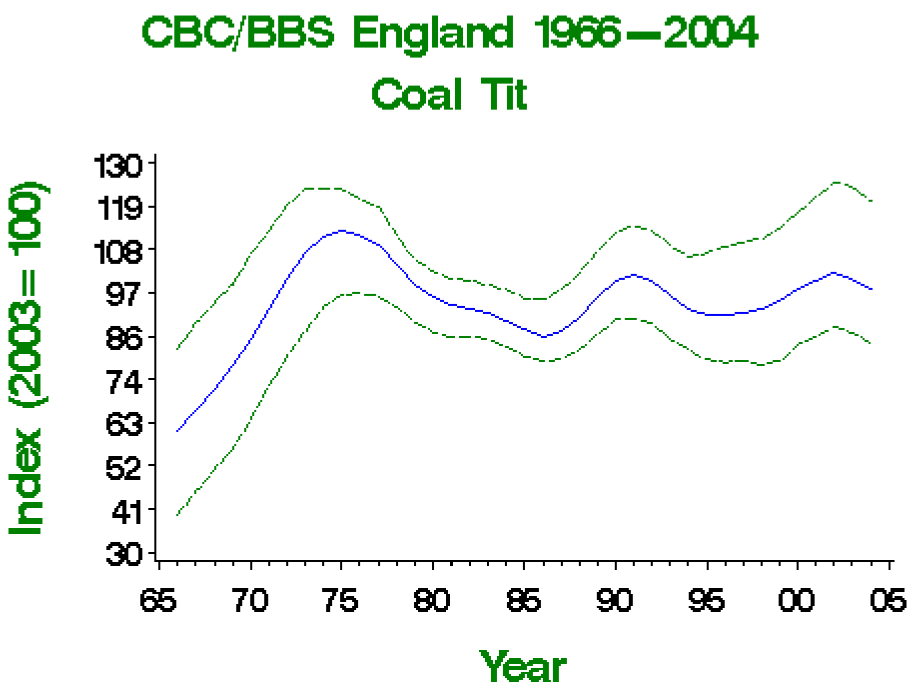


Table of population changes for Coal Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	175	51	-7	171		
	25	1978-2003	218	-4	-24	40		
	10	1993-2003	402	4	-6	23		

	5	1998-2003	464	8	-3	26		
BBS UK	10	1994-2004	585	14	5	23		
BBS England	10	1994-2004	379	12	1	25		
BBS Scotland	10	1994-2004	97	18	-3	45		
BBS Wales	10	1994-2004	62	-23	-41	1		
BBS N.Ireland	10	1994-2004	45	56	-9	167		

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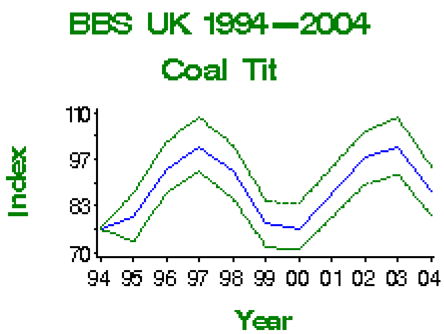

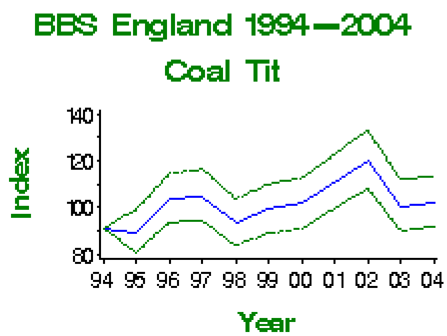

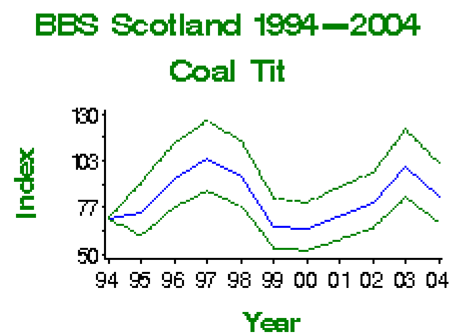

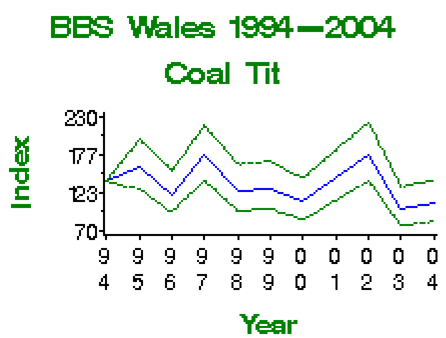

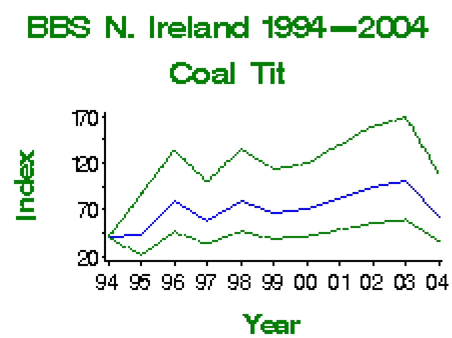

Productivity trends

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**

WILLOW TIT
Poecile montanus

• 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)

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 increasing 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**).

Population changes

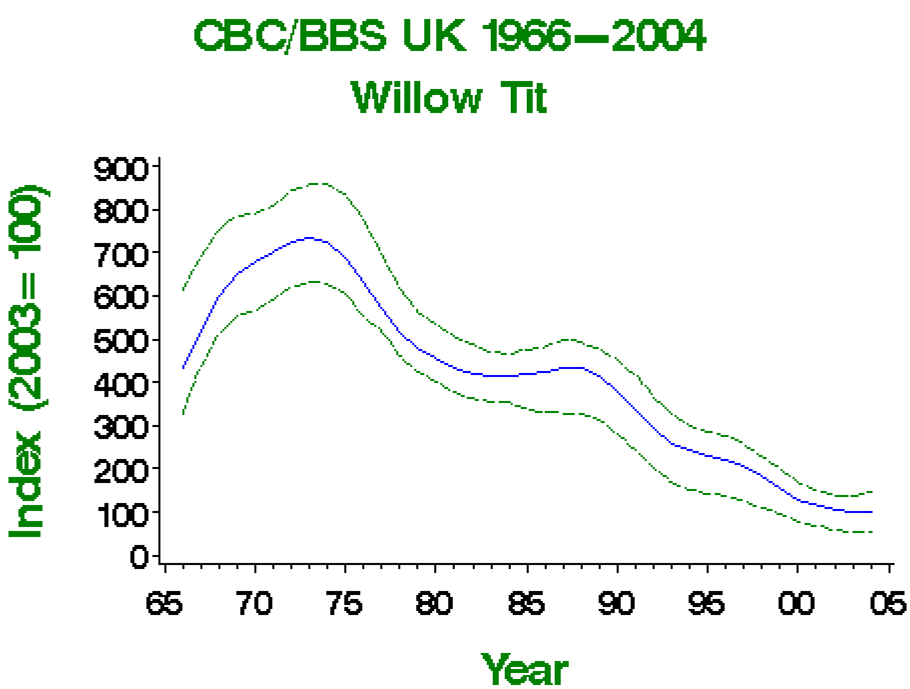

Table of population changes for Willow Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	40	-80	-90	-63	>50	
	25	1978-2003	40	-81	-91	-70	>50	
	10	1993-2003	56	-62	-74	-50	>50	Small CBC sample

	5	1998-2003	50	-43	-57	-27	>25	
CBC/BBS UK	36	1967-2003	42	-81	-92	-71	>50	
	25	1978-2003	44	-81	-91	-71	>50	
	10	1993-2003	62	-61	-74	-43	>50	Small CBC sample
	5	1998-2003	57	-45	-59	-28	>25	
CES adults	19	1984-2003	21	-42	-75	-9	>25	
	10	1993-2003	20	-34	-61	-8	>25	
	5	1998-2003	14	-7	-43	31		Small sample
CES juveniles	19	1984-2003	30	-42	-63	-21	>25	
	10	1993-2003	29	-40	-59	-22	>25	
	5	1998-2003	21	-22	-42	0		
BBS UK	10	1994-2004	54	-65	-75	-50	(>50)	
BBS England	10	1994-2004	47	-67	-77	-52	(>50)	

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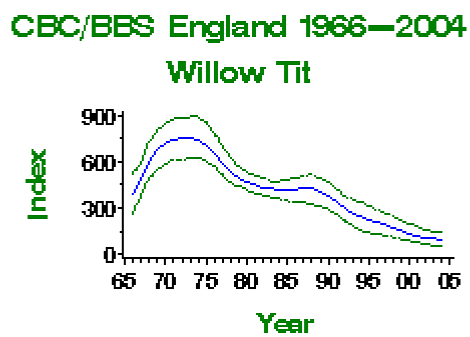
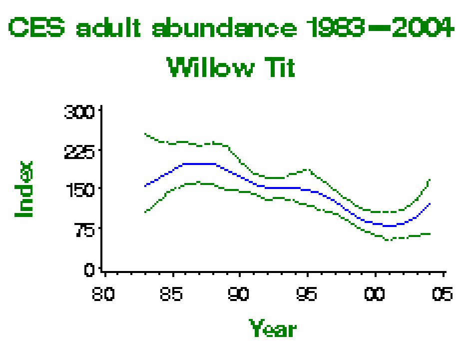
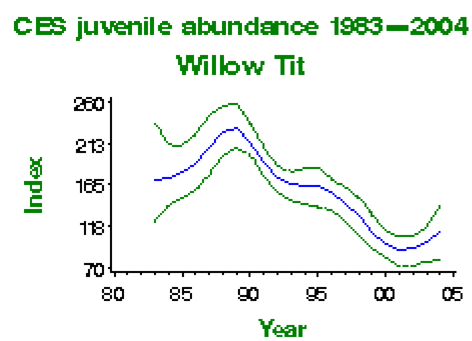
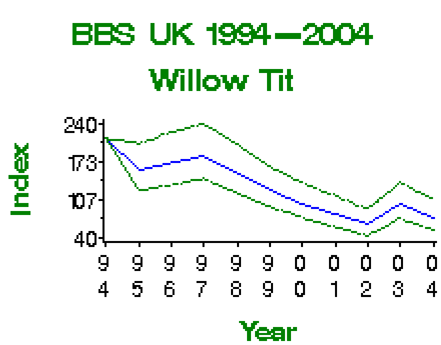
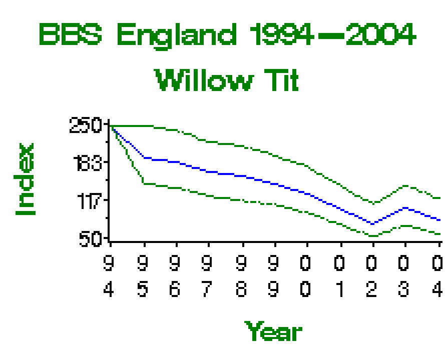










Productivity trends

Table of productivity changes for Willow Tit

Variable	Period	Years	Mean	Trend	Modelled	Modelled	Change	Comment

	(yrs)		annual sample		in first year	in 2003		
Juvenile to Adult ratio (CES)	19	1984-2003	34	Smoothed trend	113 Index value	103 Index value	-12%	
Juvenile to Adult ratio (CES)	10	1993-2003	33	Smoothed trend	109 Index value	103 Index value	-8%	
Juvenile to Adult ratio (CES)	5	1998-2003	23	Smoothed trend	80 Index value	103 Index value	25%	

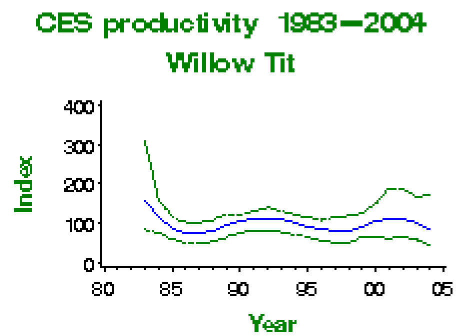
Insufficient data on clutch size available for this species

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)

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 rapidly, despite improvements in breeding performance. 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 nest predation nor interspecific competition is responsible (G.M. Siriwardena, unpubl.). Marsh Tits nest in woods as small as half a hectare (**Hinsley *et al.* 1995**), but there is evidence from CBC that declines are steeper on smaller plots (G.M. Siriwardena, unpubl.). Reductions in the structural and floristic diversity of woodland, resulting partly from increased browsing by deer, are likely to have caused the decline (**Perrins 2003**, **Fuller *et al*. 2005**). Following declines elsewhere in western Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

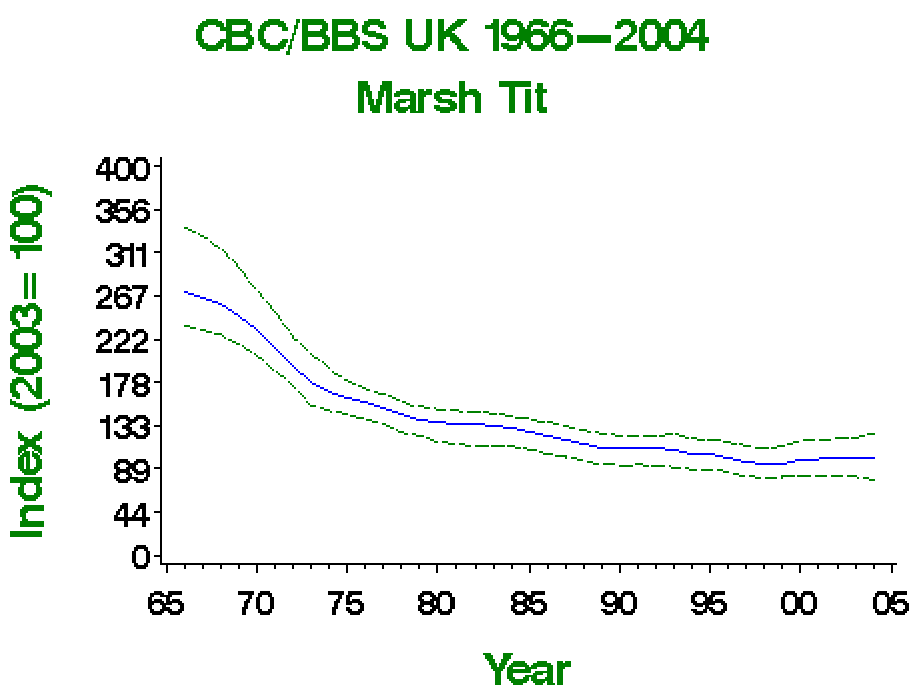


Table of population changes for Marsh Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	77	-62	-72	-49	>50	
	25	1978-2003	88	-30	-48	-9	>25	
	10	1993-2003	140	-7	-22	9		

	5	1998-2003	144	8	-5	22		
CBC/BBS UK	36	1967-2003	83	-62	-74	-49	>50	
	25	1978-2003	95	-31	-48	-7	>25	
	10	1993-2003	153	-7	-21	13		
	5	1998-2003	159	7	-7	26		
BBS UK	10	1994-2004	126	26	1	56		
BBS England	10	1994-2004	112	6	-16	33		

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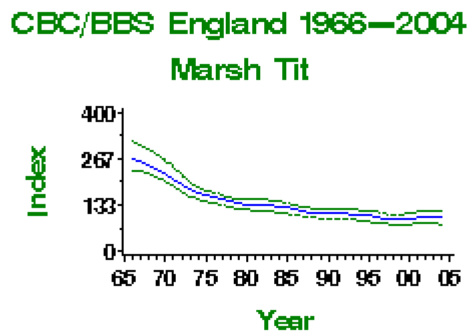
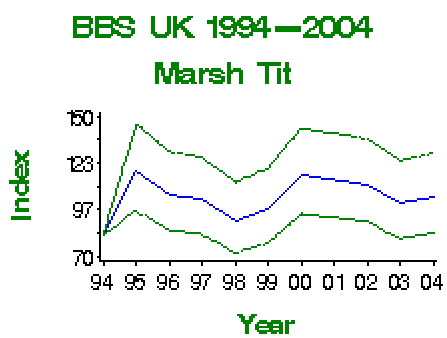
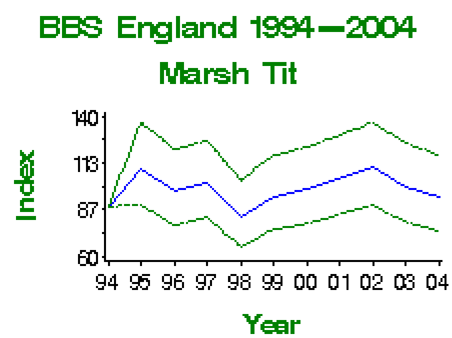


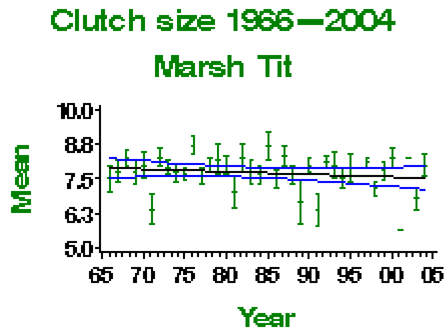


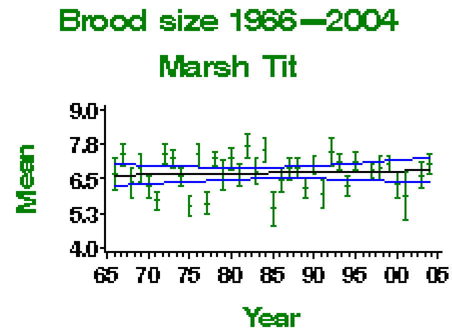


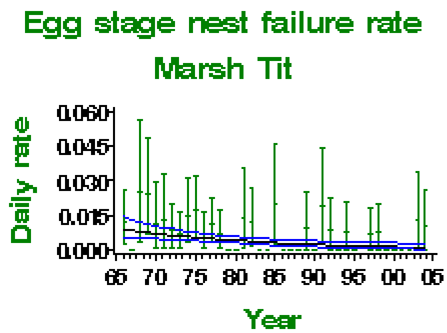
Productivity trends

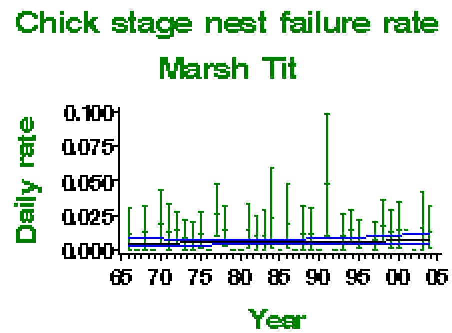
Table of productivity changes for Marsh Tit

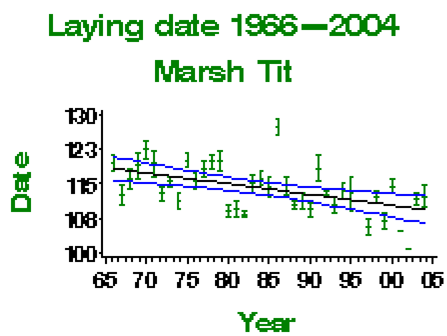
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	13	None				Small sample
Brood size	35	1968-2003	21	None				Small sample
Daily failure rate (eggs)	35	1968-2003	19	Linear decline	0.81% nests/day	0.13% nests/day	-84%	Small sample
Daily failure rate (chicks)	35	1968-2003	18	None				Small sample
Laying date	35	1968-2003	13	Linear decline	Apr 28	Apr 20	-8 days	Small sample











Insufficient data on CES available for this species

Additional information

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

NUTHATCH
Sitta europaea

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: rapid increase

UK population size

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

Status summary

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

Population changes

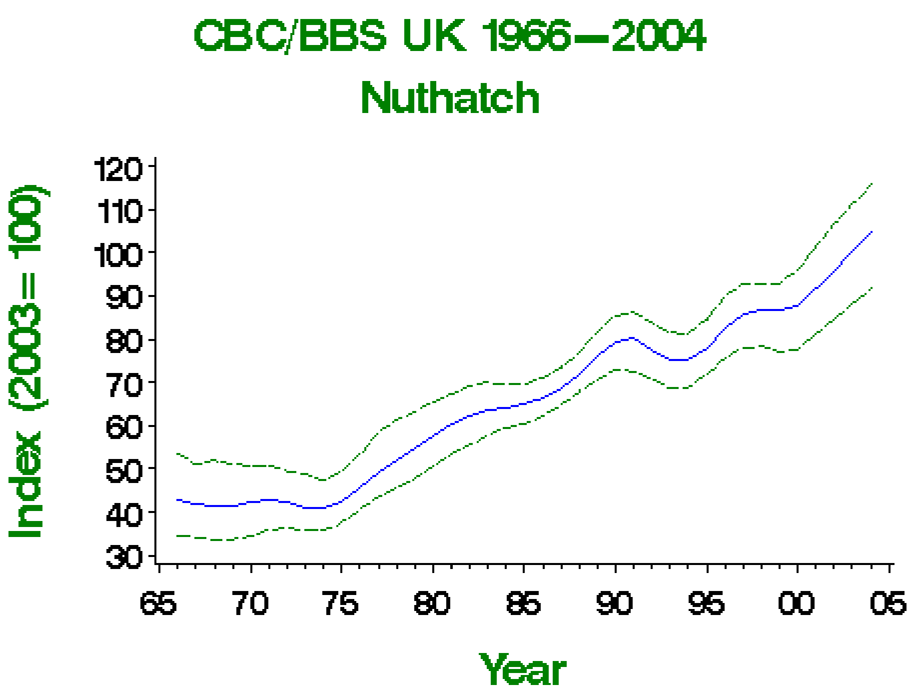


Table of population changes for Nuthatch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	120	142	79	274		
	25	1978-2003	154	89	51	148		
	10	1993-2003	288	34	20	52		
	5	1998-2003	336	18	9	30		
CBC/BBS UK	36	1967-2003	138	139	69	225		

	25	1978-2003	179	92	44	141		
	10	1993-2003	342	33	18	45		
	5	1998-2003	405	15	9	24		
BBS UK	10	1994-2004	325	52	34	73		
BBS England	10	1994-2004	268	50	31	73		
BBS Wales	10	1994-2004	57	48	8	104		

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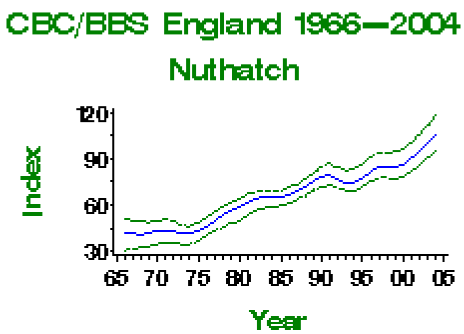
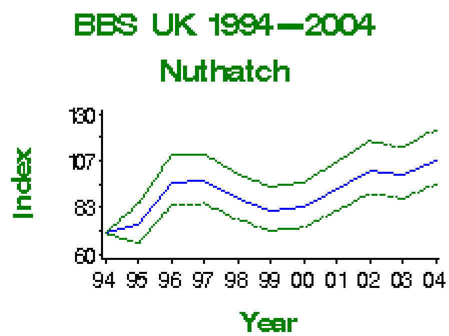
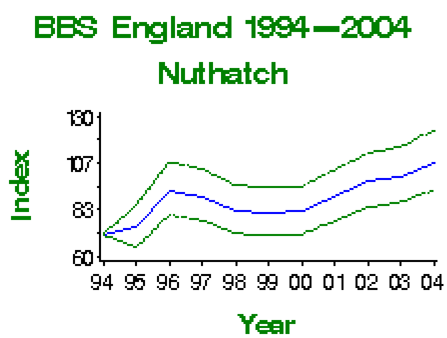
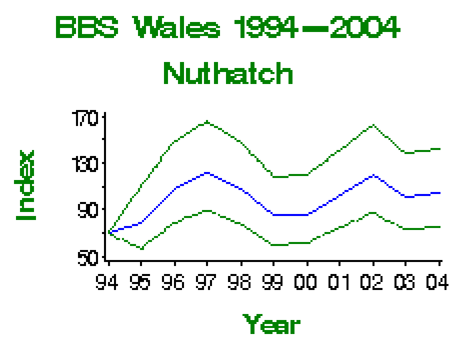




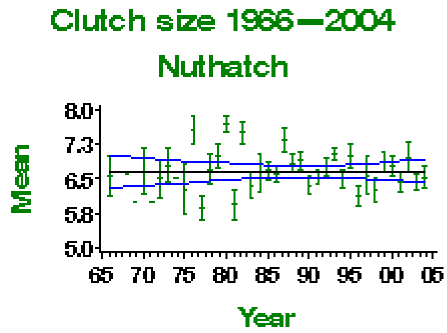


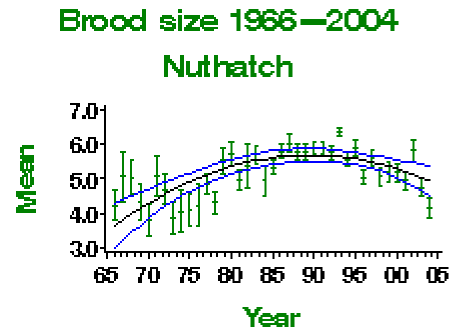


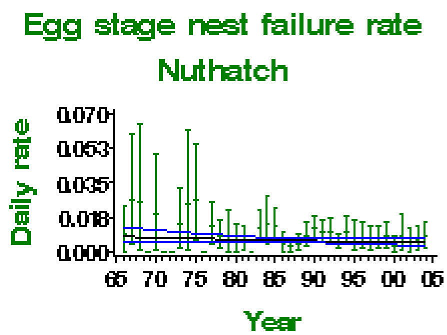
Productivity trends

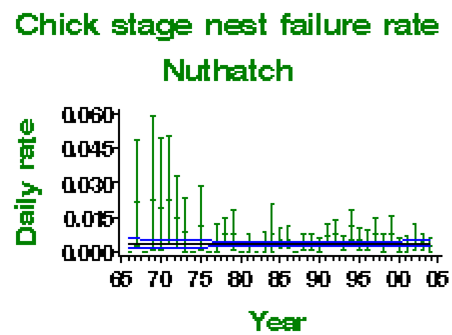
Table of productivity changes for Nuthatch

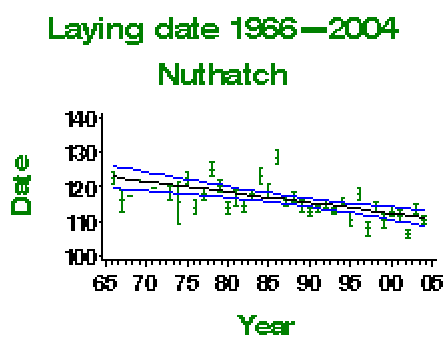
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	25	None				Small sample
Brood size	35	1968-2003	57	Curvilinear	3.98 chicks	5.05 chicks	26.8%	
Daily failure rate (eggs)	35	1968-2003	44	None				
Daily failure rate (chicks)	35	1968-2003	48	None				
Laying date	35	1968-2003	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

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 winters (**Peach *et al*. 1995b**). The influence of cold weather is also evident in the low start to the index and the trough around 1980. CBC/BBS data suggest a minor decline has occurred since the early 1980s, but CES adult captures have increased for much of this period. Productivity, calculated using CES data, shows fluctuations around a long-term shallow increase. There has been a significant fall in nest failure rates at the egg stage (18 days, comprising 14 days incubation and 4 days laying).

Population changes

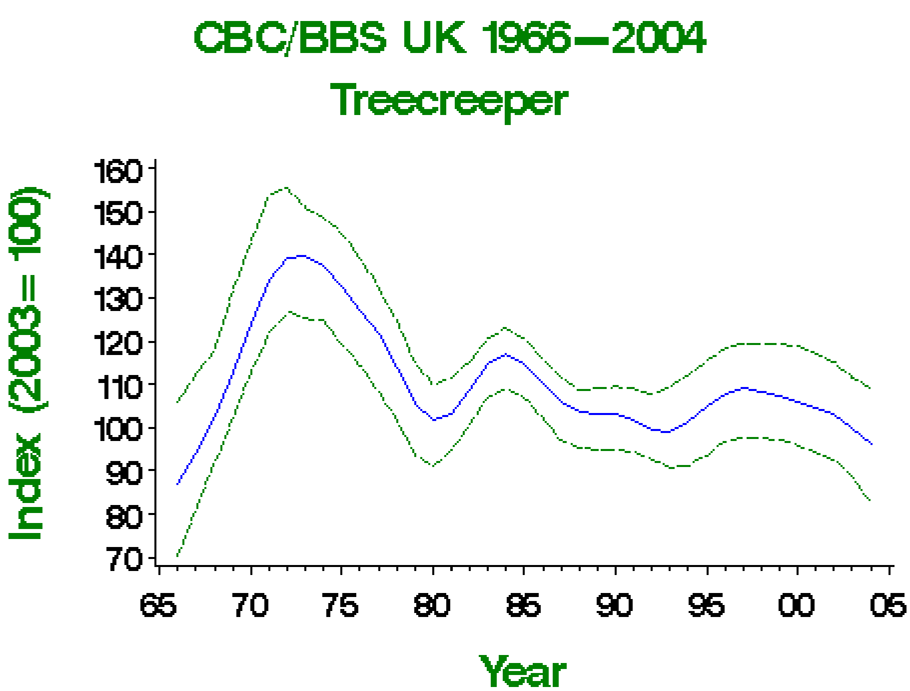
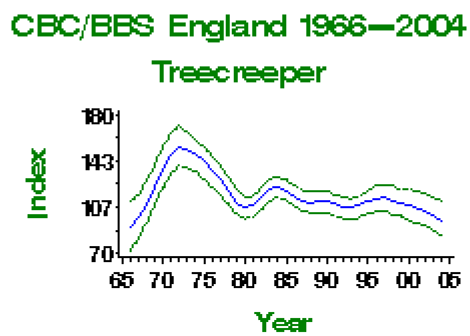


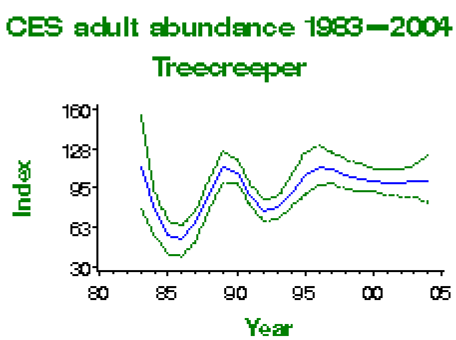
Table of population changes for Treecreeper

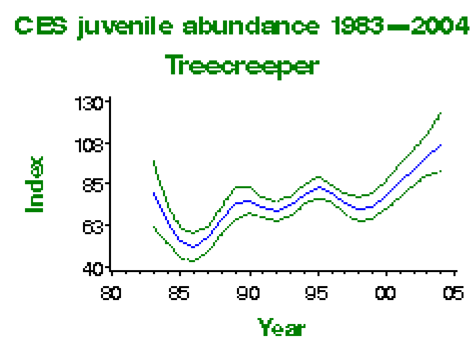
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	129	2	-22	41		
	25	1978-2003	154	-16	-32	3		
	10	1993-2003	251	-6	-16	8		

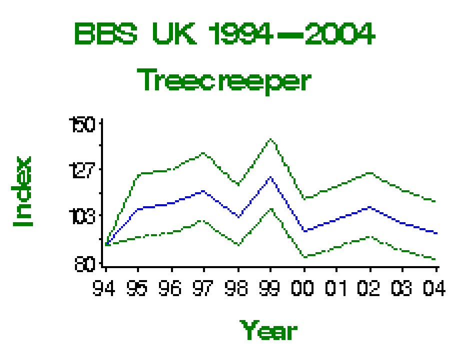
	5	1998-2003	258	-11	-22	-1		
CBC/BBS UK	36	1967-2003	162	6	-21	36		
	25	1978-2003	194	-12	-28	11		
	10	1993-2003	326	1	-12	11		
	5	1998-2003	345	-8	-18	1		
CES adults	19	1984-2003	37	33	-3	98		
	10	1993-2003	44	27	1	57		
	5	1998-2003	43	-6	-25	14		
CES juveniles	19	1984-2003	58	57	23	114		
	10	1993-2003	69	37	18	58		
	5	1998-2003	67	41	21	67		
BBS UK	10	1994-2004	276	7	-8	25		
BBS England	10	1994-2004	204	-11	-25	5		
BBS Wales	10	1994-2004	38	69	11	159		

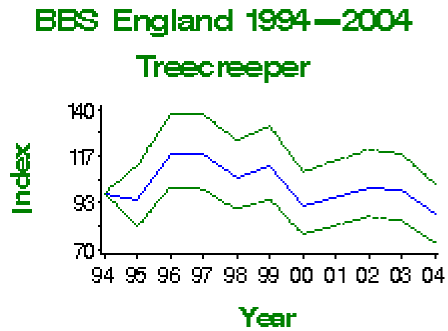
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

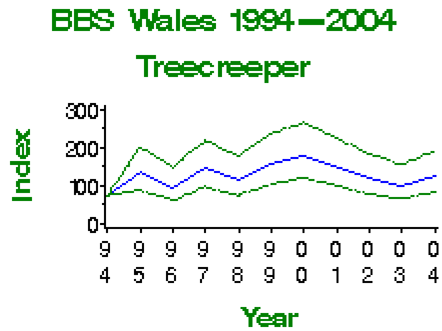








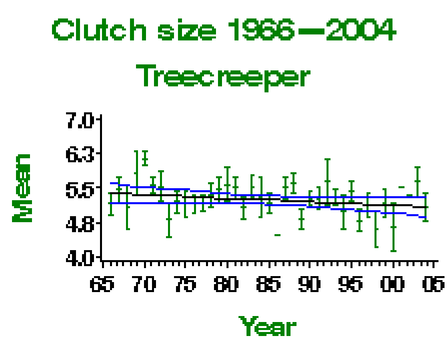


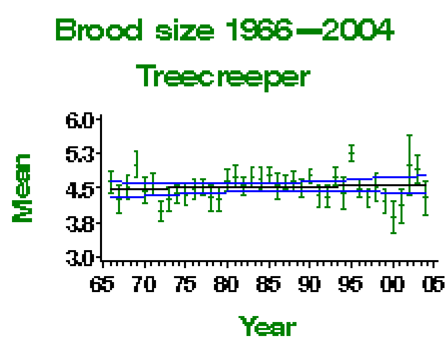


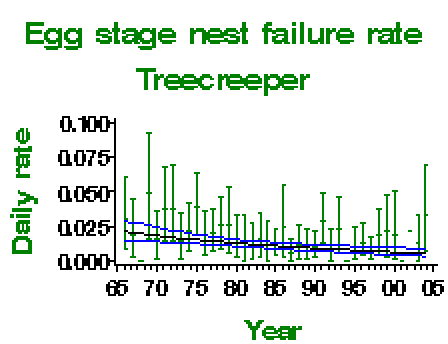
Productivity trends

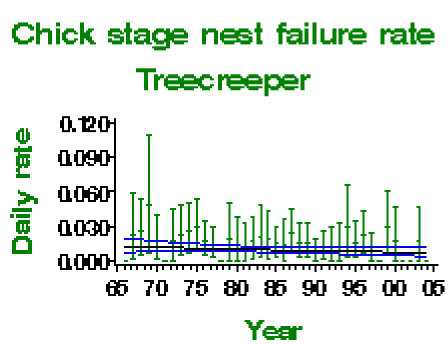
Table of productivity changes for Treecreeper

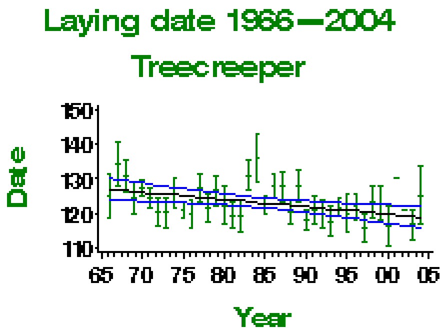
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	14	None				Small sample
Brood size	35	1968-2003	29	None				Small sample
Daily failure rate (eggs)	35	1968-2003	23	Linear decline	1.98% nests/day	0.61% nests/day	-69.2%	Small sample
Daily failure rate (chicks)	35	1968-2003	24	None				Small sample
Laying date	35	1968-2003	14	Linear decline	May 7	Apr 29	-8 days	Small sample
Juvenile to Adult ratio (CES)	19	1984-2003	65	Smoothed trend	77 Index value	103 Index value	30%	
Juvenile to Adult ratio (CES)	10	1993-2003	77	Smoothed trend	112 Index value	103 Index value	-11%	
Juvenile to Adult ratio (CES)	5	1998-2003	76	Smoothed trend	74 Index value	103 Index value	35%	

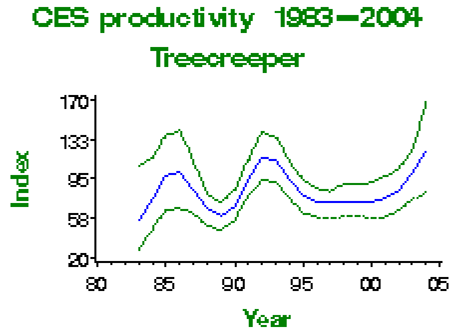












Additional information

- **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, but BBS has recorded substantial increase since 1999. Although sample sizes are small, nest failure rates at the egg stage (21 days, comprising 16 days incubation and 5 days laying) have fallen considerably.

Population changes

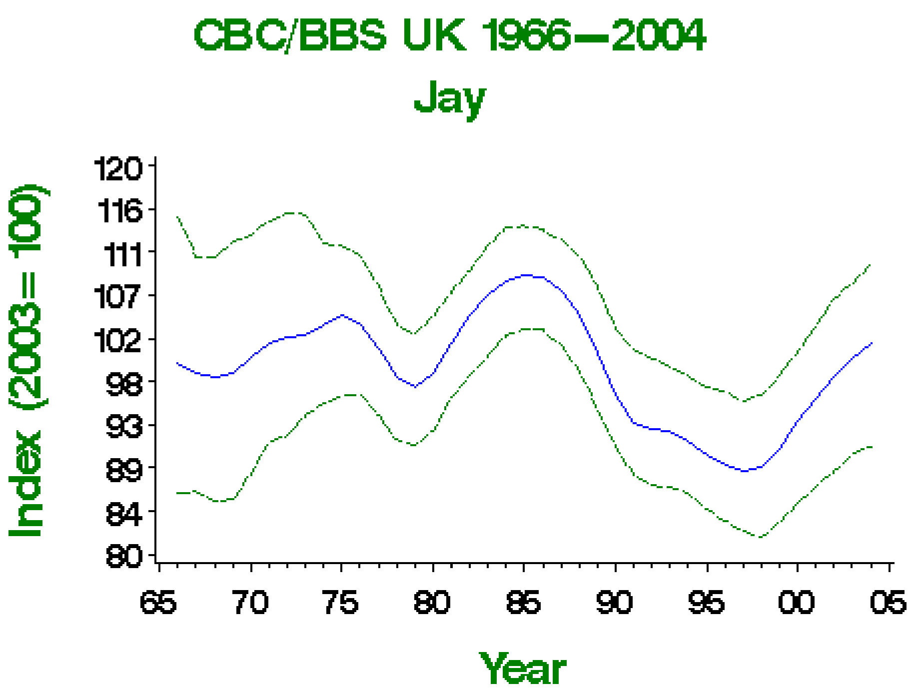


Table of population changes for Jay

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	214	-8	-27	11		
	25	1978-2003	270	-5	-20	8		
	10	1993-2003	505	-1	-9	8		
	5	1998-2003	579	7	0	16		
CBC/BBS UK	36	1967-2003	239	1	-19	25		

	25	1978-2003	303	2	-11	16		
	10	1993-2003	573	8	-3	17		
	5	1998-2003	669	12	5	18		
BBS UK	10	1994-2004	553	1	-9	11		
BBS England	10	1994-2004	479	-9	-18	1		
BBS Wales	10	1994-2004	57	11	-19	54		

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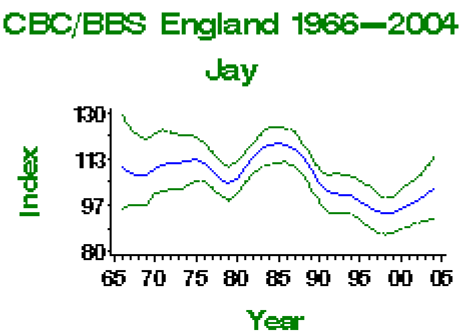
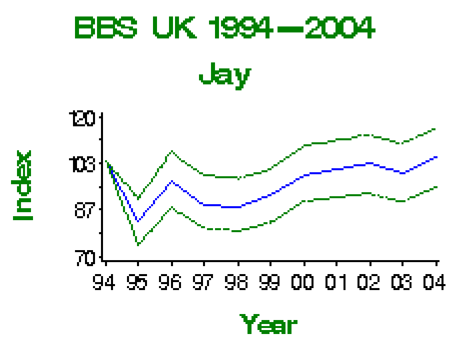
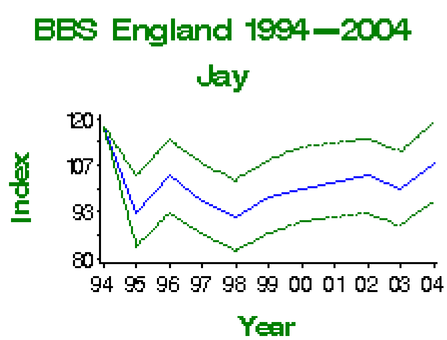
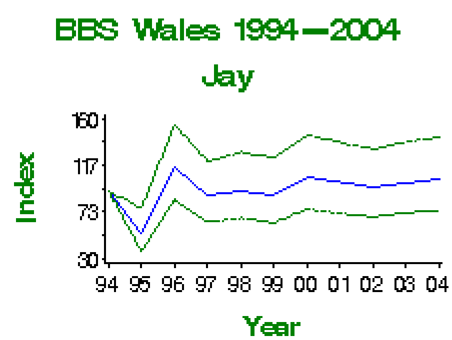






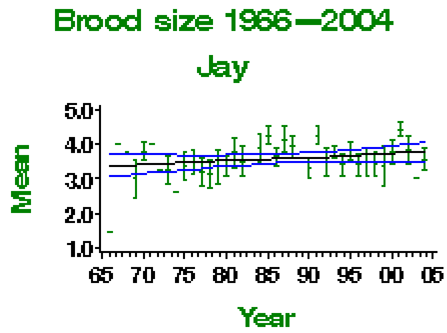


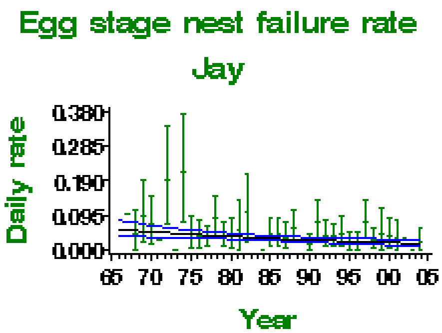
Productivity trends

Table of productivity changes for Jay

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	11	None				Small sample
Daily failure rate (eggs)	35	1968-2003	10	Linear decline	5.34% nests/day	1.92% nests/day	-64%	Small sample

Insufficient data on clutch 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
- 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 in 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

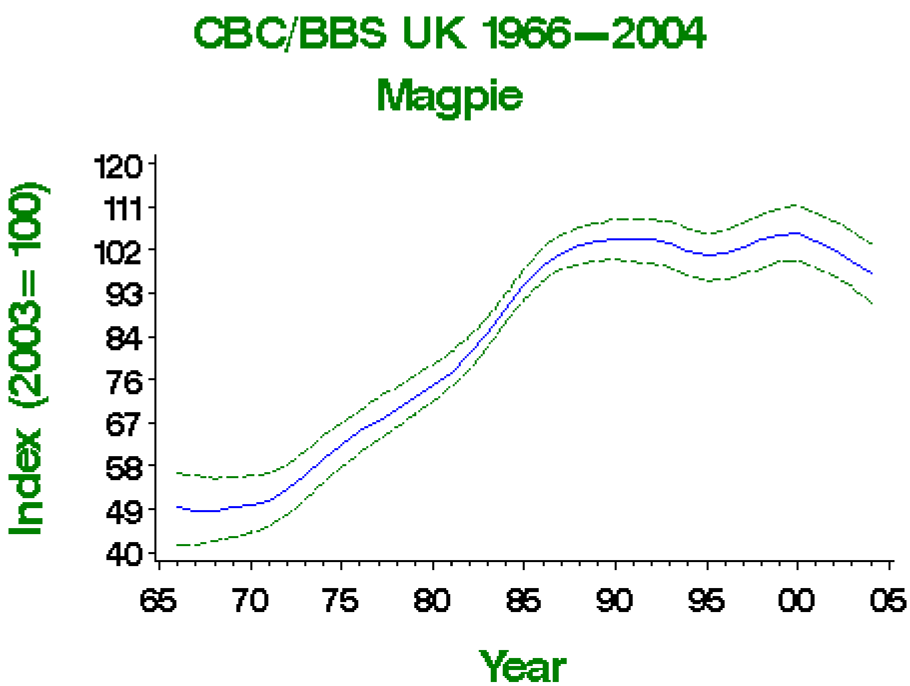


Table of population changes for Magpie

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	434	109	71	164		
	25	1978-2003	577	51	32	75		

	10	1993-2003	1206	-4	-9	1		
	5	1998-2003	1415	-3	-6	1		
CBC/BBS UK	36	1967-2003	507	106	69	152		
	25	1978-2003	677	44	27	61		
	10	1993-2003	1428	-3	-8	2		
	5	1998-2003	1712	-4	-6	-2		
BBS UK	10	1994-2004	1470	-1	-5	4		
BBS England	10	1994-2004	1226	-4	-8	1		
BBS Scotland	10	1994-2004	34	66	20	129		
BBS Wales	10	1994-2004	139	-12	-25	4		
BBS N.Ireland	10	1994-2004	63	13	-13	47		

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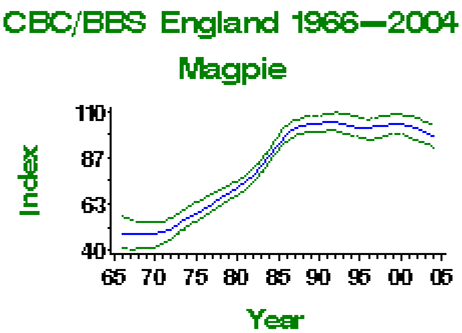
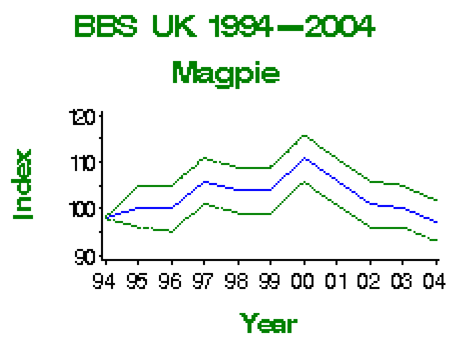
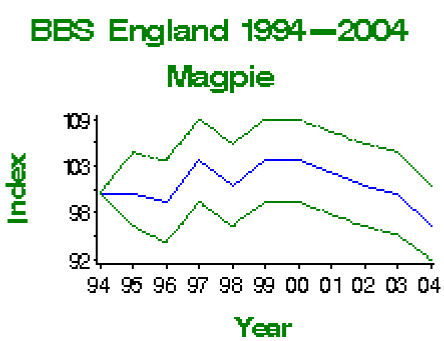
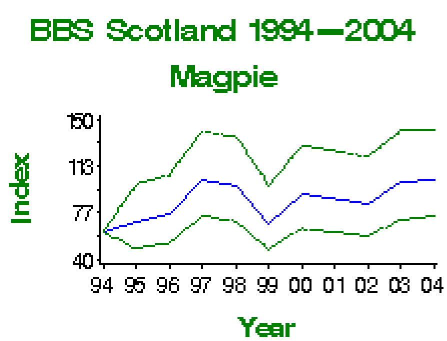
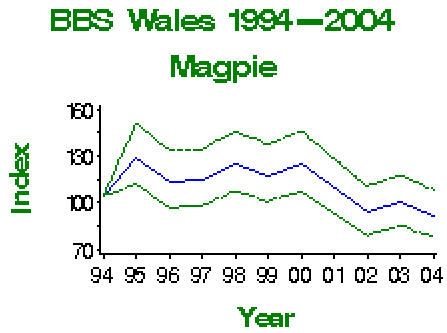
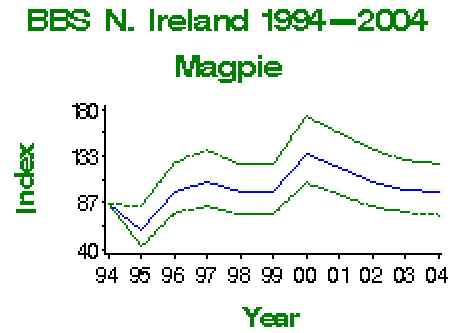








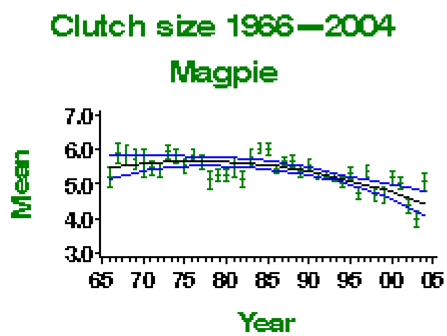


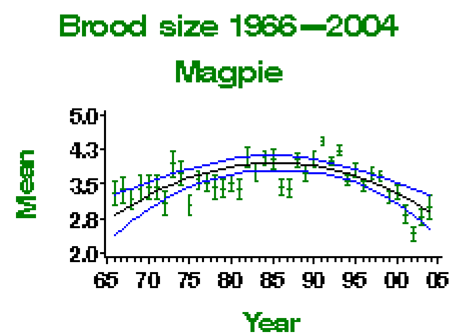


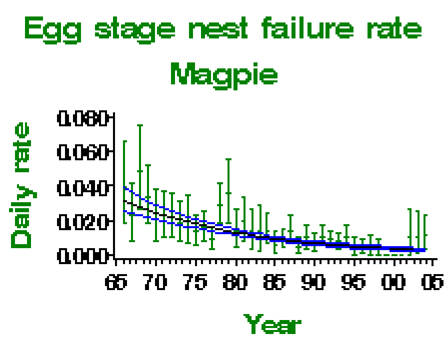
Productivity trends

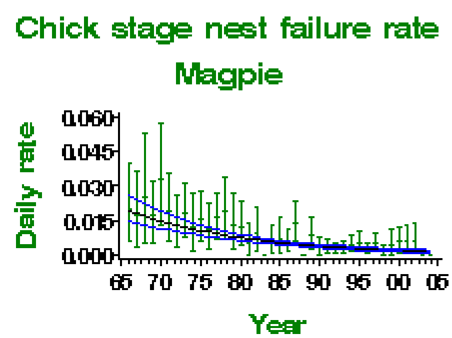
Table of productivity changes for Magpie

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	49	Curvilinear	5.54 eggs	4.53 eggs	-18.3%	
Brood size	35	1968-2003	86	Curvilinear	3.04 chicks	3.01 chicks	-1%	
Daily failure rate (eggs)	35	1968-2003	56	Linear decline	2.81% nests/day	0.31% nests/day	-89%	
Daily failure rate (chicks)	35	1968-2003	55	Linear decline	1.72% nests/day	0.17% nests/day	-90.1%	
Laying date	35	1968-2003	38	Curvilinear	Apr 20	Mar 22	-29 days	

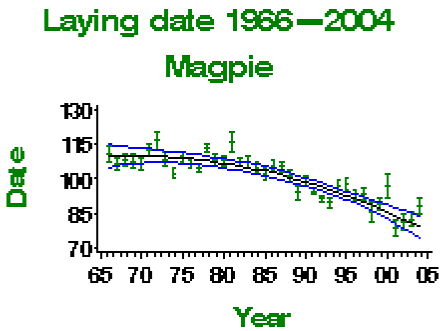








Insufficient data on CES available for this species



Additional information

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

JACKDAW
Corvus monedula

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: moderate increase

UK population size

555,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Jackdaws have increased in abundance since the 1960s (**Gregory & Marchant 1996**), and more recent BBS data suggest the increase is continuing, except perhaps in Northern Ireland. As with **Magpie**, **Rook** and **Carrion Crow**, the increase has been associated with improvements in breeding performance and probably reflects the species' generalist feeding habits, which allow it to exploit diverse and ephemeral food resources. A minor decrease in average brood size has been countered by substantial declines in nest failure rates during the egg and chick stages. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen by about two-thirds. Typically in this species, the younger chicks of a brood perish quickly if food becomes limited. Increases in fledging success are therefore likely to be due to improved parental provisioning success (**Henderson & Hart 1993**).

Population changes

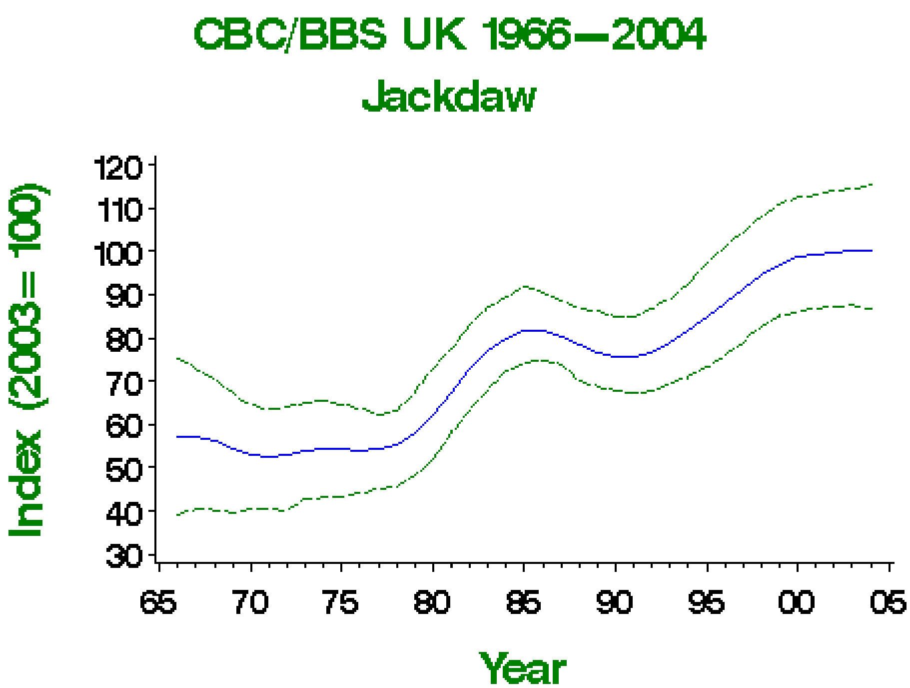
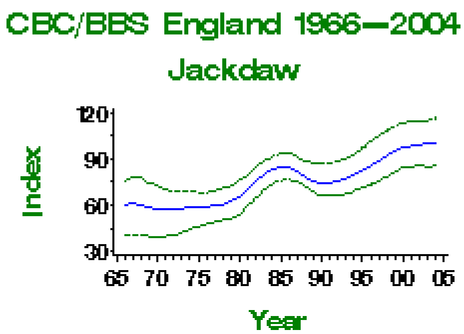


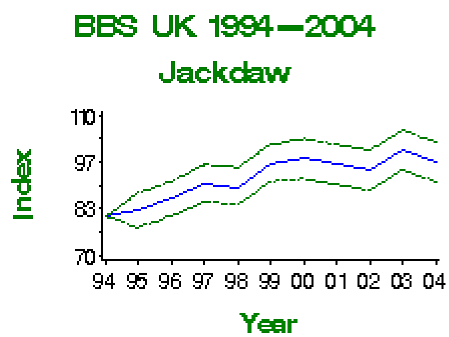
Table of population changes for Jackdaw

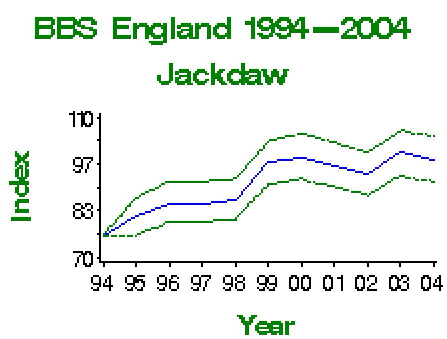
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	300	64	9	197		
	25	1978-2003	410	66	14	137		

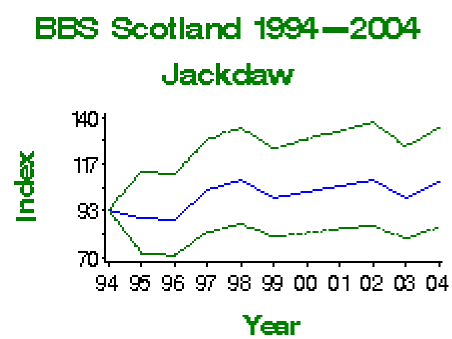
	10	1993-2003	925	30	19	43		
	5	1998-2003	1123	9	4	13		
CBC/BBS UK	36	1967-2003	377	75	13	218		
	25	1978-2003	518	81	27	157		
	10	1993-2003	1168	27	18	38		
	5	1998-2003	1434	6	1	11		
BBS UK	10	1994-2004	1256	19	12	26		
BBS England	10	1994-2004	989	28	20	37		
BBS Scotland	10	1994-2004	91	15	-9	44		
BBS Wales	10	1994-2004	116	14	-6	37		
BBS N.Ireland	10	1994-2004	56	-19	-41	11		

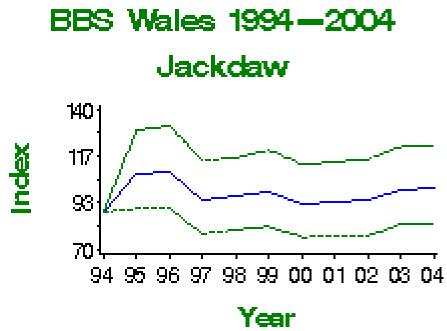
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

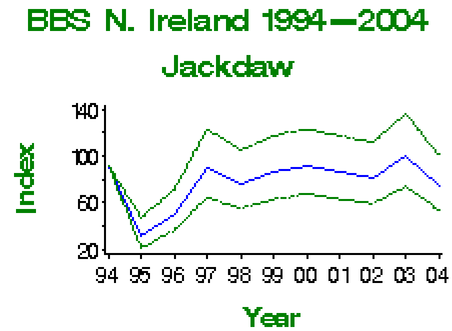








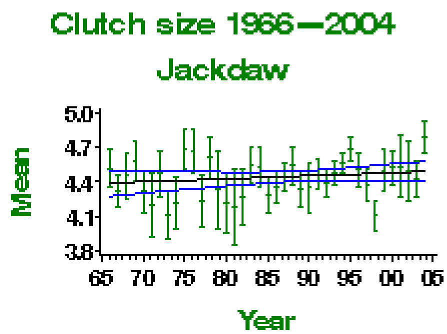


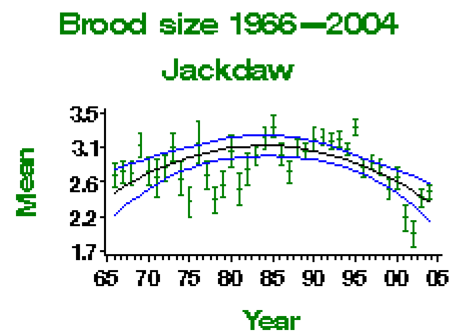


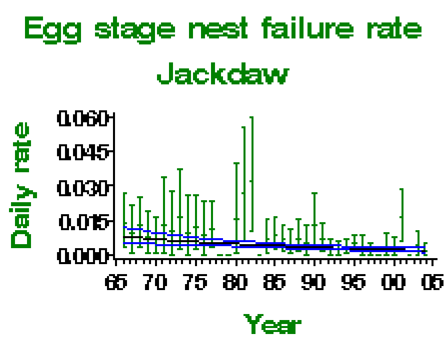
Productivity trends

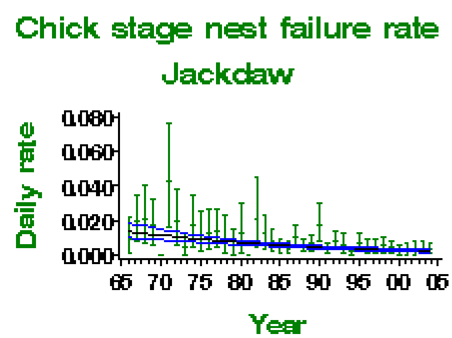
Table of productivity changes for Jackdaw

Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	39	None				
Brood size	35	1968-2003	78	Curvilinear	2.59 chicks	2.42 chicks	-6.8%	
Daily failure rate (eggs)	35	1968-2003	48	Linear decline	0.76% nests/day	0.22% nests/day	-71.1%	
Daily failure rate (chicks)	35	1968-2003	47	Linear decline	1.28% nests/day	0.26% nests/day	-79.7%	
Laying date	35	1968-2003	20	Curvilinear	Apr 23	Apr 19	-4 days	Small sample

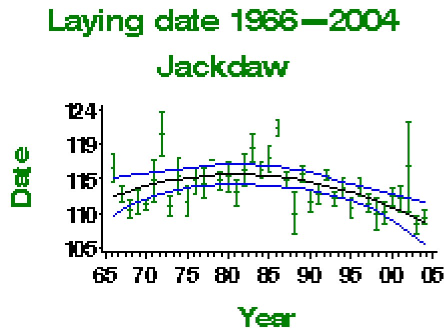








Insufficient data for CES available for this species



Additional information

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

ROOK
Corvus frugilegus

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK: moderate increase

UK population size

1,120,000–1,430,000 pairs in 1996 (**Marchant & Gregory 1999**: **BiE04**); 1,130,000–1,440,000 pairs in 2000 (1996 estimate updated using BBS trend: **APEP06**)

Status summary

Relatively few rookeries fell within CBC plots, but an index calculated from the available nest counts showed a shallow, long-term increase (**Wilson *et al.* 1998**). The trend is confirmed by the results of the most recent BTO rookeries survey, which identified a 40% increase in abundance between 1975 and 1996 (**Marchant & Gregory 1999**). This increase probably reflects the species' adaptability in the face of agricultural change. BBS indices, drawn from sightings, suggest stability in the UK since 1994; BBS also holds data from nest counts, but no indices from these are available. There has been minor increase since the 1960s in nest failure rates at the egg stage.

Population changes

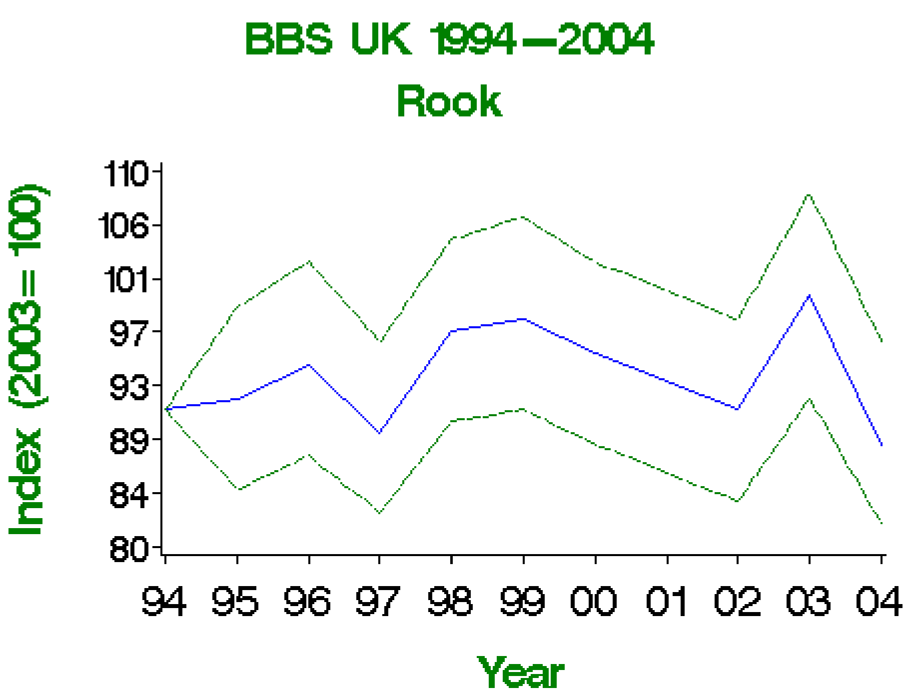


Table of population changes for Rook

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	1038	-3	-10	6		
BBS England	10	1994-2004	814	1	-8	10		

BBS Scotland	10	1994-2004	96	-5	-29	27		
BBS Wales	10	1994-2004	70	-11	-36	25		
BBS N.Ireland	10	1994-2004	56	0	-31	47		

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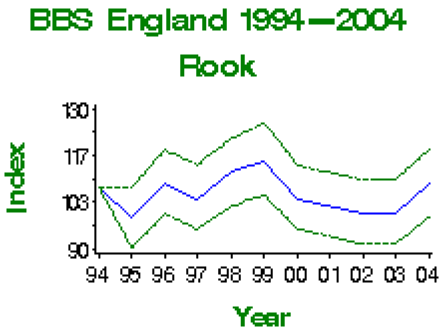
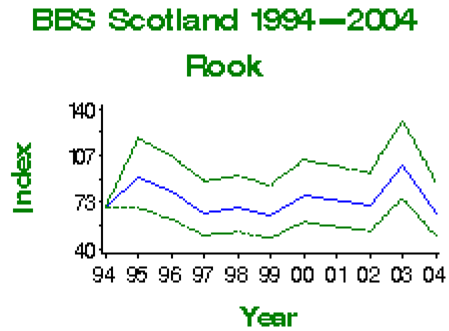
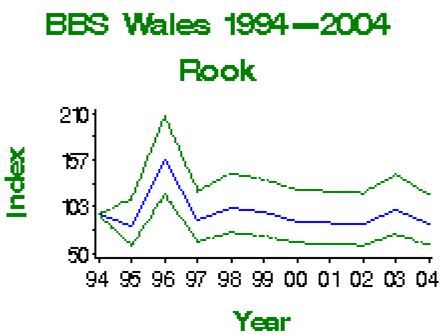
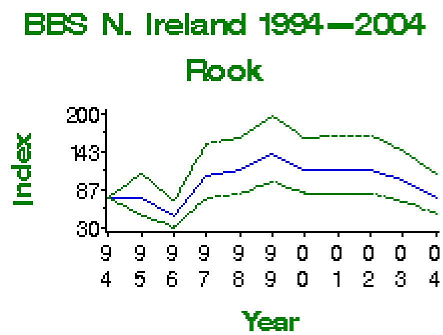




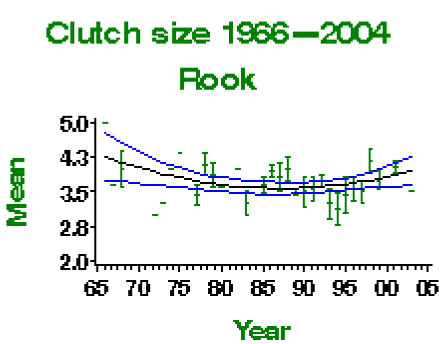


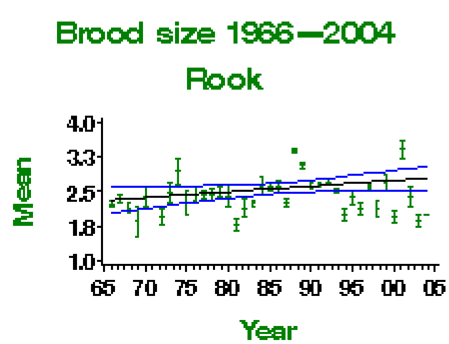


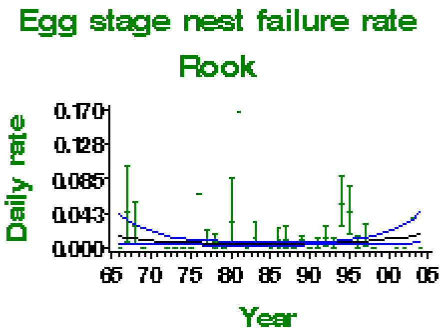
Productivity trends

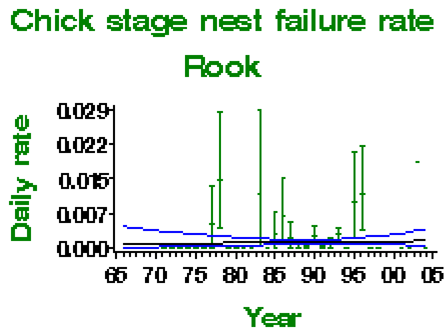
Table of productivity changes for Rook

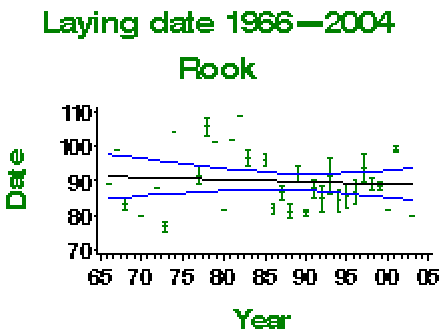
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	14	Curvilinear	4.15 eggs	3.96 eggs	-4.5%	Small sample
Brood size	35	1968-2003	90	None				
Daily failure rate (eggs)	35	1968-2003	37	Curvilinear	1.24% nests/day	1.54% nests/day	24.2%	
Daily failure rate (chicks)	35	1968-2003	58	None				
Laying date	35	1968-2003	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**
- **Garden BirdWatch results**

CARRION CROW
Corvus corone

• Population changes • Productivity trends • Additional information

Conservation listings

Europe (*C. corone/cornix*): no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK (*C. corone/cornix*): green

Long-term trend

England: rapid increase

UK population size

790,000 territories in 1990 (1988–91 Atlas: **APEP06**); 987,500 pairs in 2000 (updated using CBC/BBS trend)

Status summary

Carrion Crows have increased steadily since the 1960s (**Gregory & Marchant 1996**) and both the CBC and the BBS indicate that the increase is continuing. This trend has been associated with increases in nesting success and earlier laying (perhaps an effect of climate change: **Crick *et al.* 1997**) and probably reflects the species' adaptability to changing habitats and the exploitation of ephemeral food resources in intensive agriculture. Reduced control activities by gamekeepers may also have contributed (**Marchant *et al.* 1990**), as may an increase in roadside carrion.

Population changes

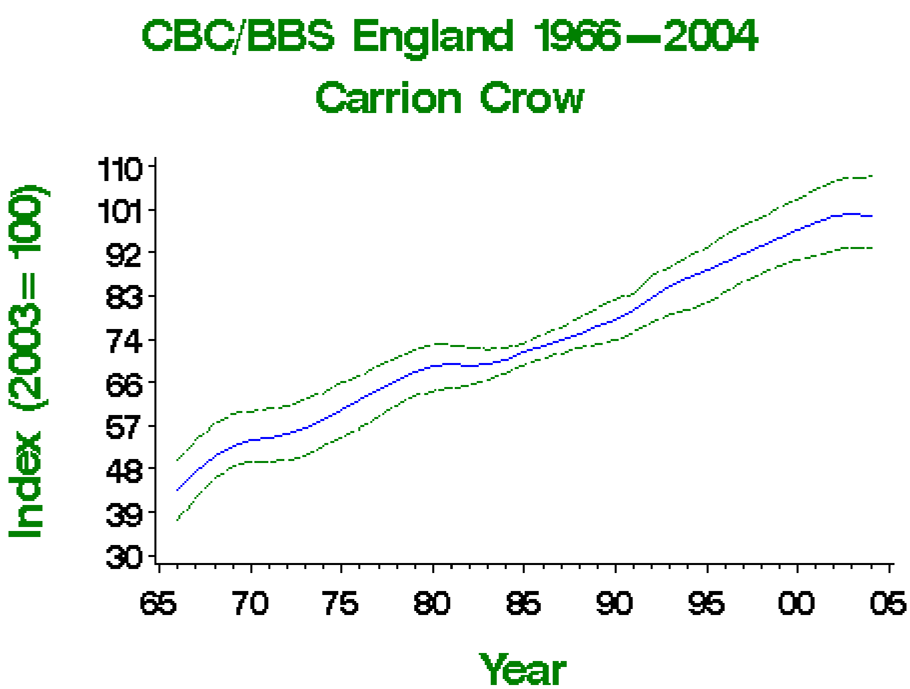


Table of population changes for Carrion Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	493	113	72	163		Includes Hooded Crow
	25	1978-2003	658	52	30	79		Includes Hooded Crow
	10	1993-2003	1416	17	11	25		Includes Hooded Crow

	5	1998-2003	1670	7	2	12		Includes Hooded Crow
BBS UK	10	1994-2004	1795	11	6	17		
BBS England	10	1994-2004	1466	20	14	26		
BBS Scotland	10	1994-2004	150	-3	-19	16		
BBS Wales	10	1994-2004	169	-4	-17	11		

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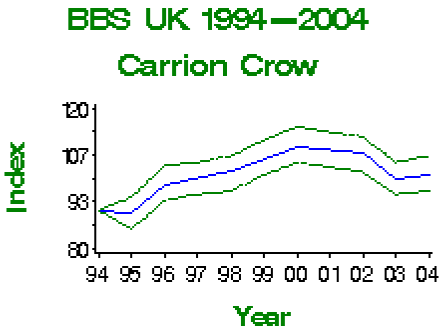
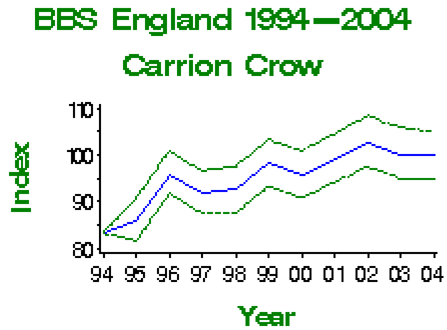
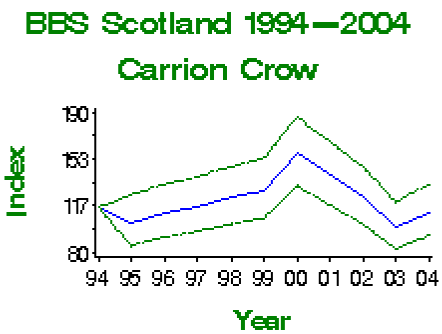
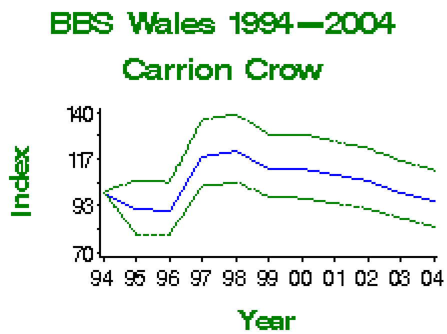




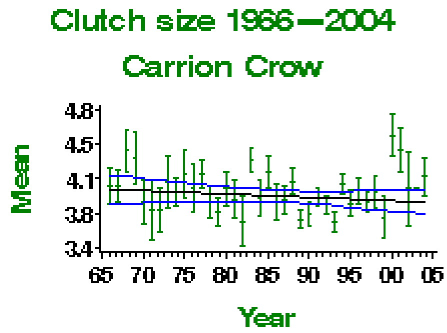


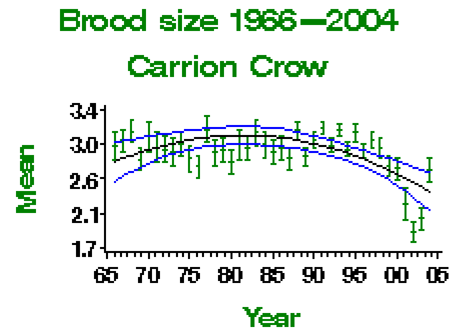


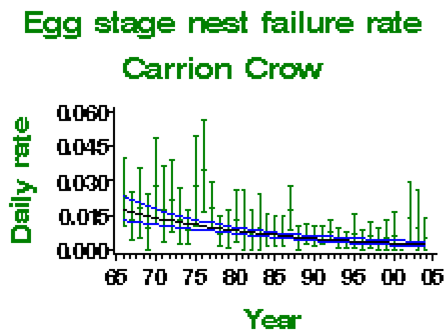
Productivity trends

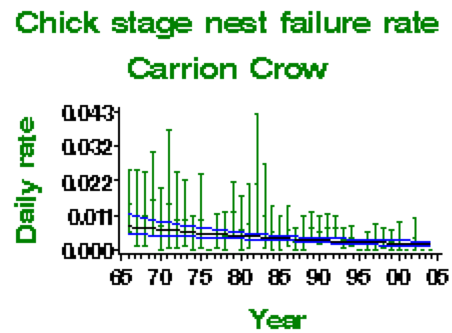
Table of productivity changes for Carrion Crow

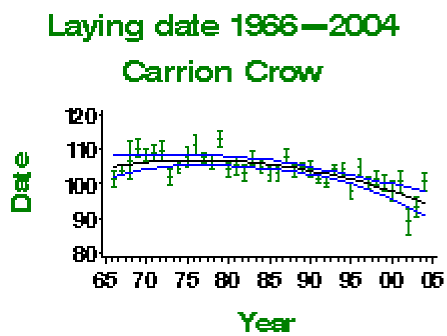
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	36	None				
Brood size	35	1968-2003	82	Curvilinear	2.83 chicks	2.46 chicks	-13.3%	
Daily failure rate (eggs)	35	1968-2003	54	Linear decline	1.57% nests/day	0.27% nests/day	-82.8%	
Daily failure rate (chicks)	35	1968-2003	45	Linear decline	0.7% nests/day	0.19% nests/day	-72.9%	
Laying date	35	1968-2003	34	Curvilinear	Apr 16	Apr 5	-11 days	











Insufficient data on CES available for this species

Additional information

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

HOODED CROW
Corvus cornix

• Population changes • Productivity trends • Additional information

Conservation listings

Europe (*C. corone/cornix*): no SPEC category (favourable conservation status in Europe, not concentrated in Europe)
UK (*C. corone/cornix*): green

Long-term trend

UK: uncertain

UK population size

213,900 territories in 1990 (1988–91 Atlas: **APEP06**)

Status summary

The BOU Records Committee took the decision in 2002 to treat Hooded Crow and **Carrion Crow** as separate species (**Parkin *et al.* 2003**). This split is not yet recognised in conservation listings. In the UK, Hooded Crows occur in Northern Ireland, the Isle of Man, and Scotland, mainly west and north of the Great Glen. Retrospective analysis of BBS trends is simple because observers record Hooded Crows (coded HC) separately from Carrion Crows and from intermediates (coded HB). Intermediate forms between Carrion and Hooded, which predominate in a band across western Scotland and occur less frequently elsewhere in the UK, are not included in either BBS index. BBS data suggest that some decrease in Hooded Crows may have occurred in Scotland, large enough to raise an alert, but that this has been countered by increase in Northern Ireland. Hooded Crows have increased markedly in Ireland since 1924 (**Hutchinson 1989**).

Population changes

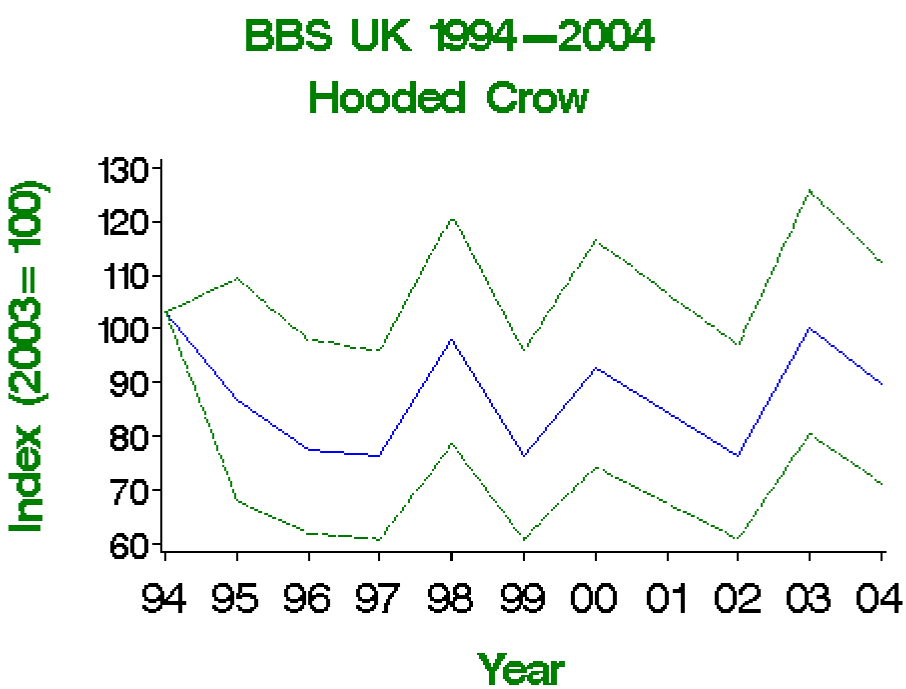


Table of population changes for Hooded Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	114	-13	-31	9		
BBS Scotland	10	1994-2004	49	-37	-53	-14	(>25)	
BBS N.Ireland	10	1994-2004	60	100	36	193		

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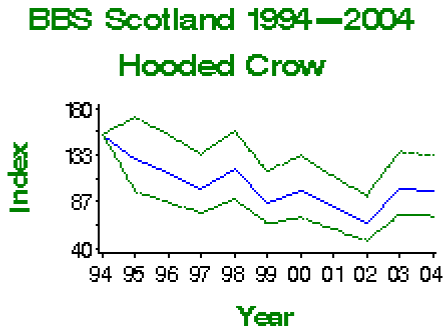

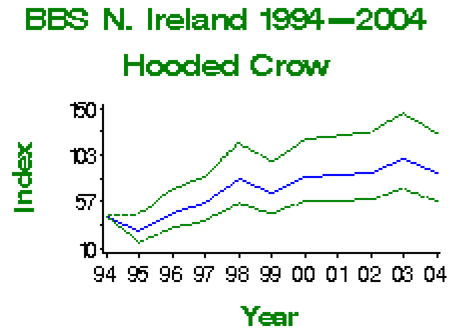

Productivity trends

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: uncertain

UK population size

12,900 pairs in 2000 (1988–91 Atlas estimate updated using BBS trend: **BiE04**, **APEP06**)

Status summary

The Raven's range has contracted from some areas of northern Britain, and gaps in the distribution have been linked to persecution associated with grouse moors (**Gibbons *et al.* 1993**, **1995**). Declines in southern Scotland and northern England were associated with increases in afforestation (**Marquiss *et al.* 1978**). More recently, Ravens have increased along the English-Welsh border and in parts of lowland England, helping to balance local declines in northern Britain (**Cross 2002**). BBS indicates steep increase in England, Scotland and Wales since 1994. Brood size, however, has fallen.

Population changes

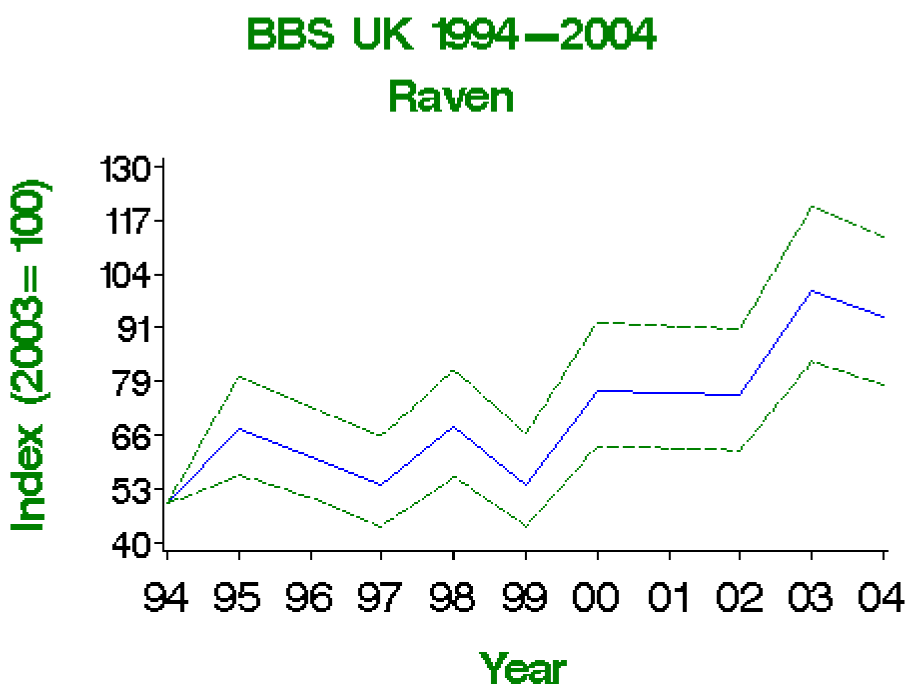

Table of population changes for Raven

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	182	91	58	130		
BBS England	10	1994-2004	55	280	178	420		
BBS Scotland	10	1994-2004	37	76	13	174		
BBS Wales	10	1994-2004	72	22	-8	62		

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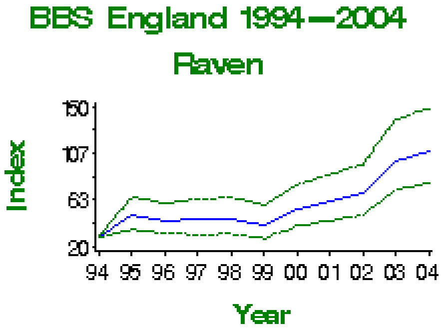
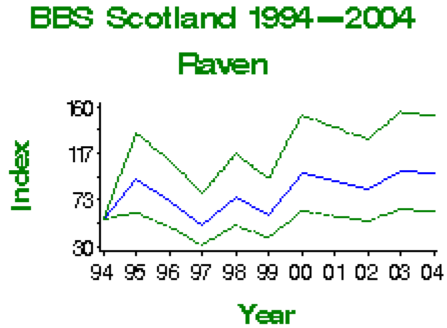
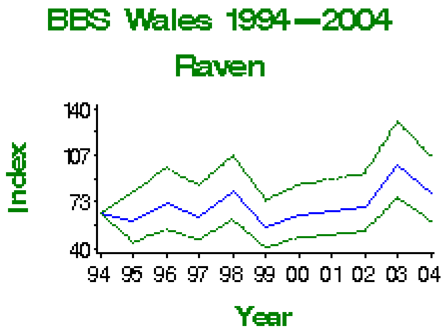


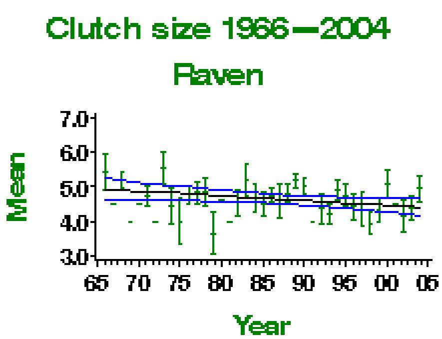


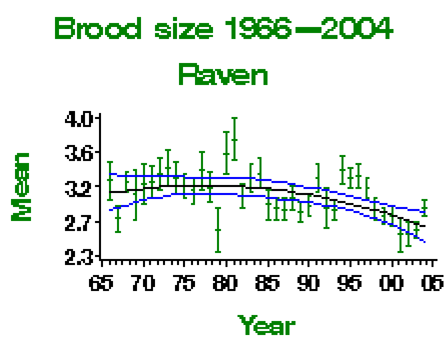


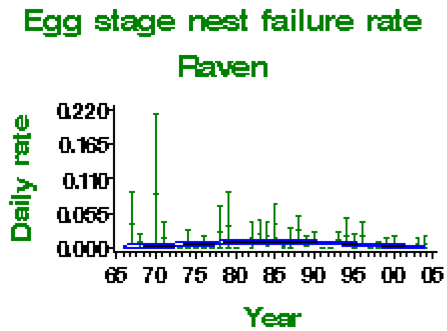
Productivity trends

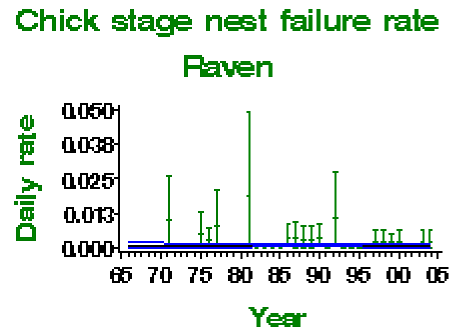
Table of productivity changes for Raven

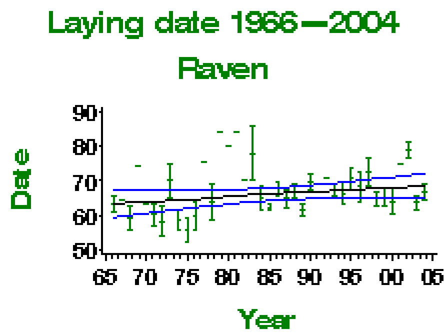
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	12	Linear decline	4.91 eggs	4.43 eggs	-9.8%	Small sample
Brood size	35	1968-2003	56	Curvilinear	3.11 chicks	2.7 chicks	-13.1%	
Daily failure rate (eggs)	35	1968-2003	19	Curvilinear	0.21% nests/day	0.18% nests/day	-14.3%	Small sample
Daily failure rate (chicks)	35	1968-2003	25	None				Small sample
Laying date	35	1968-2003	10	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)

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**)

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**). The declines have been greatest in the south and west of Britain; recent BBS data suggest that populations are currently more stable in Scotland and are even increasing in Northern Ireland, but the overall UK trend continues to be strongly downward. The species' UK conservation listing has been upgraded from amber to red as the decline has continued. 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**). Loss of the species' preferred feeding habitat, permanent pasture, and general intensification of livestock rearing are likely to be having adverse effects on farmland populations (**Crick *et al.* 2002**), but other causes should be sought in urban areas and perhaps in woodland. 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

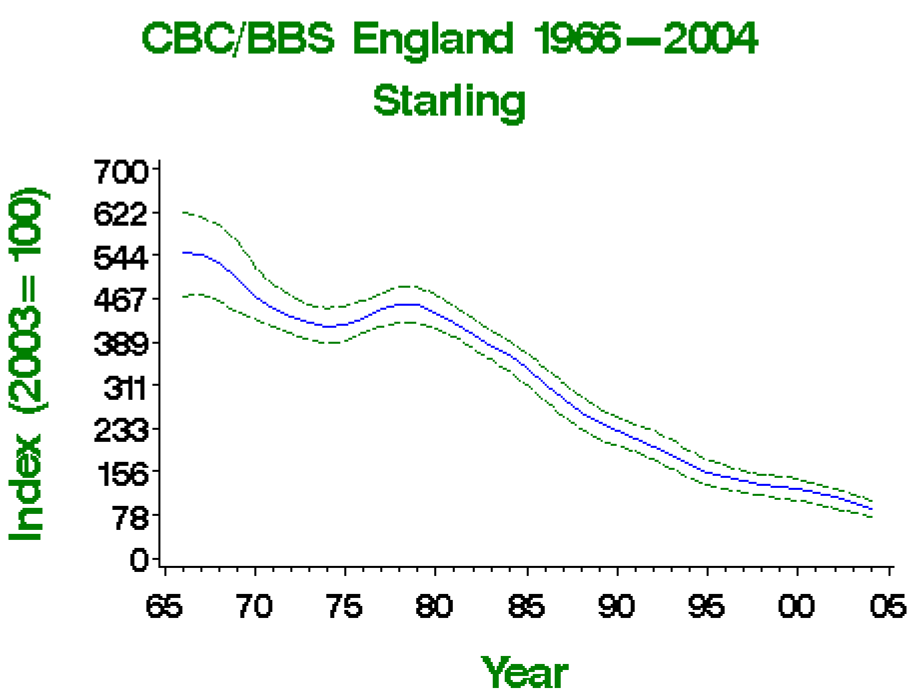
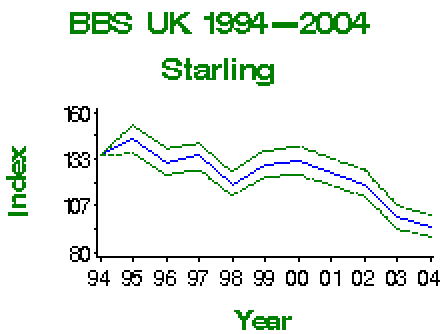


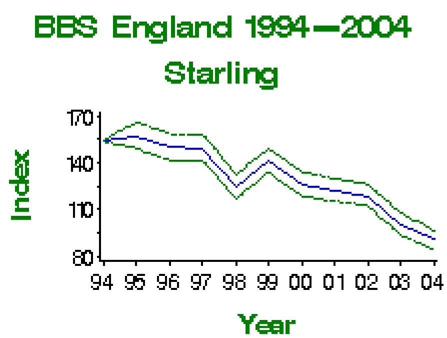
Table of population changes for Starling

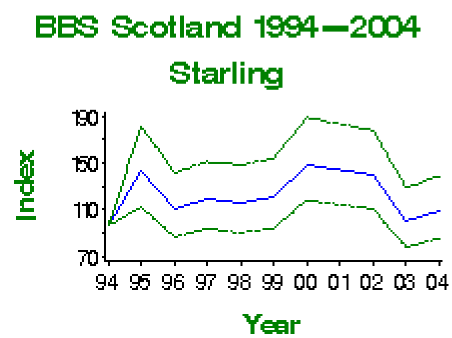
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

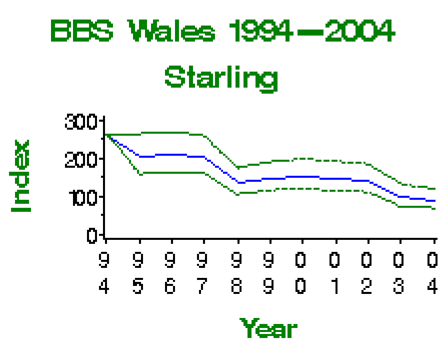
CBC/BBS England	36	1967-2003	406	-82	-86	-76	>50	
	25	1978-2003	537	-78	-83	-73	>50	
	10	1993-2003	1169	-46	-51	-42	>25	
	5	1998-2003	1352	-25	-28	-21		
BBS UK	10	1994-2004	1499	-30	-34	-25	(>25)	
BBS England	10	1994-2004	1232	-41	-45	-37	(>25)	
BBS Scotland	10	1994-2004	122	13	-11	44		
BBS Wales	10	1994-2004	79	-66	-74	-55	(>50)	
BBS N.Ireland	10	1994-2004	58	83	17	186		

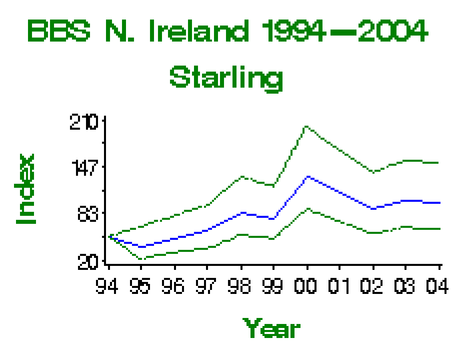
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









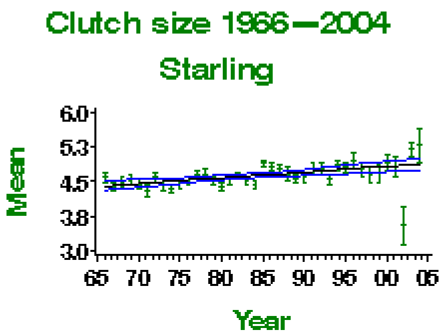


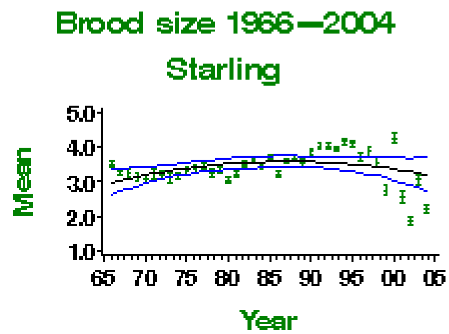
Productivity trends

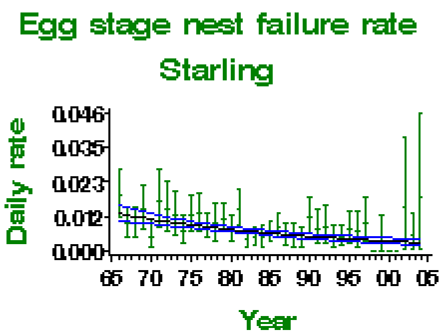
Table of productivity changes for Starling

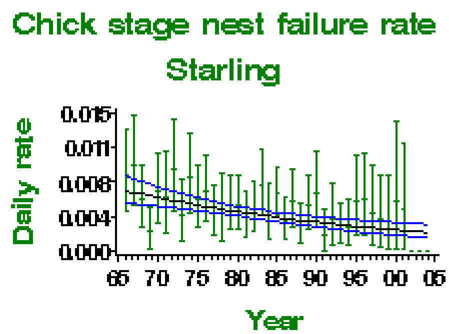
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	78	Linear increase	4.44 eggs	4.87 eggs	9.7%	
Brood size	35	1968-2003	209	Curvilinear	3.1 chicks	3.26 chicks	5.2%	

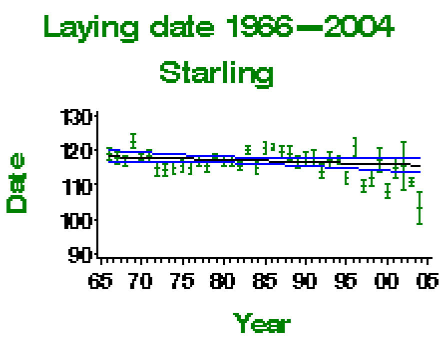
Daily failure rate (eggs)	35	1968-2003	121	Linear decline	1.16% nests/day	0.3% nests/day	-74.1%	
Daily failure rate (chicks)	35	1968-2003	146	Linear decline	0.62% nests/day	0.21% nests/day	-66.1%	
Laying date	35	1968-2003	87	None				











Insufficient data on CES available for this species

Additional information

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

HOUSE SPARROW
Passer domesticus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3, declining
UK: red (>50% population decline)

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.* 2005**)

Status summary

The UK House Sparrow population was not monitored adequately by the CBC until 1976, partly because that scheme did not target urban areas and gardens. Data collected by CBC/BBS indicate a rapid decline in abundance over the last 25 years, as does the BTO's Garden Bird Feeding Survey more recently (**Siriwardena *et al.* 2002**). These results are supported by many other data and anecdotal reports that have generated great conservation concern (see **Summers-Smith 2003**). A change in the listing criteria has resulted in the admission of the species, previously green-listed, to the red list. The decline is likely to have been driven by reductions in overwinter survival (**Siriwardena *et al.* 1999**) and has been linked to a range of changes in rural and urban habitats; the causes are likely to be different in the two areas. Possible explanations for the decrease in House Sparrow abundance include general reductions in food supply, reductions in the amount of grain spilt during agricultural operations, tighter hygiene regulations, increases in predation, and the use of toxic additives in unleaded petrol (**Crick *et al.* 2002**). BBS data suggest that the species has shown increases recently in Scotland and Wales. Brood size has decreased, but nest success has improved markedly. Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (**BirdLife International 2004**).

Population changes

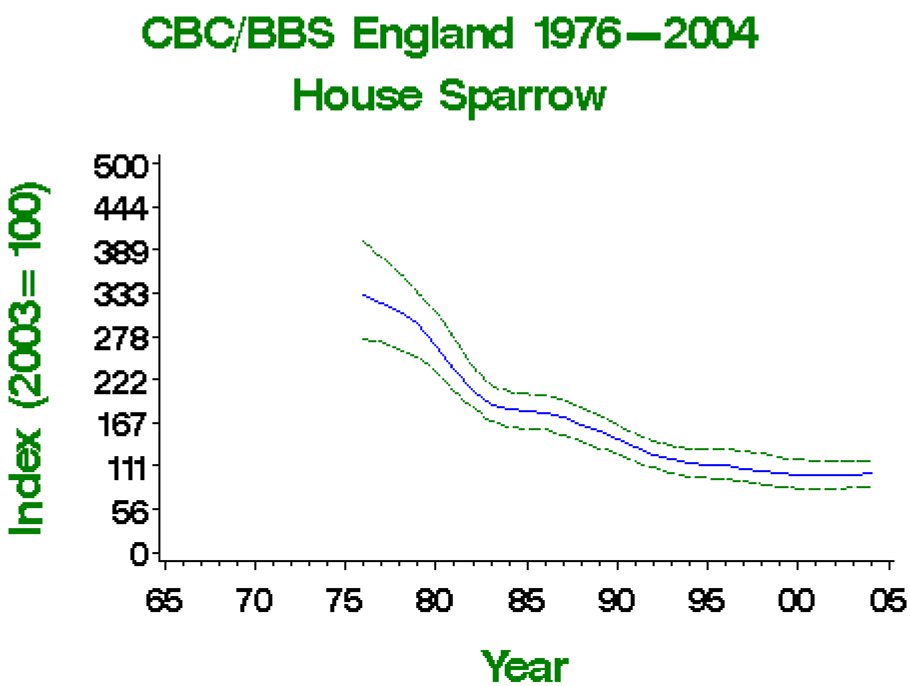
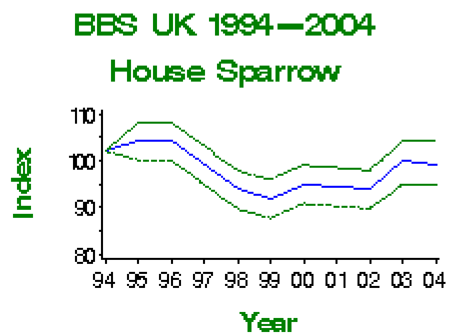
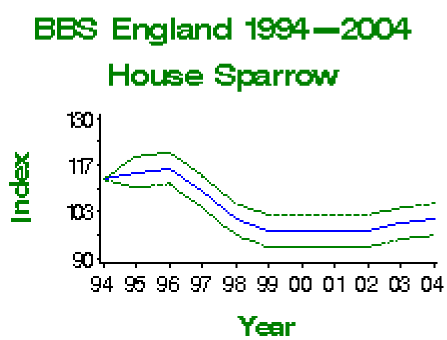


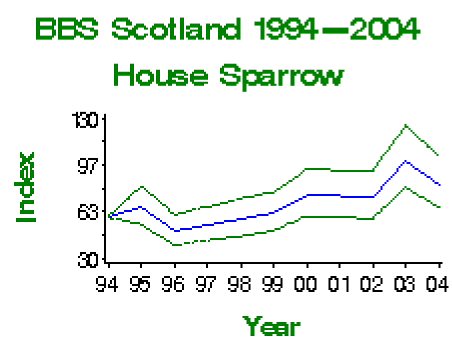
Table of population changes for House Sparrow

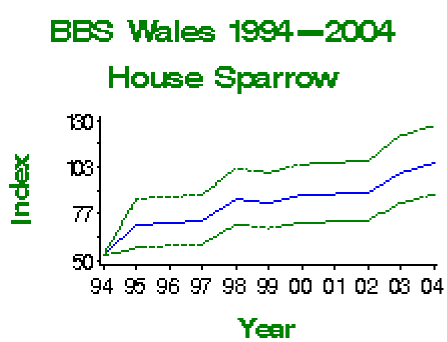
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	26	1977-2003	408	-69	-78	-55	>50	
	25	1978-2003	423	-68	-77	-53	>50	
	10	1993-2003	989	-16	-24	-9		
	5	1998-2003	1159	-4	-9	0		
BBS UK	10	1994-2004	1275	-3	-7	2		
BBS England	10	1994-2004	1059	-10	-14	-6		
BBS Scotland	10	1994-2004	73	39	12	73		
BBS Wales	10	1994-2004	99	100	66	141		
BBS N.Ireland	10	1994-2004	38	-28	-51	6		

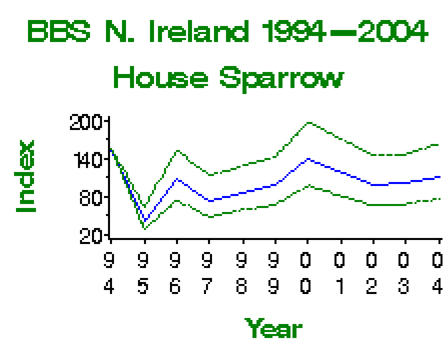
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB









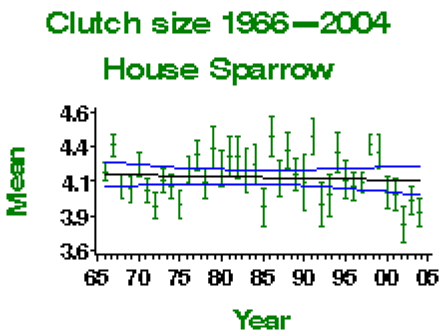


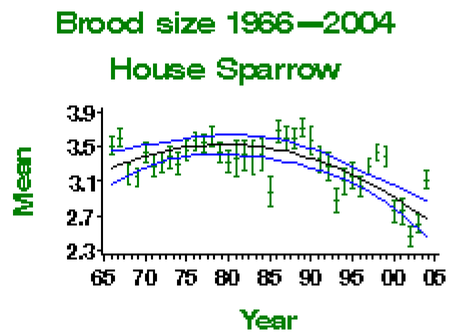
Productivity trends

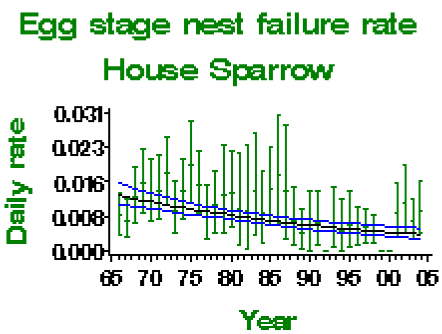
Table of productivity changes for House Sparrow

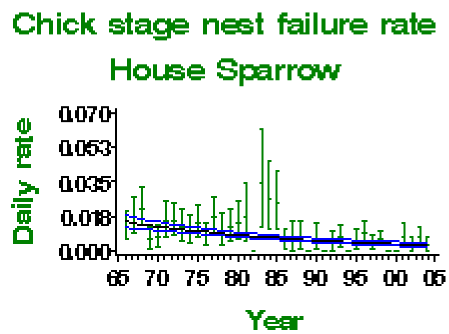
Variable	Period (yrs)	Years	Mean annual	Trend	Modelled in first year	Modelled in 2003	Change	Comment

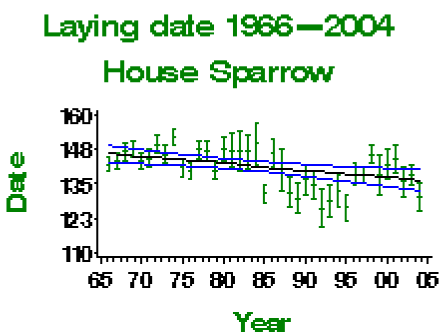
			sample					
Clutch size	35	1968-2003	57	None				
Brood size	35	1968-2003	95	Curvilinear	3.32 chicks	2.73 chicks	-17.9%	
Daily failure rate (eggs)	35	1968-2003	76	Linear decline	1.18% nests/day	0.39% nests/day	-66.9%	
Daily failure rate (chicks)	35	1968-2003	75	Linear decline	1.38% nests/day	0.32% nests/day	-76.8%	
Laying date	35	1968-2003	45	Linear decline	May 25	May 17	-8 days	











Insufficient data for CES available for this species

Additional information

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

TREE SPARROW
Passer montanus

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 3 (declining)
UK: red (>50% population decline)

Long-term trend

UK: 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 between the late 1970s and the early 1990s. BBS data indicate significant increase since 1994, in England and in the UK as a whole, but it should be remembered that the current population level is still only about 3% of that of 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

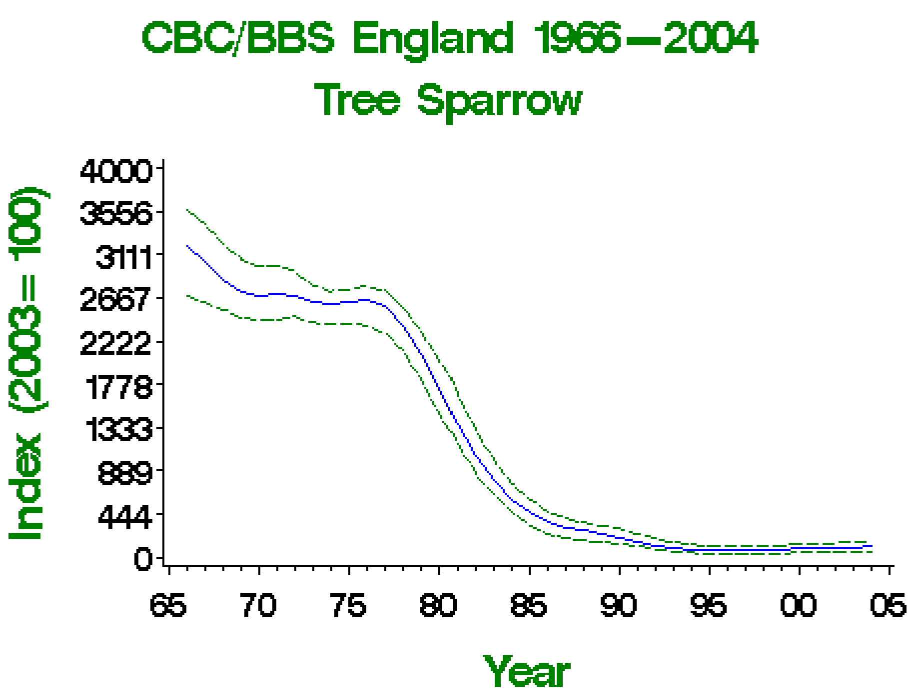


Table of population changes for Tree Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	78	-97	-98	-94	>50	

	25	1978-2003	75	-96	-98	-93	>50	
	10	1993-2003	111	10	-35	39		Small CBC sample
	5	1998-2003	117	27	9	56		
BBS UK	10	1994-2004	136	48	22	80		
BBS England	10	1994-2004	113	30	6	60		

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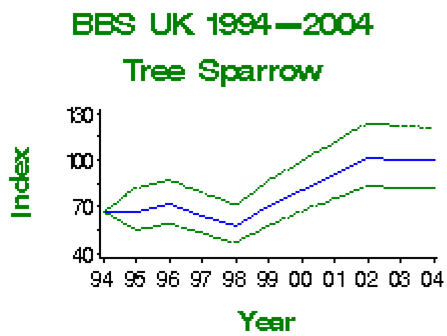
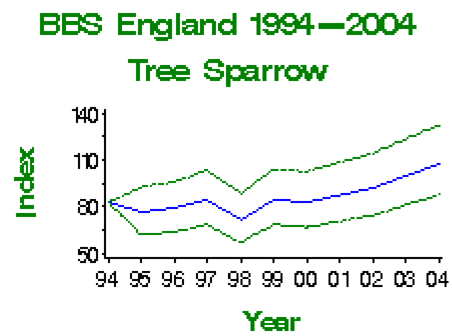
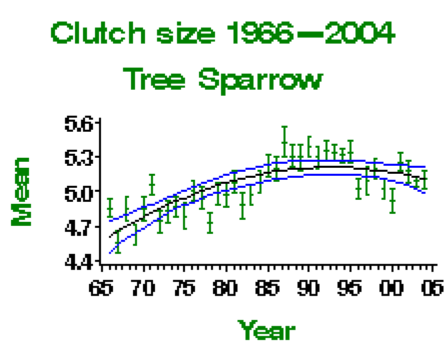


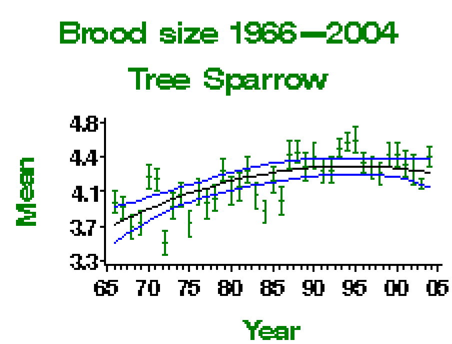


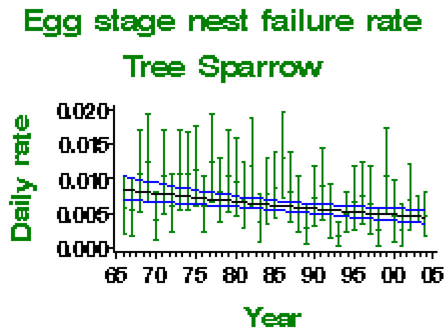
Productivity trends

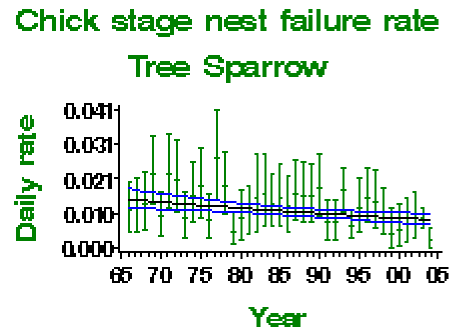
Table of productivity changes for Tree Sparrow

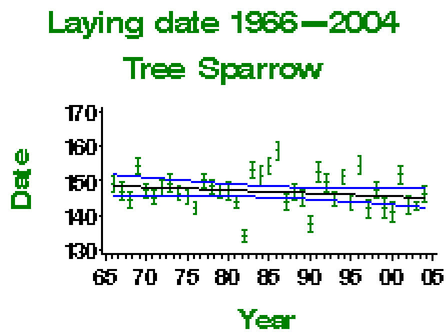
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	93	Curvilinear	4.7 eggs	5.13 eggs	9.1%	
Brood size	35	1968-2003	104	Curvilinear	3.78 chicks	4.28 chicks	13%	
Daily failure rate (eggs)	35	1968-2003	121	Linear decline	0.82% nests/day	0.46% nests/day	-43.9%	
Daily failure rate (chicks)	35	1968-2003	87	Linear decline	1.41% nests/day	0.86% nests/day	-39%	
Laying date	35	1968-2003	105	None				











Insufficient data on CES
available for this species

Additional information

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

CHAFFINCH
Fringilla coelebs

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

UK, England: shallow increase

UK population size

5,974,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Chaffinch abundance increased rapidly during the 1970s and 1980s, according to CBC/BBS and CES, but numbers seemed to stabilise during the1990s. The recent relative stability has been associated with a reduction in annual survival, which could be density-dependent (**Siriwardena *et al.* 1999**). There was also some evidence of improved breeding performance during the population increase, with larger brood sizes and fewer egg-stage nest failures. The trend towards earlier laying may be partly explained by recent climate change (**Crick & Sparks 1999**). Chaffinches are well adapted to suburban and garden habitats, as well as to highly fragmented woodland and hedgerows, occurring less in the open-field, arable habitats that have been affected most by agricultural intensification, so may have benefited by environmental changes from which other seed-eating passerines have suffered.

Population changes

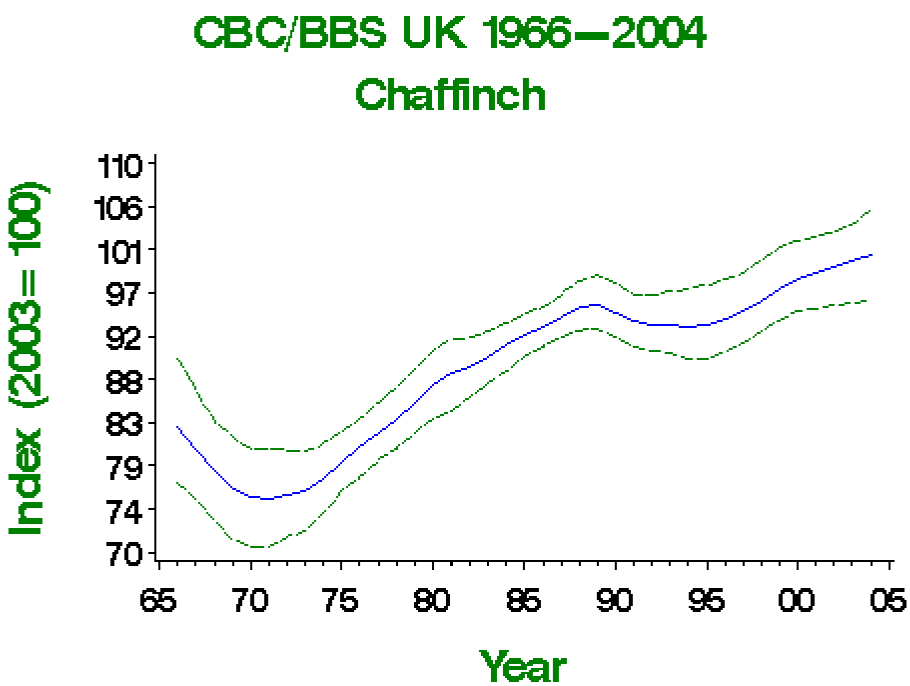


Table of population changes for Chaffinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	533	32	17	51		
	25	1978-2003	694	29	19	42		

	10	1993-2003	1447	14	10	18		
	5	1998-2003	1693	9	7	12		
CBC/BBS UK	36	1967-2003	668	24	10	40		
	25	1978-2003	876	19	10	31		
	10	1993-2003	1848	7	3	10		
	5	1998-2003	2184	4	1	7		
CES adults	19	1984-2003	77	28	-31	122		
	10	1993-2003	90	-3	-16	10		
	5	1998-2003	87	5	-11	23		
CES juveniles	19	1984-2003	57	79	-28	262		
	10	1993-2003	69	24	-15	72		
	5	1998-2003	67	54	8	102		
BBS UK	10	1994-2004	1898	9	6	12		
BBS England	10	1994-2004	1466	14	11	18		
BBS Scotland	10	1994-2004	191	1	-8	11		
BBS Wales	10	1994-2004	165	-7	-16	3		
BBS N.Ireland	10	1994-2004	68	56	19	104		

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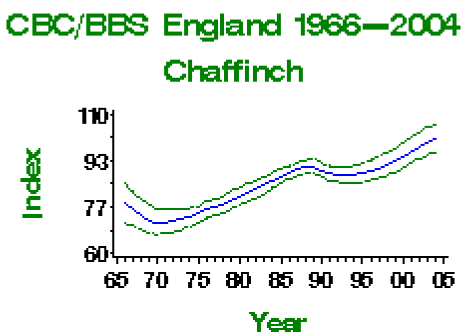
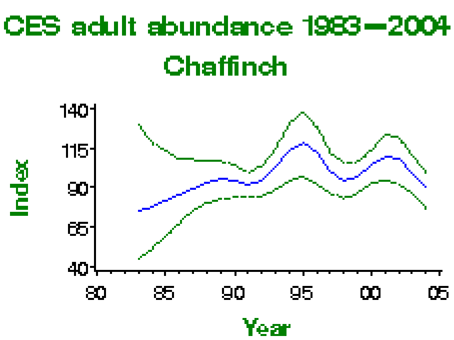
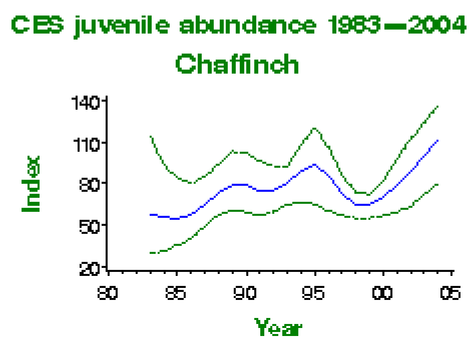
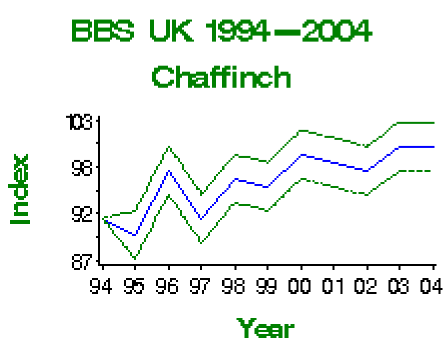
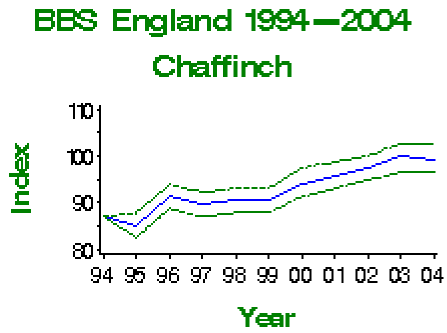
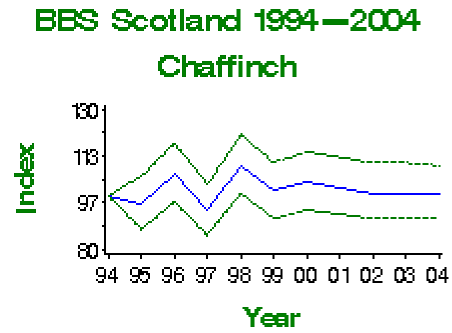


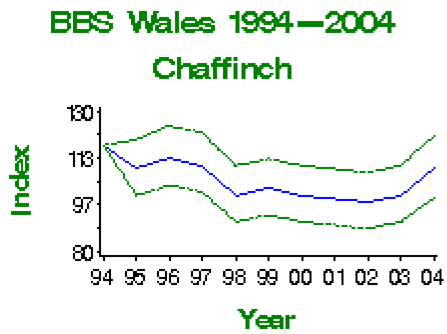


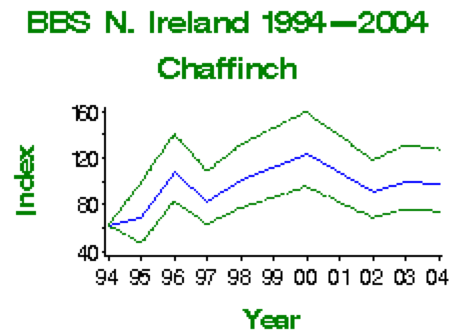








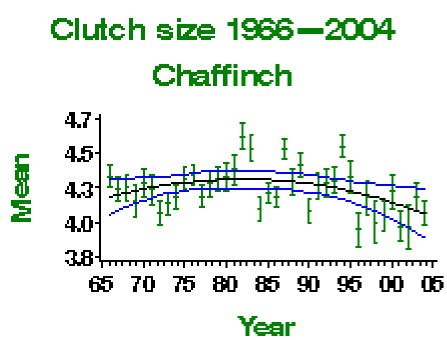


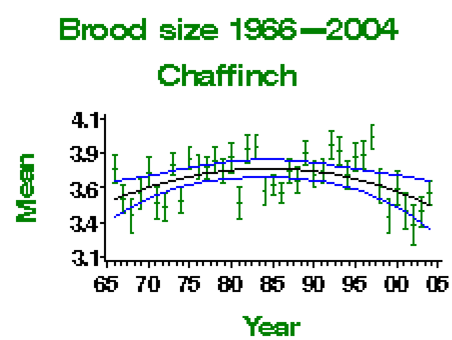


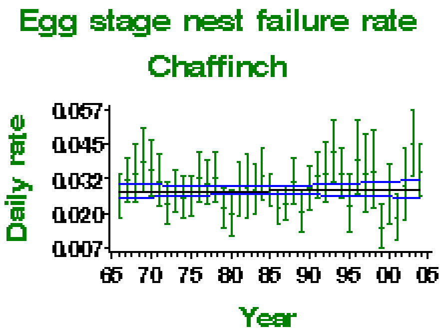
Productivity trends

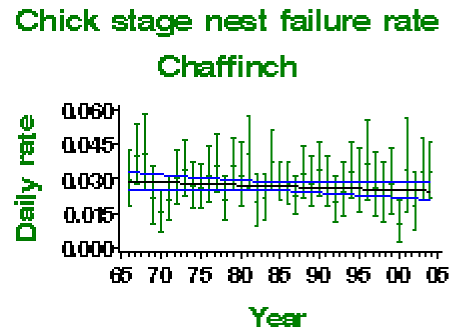
Table of productivity changes for Chaffinch

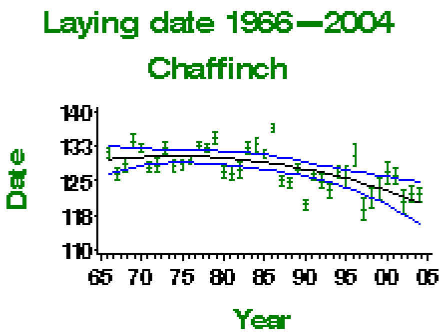
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	85	Curvilinear	4.22 eggs	4.11 eggs	-2.7%	
Brood size	35	1968-2003	136	Curvilinear	3.56 chicks	3.51 chicks	-1.6%	
Daily failure rate (eggs)	35	1968-2003	161	None				
Daily failure rate (chicks)	35	1968-2003	111	None				
Laying date	35	1968-2003	108	Curvilinear	May 10	May 1	-9 days	
Juvenile to Adult ratio (CES)	19	1984-2003	82	Smoothed trend	56 Index value	103 Index value	77%	
Juvenile to Adult ratio (CES)	10	1993-2003	96	Smoothed trend	92 Index value	103 Index value	8%	
Juvenile to Adult ratio (CES)	5	1998-2003	95	Smoothed trend	95 Index value	103 Index value	5%	

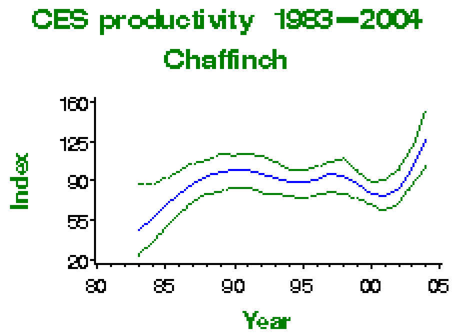












Additional information

- **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

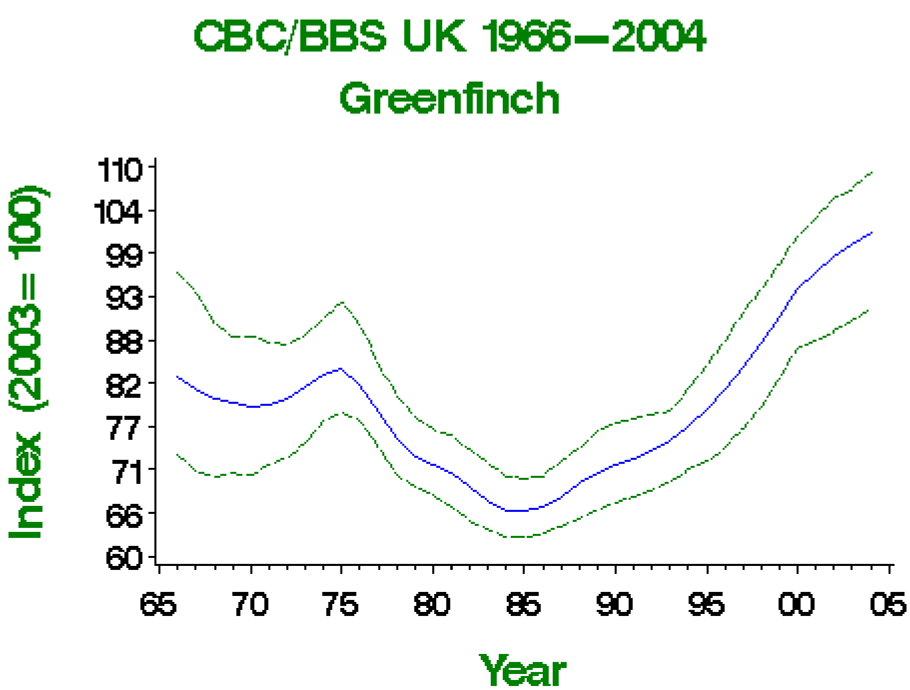
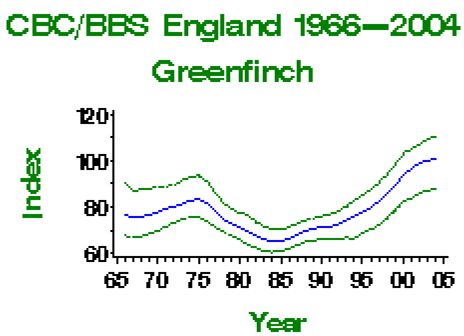


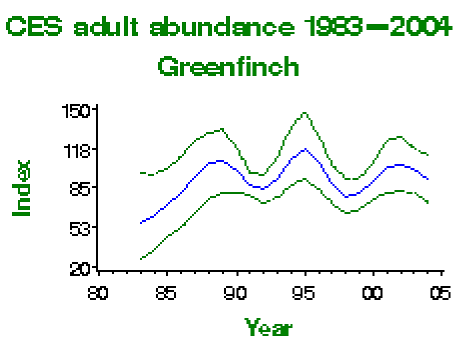
Table of population changes for Greenfinch

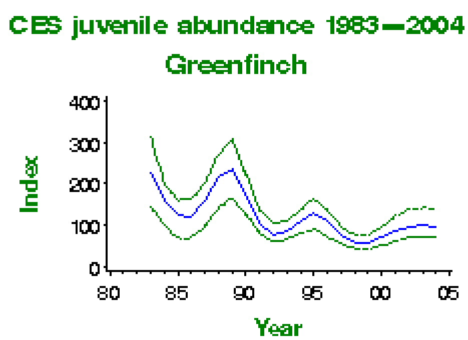
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	401	32	-1	64		
	25	1978-2003	523	33	4	58		
	10	1993-2003	1120	36	23	47		

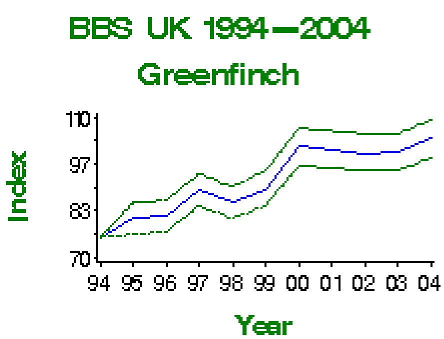
	5	1998-2003	1339	16	12	19		
CBC/BBS UK	36	1967-2003	471	23	-3	53		
	25	1978-2003	616	33	10	51		
	10	1993-2003	1320	34	24	44		
	5	1998-2003	1600	14	11	20		
CES adults	19	1984-2003	41	59	-16	261		
	10	1993-2003	49	7	-16	31		
	5	1998-2003	47	28	5	55		
CES juveniles	19	1984-2003	25	-37	-63	48		
	10	1993-2003	31	18	-18	88		
	5	1998-2003	32	73	27	141		
BBS UK	10	1994-2004	1387	37	30	44		
BBS England	10	1994-2004	1169	35	28	43		
BBS Scotland	10	1994-2004	82	35	5	74		
BBS Wales	10	1994-2004	91	30	4	62		
BBS N.Ireland	10	1994-2004	36	134	32	313		

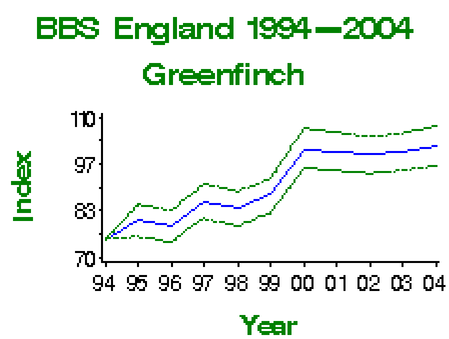
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

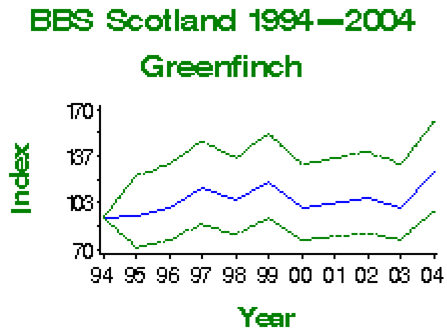


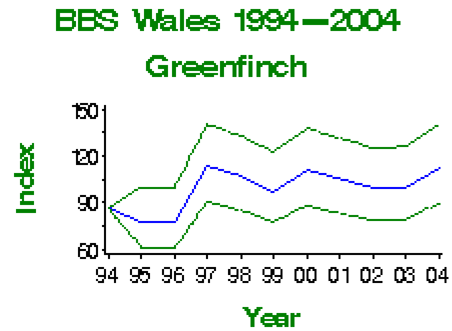








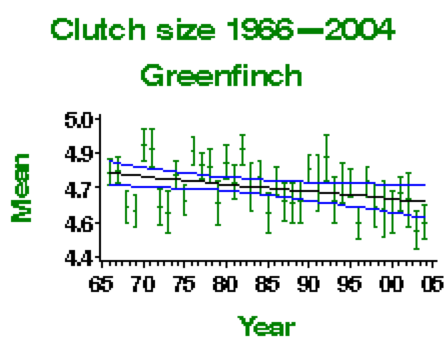


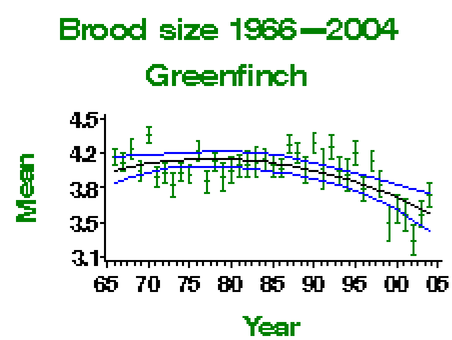


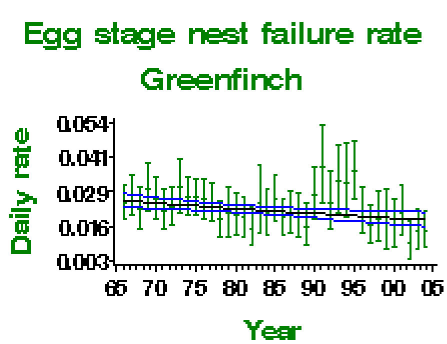
Productivity trends

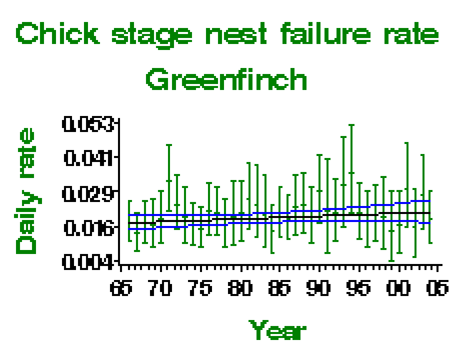
Table of productivity changes for Greenfinch

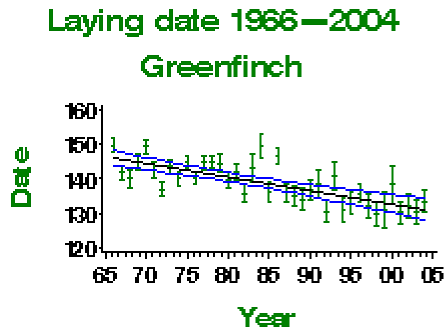
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	92	Linear decline	4.75 eggs	4.64 eggs	-2.4%	
Brood size	35	1968-2003	112	Curvilinear	4.02 chicks	3.6 chicks	-10.4%	
Daily failure rate (eggs)	35	1968-2003	128	Linear decline	2.48% nests/day	1.84% nests/day	-25.8%	
Daily failure rate (chicks)	35	1968-2003	94	None				
Laying date	35	1968-2003	94	Linear decline	May 25	May 12	-13 days	
Juvenile to Adult ratio (CES)	19	1984-2003	46	Smoothed trend	119 Index value	103 Index value	-16%	
Juvenile to Adult ratio (CES)	10	1993-2003	54	Smoothed trend	87 Index value	103 Index value	15%	
Juvenile to Adult ratio (CES)	5	1998-2003	52	Smoothed trend	75 Index value	103 Index value	33%	

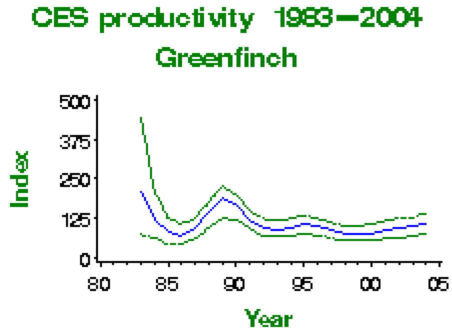












Additional information

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

GOLDFINCH
Carduelis carduelis

• Population changes • Productivity trends • Additional information

Conservation listings

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

Long-term trend

England: fluctuating, with no long-term trend

UK population size

313,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Goldfinch abundance fell sharply from the mid 1970s until the mid 1980s, but the decline was both preceded and followed by significant population increases. The recent upturn has lifted the species from the amber list into the green category, and has been accompanied by an increase in its use of gardens for winter feeding. These population changes can be explained almost entirely by changes in annual survival rates, which may have resulted from a reduction in the availability of weed seeds, due to agricultural intensification, and subsequent increased use of other food sources such as garden bird tables. Alternatively, the effects of environmental change or increased hunting pressure in the Franco-Iberian wintering grounds of the migrant majority of the population may have temporarily reduced survival rates (**Siriwardena *et al.* 1999**). There has been some reduction in productivity as measured by CES.

Population changes

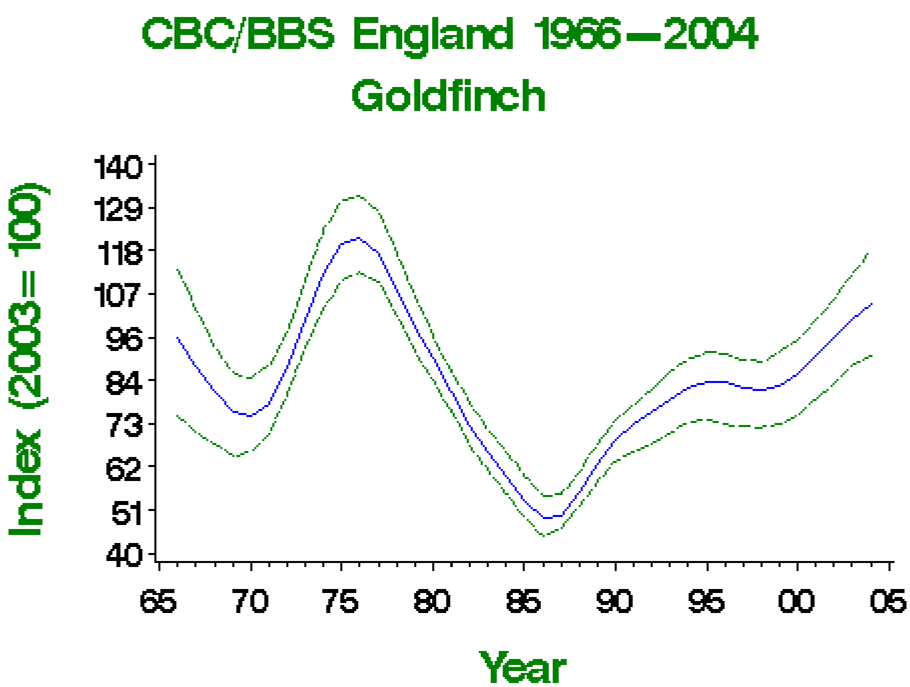


Table of population changes for Goldfinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	300	13	-14	53		
	25	1978-2003	394	-7	-26	10		

	10	1993-2003	861	26	16	42		
	5	1998-2003	1019	22	16	30		
CES adults	19	1984-2003	31	31	-33	127		
	10	1993-2003	38	19	-11	69		
	5	1998-2003	37	15	-17	47		
CES juveniles	19	1984-2003	19	-43	-70	31		Small sample
	10	1993-2003	23	14	-19	68		
	5	1998-2003	22	-10	-40	37		
BBS UK	10	1994-2004	1104	28	19	37		
BBS England	10	1994-2004	909	18	9	27		
BBS Scotland	10	1994-2004	63	52	7	117		
BBS Wales	10	1994-2004	101	82	43	132		

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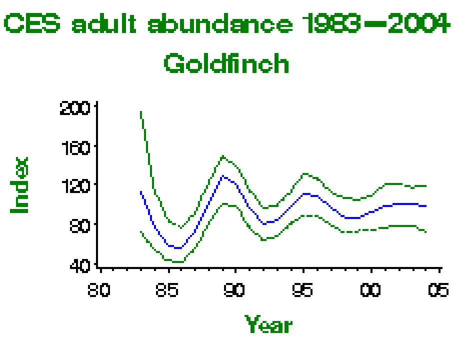
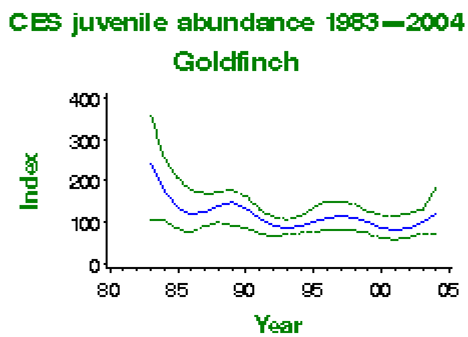
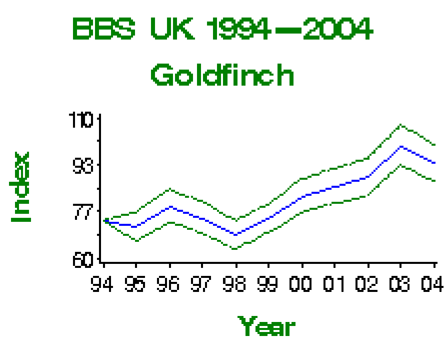
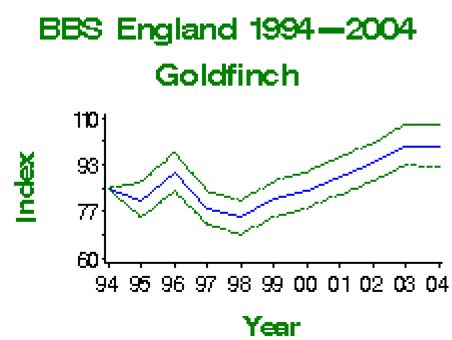
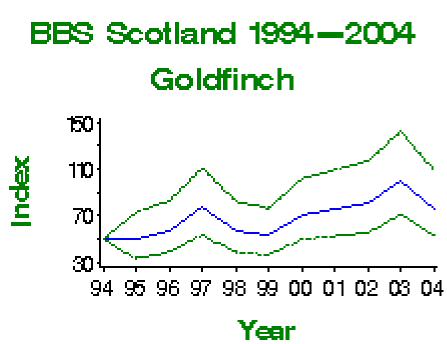
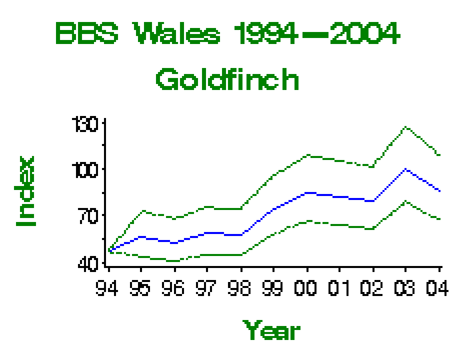










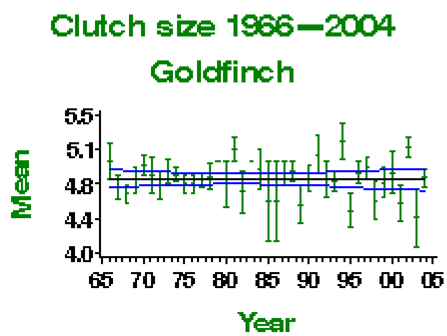


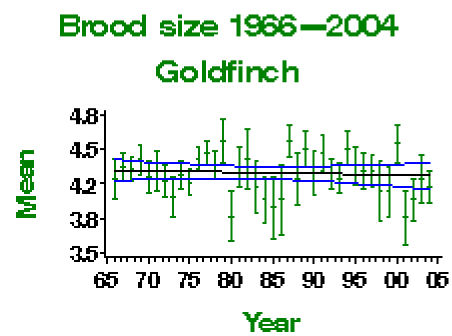
Productivity trends

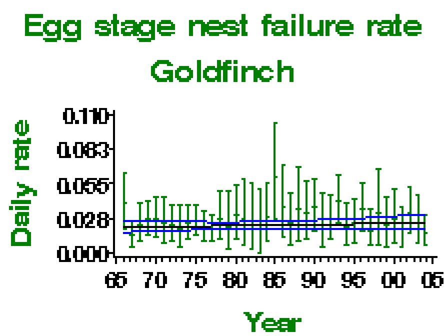
Table of productivity changes for Goldfinch

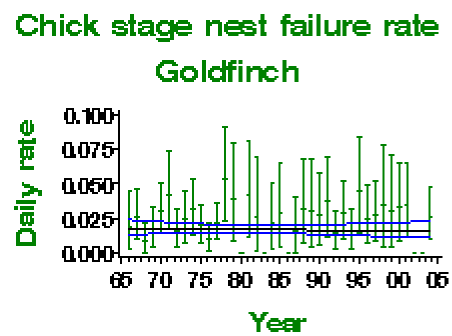
Variable	Period (yrs)	Years	Mean annual	Trend	Modelled in first	Modelled in 2003	Change	Comment

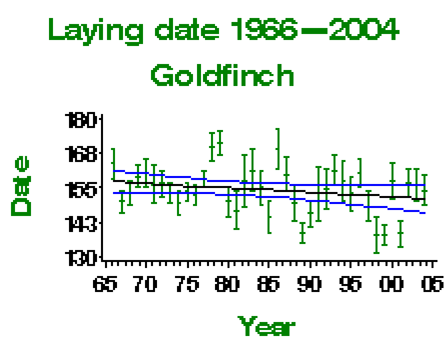
			sample		year			
Clutch size	35	1968-2003	18	None				Small sample
Brood size	35	1968-2003	32	None				
Daily failure rate (eggs)	35	1968-2003	33	None				
Daily failure rate (chicks)	35	1968-2003	27	None				Small sample
Laying date	35	1968-2003	21	None				Small sample
Juvenile to Adult ratio (CES)	19	1984-2003	36	Smoothed trend	196 Index value	103 Index value	-49%	
Juvenile to Adult ratio (CES)	10	1993-2003	45	Smoothed trend	127 Index value	103 Index value	-21%	
Juvenile to Adult ratio (CES)	5	1998-2003	44	Smoothed trend	125 Index value	103 Index value	-20%	

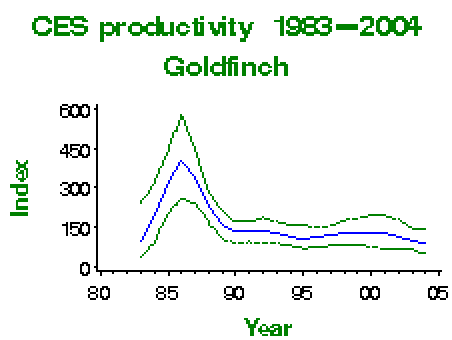












Additional information

- 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: probable 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 allowed breeding Siskins to spread throughout the UK, from their previous stronghold in the Scottish Highlands, since about 1950. The 1988–91 Breeding Atlas identified a considerable expansion of the breeding range into southern Britain (**Gibbons *et al.* 1993**). More CBC plots became occupied during the 1970s and 1980s, but annual monitoring was not possible before the inception of BBS. Results currently show a significant decrease since 1994, but wide fluctuations, in both England and Scotland, are a feature of the trend. A BTO alert has provisionally been raised.

Population changes

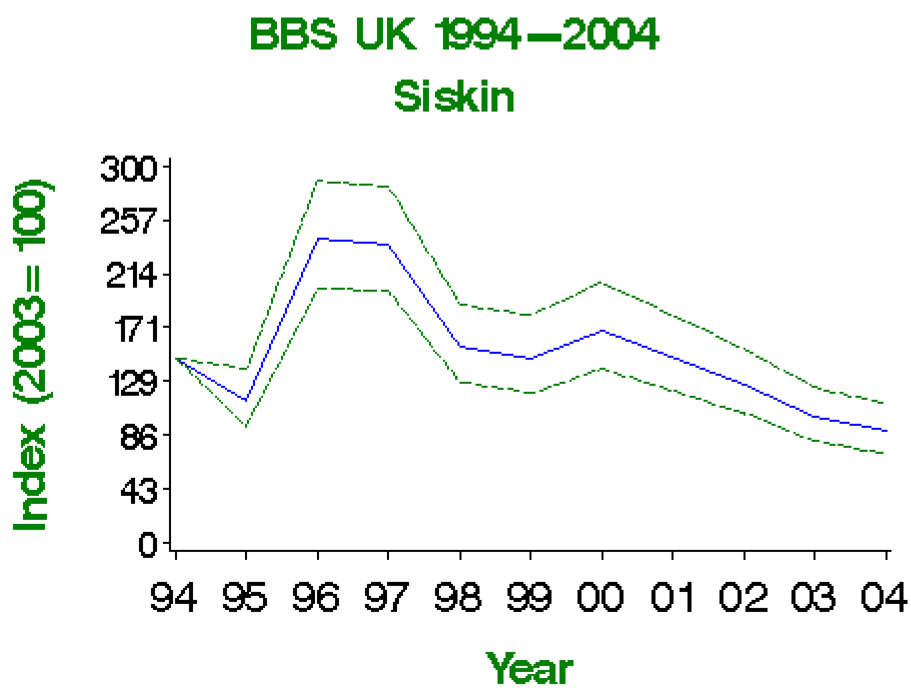


Table of population changes for Siskin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	10	1994-2004	112	-40	-52	-25	(>25)	
BBS England	10	1994-2004	33	-34	-57	0		
BBS Scotland	10	1994-2004	54	-40	-58	-15	(>25)	

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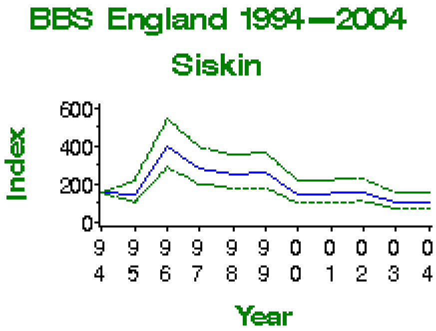
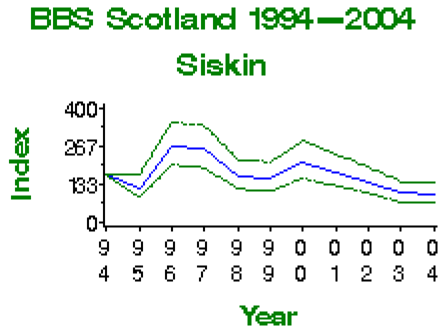




Productivity trends

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
- Garden BirdWatch results

LINNET
Carduelis cannabina

• Population changes • Productivity trends • Additional information

Conservation listings

Europe: SPEC category 2, declining
UK: red (>50% population decline)

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 declined rapidly in the UK between the mid 1970s and mid 1980s. Numbers have subsequently remained stable, although with some suggestion of recovery in Wales. CES has shown declines continuing strongly in recent years. Nest failure rates rose during the principal period of population decline, and this represents the most likely demographic mechanism driving the observed decreases in abundance (Siriwardena *et al.* 1999, 2000b). CES and nest record results suggest that low productivity is still a problem for the species, possibly due to reductions in hedgerow quality leaving nests more exposed and therefore at greater risk of predation. Following widespread declines across Europe during the 1990s, the European status of this species is no longer considered 'secure' (BirdLife International 2004).

Population changes

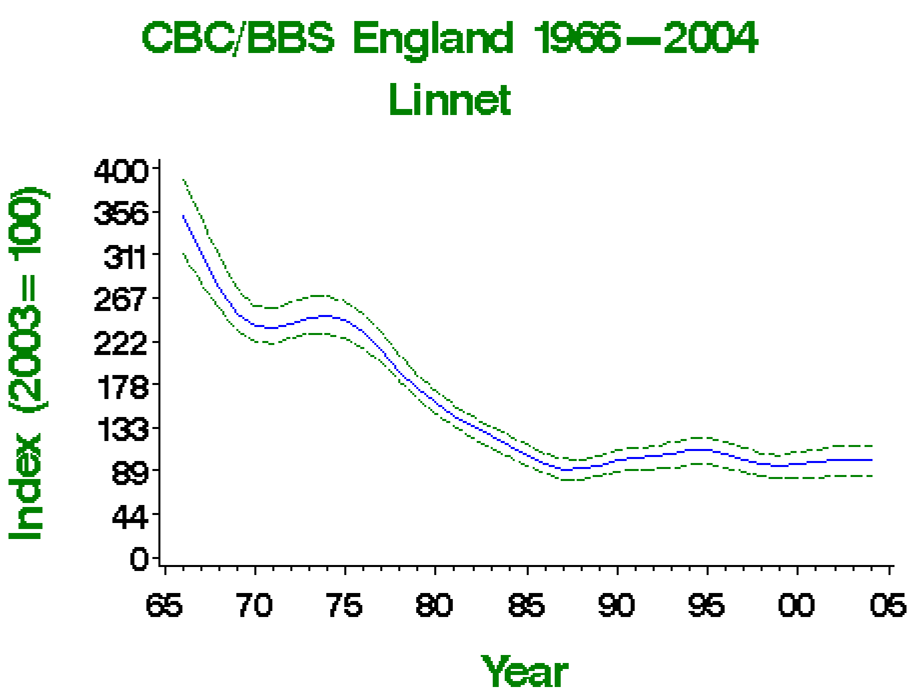
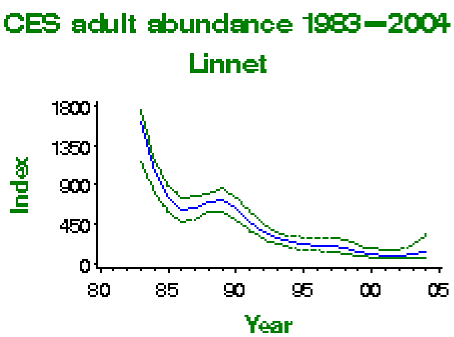


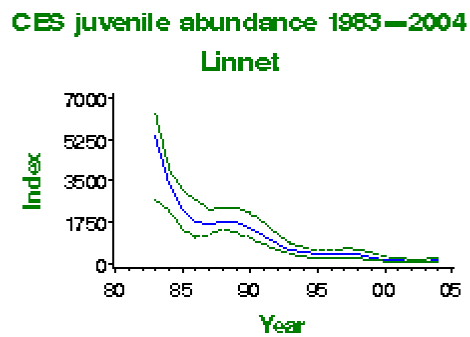
Table of population changes for Linnet

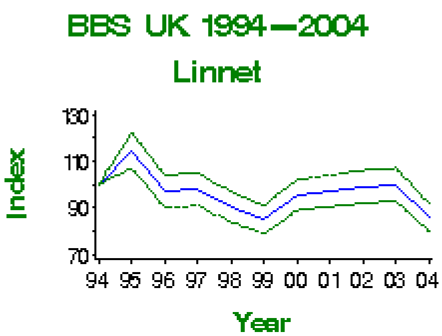
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	314	-68	-75	-59	>50	
	25	1978-2003	398	-48	-59	-38	>25	
	10	1993-2003	837	-6	-16	2		
	5	1998-2003	950	4	-2	10		

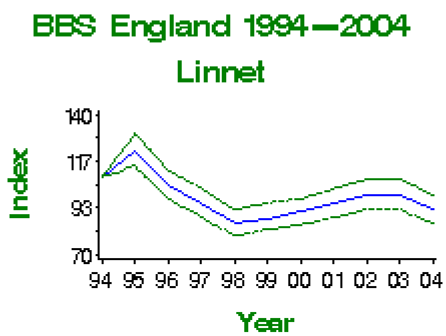
CES adults	19	1984-2003	20	-90	-96	-73	>50	
	10	1993-2003	21	-65	-83	-17	>50	
	5	1998-2003	16	-40	-66	14		Small sample
CES juveniles	19	1984-2003	14	-97	-99	-91	>50	Small sample
	10	1993-2003	14	-83	-92	-69	>50	Small sample
	5	1998-2003	13	-73	-81	-60	>50	Small sample
BBS UK	10	1994-2004	1045	-14	-20	-8		
BBS England	10	1994-2004	852	-15	-21	-8		
BBS Scotland	10	1994-2004	79	-23	-41	2		
BBS Wales	10	1994-2004	82	30	-1	70		

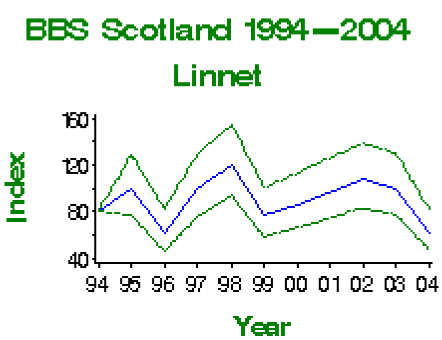
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

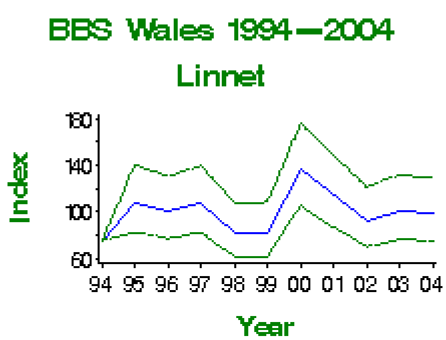










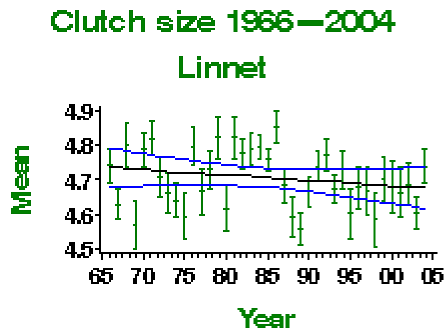


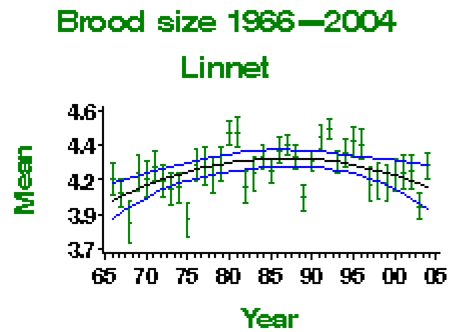
Productivity trends

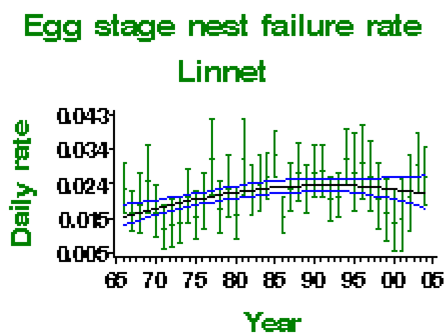
Table of productivity changes for Linnet

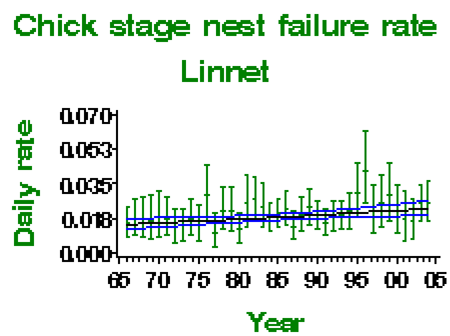
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	107	None				

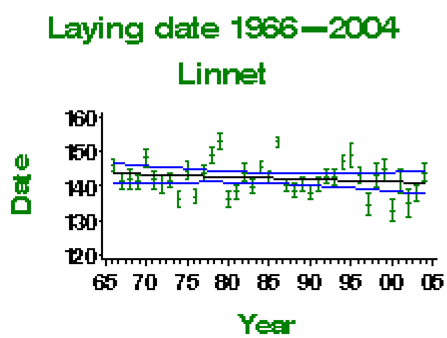
Brood size	35	1968-2003	122	Curvilinear	4.07 chicks	4.12 chicks	1.5%	
Daily failure rate (eggs)	35	1968-2003	151	Curvilinear	1.63% nests/day	2.17% nests/day	33.1%	
Daily failure rate (chicks)	35	1968-2003	108	Linear increase	1.5% nests/day	2.23% nests/day	48.7%	
Laying date	35	1968-2003	110	None				
Juvenile to Adult ratio (CES)	19	1984-2003	23	Smoothed trend	632 Index value	103 Index value	-84% >50	
Juvenile to Adult ratio (CES)	10	1993-2003	25	Smoothed trend	165 Index value	103 Index value	-39%	
Juvenile to Adult ratio (CES)	5	1998-2003	20	Smoothed trend	219 Index value	103 Index value	-54% >50	

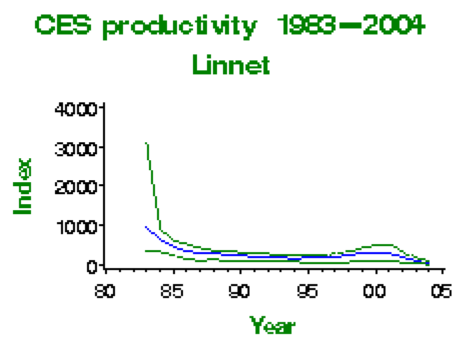












Additional information

- 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)

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 has been in decline since the mid 1970s, following a period of relative stability. The decline was initially very steep, and more so in farmland than in wooded habitats, but has been shallower since the early 1980s. CES and CBC/BBS both suggest a minor upturn in the last few seasons. The demographic mechanism of decline remains unclear (**Siriwardena *et al.* 1999**, **2000b**), 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) 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. Chick-stage nest losses have decreased slightly overall.

Population changes

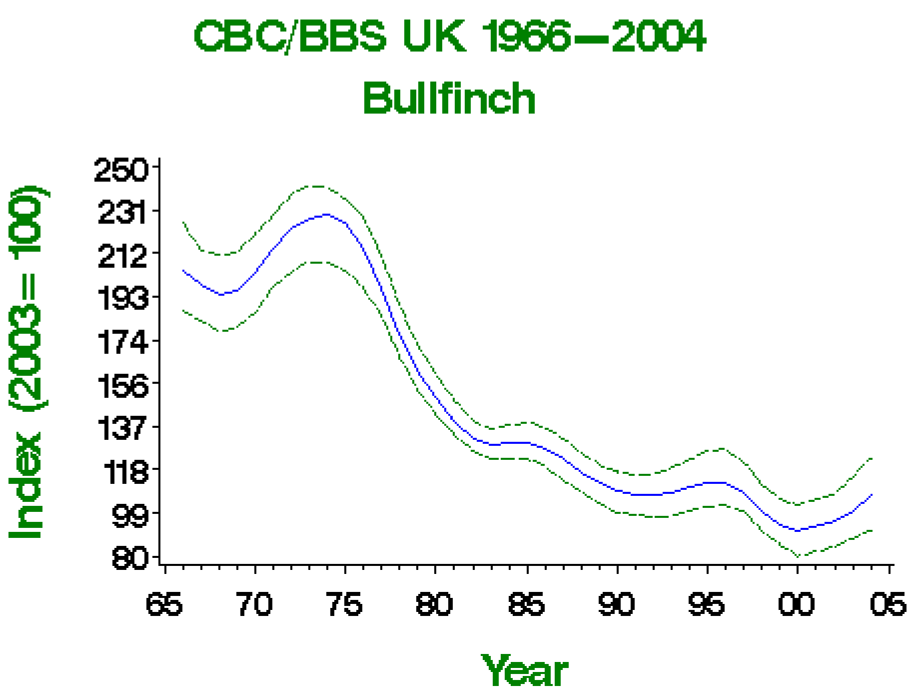


Table of population changes for Bullfinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	199	-50	-63	-37	>50	

	25	1978-2003	232	-45	-57	-32	>25	
	10	1993-2003	398	-8	-17	2		
	5	1998-2003	417	5	-5	14		
CBC/BBS UK	36	1967-2003	240	-50	-60	-38	>25	
	25	1978-2003	285	-43	-54	-32	>25	
	10	1993-2003	501	-7	-15	2		
	5	1998-2003	533	1	-9	6		
CES adults	19	1984-2003	80	-17	-32	3		
	10	1993-2003	88	-3	-16	9		
	5	1998-2003	84	-4	-15	6		
CES juveniles	19	1984-2003	62	-7	-34	44		
	10	1993-2003	70	2	-15	21		
	5	1998-2003	66	-9	-24	5		
BBS UK	10	1994-2004	463	-9	-18	2		
BBS England	10	1994-2004	360	-17	-27	-6		
BBS Wales	10	1994-2004	53	-11	-34	18		

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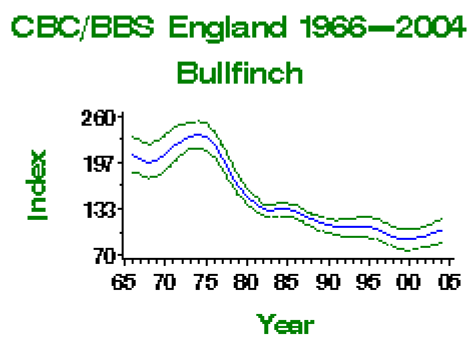
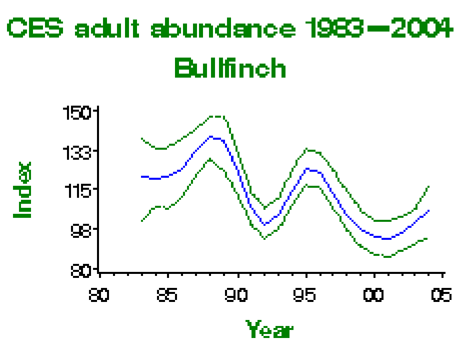
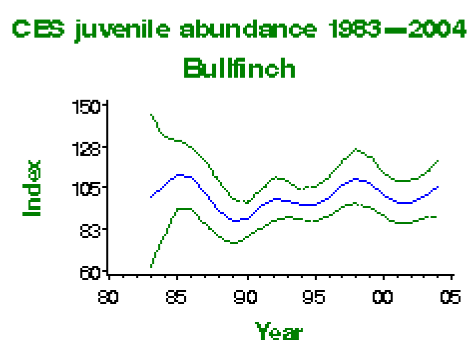
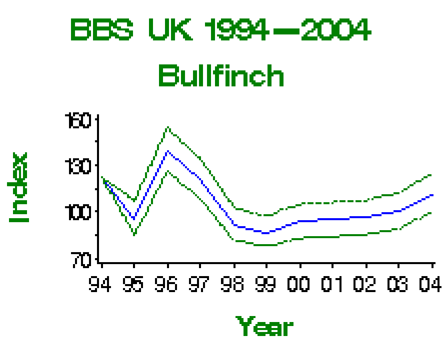
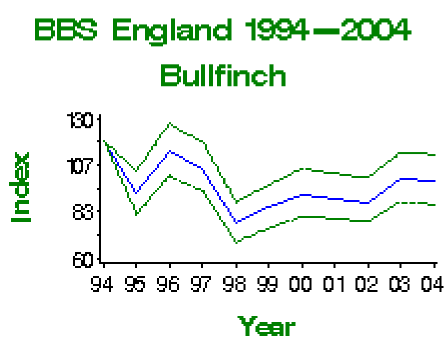
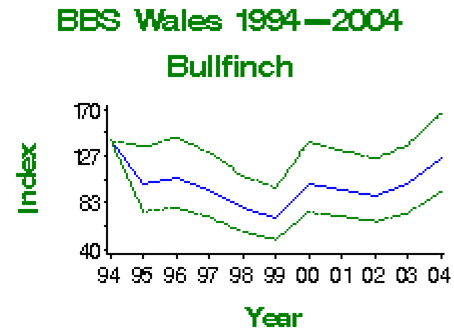








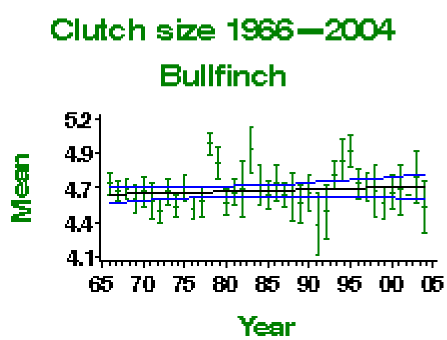


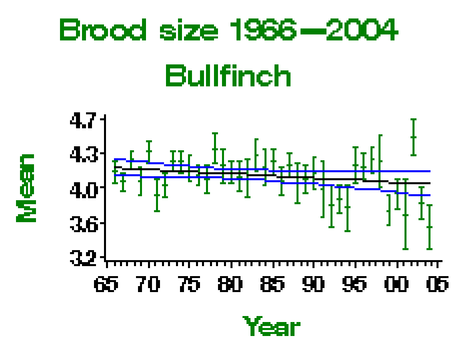


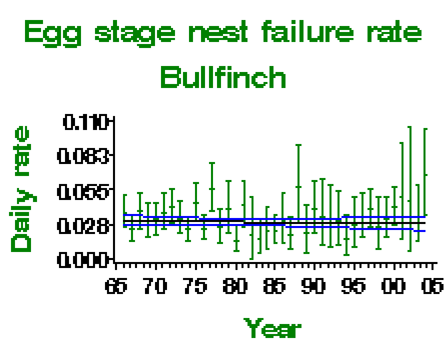
Productivity trends

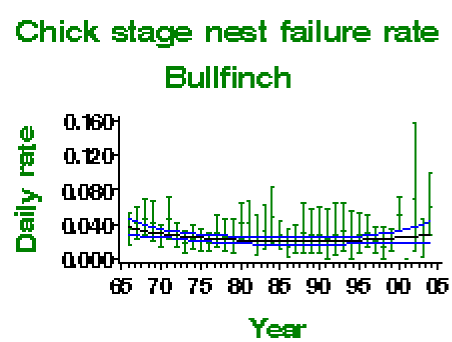
Table of productivity changes for Bullfinch

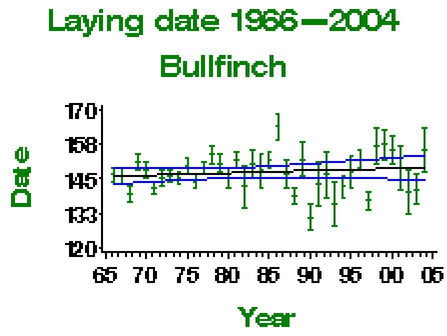
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	35	None				
Brood size	35	1968-2003	37	None				
Daily failure rate (eggs)	35	1968-2003	50	None				
Daily failure rate (chicks)	35	1968-2003	34	Curvilinear	3.28% nests/day	2.76% nests/day	-15.9%	
Laying date	35	1968-2003	33	None				
Juvenile to Adult ratio (CES)	19	1984-2003	84	Smoothed trend	101 Index value	103 Index value	-1%	
Juvenile to Adult ratio (CES)	10	1993-2003	93	Smoothed trend	101 Index value	103 Index value	-1%	
Juvenile to Adult ratio (CES)	5	1998-2003	88	Smoothed trend	98 Index value	103 Index value	2%	

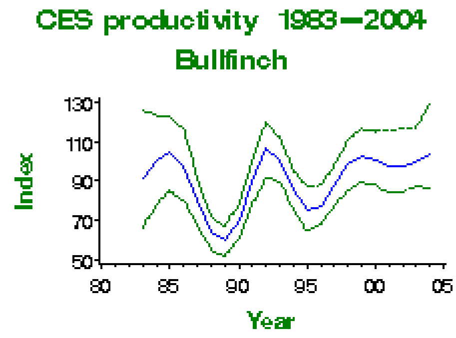












Additional information

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

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)

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 the decline has continued ever since. The species, listed as green in 1996, now qualifies for the red list. While there is some evidence that survival rates have decreased during the period of decline, Yellowhammer breeding performance has tended to improve (**Siriwardena *et al.* 1998b**, **2000b**). However, recent declines in brood size and nest success are potentially of concern. Overall nest failure rates are relatively high, probably because later nests, which tend to be more successful (**Kyrkos 1997**), are under-represented in the NRS data set, but this is unlikely to affect overall trends. Reductions in winter seed food availability as a result of agricultural intensification (for example, the loss of winter stubbles and a reduction in weed densities) are widely believed to have contributed to the population decline.

Population changes

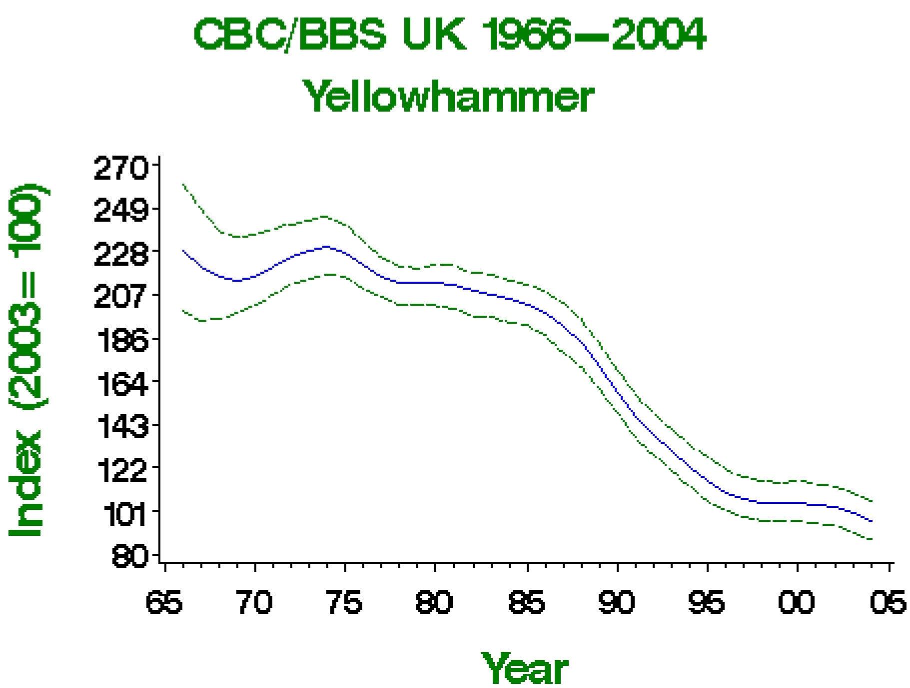
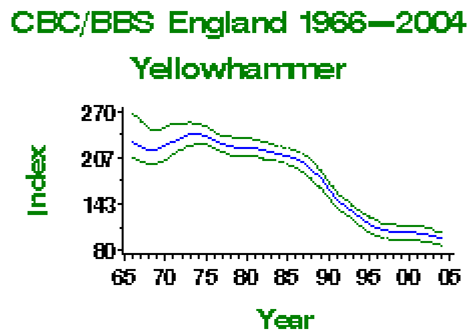


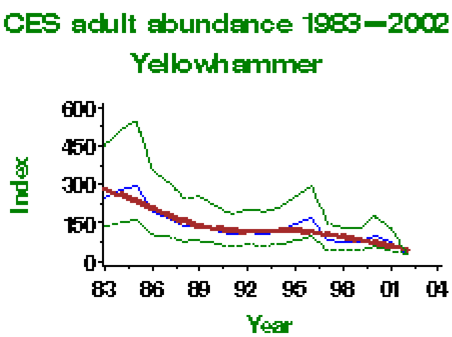
Table of population changes for Yellowhammer

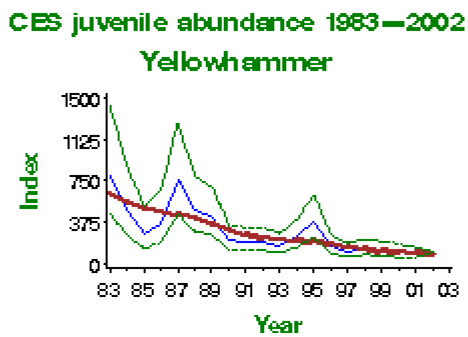
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	328	-55	-66	-46	>50	
	25	1978-2003	419	-55	-61	-48	>50	

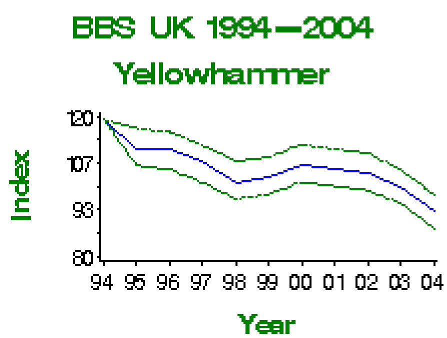
	10	1993-2003	860	-24	-29	-19		
	5	1998-2003	968	-6	-10	-2		
CBC/BBS UK	36	1967-2003	375	-55	-63	-44	>50	
	25	1978-2003	479	-53	-58	-46	>50	
	10	1993-2003	986	-23	-29	-18		
	5	1998-2003	1109	-5	-8	0		
BBS UK	10	1994-2004	1008	-22	-26	-18		
BBS England	10	1994-2004	877	-24	-28	-20		
BBS Scotland	10	1994-2004	86	-9	-24	10		
BBS Wales	10	1994-2004	36	-37	-54	-14	(>25)	

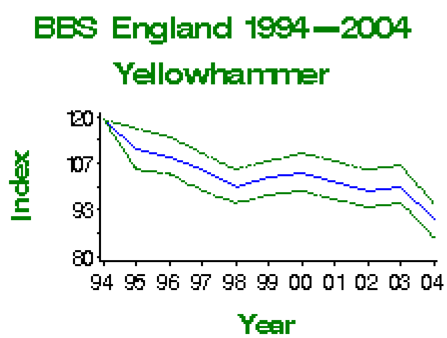
The Breeding Bird Survey is jointly funded by the BTO, JNCC & RSPB

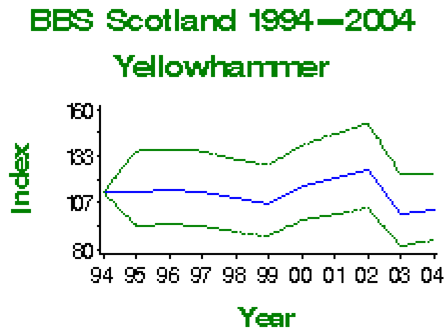


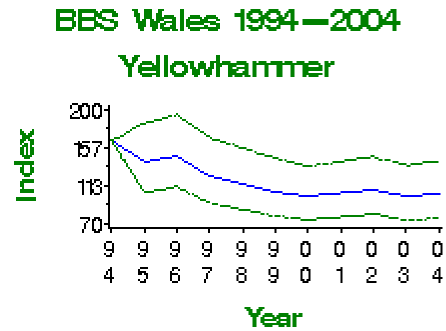








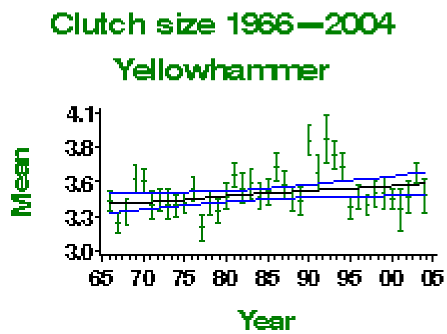


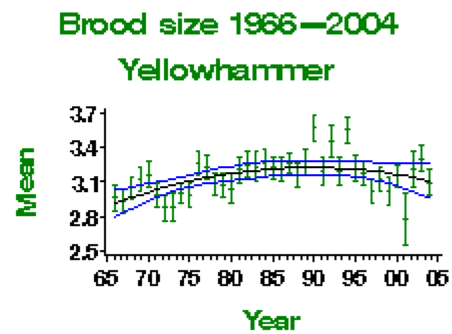


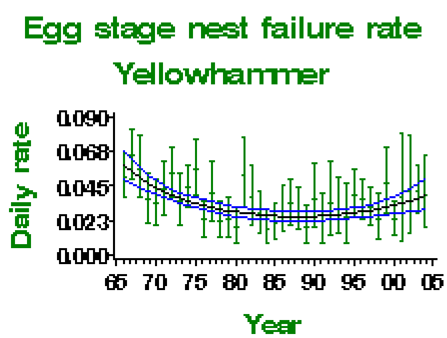
Productivity trends

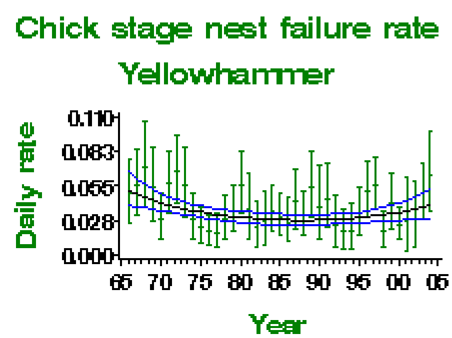
Table of productivity changes for Yellowhammer

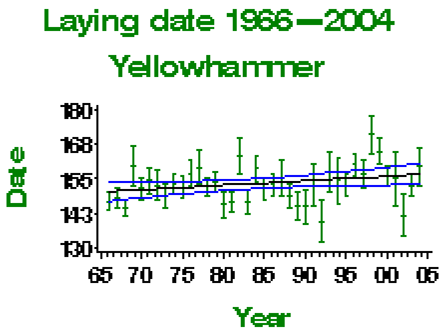
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	43	Linear increase	3.38 eggs	3.53 eggs	4.2%	
Brood size	35	1968-2003	67	Curvilinear	2.97 chicks	3.13 chicks	5.5%	
Daily failure rate (eggs)	35	1968-2003	63	Curvilinear	5.05% nests/day	3.69% nests/day	-26.9%	
Daily failure rate (chicks)	35	1968-2003	51	Curvilinear	4.65% nests/day	3.78% nests/day	-18.7%	
Laying date	35	1968-2003	26	Linear increase	May 31	Jun 5	5 days	Small sample

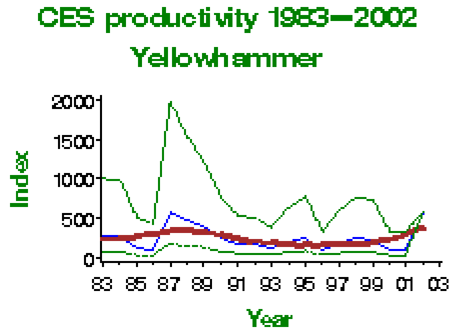












Additional information

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

REED BUNTING
Emberiza schoenicilus

• 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)

Long-term trend

UK, England: moderate decline

UK population size

192,000–211,000 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS and WBS trends: **BiE04**, **APEP06**)

Status summary

Red-listing for this species is based on a 62% decline on CBC plots between 1974 and 1999. Both CBC/BBS and WBS indices declined rapidly during the 1970s, but Reed Bunting abundance has since remained remarkably stable. The early increase in the CBC index was associated with a gradual spread into drier habitats, especially farmland, and it is likely that the subsequent decline was related to agricultural intensification. CES data indicate that the decline has continued and that it is associated with falling productivity. 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 an increase in failure rates at the egg stage.

Population changes

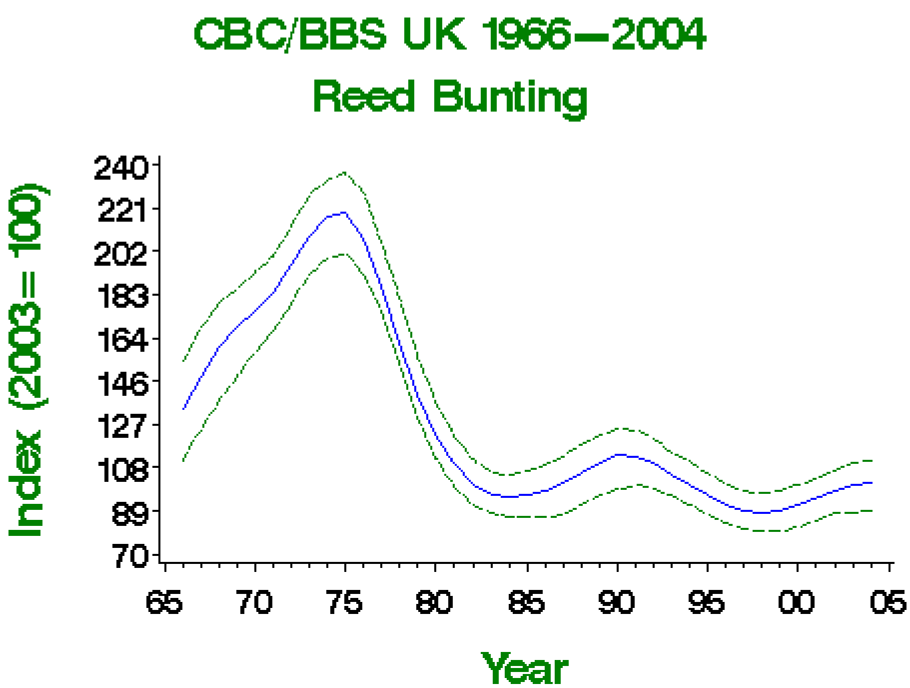


Table of population changes for Reed Bunting

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	132	-34	-49	-13	>25	
	25	1978-2003	152	-40	-52	-30	>25	

	10	1993-2003	272	-7	-18	5		
	5	1998-2003	297	19	9	31		
CBC/BBS UK	36	1967-2003	164	-32	-49	-12	>25	
	25	1978-2003	192	-38	-51	-29	>25	
	10	1993-2003	355	-5	-15	5		
	5	1998-2003	396	14	5	21		
WBS waterways	28	1975-2003	52	-67	-78	-47	>50	
	25	1978-2003	52	-58	-72	-36	>50	
	10	1993-2003	57	-11	-31	18		
	5	1998-2003	50	1	-16	26		
CES adults	19	1984-2003	59	-47	-63	-33	>25	
	10	1993-2003	69	-21	-39	0		
	5	1998-2003	66	2	-13	19		
CES juveniles	19	1984-2003	42	-63	-78	-38	>50	
	10	1993-2003	49	-41	-54	-28	>25	
	5	1998-2003	45	2	-22	24		
BBS UK	10	1994-2004	351	4	-6	16		
BBS England	10	1994-2004	263	-2	-12	11		
BBS Scotland	10	1994-2004	41	3	-28	47		

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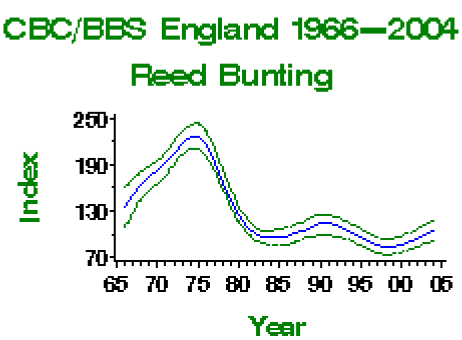
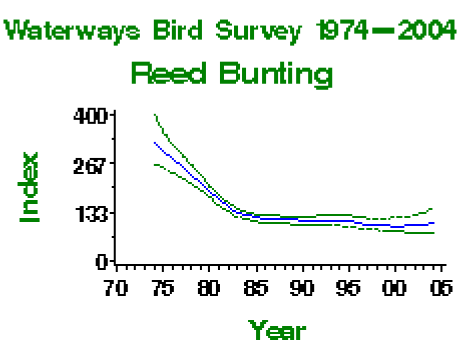
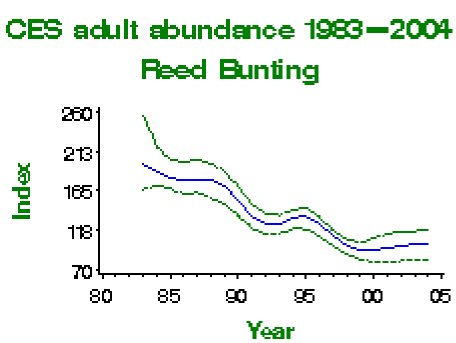
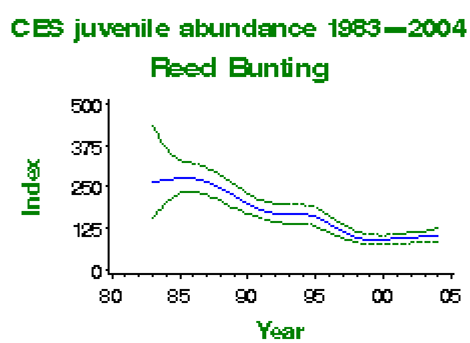
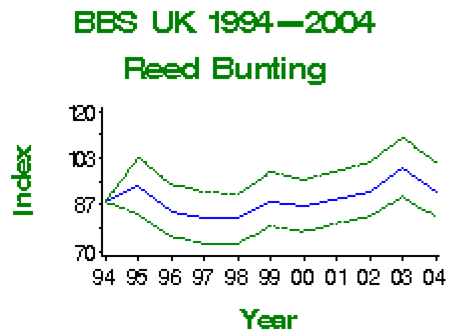
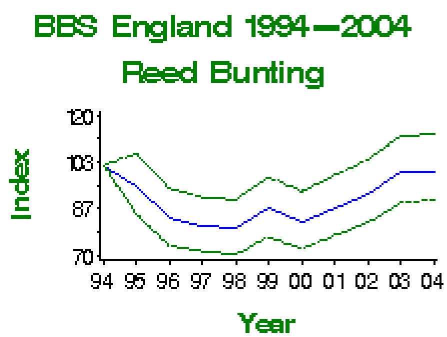


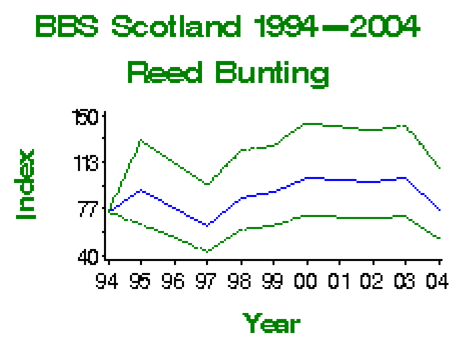








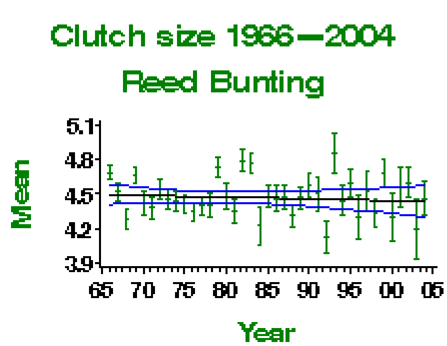


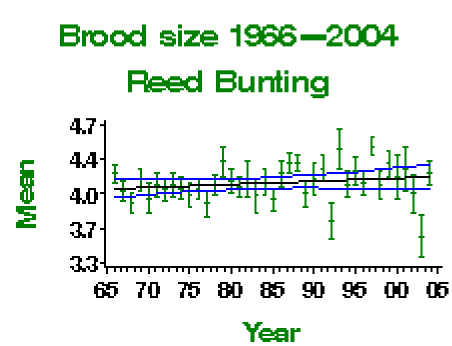


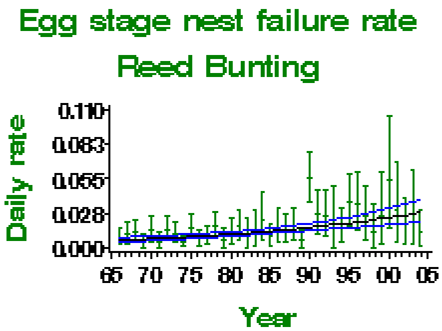
Productivity trends

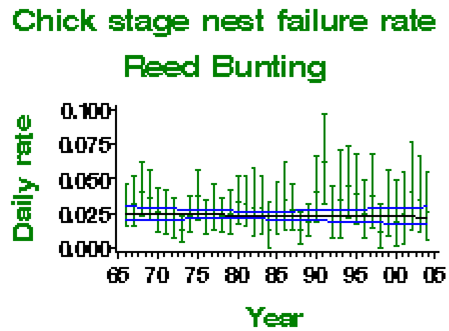
Table of productivity changes for Reed Bunting

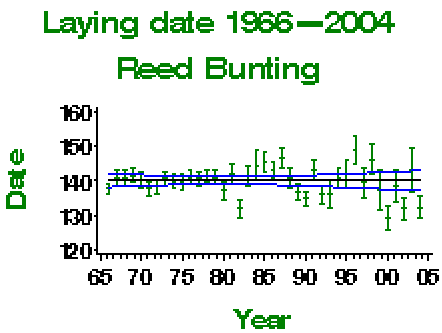
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Clutch size	35	1968-2003	45	None				
Brood size	35	1968-2003	62	None				
Daily failure rate (eggs)	35	1968-2003	53	Linear increase	0.7% nests/day	2.73% nests/day	290%	
Daily failure rate (chicks)	35	1968-2003	53	None				
Laying date	35	1968-2003	51	None				
Juvenile to Adult ratio (CES)	19	1984-2003	61	Smoothed trend	198 Index value	103 Index value	-50%	
Juvenile to Adult ratio (CES)	10	1993-2003	73	Smoothed trend	184 Index value	103 Index value	-46% >25	
Juvenile to Adult ratio (CES)	5	1998-2003	69	Smoothed trend	111 Index value	103 Index value	-10%	

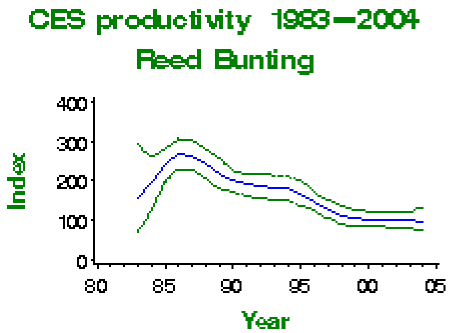












Additional information

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

CORN BUNTING
Emberiza calandra

- Population changes
- Productivity trends
- Additional information

Conservation listings

Europe: SPEC category 2 (declining)
UK: red (>50% population decline, historical decline)

Long-term trend

UK, England: rapid decline

UK population size

8,500–12,200 territories in 2000 (1988–91 Atlas estimate updated using CBC/BBS trend: **BiE04**, **APEP06**)

Status summary

Following an earlier, historical decrease, Corn Buntings declined very steeply between the mid 1970s and mid 1980s, with local extinctions across large sections of their former range. Subsequently the decline has continued, but at a much-reduced rate. Breeding performance per nesting attempt has increased considerably over this period (**Crick 1997**), but it is also reported that fewer birds now raise a second brood, thus reducing productivity overall (Brickle & Harper 2002). Ring-recovery sample sizes do not permit an analysis of survival rates (**Siriwardena *et al.* 1998b**, **2000b**). Any decrease there has been in survival rates is probably a result of the deleterious effects of agricultural intensification on seed availability in winter (**Donald 1997**). With declines across much of its European range, this previously 'secure' species is now provisionally evaluated as 'declining' (**BirdLife International 2004**).

Population changes

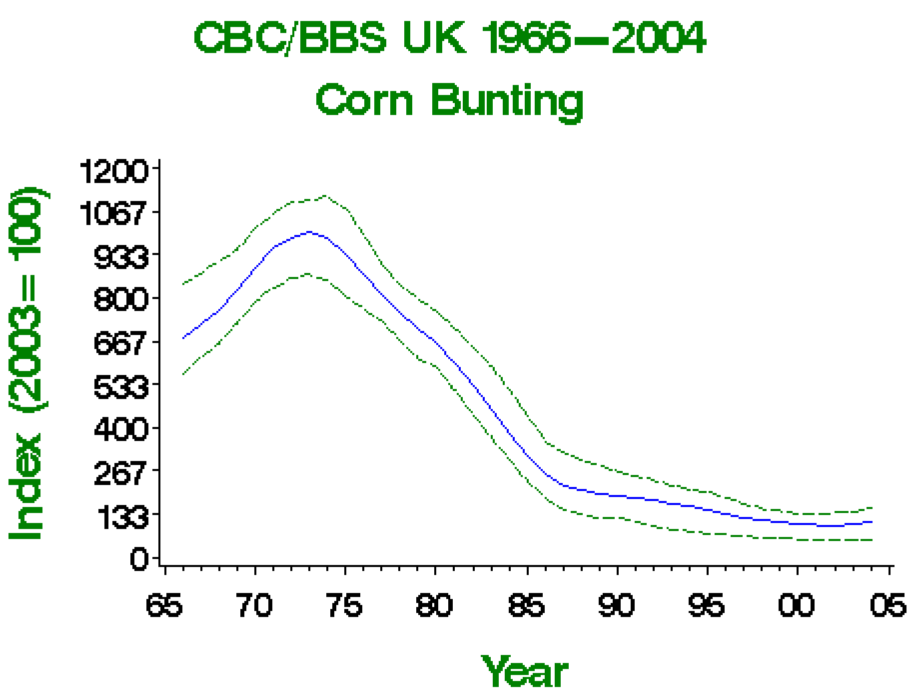
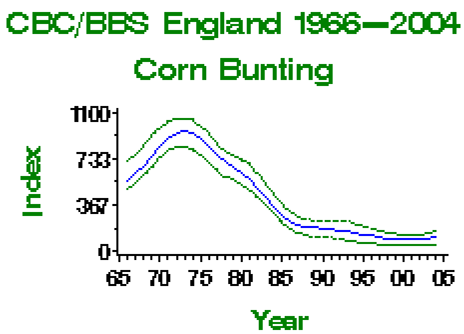


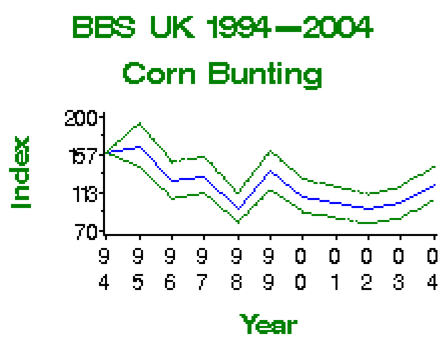
Table of population changes for Corn Bunting

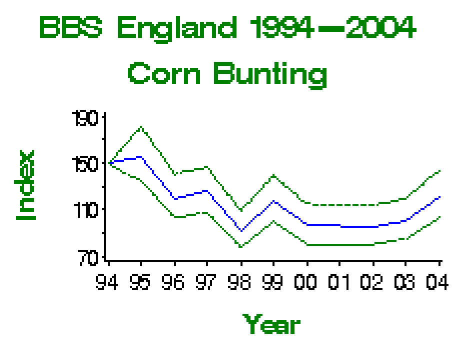
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC/BBS England	36	1967-2003	55	-84	-93	-70	>50	
	25	1978-2003	65	-86	-94	-76	>50	Small CBC sample

	10	1993-2003	132	-36	-48	-23	>25	Small CBC sample
	5	1998-2003	134	-3	-17	12		
CBC/BBS UK	36	1967-2003	57	-86	-94	-77	>50	
	25	1978-2003	67	-87	-94	-79	>50	Small CBC sample
	10	1993-2003	138	-40	-50	-24	>25	Small CBC sample
	5	1998-2003	139	-11	-25	2		
BBS UK	10	1994-2004	138	-24	-35	-10		
BBS England	10	1994-2004	132	-19	-31	-4		

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





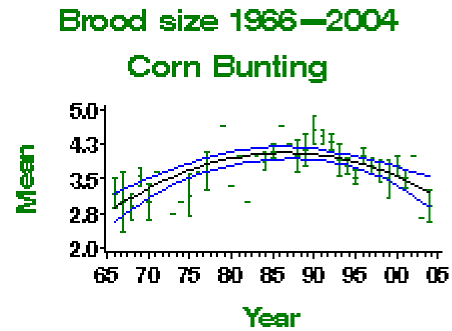


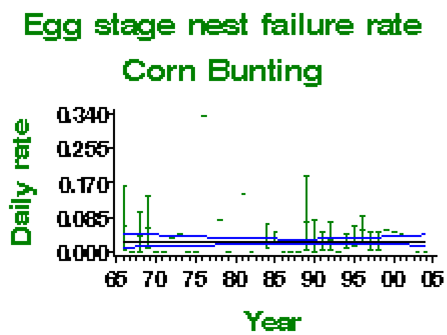
Productivity trends

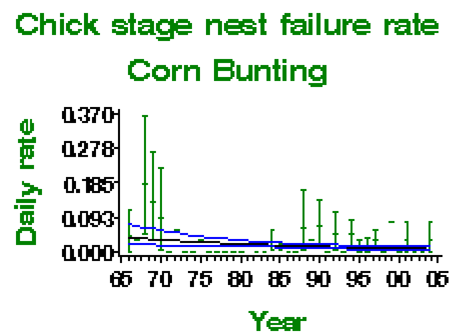
Table of productivity changes for Corn Bunting

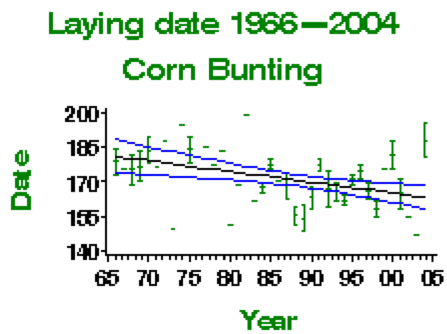
Variable	Period (yrs)	Years	Mean annual sample	Trend	Modelled in first year	Modelled in 2003	Change	Comment
Brood size	35	1968-2003	12	Curvilinear	3.09 chicks	3.31 chicks	7.3%	Small sample
Daily failure rate (eggs)	35	1968-2003	12	None				Small sample
Daily failure rate (chicks)	35	1968-2003	11	Linear decline	3.68% nests/day	0.9% nests/day	-75.5%	Small sample
Laying date	35	1968-2003	14	Linear decline	Jun 29	Jun 13	-16 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**

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3. Help on species accounts

In the heading of each species account, the scientific name used is the one currently given by the British Ornithologists' Union in its **British List**. The vernacular names used here and in the drop-down lists are those we consider most appropriate, considering this report's limited geographical scope. 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 (see **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 breeding atlases** (**Gibbons *et al.* 1993**)
- Historical decline (in UK over the period 1800–1995) is assessed by literature review

2) ***Long-term trend:*** This summarises the trend in population size since 1975 from WBS data, 1984 from CES data, or 1967 from CBC/BBS, with reference to any CBC/BBS, WBS or CES data that may be tabulated. If there are no data available from these schemes, any assessment of trends covers the period since about the mid 1960s, but may also take historical data into account. Increases and declines that are qualified as 'shallow', 'moderate' or 'rapid' are generally statistically significant. The following terms are used:

- **Rapid decline:** >50% population decline from CBC/BBS, WBS or CES
- **Moderate decline:** 25–50% population decline from CBC/BBS, WBS or CES
- **Shallow decline:** 10–25% population decline from CBC/BBS, WBS or CES
- **Decline/Increase:** information has been derived from other sources
- **Probable/Possible increase/decline:** as above, but the information is not as certain - see the status summary for reasons
- **Stable/Fluctuating, with no long-term trend:** no overall change, or change <10%
- **Uncertain:** where the information from two monitoring schemes conflicts or if the data are unrepresentative of the species' total UK population
- **Unknown:** no information on the UK population trend is available
- **Shallow increase:** 10–50% population increase from CBC/BBS, WBS or CES
- **Moderate increase:** 50–100% population increase from CBC/BBS, WBS or CES
- **Rapid increase:** >100% population increase from CBC/BBS, WBS or CES

3) ***UK population size:*** Periodic reports on population sizes of birds in Britain and in the UK, for the breeding season and for winter, are agreed by the Avian Population Estimates Panel (APEP), on which BTO, GCT, JNCC, RSPB and WWT are repesented. Extracts from the Panel's second report (**Baker *et al.* 2006**) are given for each of our species, with a shortened reference (APEP06). The second edition of ***Birds in Europe*** (**BirdLife International 2004**) was published while APEP06 was in preparation. Their figures are also given, referenced as BiE04. The units and reference year (or period) is given for each estimate, and where possible its derivation is also described briefly or referenced. BiE04 and APEP06 estimates are usually identical, but may differ because:

- one or other is updated to a new reference year
- the two publications apply different rules for inclusion of introduced species
- BiE04 figures include the Channel Islands (but for most species this has no effect on the estimate)
- different methods of rounding or range estimation have been applied to the same original data
- sources used for BiE04, but not APEP06, included papers in preparation

Information too recent to have been included in either of these publications is also given, pending ratification by APEP. Readers should note that the wide ranges given for many species reflect the considerable uncertainty that applies to all but a few of the current estimates. The application of distance sampling methods to BBS data (**Newson *et al.* 2005**), or future surveys, including the next spell of atlas fieldwork, 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 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 and BBS, annual estimates are shown (in blue) together with their 85% (Heronries) or 95% (BBS) confidence limits (in green). Graphs from the Heronries Census additionally include a smoothed line (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 online atlas maps and tables, and the relevant pages of BirdFacts, BirdTrack and Garden BirdWatch, as available, from the BTO web site. Atlas maps 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 **Atlases species help**).

Tip: use the 'Species quick links' box at top of each page to move around species pages

Section 4 - Discussion

Back to Contents

4. Discussion

Return to Contents

4.1 The alert system

This report uses a system of 'alerts' that has been agreed between the providers and users of population monitoring information in the UK.�The system provides alerts to population declines of 25–50% and of >50% over short, medium and longer terms (5 years, 10 years and 25+ years respectively). These help to highlight the scale and timing of declines, and act as an aid to interpreting the trend graphs presented.�Our main emphasis is on long-term declines measured over the longest period available (usually 36 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 *et al.* 2005**).

In this discussion we:

1) Review the latest population change measures and alerts for species that are currently on the **Population Status of Birds** (PSOB) **red** or **amber** lists (declines only) for the UK (**Gregory *et al.* 2002**).

2) Identify species that are not currently on these PSOB lists that have raised alerts on account of long-term declines, and also those species on the list where recovery may be sufficient to downgrade their listing status in the future.

3) Briefly review declines along waterways and in scrub and wetland habitats as shown by the WBS and CES schemes.

4) Review trends over the last 10 years in species that have shown long-term declines, to identify the extent of ongoing declines and any evidence of recovery.

5) Identify those species that have shown rapid long-term population increases.

6) Discuss patterns of changes in breeding performance and relationships between trends in abundance and breeding performance.

7) Summarise the overall patterns found.

Except where otherwise indicated our discussion is based on the best long-term trend that is available for each species. These are the trends presented as the main trend graph for each species. Details of estimating and comparing trends are given in the **methods section**. Full details of all trends available for each species are given on the **species pages**. Summary tables of all alerts raised by each scheme are presented in the **appendices**.

It should be noted that a number of species included in the PSOB lists are not covered by this report. Thus tables relating to PSOB list status do not include every species on the relevant PSOB list.

Return to previous page

Go to next page - 4.2 Latest long-term alerts

4.2 Latest long-term alerts

4.2.1 Long-term trends of PSOB red-listed species

The species considered here were **red-listed** due to long-term declines of more than 50% over 25 years. The latest long-term population changes and alerts over the maximum period available (usually 36 years) and over 25 years are shown in Table 4.2.1. As expected the results confirm the decline status of all of the 16 species concerned. All changes fire alerts except for the 31-year change for **Lesser Spotted Woodpecker** that has very wide confidence limits and is thus not statistically significant. **Marsh Tit**, **Song Thrush** and **Bullfinch** now show declines of less than 50% over 25 years, mainly reflecting the fact that their long-term declines started more than 25 years ago. **Reed Bunting** now has both long-term and 25-year declines of between 25% and 50%. Its population increased between 1967 and 1975 before the rapid decline that gave rise to its current conservation listing.

Table 4.2.1 Long-term population changes over the longest available period (usually 36 years) and 25 years for species that are currently on the PSOB red list. The table is ordered by decline over the longest available time period.

See **Help** for information on category definitions.

4.2.2 Long-term trends of PSOB amber-listed species

The species considered here were **amber-listed** due to long-term declines of between 25% and 49% over 25 years. The amber list category also included a number of species where the best trend estimates show declines of more that 50% but the trend data are sparse or may be unrepresentative. The latest long-term population changes and alerts over the maximum period available (usually 36 years) and over 25 years are shown in Table 4.2.2. As expected the results confirm the decline status of most of the 16 species concerned.

Table 4.2.2 Long-term population changes over the longest available period (usually 36 years) and 25 years for species that are currently on the PSOB amber list due to population declines. The table is ordered by decline over the longest available time period.

See **Help** for information on category definitions.

Six species show significant declines of greater than 50% and could thus be candidates for future red listing. Three of these, **Lesser Redpoll**, **Tree Pipit** and **Woodcock**, are amber listed as a result of data limitations, and there has been no substantial change in the information available on their declines. Three others, **Yellow Wagtail**, **Willow Warbler** and **Cuckoo**, have been subject to ongoing declines that have now passed the 50% threshold, although it should be noted that for the latter two species the long-term trend data are from England only. The serious nature of the **Yellow Wagtail** decline is supported by data from both WBS (-92% over 25 years) and BBS (-27% over 10 years). BBS data indicate that in England and Wales **Willow Warblers** and **Cuckoos** have continued to decline over the last ten years, but both species have shown significant increases in Scotland.

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

Grey Wagtails have been increasing since the late 1990s, and as a result of this their 25-year change is now +3%, while the decline over the longest period for which we can measure changes in their populations (28 years) is down to 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 36 years than 25 years, reflecting modest increases prior to the declines that are now a cause of concern. **Goldcrest** is a difficult species for status assessments because its populations show wide fluctuations and may not have been well monitored prior to the start of the BBS. Numbers actually increased by 46% over 36 years and declined by obly 16% over 25 years. More recently BBS data show that numbers have increase by 60% over the last ten years and it is doubtful that the status of this species should be of particular concern.

4.2.3 Long-term declines of species that are not currently red- or amber-listed (for declines)

We identified only five species that are currently showing long-term declines of greater than 25% but are not currently included on either the red or amber lists (Table 4.2.3). Two species, **Little Grebe** and **Whitethroat**, appear to have experienced declines of greater than 50%. The **Little Grebe** data should be treated with caution as they are based on a small sample from linear waterways. WBS shows an ongoing decline over the last ten years while BBS shows an increase for the UK as a whole. The long-term **Whitethroat** decline results from the well-documented crash between 1968 and 1969 (**Winstanley *et al.* 1974**), from which numbers have shown only a limited recovery over the last 25 years.

Table 4.2.3 Long-term population changes over the longest available period (usually 36 years) and 25 years for species that have declined by more than 25% but are not currently on the PSOB red or amber lists (for declines). The table is ordered by decline over the longest available time period.

See **Help** for information on category definitions.

Two other species, **Common Sandpiper** and **Lesser Whitethroat**, could all be candidates for future inclusion on the amber list. **Lesser Whitethroat** should be of particular concern because the 29% decline from CBC/BBS over the last 25 years is consistent with a 52% decline on CES sites over the last 19 years and a 30% decline measured by the BBS over the last 10 years. **Red-legged Partridge** declined by 46% over the last 25 years but would not be a candidate for amber listing because the species is not native to the UK.

4.2.4 Declines on WBS plots

The **Waterways Bird Survey** supplements the results from more broadly based schemes, such as CBC and BBS, by measuring trends in the bird populations of linear waterways. For a few waterways habitat specialists such as **Grey Wagtail** and **Common Sandpiper** WBS provides our best information on population trends but for several others it provides supplementary information from this sensitive habitat. Long-term declines of greater than 25% recorded from WBS plots are listed in Table 4.2.4.

Table 4.2.4 Population declines of greater than 25% recorded by the Waterways Bird Survey between 1975 and 2003.

See **Help** for information on category definitions.

The trends for **Little Grebe**, **Redshank** and **Common Sandpiper** have already been discussed above while those for **Yellow Wagtail** and **Reed Bunting** are consistent with those reported from CBC/BBS. The **Pied Wagtail** decline of 47% is interesting because in contrasts markedly with the position in the rest of the country where populations have recently been increasing. Over the 25-year period 1978 to 2003 **Pied Wagtails** declined by 42% on linear waterways compared with only an 8% decrease in the UK, as shown by the CBC/BBS trend. The cause of the decline on waterways is currently unknown.

4.2.5 Declines on CES plots

The **Constant Effort Sites Scheme** provides trends from standardised ringing in scrub and wetland habitats. It is our best scheme for monitoring bird populations inhabiting reed beds but its main objective is to collect integrated data on relative abundance, productivity and survival for a suite of species. The longest trends currently available from the CES cover a period of 19 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 2003.

See **Help** for information on category definitions.

Most of the species that are declining on CES sites also show similar trends from CBC/BBS data. **Linnet**, **Spotted Flycatcher** and **Willow Tit** are already red-listed while **Lesser Redpoll** and **Willow Warbler** are amber-listed. The declines of **Lesser Whitethroat** and **Whitethroat** have also been discussed above (**section**

4.2.3). Both species are doing less well on CES sites than in the UK as a whole. Over the ten-year period 1993 to 2003 **Whitethroats** increased by 41% in the 41% in the UK but decreased by 21% at CES sites. Similarly **Lesser Whitethroats** declined by 17% in the UK as a whole but by 58% on CES sites. Longer-term comparisons show a similar picture. Numbers of juveniles captured at CES sites show very similar patterns of decline to adult captures for both species. It is unclear why these two species are doing so poorly on CES sites as many of these are located in the good-quality scrub habitats that are preferred by these species.

Return to previous page

Go to next page - 4.3 Ten-year trends and evidence of species recovery

4.3 Ten-year trends and evidence for species recovery

If the status of species that have shown long-term declines were now improving, we would expect to find more positive trends in recent years compared with the earlier part of the time series. To examine this we list here the best change estimates over the most recent ten-year period for which we have data (1993–2003) for all of the declining species listed in the previous section of this report (Table 4.3).

Table 4.3 Best estimates of population change over the last 10 years (1993-2003) for all species identified as having long-term declines of greater than 25%.

See **Help** for information on what the categories mean

The 41 species listed include 17 from the red list, 19 declining species that are amber listed on account of population declines and five species that are not formally listed as declining. The table includes data on four species for which we do not report long-term trends but for which we can now report ten-year trends from BBS data. Ten species, **Red-legged Partridge**, **Tree Sparrow, Dunnock**, Nightingale, **Song Thrush**, **Grey Wagtail**, **Whitethroat**, **Snipe**, Grasshopper Warbler and **Goldcrest** show positive trends over the last ten years. The figure for **Nightingale** should be treated with caution as it is based on a small amount of data from CES sites. The steady increase in the red-listed **Song Thrush** since about 1997 is particularly encouraging, as are the positive trends for **Dunnock**, **Grey Wagtail**, **Snipe** and **Grasshopper Warbler**.

The rate of decline of 25% over 25 years that is used as a threshold for amber listing is equivalent to a decline of 10.9% over ten years (assuming both have the same annual rate of change). A further nine species, **House Martin**, **Lapwing**, **Kestrel**, **Red Grouse**, **Reed Bunting**, **Mistle Thrush**, **Linnet**, **Bullfinch** and **Marsh Tit**, have negative ten-year changes involving declines of less than 11%. None of the ten-year declines for these nine species are statistically significant. Thus our data suggest that the declines of these species appear to be levelling off, although there is as yet no clear indication of recovery.

Ten-year changes for the remaining 22 species in Table 4.3 indicate ongoing declines, with rates equivalent to at least 25% over 25 years. Five species, **Lesser Redpoll**, **Willow Tit**, **Little Grebe**, **Wood Warbler** and **Lesser Spotted Woodpecker**, have declined by more than 50% over the last ten years alone. The ongoing declines of so many of the species listed in Table 4.3 must be a cause of serious conservation concern.

Return to previous page

Go to next page - 4.4 Increasing species

4.4��� Increasing species

Population changes of 24 species for which our best trend estimate from CBC/BBS (usually over 36 years) or from WBS (usually over 28 years) shows an increase of more than 50% are shown in Table 4.4.1. Four identifiable groups stand out: corvids **- Jackdaw**, **Carrion Crow** and **Magpie**; doves **- Woodpigeon**, **Stock Dove** and **Collared Dove**; insectivores; and some waterbirds. Corvids appear to have benefited from relaxation and decrease of gamekeeping activities in the countryside in recent years, and the increased use of *Brassica* crops (particularly oilseed rape) has probably been beneficial to the doves. Numbers of **Pheasants** have also increased but the index for this species is difficult to interpret because it may be influenced by releases of captive-reared birds.

The majority of increasing insectivores are species that are associated with woodland but also common in gardens: **Great Spotted Woodpecker**, **Green Woodpecker**, **Nuthatch**, **Blackcap**, **Wren**, **Long-tailed Tit**, **Great Tit** and **Coal Tit**. The reasons for these increases are presently unclear. **Pied Wagtail** has increased in numbers by 97% on CBC/BBS plots over 36 years, but declined by 51% on WBS plots over the past 28 years. The former survey is likely to be more representative of the UK population as a whole.

Table 4.4.1 Long-term population increases of >50% from CBC/BBS 1967-2003 or WBS (1975-2003) using the best survey for each species.

See **Help** for information on category definitions.

A number of species associated with freshwater habitats are also becoming more abundant, although differences between their ecological requirements make it unlikely that a common causal factor is involved.�The CBC and WBS cannot be said to provide monitoring of a representative portion of the population for most of these species but these results are interesting indicators of changes that may nevertheless be affecting the whole population.� We can be confident that **Mallard** populations have increased greatly as CBC/BBS recorded a 184% increase over 36 years while WBS recorded a 185% increase over 28 years. The growth of this population is still continuing with CBC/BBS recordeding a 23% increase over the last ten years. The increases recorded for **Mute Swan** on both CBC/BBS and WBS plots are likely to be the result of banning the use of lead weights by anglers. **Oystercatchers** have increased by 114% on WBS plots over the last 28 years. This finding is consistent with the results of the **Survey of Breeding Waders of Lowland Wet Meadows** which found that numbers of Oystercatchers using these habitats in England and Wales increased by 51% between 1982 and 2002. Grey Heron is not listed in Table 4.4.1 because it is covered by a separate survey that spans a much longer period. The population of this species is probably not increasing quite as fast as the species listed in the table, with only a 20% increase over the last 25 years. Nevertheless this population has undergone a sustained increase of 69% over the last 74 years (1929–2003).

Return to previous page

Go to next page - 4.5 Changes in breeding performance

4.5������ Changes in breeding performance

Changes in a range of aspects of breeding performance can be measured under the Nest Record Scheme and the Constant Effort Sites scheme.�The former provides information on components of breeding performance *per nesting attempt*. The latter provides an index of breeding performance accrued over *all* nesting attempts in a particular year, combined with the effect of changes in the survival of fledglings once they have left the nest but before they are caught as juveniles � a period when losses of young can be high.

Breeding performance may be influenced by a variety of factors, including food availability, predation pressure and weather conditions. Variation in breeding performance may help to influence a population, and may even be the main demographic factor responsible for determining its size. Conversely, the breeding performance of a population may be negatively related to its size, with productivity decreasing as the number of individuals increases, and vice versa. This relationship may be due to the action of density-dependent factors, such as competition for resources: as numbers increase, competition for resources is likely to increase, possibly resulting in a reduction in productivity. Alternatively, increases in abundance may result from range expansion into new, suboptimal habitats where breeding performance is poorer and the average productivity of the population is thus lowered, whilst declines may result from the loss of individuals from these suboptimal habitats, leading to a subsequent increase in average productivity.

4.5.1 Changes in clutch and brood size

Those species exhibiting statistically significant trends in clutch and brood size over the past 35 years (1968–2003) are shown in Tables 4.5.1.1 and 4.5.1.2. More species showed decreases than increases in clutch size (17 decreases, 12 increases) while the opposite was true for brood size (23 increases, 15 declines).

Table 4.5.1.1 Significant trends in clutch size measured between 1968 and 2003

See **Help** for information on category meanings.

Nine species (**Pied Wagtail**, **Long-tailed Tit**, **Blue Tit**, **Great Tit**, **Magpie**, **Raven**, **Chaffinch**, **Greenfinch** and **Twite**) exhibited decreases in both clutch size and brood size over the period, whilst another eight species (**Barn Owl**, **Skylark**, **Grey Wagtail**, **Dunnock**, **Redstart**, **Starling**, **Tree Sparrow** and **Yellowhammer**) exhibited increases in both clutch size and brood size. For **Moorhen** and **Blackbird** average brood sizes increased despite a reduction in clutch size, suggesting that conditions for young had improved for these species whilst conditions for parent birds during egg formation may have deteriorated. **Mistle Thrush** showed the opposite pattern with a reduction in average brood size despite an increase in clutch size of similar magnitude.

Table 4.5.1.2 Significant trends in brood size measured between 1968 and 2003

See **Help** for information on category meanings.

Long-term changes in clutch or brood size are associated with long-term population trends in a number of species. Here we highlight those changes that are both statistically significant and likely to be of biological importance.

Declines in population size and brood size were recorded for **Yellow Wagtail** and **House Sparrow**. Both species show reductions of about half a chick per nesting attempt. The BTO project on **Yellow Wagtails**, initiated in 2002, aims to investigate the influence of decreased brood sizes on the abundance of this species. In the case of the **House Sparrow**, population modelling based on BTO data has shown that declines in rural areas were caused by reduced survival rates but that these declines were mainly halted due to improvements in breeding performance (**Crick *et al.* 2002**). The apparently accelerating reduction in brood size is therefore of some concern. Work by Kate Vincent at the University of Leicester has suggested that insect food for the chicks may be limited in certain situations and recent brood size reductions may be a manifestation of this at a wider scale. However, it should be noted that over the long term some of the reduction in brood size may have been compensated for by reduced nest failure rates at the egg and chick stages. The reduction in average brood sizes of **Mistle Thrushes** in recent years may be contributing to the failure of this species to recover from its population decline and would merit further investigation.

Several increasing species show increasing brood sizes, particularly **Sparrowhawk**, **Collared Dove, Wren** and **Nuthatch**. The return of **Sparrowhawks** into eastern areas of the UK, where populations of songbird prey are greater, may be a factor in this increase. The UK **Nuthatch** population, which has been expanding northwards and has increased considerably in size, has exhibited an increase in average brood size of more than one extra young per nesting attempt. It would seem likely that this has helped to drive the population increase of this species.

Inverse associations between clutch or brood size and population trend are found in some 24 species. Such relationships may arise through density-dependent processes where increased competition leads to reduced clutch or brood sizes at higher population densities. Totals of ten increasing species and 14 decreasing ones show such associations. Notable examples amongst increasing species include **Mute Swan** (clutch size), **Great Tit** (clutch and brood size), **Long-tailed Tit** (clutch and brood size) and **Magpie** (clutch and brood size). Amongst declining species the examples include **Barn Owl** (clutch and brood size), **Skylark** (clutch and brood size), **Tree Sparrow** (clutch and brood size) and **Corn Bunting** (brood size).

4.5.2 Changes in nest failure rates

Statistically significant trends in the daily nest failure rates at the egg and chick stages over the past 35 years (1968-2003) are shown in Tables 4.5.2.1 and 4.5.2.2. The number of species exhibiting declines in failure rates at the chick stage (24) was more than treble the number exhibiting increases (7), as was the number of species exhibiting declines in failure rates at the egg stage (37 vs. 12).� Thus the general picture is one of improving nesting success.

Table 4.5.2.1 Significant trends in egg-stage daily failure rate of nests measure between 1968 and 2003

See **Help** for information on category meanings.

The changes in egg-stage and chick-stage failure rates were both positive for **Mute Swan**, **Nightjar** and **Linnet**. For a further 17 species (**Merlin**, **Stock Dove**, **Barn Owl**, **Tawny Owl**, **Sand Martin**, **Robin**, **Redstart**, **Stonechat**, **Song Thrush**, **Reed Warbler**, **Magpie**, **Jackdaw**, **Carrion Crow**, **Starling**, **House Sparrow**, **Tree Sparrow** and **Yellowhammer**), egg-stage and chick-stage failure rates both decreased. For a further two species (**Whinchat** and **Long-tailed Tit**), declines in the failure rate at one stage were partially cancelled out by increases in failure rates at the other, suggesting that different factors may influence productivity at egg and chick stages.

Table 4.5.2.2 Significant trends in chick-stage daily failure rate of nests measured between 1968 and 2003

See **Help** for information on category meanings.

Long-term changes in egg-stage or chick-stage nest failure rates are associated with long-term population trends in a number of species. Here we highlight those changes that are both statistically significant and likely to be of biological importance.

Increased nest failure rates were associated with negative long-term trends in population size for seven species, and may have contributed to the observed population declines. These species were **Nightjar** (both stages), **Skylark** (egg stage), **Dunnock** (egg stage), **Willow Warbler** (egg stage), **Spotted Flycatcher** (nestling stage), **Linnet** (both stages) and **Reed Bunting** (egg stage). Although **Nightjar** is included in this list of declining species on account of its red-listed status, it should be noted that recent surveys show a population increase. Reductions in breeding performance at the egg stage have been implicated in a detailed analyses of the population declines of the **Linnet** (**Siriwardena *et al.* 2000b**). It has also been suggested that poor breeding performance may be preventing the recovery of Reed Bunting populations (**Peach *et al.* 1999**). However, the increasing trend in chick-stage failure rates of Spotted Flycatchers has only just become significant and previous work suggested that other demographic factors were more important in the decline of this species (**Freeman & Crick 2003**).

Thirteen species showed clear associations between long-term increases in abundance and long-term reductions in nest failure rates. **Sparrowhawk**, **Buzzard**, **Pied Wagtail**, **Blue Tit** and **Great Tit** experienced reduced nest failure rates at the egg stage, while **Grey Heron**, **Collared Dove** and **Great Spotted Woodpecker** showed reduced failure rates at the chick stage. The remaining five species, **Stock Dove**, **Robin**, **Magpie**, **Jackdaw** and **Carrion Crow**, showed reduced failure rates at both the egg and chick stages. A reduction in the egg-stage failure rates of **Long-tailed Tits** may have contributed to their population increase, but this is partly offby an increase in check-stage failure rates. Corvids, such as **Magpie**, **Carrion Crow** and **Jackdaw**, appear to have benefited from improvements in nesting success at the egg stage, as have raptors such as **Sparrowhawk** and **Buzzard**. Decreased persecution and reduction in the use of pesticides are likely to have been important factors in the recovery of these species. The improvements in the nesting success of **Stock Dove** could have a major impact on the size of the population, given the high number of breeding attempts made by this species each year. **Grey Heron** populations have increased over the last 70 years, and improvements in chick-stage nest survival may have played a part in this increase, perhaps aided by the declining impact of organochlorine pesticides and improvements in water quality of riverine and standing water bodies. Decreased chick-stage failure rates of **Collared Doves** may have aided the rapid growth of the UK population over the last 35 years, particularly as this species makes a relatively large number of breeding attempts per year.

Inverse associations between changes in egg- or chick-stage nest survival and population trend are found in some 18 species, while only **Long-tailed Tit** (above) shows such a relationship at one stage but a compensatory one at the other stage. Such relationships may arise through density-dependent processes where increased competition leads to increased failure rates at higher population densities. Two increasing species showed long-term increases in nest failure rates. Failure rates of **Mute Swans** increased at both the egg and chick stages while failure rates of **Oystercatchers** increased at the egg stage. Some 16 declining species showed evidence of improving nesting success. **Snipe**, **Redshank**, **Woodlark**, **Tree Pipit**, **Wood Warbler** and **Marsh Tit** showed decreased failure at the egg stage while **Meadow Pipit**, **Bullfinch** and **Corn Bunting**, showed decreased chick-stage failure rates. The remaining seven species, **Merlin**, **Barn Owl**, **Song Thrush**, **Starling**, **House Sparrow**, **Tree Sparrow** and **Yellowhammer** show decreased failure rates at both stages.

4.5.3 Changes in productivity from CES

The CES results start in 1984, so the changes in productivity shown in Table 4.5.3 cover roughly half the time period of the Nest Record Scheme results. The proportion of juveniles in the CES catch provides a relative measure of annual variation in productivity that integrates the effects of fledglings produced per attempt, number of nesting attempts and immediate post-fledging survival. The CES is unique in providing relative measures of adult abundance and productivity from the same set of sites in wetland and scrub habitats. Overall, nine species exhibit significant declines in the proportion of juveniles while only **Chaffinch** shows an increase in this measure.

Four species, **Nightingale**, **Linnet**, **Lesser Redpoll** and **Sedge Warbler**, all show greater than 50% declines in the proportion of juveniles captured over the last 19 years, although it should be noted that two of these occur on a relatively small number of plots. A further five species show reductions in relative productivity of between 25% and 50%. Four of the nine species showing these large productivity declines (**Linnet**, **Lesser Redpoll**, **Song Thrush** and **Willow Warbler**) have experienced significant population declines both on CES sites and more widely (based on CBC/BBS figures). For **Linnet** there is good evidence that variation in productivity has been important in driving the decline (**Siriwardena *et al.* 2000b**), but for **Song Thrush** and **Willow Warbler** other work indicates that variation in survival rates is likely to have been a more important contributor to population changes (**Peach *et al.* 1999**, **Robinson *et al.* 2004**). The large decline in **Nightingale** productivity may have contributed to the complex changes in its distribution shown by the **1999 survey**, which identified decreases in abundance over large parts of the species' range. The four other species (**Sedge Warbler**, **Blue Tit**, **Blackbird** and **Blackcap**) with marked reductions in productivity on CES sites have not experienced related declines in abundance, either on CES sites or more widely. The causes and consequences of the productivity declines observed in these species are unclear and warrant further investigation.

Three species with long-term declines in abundance of greater than 50% on CES sites, **Willow Tit**, **Spotted Flycatcher** and **Lesser Whitethroat**, all show stable or slightly increased productivity over the last 19 years.

Taking the CES data set as a whole, 21 species show some decline in productivity over the last 19 years while only six show increases. The strong preponderance in trends towards lower productivity requires urgent and more detailed investigation.

Table 4.5.3 Changes in productivity indices (percentage juveniles) for CES 1984-2003 (19 years) calculated from smoothed trend. Only those changes that are statistically significant are shown.

See **Help** for information on category meanings.

4.5.4 Changes in average laying dates

Over the past 25 years many species have exhibited a trend towards progressively earlier clutch initiation (**Crick *et al.* 1997**) with laying dates showing curvilinear responses over the past 50 years as spring temperatures have cooled and then warmed (**Crick & Sparks 1999**).�Table 4.5.4 confirms that over the past 34 years the majority of species exhibiting significant trends show an advancement of laying dates rather than a delay.�Thus 33 species are laying between 29 days and 1 day earlier, on average, than they were 35 years ago.�Four species, **Garden Warbler**, **Turtle Dove**, **Stonechat** and **Lesser Redpoll**, are added to the list of earlier layers published in the previous report in this series while **Ringed Plover** and **Blackbird** are removed from the list. There are no taxonomic or ecological associations between the species showing such changes, and they seem to occur across a wide range of species (**Crick *et al.* 1997**). Only four species show significant changes towards later laying, all of which suffer from small sample sizes. It is likely that the laying dates of the majority of those species that do not show a significant trend in timing of laying are related to some aspect of weather, but that those aspects do not show any trend over time (**Crick & Sparks 1999**).

The significance of the changes in phenology for breeding performance and productivity is currently unknown and needs to be investigated. Earlier average laying may be beneficial for birds because earlier fledging is often related to improved survival to the following year.�However, several studies are beginning to show that birds are unable to advance their phenology sufficiently to match phenological changes in their food supply, such that later nesting birds are suffering from poorer productivity.�Early nesting parents have an increased chance of having their offspring recruited into the next generation (**Visser *et al.* 1998**).�The conservation significance of factors such as these needs to be assessed urgently.

Table 4.5.4 Significant trends in laying date (Day 1 = 1 Jan) for 1968-2003

See **Help** for information on category meanings.

Return to previous page

Go to next page - 4.6 Conclusion

4.6������Conclusion

We hope that this report will be useful both as a ready source of information for conservation practitioners and as a source of information for those involved in more strategic conservation policy making. The information presented here is very much the 'tip of the iceberg' of information held by the BTO, providing a concise overview of the way in which populations are changing and suggesting areas where further research and conservation action needs to be taken.

Alerts are raised as a result of declines in the population sizes of a considerable number of species. These alerts will help conservation organisations to prioritise future conservation action, alongside the Population Status of Birds list (**Gregory *et al.* 2002**) and other information.

The information concerning demographic factors contained in this report will also help conservation organisations to target their resources more effectively. For declining species of conservation importance, declines in breeding performance may indicate that conservation action should be targeted at the breeding season; although such responses may sometimes be masked by density-dependent improvements in breeding success (**Green 1999**). The lack of a decline in breeding performance may suggest that factors other than nesting success, such as loss of habitat or changes in survival rates are more likely to be influencing observed population declines. A report of this kind can only provide an initial summary of such information, and a full assessment of the population dynamics of a declining species will generally require more detailed investigations (e.g. **Peach *et al.* 1999**, **Freeman & Crick 2003**, **Robinson *et al.* 2004**).

Finally, we hope that users of this report will provide feedback on how the report can be improved in the future. We welcome comments on more general aspects of this report as they will help us to produce a better and more useful product in the next edition.

Email your comments

Section 5 - Acknowledgements

Return to Discussion index

5. Acknowledgements

Volunteer fieldwork

Our biggest thankyou is to the volunteers who collected the data on which this website is based. The population trends and other results that we present rely on the sustained, long-term fieldwork of many thousands of BTO volunteers. Our knowledge of the conservation status of the UK's bird populations is only possible as a result of their dedication and enthusiasm. The conservation community owes them an enormous debt of gratitude for their work. We are also very grateful to the many farmers, land managers and landowners who allowed census work, nest recording and ringing to take place on their land.

Report production and analysis

This website presents the latest in a series of reports, prepared within the partnership between the British Trust for Ornithology (BTO) and the Joint Nature Conservation Committee (JNCC) (on behalf of Natural England, Scottish Natural Heritage, the Countryside Council for Wales and the Environment & Heritage Service of Northern Ireland), as part of its programme of research into nature conservation.

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Section 6 - References

Back to Contents

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Section 7 - Appendix

Back to Contents

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

7.1 Tables of alerts and population increases from CBC

7.2 Tables of alerts and population increases from WBS

7.3 Tables of alerts and population increases from CES

7.4 Tables of population declines or increases from BBS

Back to top

Return to Contents

BBWC Home > **Contents** > **Appendix** > Tables of alerts and population increases from CBC/BBS

7.1 Tables of alerts and population increases from CBC/BBS

Back to top

Appendix 7.1 Tables 5a and 5b

7.1 Tables of alerts and population increases from CBC/BBS

Back to top

Appendix 7.2

7.2 Tables of alerts and population increases from WBS

Back to top

Appendix 7.3

7.3 Tables of alerts and population increases from CES

Back to top

Appendix 7.4

BBWC Home > **Contents** > **Appendix** > Tables of population declines or increases from BBS

7.4 Tables of population declines or increases from BBS

This table does not use formal alerts methods due to the small number of years of data.
Population changes are based on an annual population index with no smoothing or truncation of end points.

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Back to top

Appendix 7.4 continued

7.4 Tables of population declines or increases from BBS

This table does not use formal alerts methods due to the small number of years of data.
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Back to top

Back to Contents

Images: Willow Warbler,, by Tom Cadwallander / BTO; Lapwing, by Sarah Kelman / BTO

Breeding Birds in the Wider Countryside: their conservation status 2005

This report is a "one-stop-shop" for information about the population status of our common terrestrial birds. With one page per species, readers can quickly find all the key information about trends in population size and breeding performance as measured by BTO monitoring schemes. It provides an overview of trends for the period 1966–2004.

This report is the third in a series, prepared within the Partnership between the British Trust for Ornithology (BTO) and the Joint Nature Conservation Committee (JNCC) (on behalf of Natural England, Scottish Natural Heritage, Countryside Council for Wales and the Environment & Heritage Service of Northern Ireland) as part of its programme of research into nature conservation.

It is the result of the sustained long-term fieldwork efforts of many thousands of the BTO's volunteer supporters. Without their enthusiasm for collecting these hard-won facts, the cause of conservation in the UK would be very much the poorer.

Baillie, S.R., Marchant, J.H., Crick, H.Q.P., Noble, D.G., Balmer, D.E., Coombes, R.H., Downie, I.S., Freeman, S.N., Joys, A.C., Leech, D.I., Raven, M.J., Robinson, R.A. & Thewlis, R.M. 2005. Breeding Birds in the Wider Countryside: their conservation status 2005. *BTO Research Report* **435**, BTO, Thetford, UK.

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