BTO RESEARCH REPORT

Breeding Birds in the Wider Countryside: their conservation status 2001

Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Beaven, L.P., Downie, I.S., Freeman, S.N., Leech, D.I., Marchant, J.H., Noble, D.G., Raven, M.J., Simpkin, A.P., Thewlis, R. & Wernham, C.V.

S R Baillie, H Q P Crick, D E Balmer, L P Beaven, I S Downie, S N Freeman, D I Leech, J H Marchant, D G Noble, M J Raven, A P Simpkin, R M Thewlis and C V Wernham

This website is a "one-stop-shop" for information about the population status of our common terrestrial birds. With one page per species, users can quickly find all the key information about trends in population size and breeding performance over the period 1968-1999 as measured by BTO monitoring schemes.

For each species, we provide:

- General information concerning species' conservation listings
- 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 31 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 of greater than 25% or greater than 50% that have occurred over the past 5 years, 10 years, 25 years and 31 years.

The website covers the majority of British breeding birds, over 100 species in total, but excludes both colonial seabirds, which are well covered by the JNCC's Seabird Monitoring Programme (**Thompson *et al.* 1998**), and those species that are already covered by the Rare Breeding Birds Panel (**Ogilvie 1996**). Most wintering populations of waterfowl are well covered by the Wetland Bird Survey annual reports (eg **Pollitt *et al.* 2000**).

The following species exhibit rapid declines (of over 50%) or moderate declines (between 25 and 49%) over the 31-year period 1968-99 as measured by the Common Birds Census (CBC):

- **Rapid declines:**
  17 species: **Grey Partridge**, **Woodcock**, **Turtle Dove**, **Skylark**, **Tree Pipit**, **Song Thrush**, **Whitethroat**, **Spotted Flycatcher**, **Marsh Tit**, **Willow Tit**, **Starling**, **Tree Sparrow**, **Linnet**, **Lesser Redpoll**, **Yellowhammer**, **Corn Bunting** and **Bullfinch**
- **Moderate declines:**
  7 species: **Lapwing**, **Cuckoo**, **Yellow Wagtail**, **Dunnock**, **Mistle Thrush**, **Willow Warbler** and **Reed Bunting**

It should be noted that CBC plots are concentrated in lowland areas, and as such may not cover a major proportion of the UK population of species associated with alternative habitats, including Woodcock, Lapwing, Tree Pipit and Lesser Redpoll mentioned above. Reported trends for these species may be unrepresentative of the conservation status of the population as a whole.

The following species show rapid declines (of over 50%) or moderate declines (between 25 and 49%) over the 24-year period 1975-99, as measured by the Waterways Bird Survey (WBS):

- **Rapid declines:**
  3 species: **Little Grebe**, **Yellow Wagtail** and **Reed Bunting**
- **Moderate declines:**
  3 species: **Redshank**, **Grey Wagtail** and **Pied Wagtail**

A number of species have undergone substantial population increases, more than doubling, over the same time period:

- **CBC:**
  Mute Swan, **Shelduck**, **Mallard**, **Tufted Duck**, **Sparrowhawk**, **Buzzard**, **Stock Dove**, **Collared Dove**, **Green Woodpecker**, **Great Spotted Woodpecker**, **Nuthatch**, **Reed Warbler**, **Blackcap**, **Magpie**,
- **WBS:**
  Mallard, **Oystercatcher**

Again, it should be noted that trends derived from CBC data for Mute Swan, Tufted Duck, Buzzard and Reed Warbler may be unrepresentative of the conservation status of the whole population (see above).

We have not updated the Breeding Birds in the Wider Countryside website using data for 2001, because coverage was very sparse in that year due to access limitations resulting from Foot and Mouth Disease. The next update of this website, based on monitoring data up to the 2002 breeding season, will be published in late autumn 2003.

We welcome comments that will help us to improve future editions of this website.

Email your comments

Next page - Contents

| **BTO Home** | **JNCC Home**

This report should be cited as:
Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Beaven, L.P., Downie, I.S., Freeman, S.N., Leech, D.I., Marchant, J.H., Noble, D.G., Raven, M.J., Simpkin, A.P., Thewlis, R.M. and Wernham, C.V. (2002) Breeding Birds in the Wider Countryside: their conservation status 2001. BTO Research Report No. 278. BTO, Thetford. (http://www.bto.org/birdtrends)

BTO, The Nunnery, Thetford, Norfolk IP24 2PU, UK. Registered Charity Number 216652
Tel: +44 (0)1842 750050 Fax: +44 (0)1842 750030 Email: **info@bto.org**
This page last updated: 21 April, 2008

Page created by Susan Waghorn

Contents

1. INTRODUCTION

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 broadly-based 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;
- 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, under a BTO/JNCC contract, 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.

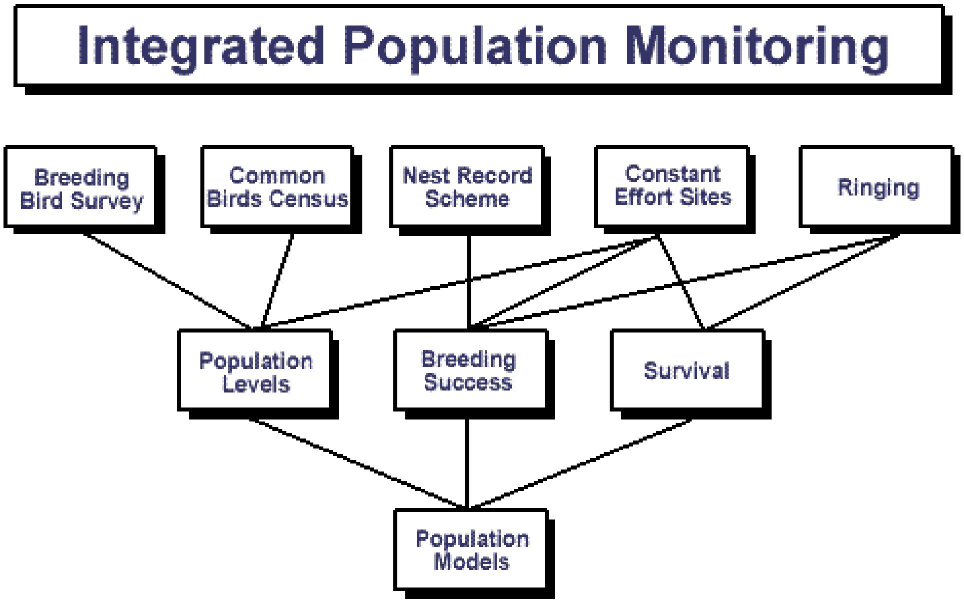
(c) To provide data that will assist in identifying the causes of such changes.

(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 1962-2000. This scheme mapped the territories of common birds on 2-300 farmland and woodland plots measuring, on average, about 60 and 20 ha respectively.
  - **The Waterways Bird Survey (WBS)** - which began in 1974 and maps the territories of birds on rivers, streams and canals on 1-300 plots, each covering, on average, 4.5km.
  - **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 are likely to 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. It is based on 2300 1-km squares, in which bird-watchers count and record birds along a 2 km transect walked in a standardised manner within each square. All habitats and regions are well covered by the survey because the squares are chosen randomly by computer.
- 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 over egg and chick stages
  - The CES provides information on overall productivity for a range of species by measuring the ratio of the numbers of juveniles to numbers of adults caught each year.
- Changes in survival are measured by:
  - **The National Ringing Scheme** - which provides information on the finding circumstances and longevity of ringed birds found dead by members of the public.
  - The CES can provide information on survival rates based on the recapture of ringed birds at CES sites.

An overview of the way in which the schemes fit together is 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

It is becoming increasingly obvious that simply monitoring changes in the size of a population does provide sufficient information on which to base effective conservation strategies is not enough for conservationists (**Goss-Custard 1993**). The monitoring of breeding performance and survival rates are essential to allow efficient interpretation of changes in population size (**Temple & Wiens 1989**) and, in the case of long-lived species, to provide early warning of impending changes in population size (**Pienkowski 1991**).

Without access to good long-term datasets concerning breeding performance and survival, remedial conservation action has to be taken without a sound basis or must wait for detailed investigative research to be undertaken. In addition, for long-lived species, declines in population size may only occur after long periods of low survival or reproduction.

The classic example is that of the Peregrine, which in the UK suffered from poor breeding performance during the 1940s and 1950s due to DDT contamination. This decreased the buffering capacity of the non-breeding population to withstand the severe mortality of breeding adults that occurred due to cyclodiene poisoning from the middle 1950s onwards (**Ratcliffe 1993**). Monitoring of breeding numbers did not reveal the problem as efficiently as an "early warning" based on the monitoring of breeding performance (**Pienkowski 1991**).

Another recent example of a decline in breeding performance preceded a decline in population size is provided by the catastrophic breeding failures of seabirds, and 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 some farmland bird species (**O'Connor & Shrubb 1986**, **Fuller *et al.* 1995**), but the causes of the declines were not readily apparent. The BTO has been able to investigate the causes of these declines because of its long-term historical databases (**Siriwardena *et al.* 1998a**, **2000**). The alternative approach of funding intensive studies of the 10-20 species separately would have been very costly, taken several years to complete and would not necessarily have been representative of the UK.

The investigation, which was undertaken jointly with Oxford University, and funded by the UK Government, looked at changes in population size, breeding performance and survival rates of a variety of species in relation to changes in farming practice. The study showed that each species has tended to respond to different aspects of the agricultural environment but that these aspects tended to be symptomatic of the trend towards intensification and regional specialisation. Overall, declines in survival rates were found to be the main factor driving population declines in these species with the exception of the 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 identify areas for future research, thereby helping conservation bodies to target their scarce resources in the most efficient manner.

Other examples where the combined (or integrated) analysis of BTO datasets has helped to pinpoint the causes of population declines include:

- Declines in breeding performance appear to have driven the population decline of Lapwing (**Peach *et al.* 1994**).
- Declines in survival rates during the first year of life are sufficient to have driven the population decline of Song Thrush (**Baillie 1990**, **Thomson *et al.* 1997**).

- Declining over-wintering survival, associated with below average rainfall in the Sahel wintering quarters, was the most important factor determining changes in Sedge Warbler abundance (**Peach *et al.* 1991**).

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 considering the plight of species listed on conservation listings (**JNCC 1996**; **Anon. 1995**, **1998**). (These lists were drawn up using data from the BTO's Common Birds Census (and other sources of information) to prioritise bird species of conservation concern). Indeed, analysis of BTO datasets is included as a key point in several of the UK Government's Biodiversity Steering Group Action Plans for rapidly declining species.

Of course, this is not the only function of the BTO's Integrated Population Monitoring programme. Once conservation actions have been initiated, their successes will be monitored and assessed against the background information provided by the BTO's long-term schemes. This is the only way that conservation bodies can measure the effectiveness of their actions at a national scale in a cost-effective manner.

Next Section - 1.3 The aims of this report

Back to Introduction Index

1.3 The aims of this report

The aims of this report are as follows:

1) To provide a species-by-species overview of the trends in breeding population size and reproductive success of birds covered by BTO monitoring schemes over the past 30 years.
2) To report on the observed population trends for the majority of breeding species with the exception of colonial seabirds which are well covered by the JNCC's Seabird Monitoring Programme (**Upton *et al.* 2000**), and the majority of species already covered by the Rare Breeding Birds Panel (**Ogilvie 1998**). Most wintering populations of waterfowl are well covered by the Wetland Bird Survey annual reports (e.g. **Pollitt *et al.* 2000**).
3) To report on population trends over the UK as a whole, and to provide habitat and regional analyses where practical.
4) To provide early warning alerts to JNCC and Country Agencies concerning worrying declines in population size or reproductive success, with special reference to species on the Conservation Importance Lists.

The report will be updated regularly and it is meant to be a working document that can be used primarily by conservation practitioners as a ready reference guide to the current changes in status of breeding birds in the UK. (Breeding distributions are not included as these are already fully documented in the New Breeding Atlas (**Gibbons *et al.* 1993**) and breeding population sizes are not included because these are to be reported on regularly by the Avian Population Estimates Panel (**Stone *et al.* 1997**)). However, by producing this as a web-report, we hope that it will be regularly used by a wider audience, especially BTO members and the general bird-watching public. We also hope that it will be used more widely and will become 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.

The report is the fourth in a series produced as part of the BTO's work carried out under its 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. The first report was produced in 1997 (**Crick *et al.* 1997**) and investigated population trends exhibited by breeding species during the period 1971-1995. This second report (**Crick *et al*. 1998**), produced the following year, covered the period 1972-1996, and the third report (**Baillie *et al.* 2001**), produced last year, concentrated on trends observed over the period 1968-1999. 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.

Back to Introduction Index

BBWC Home > Contents > Methodology

2. METHODOLOGY

Six monitoring schemes have contributed data to this report. Five provide data on changes in abundance: Common Birds Census; Waterways Bird Survey; Breeding 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 statistical methods used to analyse the data. Species are listed in taxonomic (Voous) order.

Next Page - Common Birds Census

Back to Contents

2.1 Common Birds Census

The results from the Common Birds Census (CBC) provide population trends for almost all of the commoner breeding species in Britain. Annual estimates of the number of breeding pairs on between 200 and 300 plots around the country allow comparisons of population levels on a year-to-year basis. Focusing on farmland and woodland habitats, the CBC provides reliable indices of population change for around 60 species.

The CBC has been running since 1962 and was instigated to provide sound information on farmland bird populations in the face of rapid changes in agricultural practice. The same observers survey the same plots using the same methods year after year. Although the original emphasis was on farmland plots, woodland plots were added shortly afterwards. The sample of farmland plots contains most of the main agricultural land-uses, with plots averaging around 70 hectares in extent. Woodland plots are generally smaller, averaging just over 20 hectares. A small number of plots of other habitats, including heathlands and small wetlands, are also surveyed annually. The plots show a rather uneven geographical coverage and are probably mainly representative of lowland England, with relatively few in Wales, Scotland and Northern Ireland. Fieldwork is carried out by a team of dedicated volunteers, until recently around 250 strong. On average, plots are censused for around seven consecutive years but a few observers have now been surveying the same sites since the CBC's inception in the early 1960s.

A territory-mapping approach is used to estimate the number and positions of territories of each species present on each survey plot during the breeding season. Volunteers visit their survey plot eight to ten times between late March and early July and all contacts with birds, either by sight or sound, are plotted on large-scale maps. Codes are used to identify the birds' species, sex and age where possible, and also to record activity such as song or nest-building. The registrations are then transferred to species maps, which are returned to the BTO for analysis.

The pattern of registrations reveals the numbers of territories for each species. By applying rigorous rules while analysing the species maps, we can be sure that there is consistency between our estimates from year to year. Comparison of territory totals with those for the same plots in previous years gives estimates of change between years, and allows the production of a long-running population index for each species. 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 population graphs for around two-thirds of these.

Observers also provide detailed habitat maps and information from 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.

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. As the benchmark to which other survey methods are compared, it is important that the validity and limitations of the CBC methods are understood. **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 will not have 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 land-classes and cropping patterns in lowland England.

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 from the mid-1990s until 1999, but the principles are similar. 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 and measurement error) and thus reveal the underlying pattern of population change. This is achieved by setting the degrees of freedom to one-third the number of years in the series. Confidence limits on the indices are estimated by bootstrapping (a resampling method; **Manley 1991**) and thus do not make any assumptions about the underlying distribution of counts.

Indices are plotted as the thick blue line on the graphs, and provide a relative measure of population size on an arithmetic scale with a 1998 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 dotted 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**). Confidence limits are not provided for farmland or woodland trends unless they show a significant decline >25%. Caveats are provided to show where the data suffer from a "Small sample" if the mean number of plots was <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.

Where possible, separate indices were calculated for farmland, woodland and all CBC plots, and all three indices from the latter selection are presented graphically in the species accounts. In some cases, however, we were unable to calculate indices for the different habitat types and only the single index for all CBC plots is presented.

The CBC's future
The CBC is recognised as having many strengths and has been a keystone of bird population monitoring within the United Kingdom for more than three decades. However, all monitoring programmes are subject to compromises between the theoretical ideal and methods that are practicable and cost-effective. The weaknesses of the CBC are largely related to the fact that both fieldwork and analysis are very time-consuming. This inevitably limits the numbers of volunteers who are able to participate in the scheme, with the result that areas with a low density of birdwatchers are under-represented. Due to the constraints imposed by the relatively small sample size, it was felt necessary to concentrate on farmland and woodland habitats. Bird population trends in built-up areas and the uplands are therefore little known. Moreover, as the plots are chosen by the observers, it may be that plots are not always representative of the surrounding countryside and there may be some bias towards bird-rich habitats. It is for these reasons that the Breeding Bird Survey (see below) was introduced in 1994. Both surveys were run in parallel for several years to allow calibration between the schemes. The 2000 field season was the last year of operation of the full CBC. During 2001 a reduced set of CBC plots was operated, with the aim of providing information on the relationships between bird locations and features of their habitats, and providing monitoring information for a small number of specific habitat types. CBC monitoring will continue to take this format in future years.

Next section - 2.2 Waterways Bird Survey

Back to Methodology Index

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

2.2 Waterways Bird Survey

The Waterways Bird Survey (WBS) has monitored up to 22 riparian bird species on canals and rivers throughout the United Kingdom since 1974. As with the **Common Birds Census** (CBC), the territory-mapping method is used to estimate the breeding population of waterbirds on each plot and shows in detail each bird's habitat usage. 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 120 plots distributed throughout the United Kingdom. Geographical spread is slightly different to that of the CBC because there is a higher proportion of plots in the north and west of England. Wales, Northern Ireland and Scotland are again rather poorly covered.

As with the CBC, 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. In 1994 observers were asked to complete their own territory analysis, based on issued guidelines for the first time. This has successfully speeded up the processing of WBS data at BTO headquarters. The results are still checked by BTO staff, and observer's analyses have generally been found to be consistent with those of BTO analysts. Population indices are estimated using the methods described for the CBC (**section 2.1**), and an index series has been created for each species.

Population changes are reported annually in BTO News for around 20 riparian species, eight of which are not covered by the CBC indices, and many of the others are found in higher numbers in the WBS sample than in the CBC sample. Long-term trends were summarised in *Population Trends in British Breeding Birds* (**Marchant *et al.* 1990**) and in a recent issue of *BTO News* (**Marchant & Beaven 2000**). For those species covered by both CBC and WBS, there is generally much agreement between the population indices from the two schemes. However, there are one or two exceptions, such as for **Lapwing**, the populations of which declined rapidly on arable farmland during the late 1980s while numbers on WBS plots, typically representing populations along river flood plains, showed greater stability.

As the WBS employs very similar methods to the CBC, the validation studies carried out for the latter generally hold true for the WBS (see **section 2.1**). **Marchant *et al.* (1990)** found that there has been little change in the composition of the WBS sample in terms of habitat type or geographical spread. Data analysis follows the same methods as used for CBC (Section 2.1), except that the "Unrepresentative?" caveat has not been used.

Next section - 2.3 Breeding Bird Survey

Back to Methodology Index

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

2.3 Breeding Bird Survey

In 1994 the BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched following two years of extensive pilot work and earlier desk-based studies. The introduction of the BBS was a response to the limitations of the **Common Birds Census** (CBC), which has monitored bird populations since 1962. It was recognised that there was a need to improve the geographical representation of UK bird monitoring and, thereby, both species and habitat coverage. The BBS uses line transects rather than the time-consuming territory-mapping method used by the CBC. This makes the survey relatively quick and convenient to undertake, and has been successful in encouraging a large number of volunteers to take part.

The sampling units are 1 x 1 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 BBS Regional Organisers, who are also volunteers. Information and survey forms are distributed to organisers, who contact volunteers willing to survey the squares every year, and after the field season, forms are returned to BTO headquarters via the Regional Organisers.

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 made up 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 units. The two bird-count visits are made about four weeks apart (ideally early May and early June), ensuring that late 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. The total numbers of each species, excluding juveniles, in each 200 m transect section and distance category, are recorded on summary forms, as well as the timing of the survey and weather conditions. The average time observers spend per visit is around 90 minutes.

In the first year (1994), 1569 plots were surveyed. The number has increased steadily from 1751 in 1995, 1919 in 1996, 2194 in 1997 and 2310 in 1998 to 2379 in 1999, close to the original target of 2500. Only around a quarter of these plots were covered in 2001, however, owing to Foot & Mouth Disease access restrictions. Squares are distributed throughout the UK, and cover a broader range of habitats than the CBC, including uplands and urban areas. In 1999, 217 species were recorded, 88 from more than 100 squares and a further 13 species from 50-100 squares. For a small number of species, which are colonial or flocking in habit, it is unclear how well they are monitored by the BBS but they are not currently monitored by other BTO schemes, and have therefore been included.

Data Analysis

Survey squares are chosen randomly using a stratified random sampling approach from within 83 sampling regions, which in most cases are the standard BTO regions, based on membership distribution. "Stratified random" means that the country is divided up into regions ("strata") within each of which a certain number of survey squares are chosen at random. BBS regions with larger numbers of potential volunteers are 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 annual differences in the coverage of each region 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 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 under- or over-sampling of BBS regions 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.

Trends are presented as graphs in which annual estimates are shown in blue and their 95% confidence limits in green. A caveat of "Small sample" is provided where the mean sample size is less than 50 plots per year.

Next section - 2.4 Heronries Census

Back to Methodology Index

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

2.4 Heronries Census

As predators at the top of the freshwater food chain, Grey Herons are excellent indicators of environmental health in the countryside. The aim of this census is to collect annual nest counts of Grey Herons *Ardea cinerea* from as many sites as possible in the United Kingdom. The Heronries Census began in 1928 and is the longest-running breeding season bird monitoring scheme in the world. 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 trends. In recent seasons, observers have counted also the nests of Little Egrets *Egretta garzetta*, which are now appearing in a number of southern heronries.

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 major censuses carried out in 1929, 1954, 1964 and 1985. Rather few counts are made of heronries in Scotland and Northern Ireland. Counts are submitted to the BTO 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.* in press**). A report containing simple chain estimates of change for the latest year is published annually in *BTO News*.

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 24 degrees of freedom.

Next Section - 2.5 Constant Effort Sites Scheme

Back to Methodology Index

2.5 Constant Effort Sites

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 by 2000 had expanded to encompass 144 sites. The distribution of CES sites tends to reflect the distribution of ringers within the UK and Ireland. In 1999, 115 sites were operated in England, 15 in Scotland, 5 in Wales, 5 in Northern Ireland and 4 in the Republic of Ireland. The CES is able to monitor 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 loglinear Poisson regression models, from which fitted year effects are taken as annual relative abundances, compared to an arbitrary value of unity in 2000. 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 (see **Peach *et al.* 1998** for full details). Data from sites with fewer visits in a given year are omitted for the year in question.

Annual indices of productivity (young per pair) are estimated from logistic regression models applied to the proportions of juvenile birds in the catch, the year effects then transformed to measures of productivity relative to an arbitrary value of unity in 2000. 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 pair. Full methodological details are provided by **Freeman *et al.* in prep**.

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 nonparametric regression model fitted to the calculated annual indices of abundance and productivity (via thin-plate smoothing splines with 5 degrees of freedom), to provide a simple smoothed picture. This is the red smoothed line on the CES graphs on the species pages.

Next Section - 2.6 Nest Record Scheme

Back to Methodology Index

2.6 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. There are currently more than a million 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.* 2000**) 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. **Brown *et al.* 1995**, **Crick *et al.* 1994**, **Crick 1997**, **Peach *et al.* 1995**).

The Nest Record Scheme gathers data on the breeding performance of birds in Britain and Ireland 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)**.

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 & Baillie 1996**). 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. Linear regressions are presented on the figures in this report, even when statistically non-significant, for illustrative purposes.

Results are only presented if the total sample size of records for a particular variable and species exceed 300 (i.e. mean >10 per year), and are presented with a caveat for small sample sizes if the number of records contributing data was between 300 and 900 (i.e. if mean is between 10 and 30 per year).

Next Section - 2.7 The Alert System

Back to Methodology Index

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

2.7 The Alert System

2.7.1 General approach

The alerting system used within this website is designed to draw attention to developing population declines that may be of conservation concern. It also identifies situations where long-term declines have been reversed leading to an improvement in the conservation status of the species concerned. It must be stressed that the changes reported here are advisory and do not represent a revision of agreed conservation listings (e.g. JNCC's Birds of Conservation Importance list (**JNCC 1996**) or the NGO Birds of Conservation Concern List (**Gibbons *et al.* 1996**)). However, they are based on similar criteria to the formal lists so they provide a good 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%-49%). These declines are measured over the full length of the available time series, 25 years, 10 years and 5 years. The conservation emphasis is particularly on the longer time periods but short term changes help separate those species where the decline is continuing or even accelerating from those which have declined previously but are now stable.

The alerts presented on this website 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.

Data on some species may be potentially biased due to unrepresentative coverage by monitoring schemes or imprecise due to small sample sizes. Because these data often provide the only available information our general approach is to report all the trends that can be calculated but to clearly flag up deficiencies in the data.

2.7.2 Smoothing population trends

Bird populations show long-term changes that do not follow simple mathematical trajectories. In addition to such long-term trends population indices also show annual 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 so that the long-term trend is revealed more clearly.

Technical details available here

2.7.3 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. Therefore we always drop these years before calculating any alerts. It may seem that that the alerts are therefore less up-to-date than they might be but the advantage is that fewer false alarms will be generated. It is important to stress that the final year of data do contribute to the smoothed curve and that the final point is only dropped 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 all data sets are not usually available until 12-15 months after the end of a particular breeding season. This report was prepared in the first half of 2002 when we had analyses of monitoring data up to 2000. As we drop the final year of the smoothed time series we are using change measures up to 1999.

Long-term changes for most of the species included in this report are calculated from Common Birds Census (CBC) data. 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 if 1961/62 and 1962/63, as well as by developments in methodology (**Marchant *et al.* 1990**). Therefore CBC indices have been calculated using the data from 1966 onwards and population changes are calculated back to 1968.

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

Scheme	Time series available		Maximum alert period		
	First year	Last year	First year	Last year	Number of years
Common Birds Census	1966	2000	1968	1999	31
Waterways Bird Survey	1974	2000	1975	1999	24
Constant Effort Sites	1983	2000	1984	1999	15
Heronries Census	1928	2000	1929	1999	75
Breeding Bird Survey	1994	2000	-	-	-

The Breeding Bird Survey started in 1994 and has not been running for long enough for it to be worthwhile to apply formal alerts methodology. Six year changes based on annual indices are reported here but we do not flag formal alerts.

2.7.4 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 be used to trigger an alert if it is of sufficient magnitude. Note that because we are only seeking to detect declines we are using a one-tailed test with a P value of 0.05. *Therefore these confidence limits should not be use to determine 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. These 85% confidence intervals provide us with an heuristic test for population change: 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

2.7.5 Data deficient species

There is uncertainty about the reliability of the results for some species, either because data may be unrepresentative or because that 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

This assessment is based on the criteria developed by **Gibbons *et al.* (1993)**. Data from the New 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. CBC data for such species are labeled as "unrepresentative". Where there are insufficient data to undertake such calculations expert opinion is 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 less than 20 plots is flagged as a small sample. For BBS a mean of less than 50 plots is flagged as a small sample.

2.7.6 Alert criteria

Alerts are flagged in two categories, greater than 50% decline (>50%) and 25%-49% decline (>25%). The change measures used are calculated from smoothed time series, wherever possible based on generalized additive models. After smoothing the first and last years are dropped from the time series as they may be unreliable. Alerts are only flagged if the estimated population change is significantly different from zero (no change) based on bootstrapped 90% confidence limits for the population change measure (a one-tailed test). Where change measures may be unreliable due to unrepresentative data or small sample sizes the alert is still flagged but the potential problem is noted.

Alerts are evaluated over the maximum length of the time series, 25 years, 10 years and 5 years. The maximum lengths of the time series used in this report are 31 years for the Common Birds Census, 24 years for the Waterways Bird Survey, 15 years for the Constant Effort Sites Scheme and 75 years for the Heronries Census.

2.7.7 Application to individual schemes

Currently the full methodology outlined above is applied to results from the Common Birds Census and the Waterways Bird Survey. For the Constant Effort Sites scheme and the Heronries census we present annual indices with confidence limits and the 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.

Technical details available here

2.7.8 Breeding Bird Survey

The breeding survey started in 1994 so only six years of data (1994-2000) 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.

Next - Statistical methods used for alerts

Back to Methodology Index

2.8 Statistical methods used for alerts

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

2.8.1 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 sites x years data matrix within which a proportion of the cells contain missing values because not all of the sites are covered every year. Such data can be represented as a simple model:

log (count) = site effect + year effect

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

A simple annual model would be fitted as a generalized 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**).

2.8.2 Fitting smoothed models

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

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

where smooth (year) represents some smooth function of year. It was not straightforward to fit GAMs to the CES or heronries data and we have therefore fitted smooth curves with a similar degree of smoothing to the annual indices.

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 on the web site are summarised below.

	Years	Length of time series	df for smoothed index
Common Birds Census	1966-2000	35	11
Waterways Bird Survey	1974-2000	27	8
Constant Effort Sites	1983-2000	18	5
Heronries Census	1928-2000	73	24

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

2.8.3 Common Birds Census and Waterways Bird Survey

GAMs were fitted to the CBC and 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 (2.7.4)** gives the reasons for choosing these particular confidence limits.

The GAMs were fitted using a modified version of FORTRAN program GAIM (**Hastie & Tibshirani 1990**) running on a Sun Sparc Ultra 80 computer.

2.8.4 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 5 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 or the change measures derived from it. Therefore all alert flags relating to the CES are shown in square brackets.

2.8.5 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.* unpublished m/s).

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 24 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.

Back to Methodology Index

SPECIES LIST

Jump to

List of species (in Taxonomic order)

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

RED-THROATED DIVER
Gavia stellata

Conservation listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Unknown
Shetland: Stable

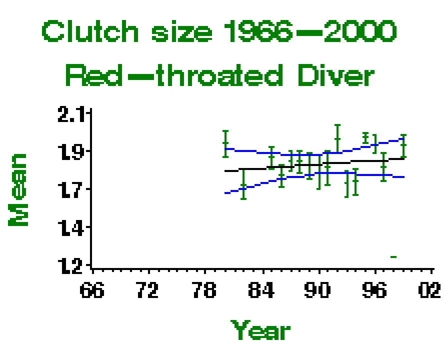
Status summary

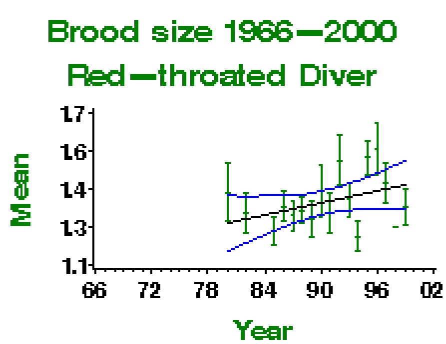
Increasing nest failure rates during the egg stage are a cause of concern for this species due to its unfavourable European conservation status. The increase represents a change from 16% to 34% of nests failing over the 27-day egg stage (26d incubation + 1d egg laying). It should be noted that, although many of the nest records come from Orkney, there are also reasonable numbers of records from Shetland, mainland Scotland and the Western Isles. Population trends are not monitored by the BTO, but the UK Seabird Monitoring Programme shows that numbers on Shetland fluctuated around a stable level during 1980-99 (Upton *et al.* 2000).

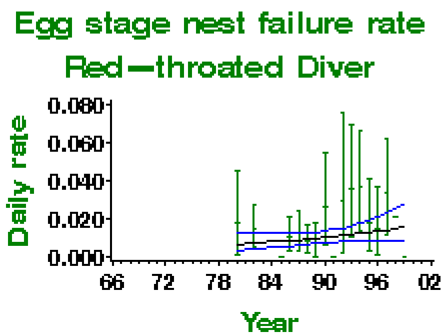
Annual breeding population changes are not currently monitored by BTO for this species

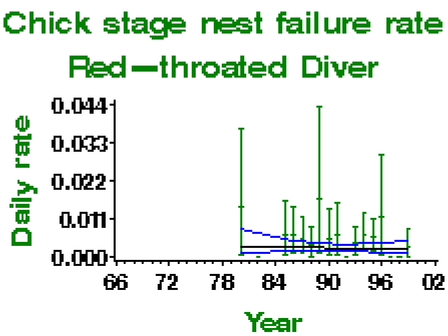
Table of productivity information for Red-throated Diver

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	19	1980-1999	28	None				Small sample
Brood size	19	1980-1999	42	None				
Daily failure rate (eggs)	19	1980-1999	16	None				Small sample
Daily failure rate (chicks)	19	1980-1999	23	None				Small sample









Insufficient data on laying date
available for this species

Insufficient data on CES
available for this species

LITTLE GREBE
Tachybaptus ruficollis

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Uncertain
Linear waterways: Rapid decline since late 1970s

Status Summary

The Little Grebe is not monitored well by the CBC, WBS or BBS, and each survey shows a different pattern of population change. The decline shown by the WBS may reveal problems among birds on linear waterways in the early 1980s, while the increase shown by the CBC may suggest that wider populations (including small still waters) are healthy. 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 stabilised.

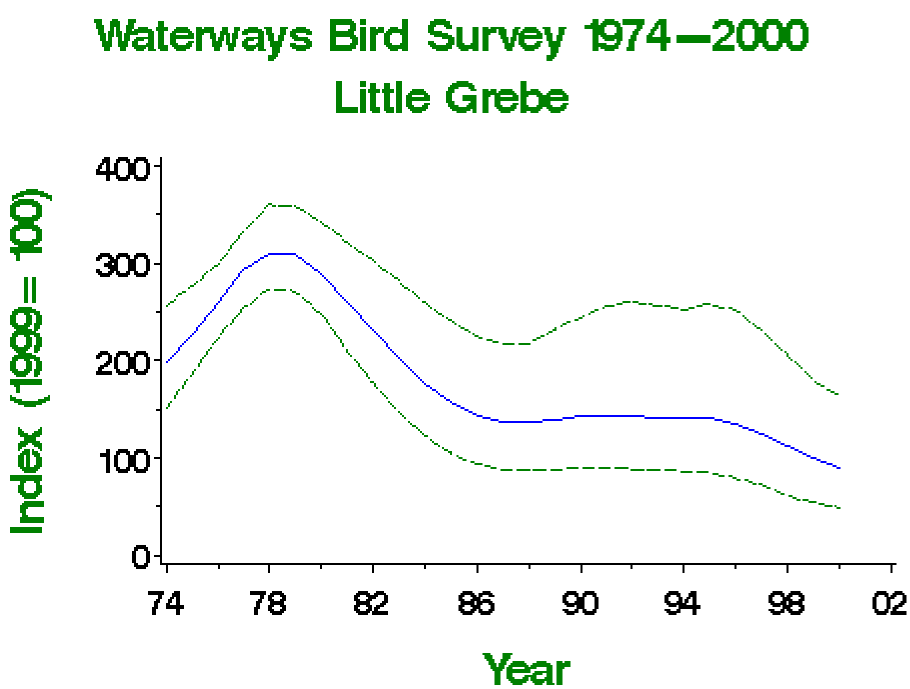
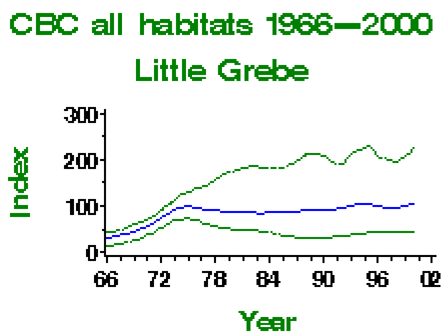


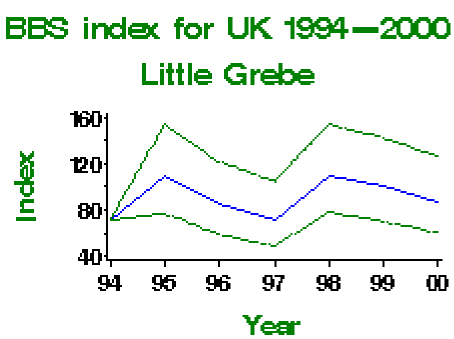
Table of population changes for Little Grebe

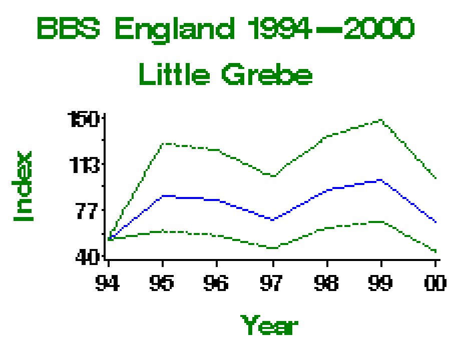
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	15	153	2	849		Unrepresentative? small sample

	25	1974-1999	16	3	-50	129		Unrepresentative? small sample
	10	1989-1999	13	8	-45	95		Unrepresentative? small sample
	5	1994-1999	15	-2	-36	54		Unrepresentative? small sample
WBS waterways	24	1975-1999	17	-56	-75	-20	>50	Small sample
	10	1989-1999	16	-28	-51	-4	>25	Small sample
	5	1994-1999	15	-30	-45	-15	>25	Small sample
BBS UK	6	1994-2000	46	23	-15	78		Small sample
BBS England	6	1994-2000	38	26	-17	92		Small sample

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







Productivity information is not currently available for this species

GREAT CRESTED GREBE
Podiceps cristatus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Unknown

Status Summary

The BBS provides the first annual, national monitoring of this species and prior trends are poorly known, although increases are believed to have followed reductions in persecution and the creation of habitat in the form of gravel pits (Gibbons *et al.* 1993). The BBS indicates population stability over the last six years. Winter numbers, monitored by WeBS, increased during the 1980s and are now stable (Musgrove *et al.* 2001).

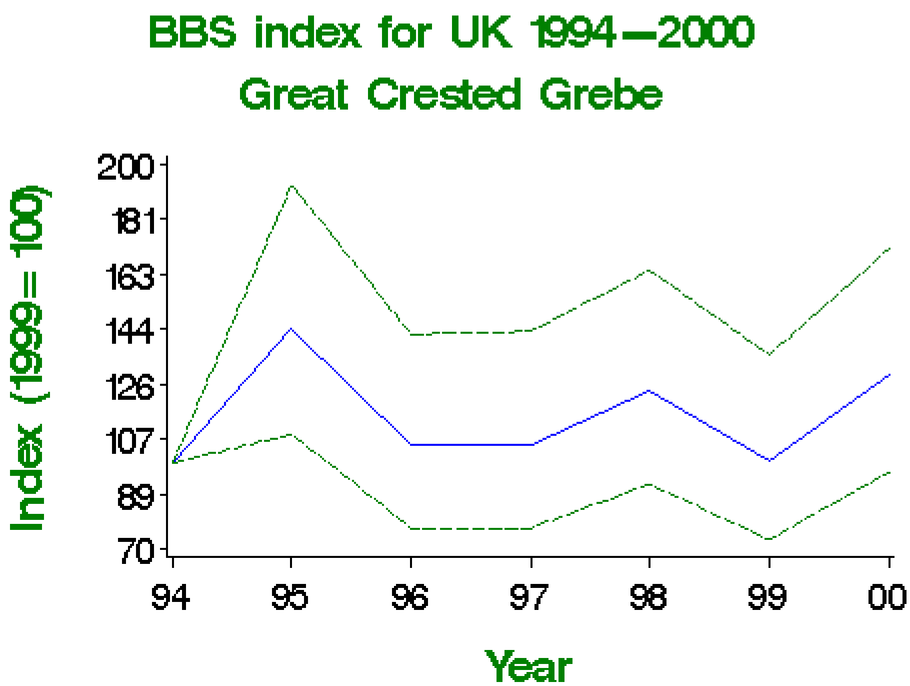
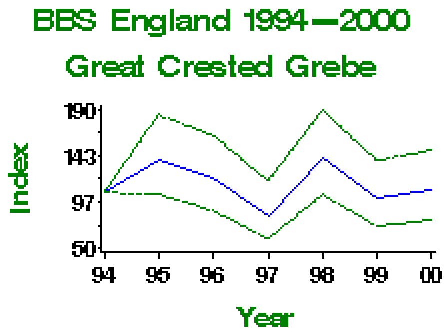


Table of population changes for Great Crested Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	55	30	-3	73		
BBS England	6	1994-2000	49	2	-26	40		Small sample

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



Productivity information is not currently available for this species

CORMORANT
Phalacrocorax carbo

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increasing
Shetland: Decreasing

Status Summary

The BBS indicates little change in Cormorant numbers over the past five years. The UK Seabird Monitoring Programme shows substantial increases in numbers breeding inland in England and in Northern Ireland between 1986-99 (Upton *et al.* 2000). However, numbers have fallen in Shetland by 5% per year over the same period.

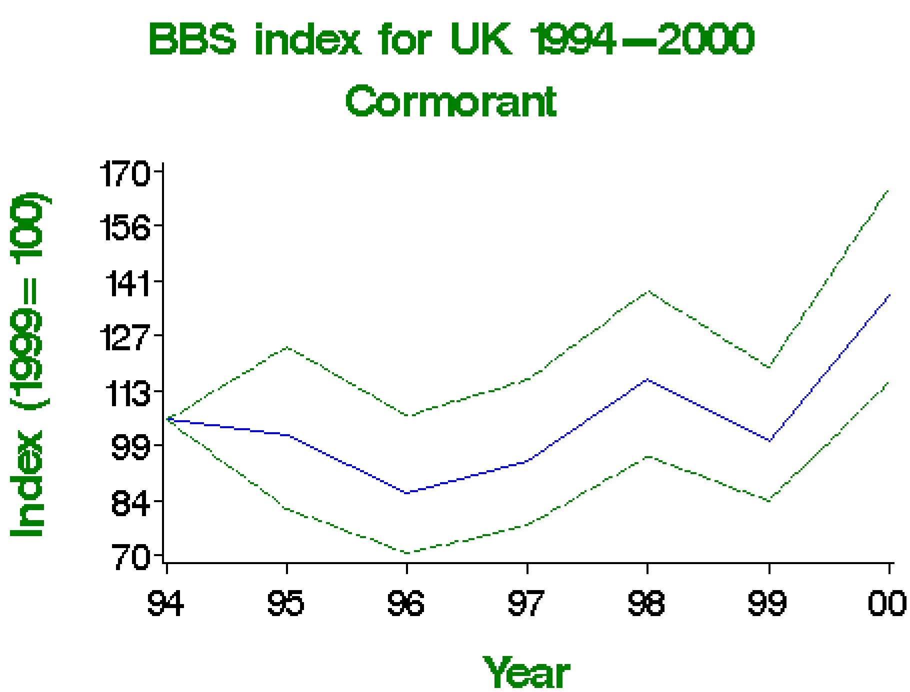
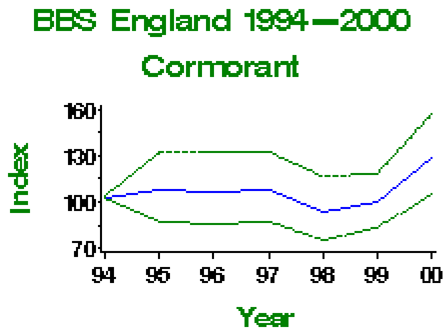


Table of population changes for Cormorant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	140	31	9	57		
BBS England	6	1994-2000	115	25	2	53		

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



Productivity information is not currently available for this species

GREY HERON
Ardea cinerea

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: increasing

Status Summary

The Heronries Census, which has monitored Grey Herons since 1928, now shows the species to be more abundant than ever before as it has recovered from a crash caused by the cold winter of 1962-63 and perhaps benefits from warmer winters, reduced persecution, falling pollution and increased stocking levels in freshwater fisheries (Gibbons *et al.* 1993, Marchant *et al.* in press).

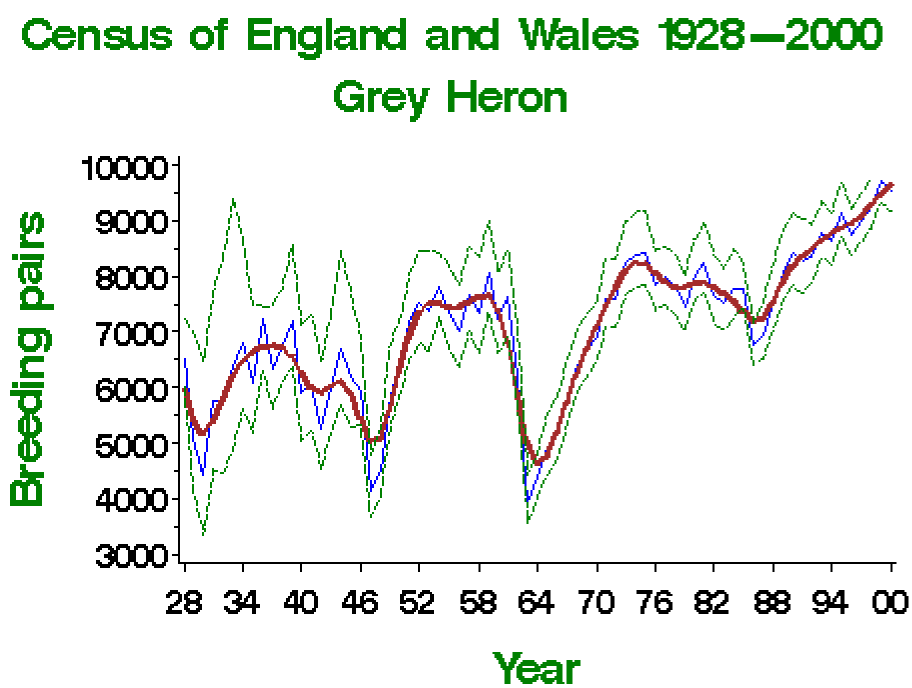
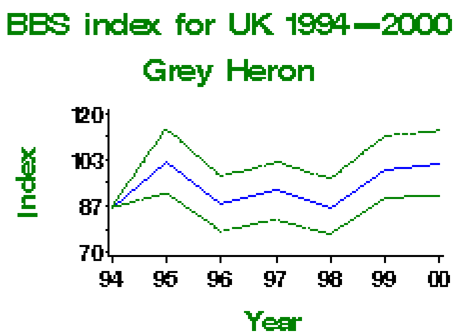


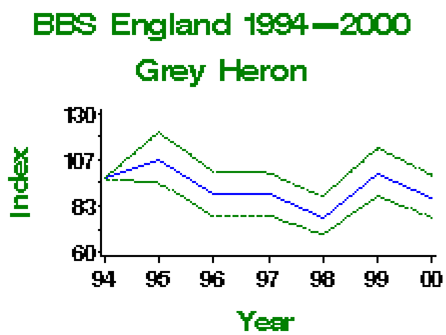
Table of population changes for Grey Heron

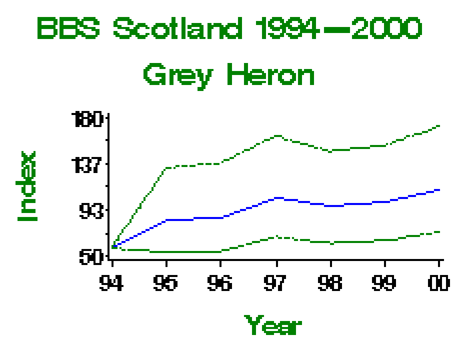
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Heronries Census	70	1929-1999	.	75	.	.		
	25	1974-1999	.	15	.	.		
	10	1989-1999	.	20	.	.		
		1994-						

	5	1999	.	8	.	.		
BBS UK	6	1994-2000	462	18	5	32		
BBS England	6	1994-2000	374	-10	-20	2		
BBS Scotland	6	1994-2000	41	93	26	197		Small sample
BBS Wales	6	1994-2000	34	24	-19	90		Small sample

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







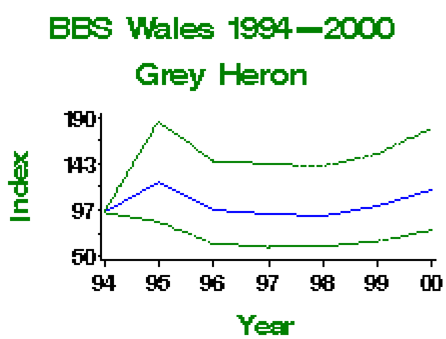
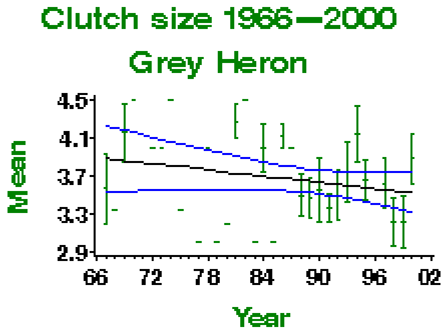
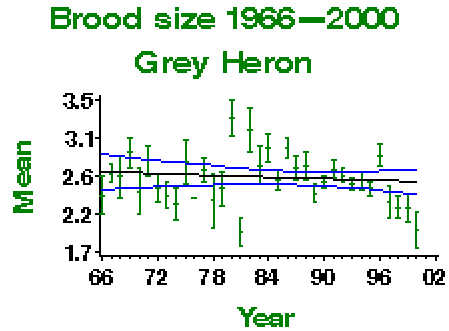
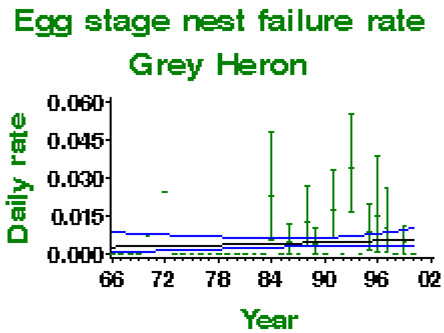


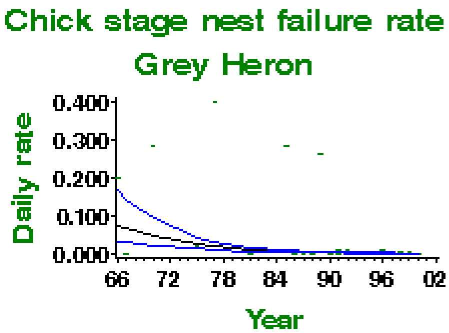
Table of productivity information for Grey Heron

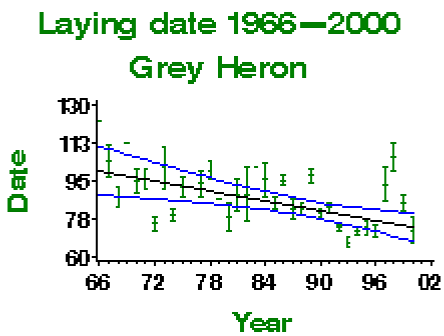
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	45	None				
Daily failure rate (eggs)	31	1968-1999	16	None				Small sample
Daily failure rate (chicks)	31	1968-1999	29	Linear decline	0.0584 nests/day	0.0009 nests/day	-0.0575 nests/day	Small sample
Laying date	31	1968-1999	32	Linear decline	day 98	day 74	-24 days	











Insufficient data on CES
available for this species

MUTE SWAN
Cygnus olor

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Moderate increase

Status summary

Mute Swan populations have increased progressively on both WBS and CBC plots since the mid-1980s, perhaps reflecting the replacement of anglers' lead shot with non-toxic alternatives and warmer winter weather (Gibbons *et al.* 1993). The trends in breeding performance, although statistically significant, may be due to relatively small, and perhaps unrepresentative, annual samples in the 1990s.

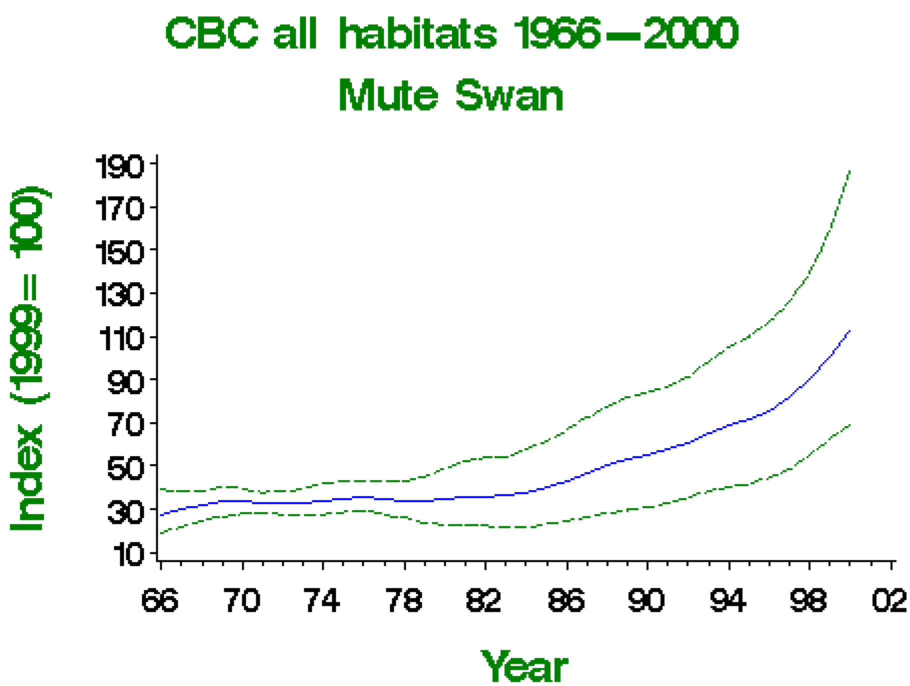
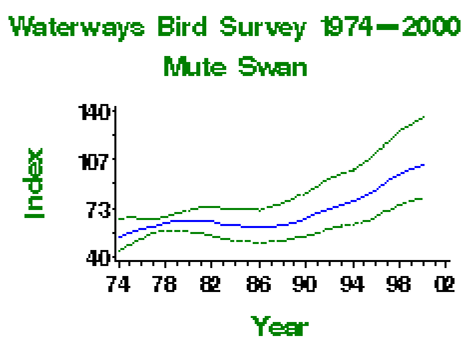


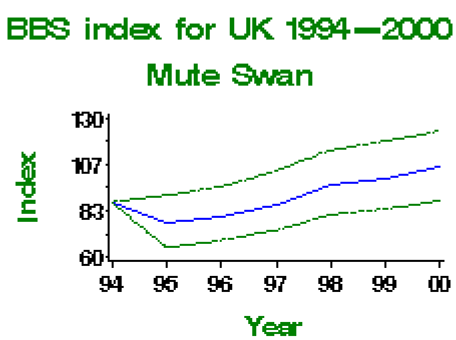
Table of population changes for Mute Swan

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	20	216	66	487		Unrepresentative? small sample
	25	1974-1999	22	196	87	368		Unrepresentative?
	10	1989-1999	24	88	51	165		Unrepresentative?
	5	1994-	27	46	22	85		Unrepresentative?

		1999						
WBS waterways	24	1975-1999	44	76	12	152		
	10	1989-1999	54	56	27	85		
	5	1994-1999	61	28	13	44		
BBS UK	6	1994-2000	167	20	1	41		
BBS England	6	1994-2000	144	-5	-19	11		

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





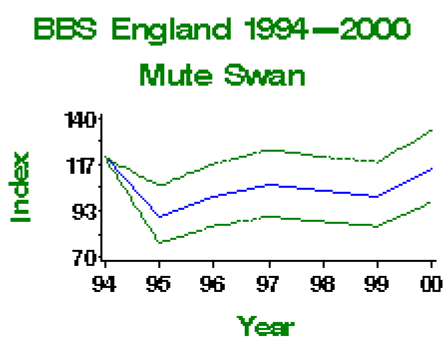
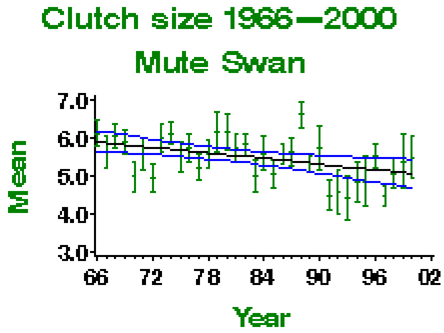
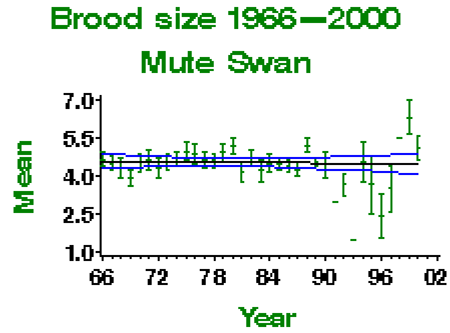
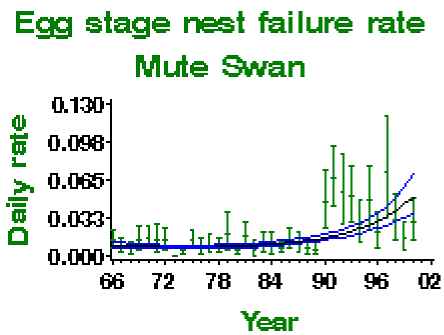


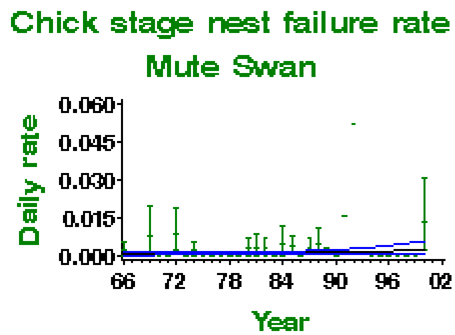
Table of productivity information for Mute Swan

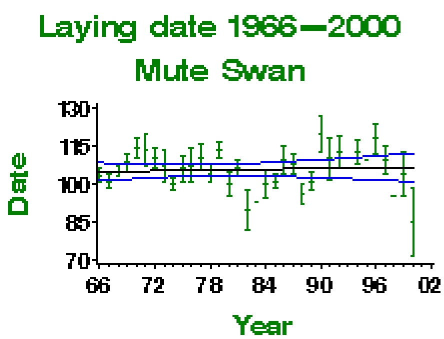
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	19	Linear decline	5.87 eggs	5.09 eggs	-0.78 eggs	Small sample
Brood size	31	1968-1999	33	None				
Daily failure rate (eggs)	31	1968-1999	26	Curvilinear	0.0081 nests/day	0.0437 nests/day	0.0356 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	20	None				Small sample
Laying date	31	1968-1999	12	None				Small sample











Insufficient data on CES available for this species

GREYLAG GOOSE *Anser anser*

Conservation Listings

Table 4/Amber (wintering population)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increase
Riparian habitats: Rapid increase

Status Summary

Apart from an indigenous population in north-west Scotland and Western Isles, and winter visitors from Iceland and Scandinavia, the Greylag Goose is an introduced species throughout the UK. Breeding season monitoring information was sparse before the early 1990s, but the population shows evidence of increases since then. Winter monitoring by WeBS shows a continuing long-term increase (Musgrove *et al.* 2001).

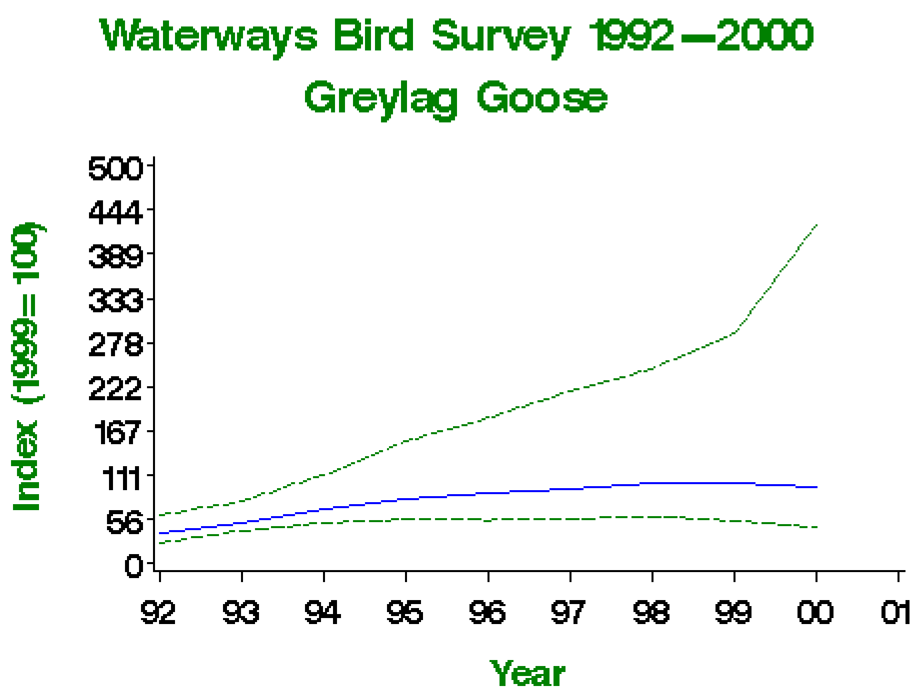
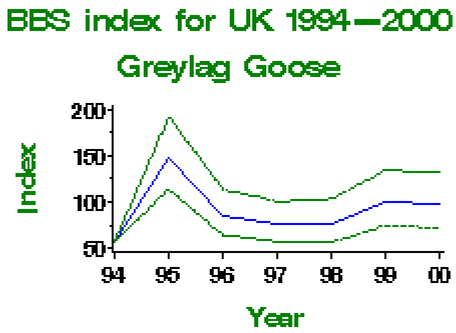
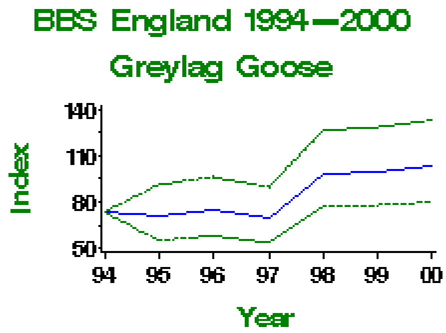


Table of population changes for Greylag Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	82	69	25	129		
BBS England	6	1994-2000	64	40	9	81		

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





Productivity information is not currently available for this species

CANADA GOOSE
Branta canadensis

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Increase
Riparian habitats: Stable/fluctuating

Status Summary

Canada Geese on linear waterways have been monitored by WBS since 1980, but long-term trends in the UK population as a whole are not known from annual breeding season surveys. Results from periodic breeding surveys show the population is increasing at an accelerating rate (Wernham *et al.* in press). Winter monitoring by WeBS shows a continuing long-term increase (Musgrove *et al*. 2001).

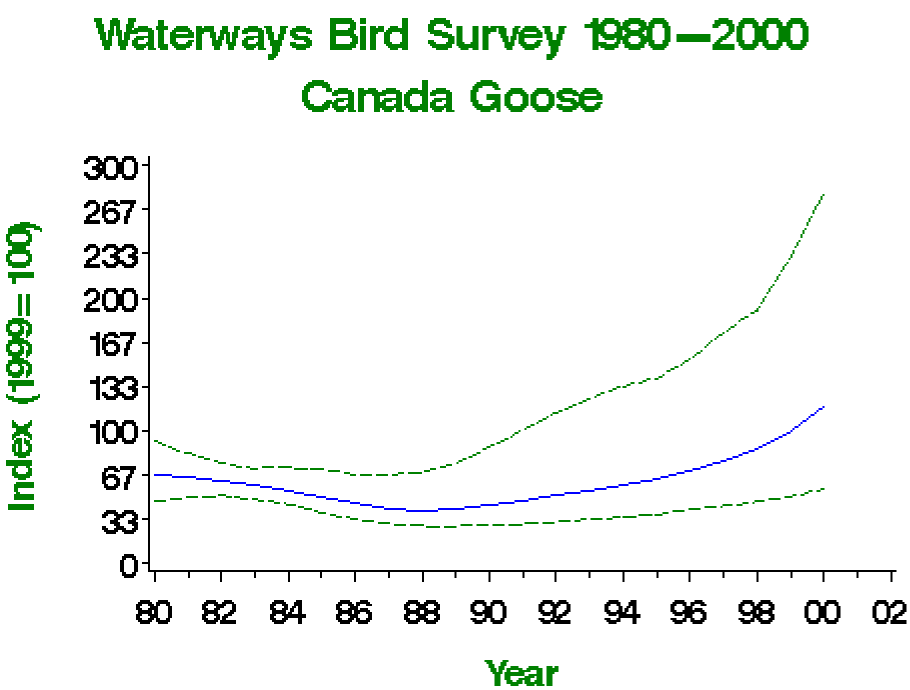
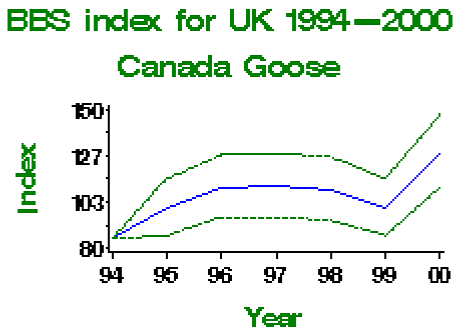
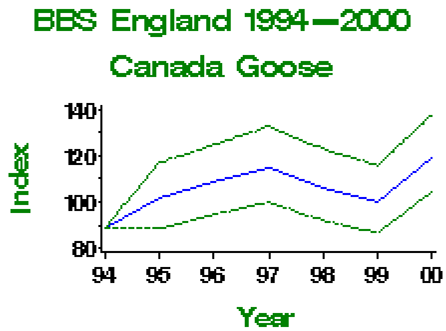


Table of population changes for Canada Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	289	51	31	74		
BBS England	6	1994-2000	274	35	18	56		

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





Productivity information is not currently available for this species

SHELDUCK
Tadorna tadorna

Conservation Listings

Table 4/Amber (important breeding and wintering populations)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increase

Status Summary

The UK winter Shelduck population has shown a general increase since 1965 (Musgrove *et al.* 2001). The CBC shows a similar increase until the 1980s, after which numbers stabilised, although it is unlikely to be representative of the population as a whole. Recent declines shown by the BBS and by WeBS (Musgrove *et al.* 2001) may reveal emerging problems for the species.

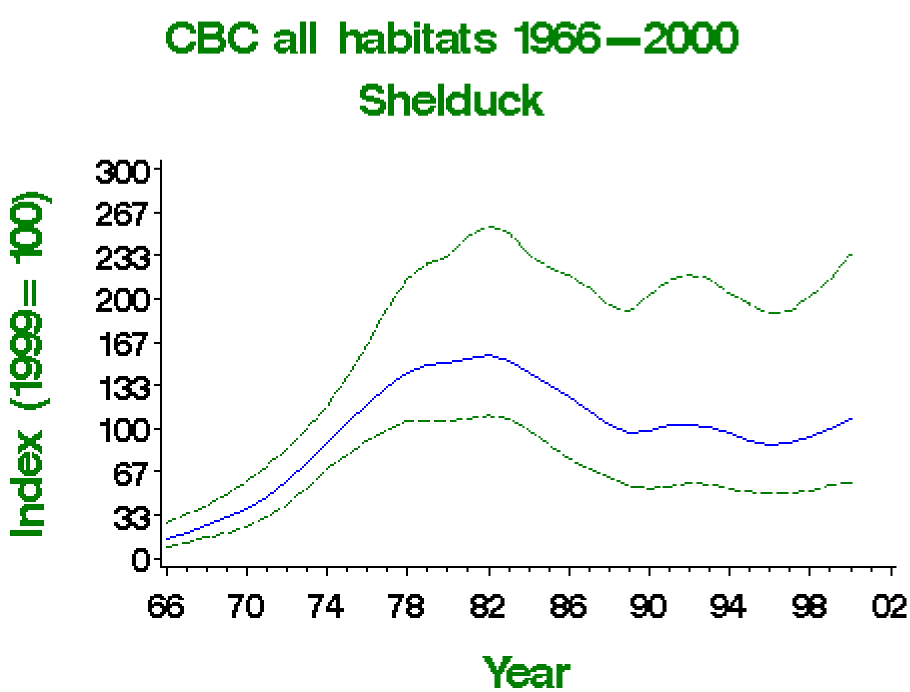
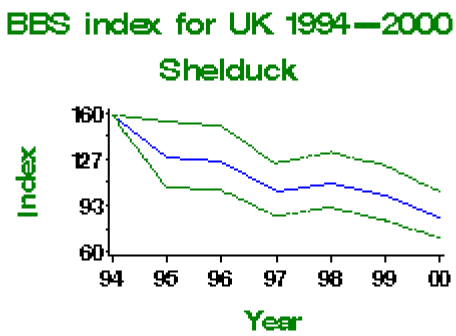


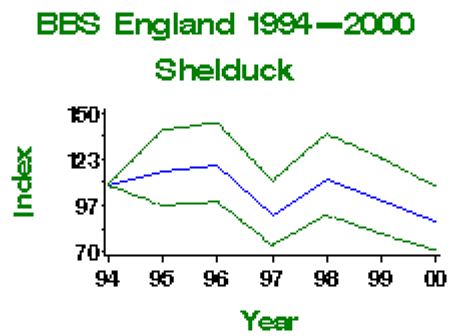
Table of population changes for Shelduck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	18	300	94	787		Unrepresentative? small sample
	25	1974-1999	21	12	-40	118		Unrepresentative?
	10	1989-1999	21	3	-21	40		Unrepresentative?
	5	1994-1999	23	4	-18	39		Unrepresentative?

BBS UK	**6**	**1994-2000**	**114**	**-47**	**-56**	**-35**	**(>25)**	
BBS England	**6**	**1994-2000**	**95**	**-19**	**-35**	**-1**		

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





Productivity information is not currently available for this species

MALLARD
Anas platyrhynchos

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Rapid increase

Status Summary

Mallards have increased steadily in the UK since the 1960s, an increase that may have been contributed to by large-scale releases for shooting (Marchant *et al.* 1990). Winter populations have declined since the late 1980s (Musgrove *et al*. 2001), linked apparently to a decrease in continental immigration (Wernham *et al.* in press).

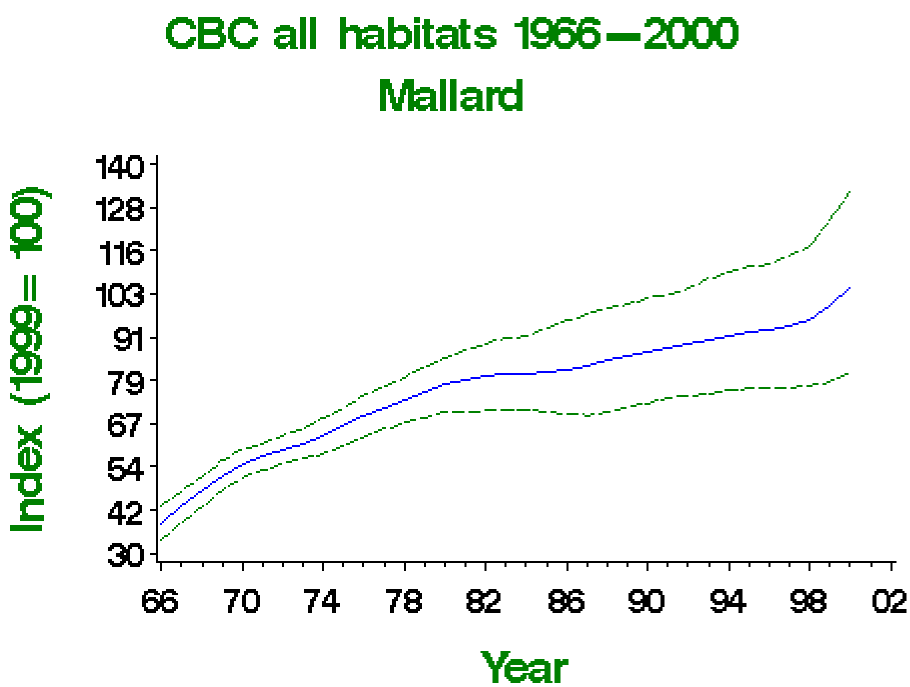
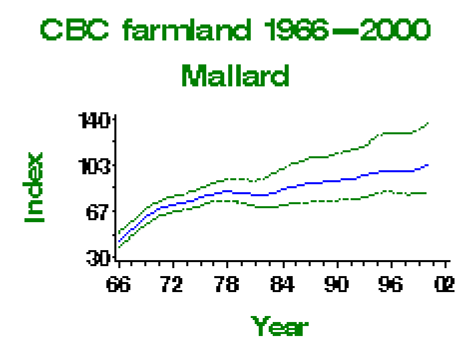


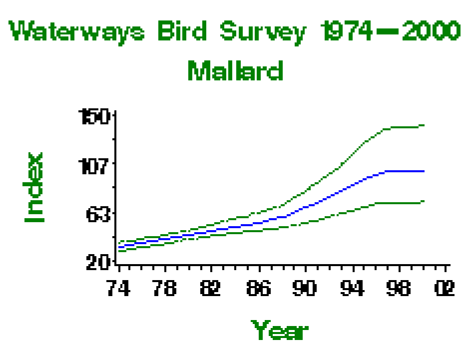
Table of population changes for Mallard

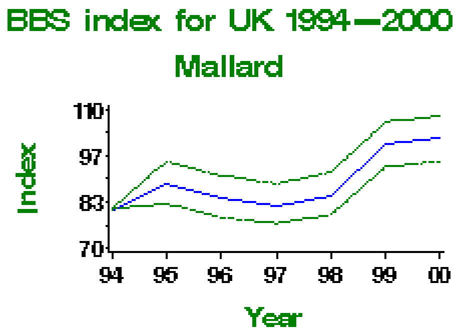
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	112	110	61	166		
	25	1974-1999	118	58	29	89		
	10	1989-1999	110	17	1	34		
	5	1994-1999	116	9	-3	23		

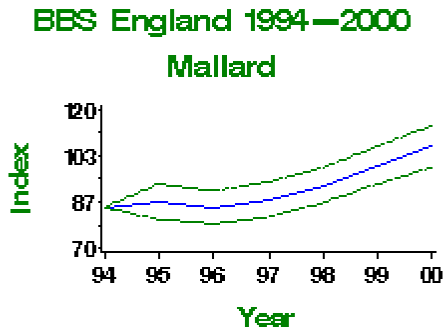
CBC farmland	31	1968-1999	62	78	45	136		
	25	1974-1999	64	33	10	72		
	10	1989-1999	65	11	-3	29		
	5	1994-1999	66	3	-7	17		
WBS waterways	24	1975-1999	93	192	116	294		
	10	1989-1999	108	59	33	91		
	5	1994-1999	112	15	6	24		
BBS UK	6	1994-2000	914	25	17	33		
BBS England	6	1994-2000	762	26	17	35		
BBS Scotland	6	1994-2000	85	41	10	79		
BBS Wales	6	1994-2000	49	-40	-57	-15	(>25)	Small sample

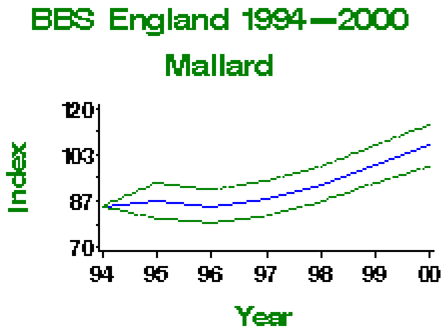
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

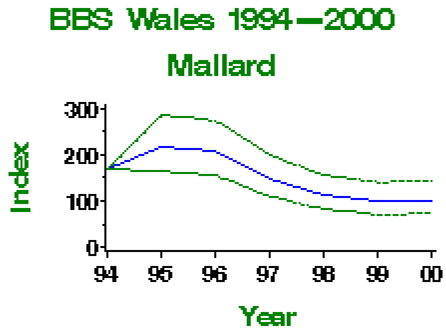






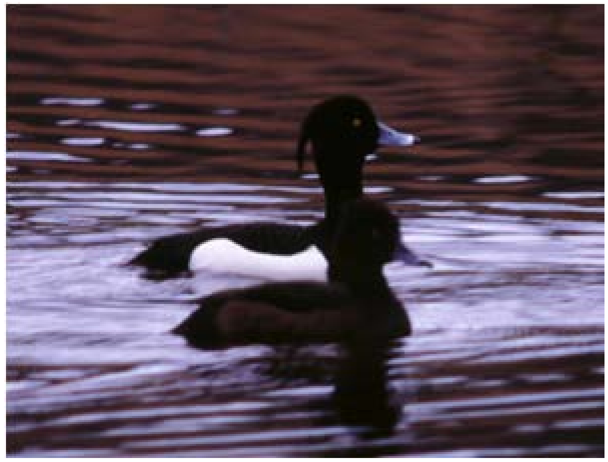






Productivity information is not currently available for this species

TUFTED DUCK
Aythya fuligula



Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Stable/increasing

Status Summary

The WBS shows little long-term change in the abundance of Tufted Duck. However, the CBC and BBS data suggest that populations away from linear waterways may be increasing, a pattern supported by the species' winter trend in the UK (Musgrove *et al.* 2001). It is thought that the spread of the zebra mussel has helped this species in the recent past (Gibbons *et al.* 1993).

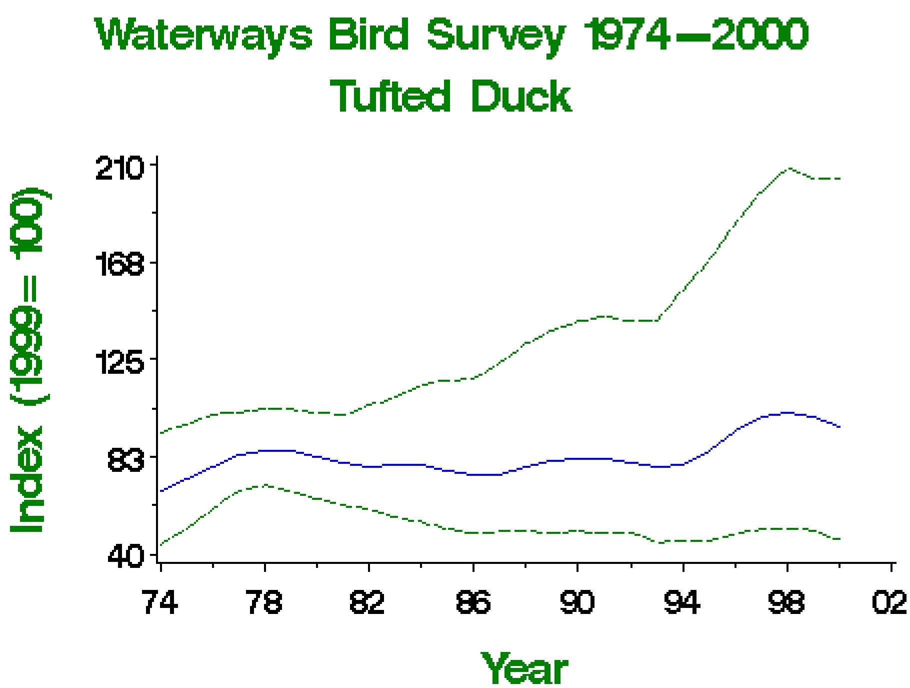
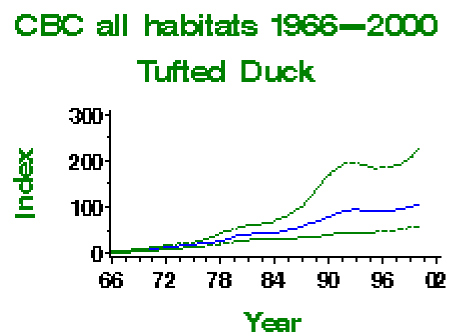


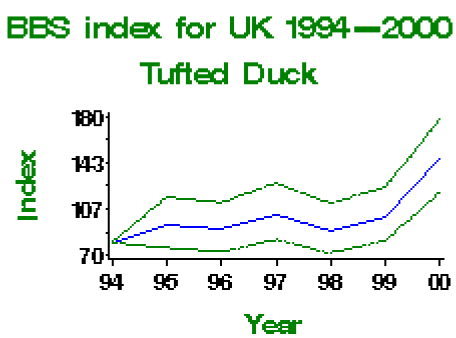
Table of population changes for Tufted Duck

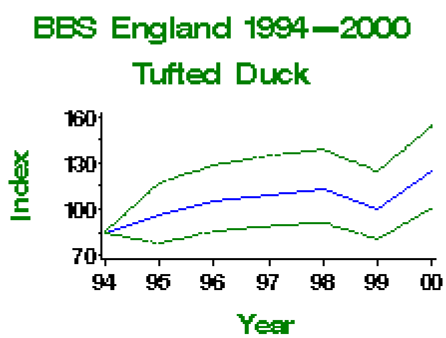
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	16	2141	941	5175		Unrepresentative? small sample
	25	1974-1999	17	504	270	1038		Unrepresentative? small sample
	10	1989-1999	19	39	-2	93		Unrepresentative? small sample
	5	1994-1999	21	8	-22	48		Unrepresentative?

[WBS waterways]	24	1975-1999	24	37	-41	250		
	10	1989-1999	28	24	-19	96		
	5	1994-1999	30	26	-7	70		
[BBS UK]	6	1994-2000	122	83	50	123		
[BBS England]	6	1994-2000	106	47	19	82		

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







Productivity information is not currently available for this species

GOOSANDER
Mergus merganser

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Moderate increase

Status Summary

Goosanders first colonised the UK in the second half of the 19th century, spreading from Scotland into northern England in the 1940s (Holloway 1996). Between the two breeding atlases it expanded its range in northern England, and colonised Wales and south-west England. The WBS provides a reasonably representative coverage of the species to show its population expansion since 1980. The BTO organised two national surveys that demonstrated an average increase in population size of 3% per annum between 1987 and 1997 (Rehfisch *et al.* 1999). Reasons for this population increase are unknown.

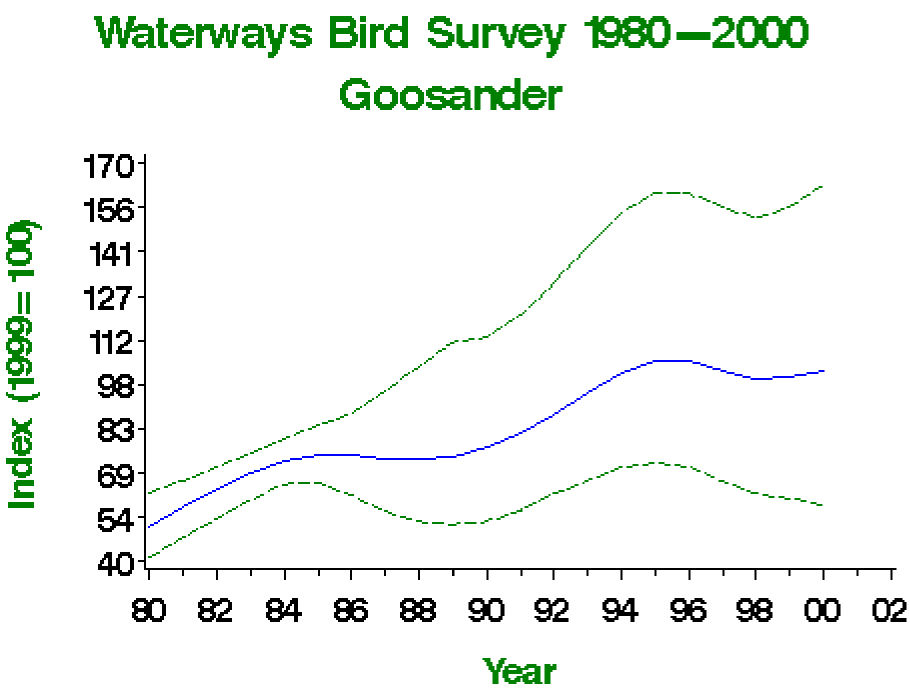


Table of population changes for Goosander

? Table

Productivity information is not currently available for this species

HEN HARRIER
Circus cyaneus

Conservation Listings

Table 2/Red (Historical decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Stable since 1988-89

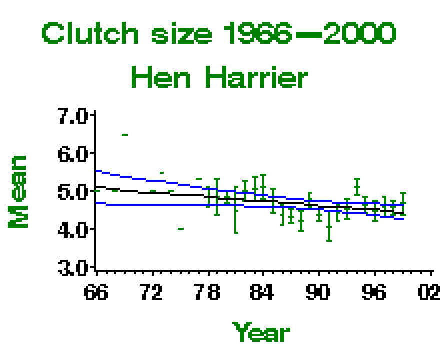
Status Summary

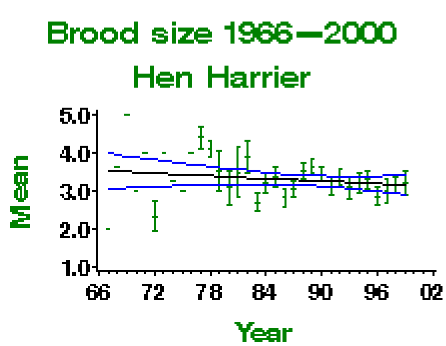
Listed because of substantial declines over the last 200 years, this species has suffered from persecution on grouse moors (Etheridge *et al.* 1997) and more recently from loss of habitat as forestry plantations have matured (Bibby & Etheridge 1993). The UK population was unchanged between surveys in 1988-89 and 1998, although there were declines in Orkney and England but increases in Northern Ireland and Isle of Man (DETR 2000). Although average clutch size has declined substantially since the mid 1980s, further investigation has shown that this trend is due to increased proportions of records from Orkney in recent years, where clutch sizes tend to be smaller than on the mainland (Summers 1998, Crick 1998).

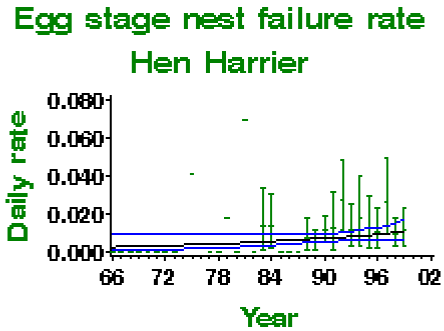
Annual breeding population changes for this species
are not currently monitored by BTO

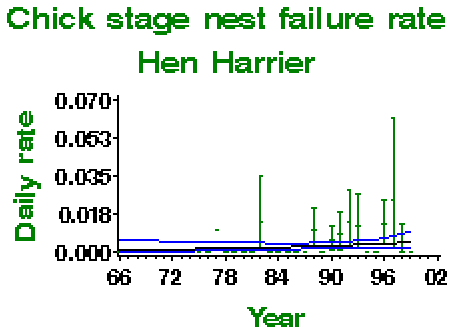
Table of productivity information for Hen Harrier

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	13	Linear decline	5.05 eggs	4.45 eggs	-0.6 eggs	Small sample
Brood size	31	1968-1999	19	None				Small sample
Daily failure rate (eggs)	31	1968-1999	11	None				Small sample
Daily failure rate (chicks)	31	1968-1999	13	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

SPARROWHAWK
Accipiter nisus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Rapid increase

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). Improving breeding performance is likely to have contributed to this increase. Failure rates at the egg stage (c.44 days from laying the first egg) have fallen from 18% to 6%. The population seems to have stabilised since the mid-1990s.

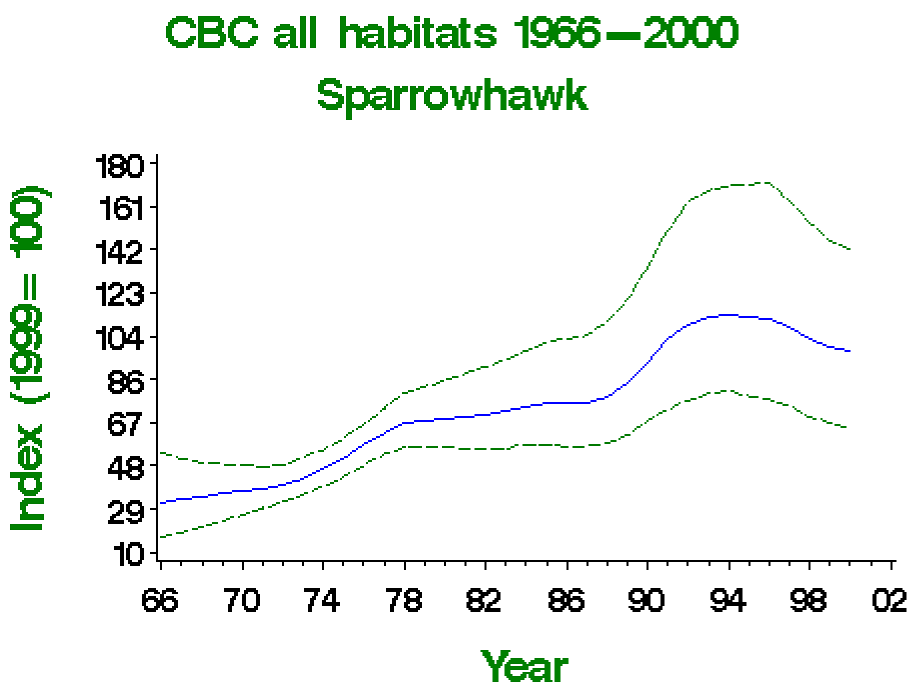
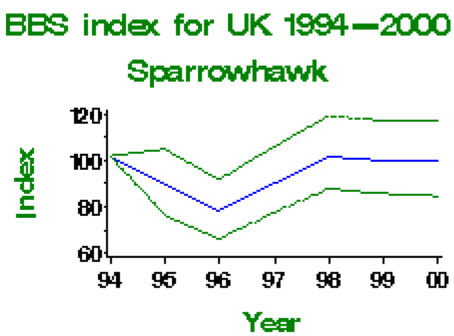


Table of population changes for Sparrowhawk

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	37	193	67	490		
	25	1974-1999	44	116	46	203		
	10	1989-1999	53	19	-1	40		

	5	1994-1999	55	-12	-25	0		
BBS UK	6	1994-2000	264	-2	-17	15		
BBS England	6	1994-2000	221	-4	-19	14		

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



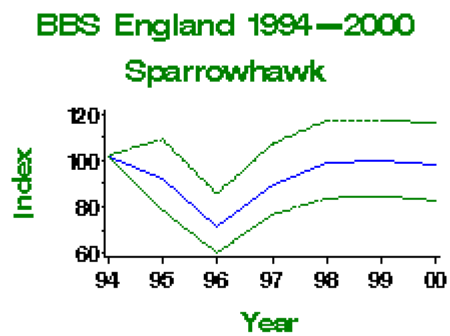
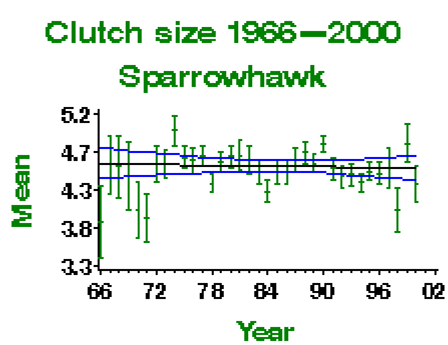
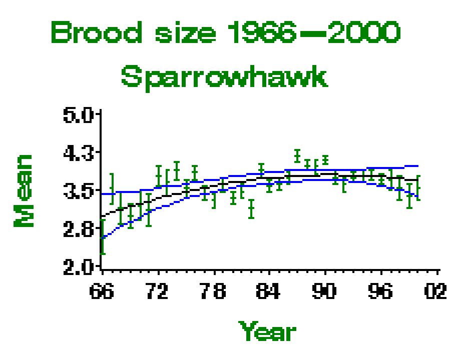
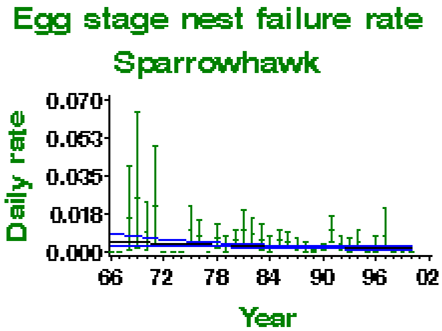


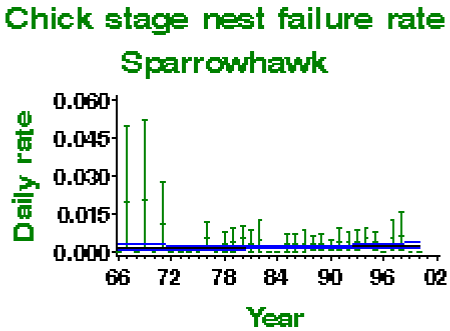
Table of productivity information for Sparrowhawk

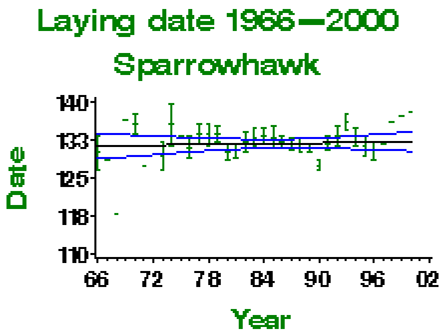
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	43	None				
Brood size	31	1968-1999	83	Curvilinear	3.12 chicks	3.71 chicks	0.59 chicks	
Daily failure rate (eggs)	31	1968-1999	40	Linear decline	0.0044 nests/day	0.0014 nests/day	-0.003 nests/day	
Daily failure rate (chicks)	31	1968-1999	56	None				
Laying date	31	1968-1999	17	None				Small sample











Insufficient data on CES available for this species

BUZZARD
Buteo buteo

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increase

Status Summary

The CBC shows a significant recent increase in Buzzard abundance but does not cover the species' northern and western strongholds well. This pattern is supported, however, by increases in the BBS for all of the UK, particularly in England. The increase reflects population expansion to the south and east and has been associated with improving nesting success, perhaps through reduced persecution (Elliott & Avery 1991), the recovery of Rabbit populations from the effects of myxomatosis and release from the deleterious effects of organochlorine pesticides. The decline in failure rate at the egg stage (c.42 days from laying the first egg) is from 23% to 8%.

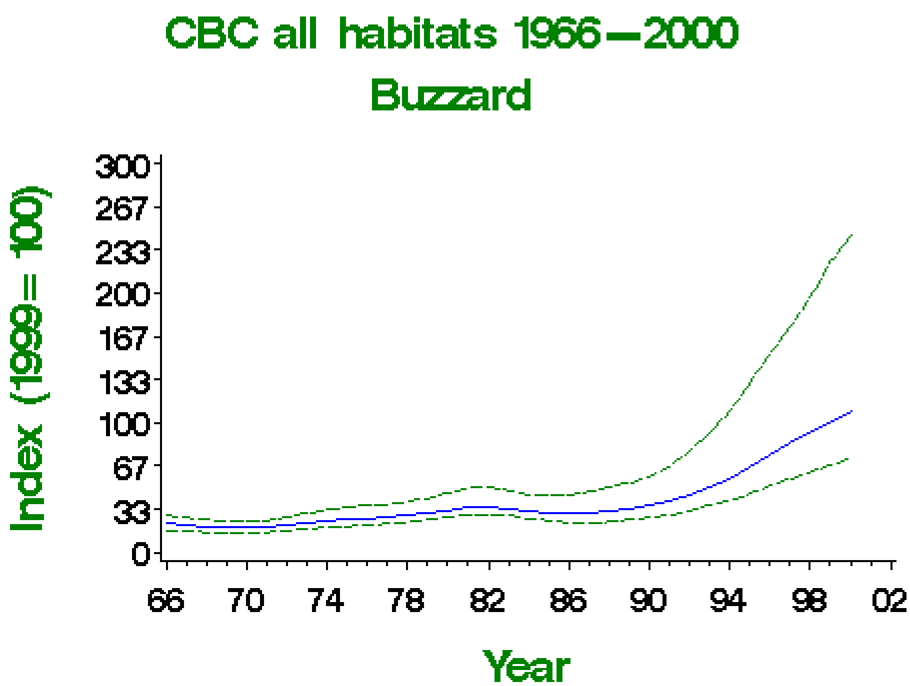
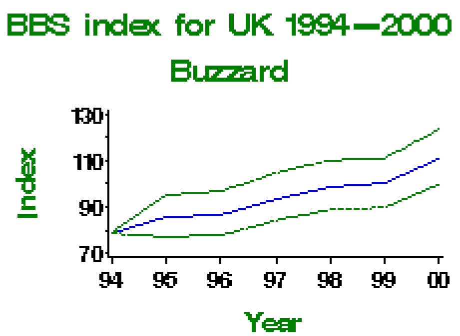


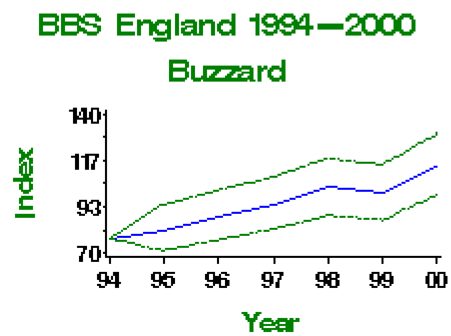
Table of population changes for Buzzard

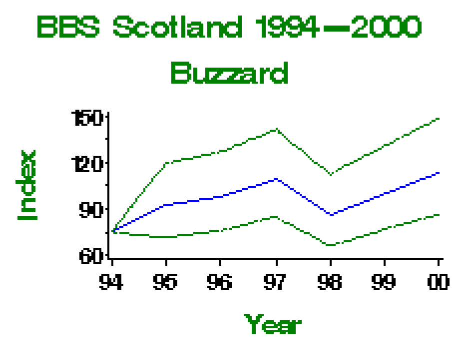
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	22	404	236	1040		Unrepresentative?
	25	1974-1999	25	318	199	646		Unrepresentative?
	10	1989-1999	33	197	129	358		Unrepresentative?

	5	1994-1999	41	77	57	115		Unrepresentative?
BBS UK	6	1994-2000	448	41	27	57		
BBS England	6	1994-2000	244	46	28	68		
BBS Scotland	6	1994-2000	93	51	15	98		
BBS Wales	6	1994-2000	103	3	-17	28		

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







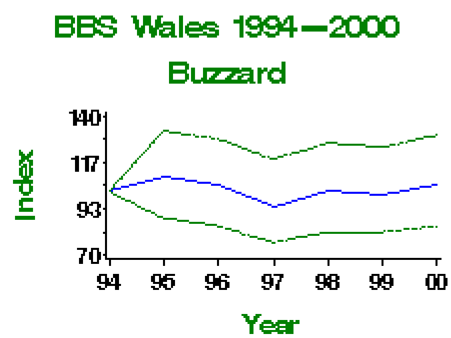
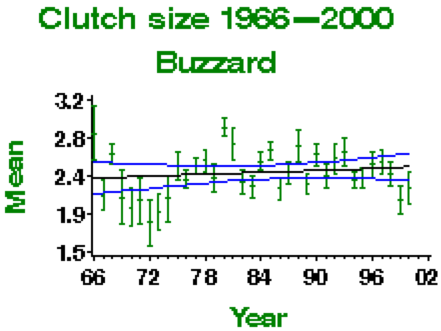
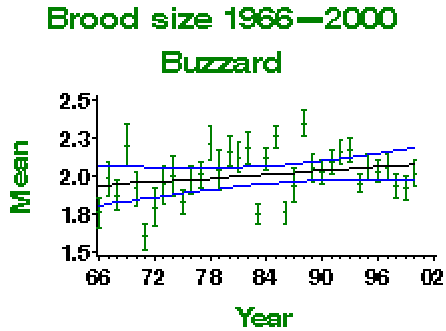
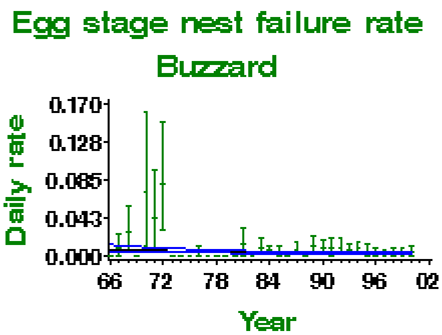


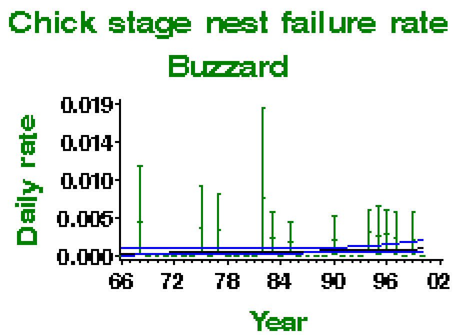
Table of productivity information for Buzzard

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	31	None				
Brood size	31	1968-1999	86	None				
Daily failure rate (eggs)	31	1968-1999	24	Linear decline	0.0062 nests/day	0.0021 nests/day	-0.0041 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	42	None				









Insufficient data on laying dates available for this species

Insufficient data on CES available for this species

KESTREL
Falco tinnunculus

Conservation Listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Moderate decline since mid 1970s

Status Summary

Kestrels had recovered from the deleterious effects of organochlorine pesticides by the mid 1970s, the recovery probably driven by improving nesting success, but subsequently declined rapidly. The failure rate at the egg stage (c.28 days from laying the first egg) has declined from 16% to 3%. The population decline has been linked to the effects of agricultural intensification on farmland habitats and small mammal populations (Gibbons *et al.* 1993). The CBC indicates that abundance has been stable for the last 15 years, but the BBS suggests that a further decline has occurred since 1994.

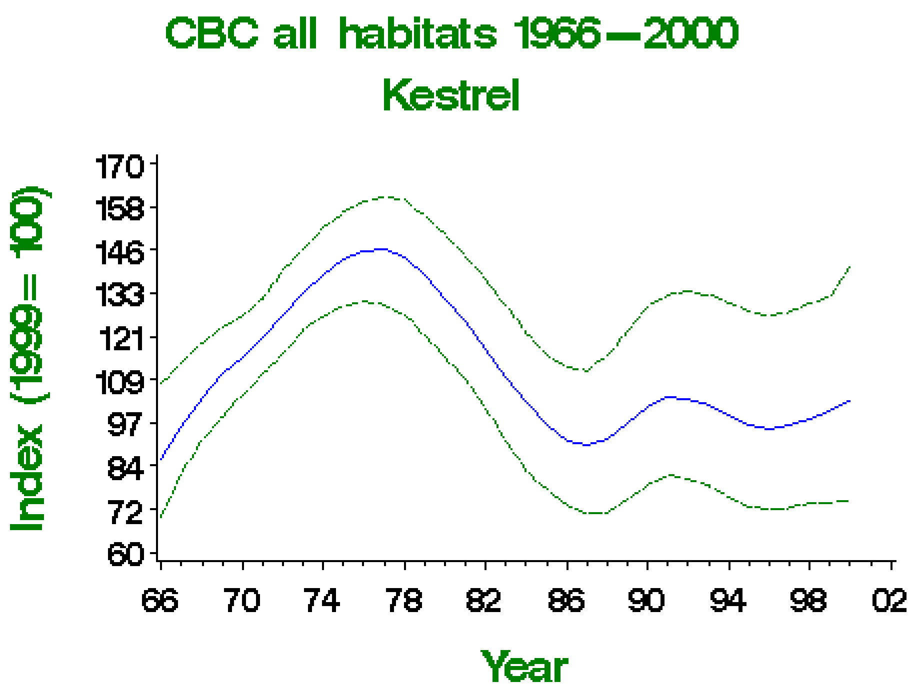
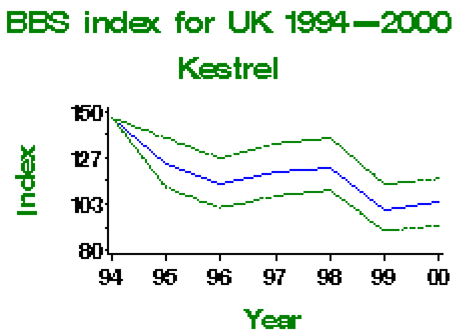


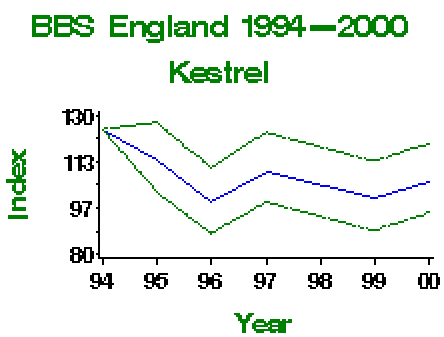
Table of population changes for Kestrel

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	80	-4	-28	27		
	25	1974-1999	85	-28	-45	-6	>25	
	10	1989-1999	74	4	-11	19		
	5	1994-1999	72	2	-11	15		

BBS UK	6	1994-2000	509	-29	-37	-21	(>25)	
BBS England	6	1994-2000	439	-15	-24	-4		
BBS Scotland	6	1994-2000	40	-59	-73	-36	(>50)	Small sample

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





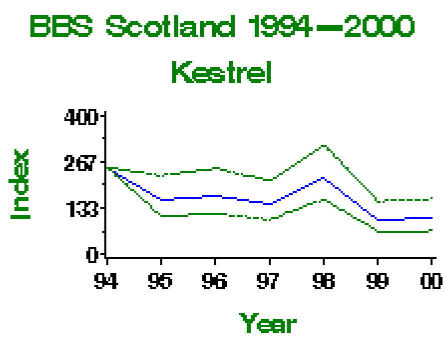
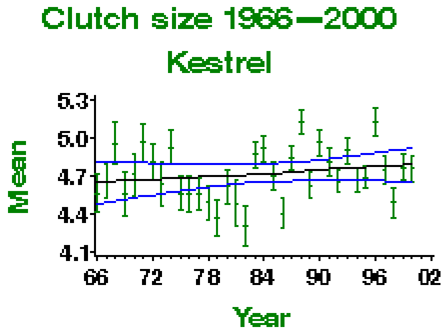
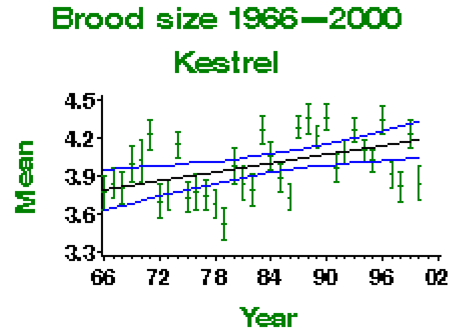
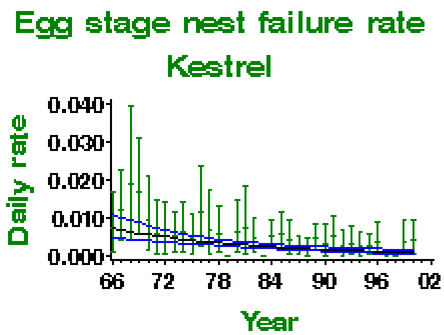


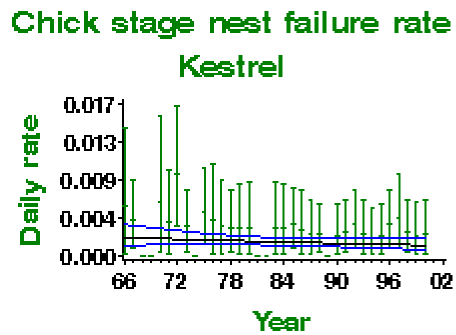
Table of productivity information for Kestrel

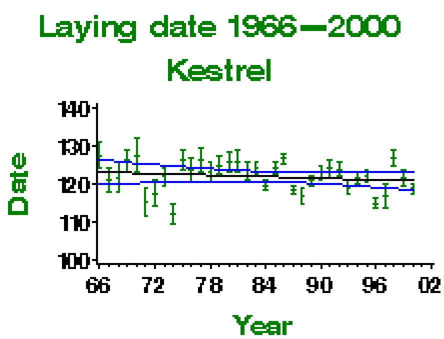
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	53	None				
Brood size	31	1968-1999	113	Linear increase	3.81 chicks	4.17 chicks	0.36 chicks	
Daily failure rate (eggs)	31	1968-1999	41	Linear decline	0.0064 nests/day	0.0009 nests/day	-0.0055 nests/day	
Daily failure rate (chicks)	31	1968-1999	62	None				
Laying date	31	1968-1999	21	None				Small sample











Insufficient data on CES
available for this species

MERLIN
Falco columbarius

Conservation Listings

Table 2/Red (Historical decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Probable increase

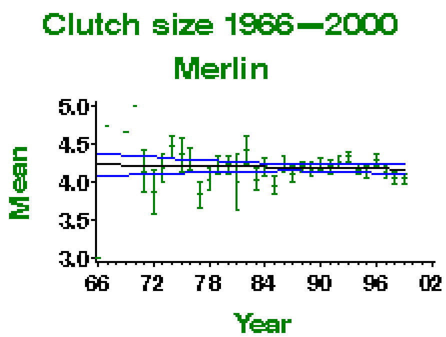
Status Summary

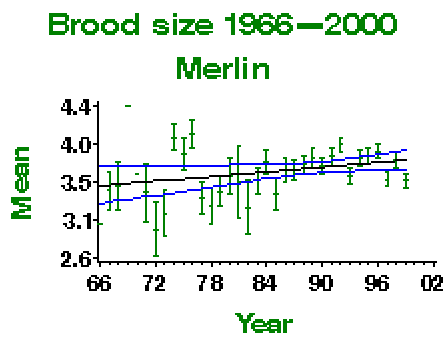
Having declined substantially over the past two centuries, there are indications that it has increased recently (DETR 2000), perhaps associated with an increased use of forest edge as a nesting habitat (Parr 1994). Breeding performance has tended to improve since the 1960s, probably linked to the declining influence of organochlorine pesticides (Crick 1993).

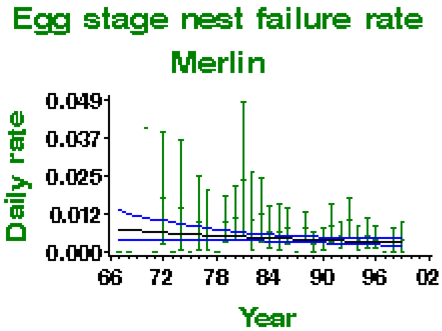
Annual breeding population changes for this species
are not currently monitored by BTO

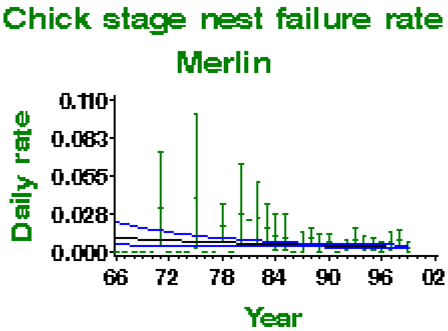
Table of productivity information for Merlin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	41	None				
Brood size	31	1968-1999	58	None				
Daily failure rate (eggs)	31	1968-1999	29	Linear decline	0.007 nests/day	0.0028 nests/day	-0.0042 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	30	Linear decline	0.0095 nests/day	0.0031 nests/day	-0.0064 nests/day	Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

HOBBY
Falco subbuteo

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increase

Status Summary

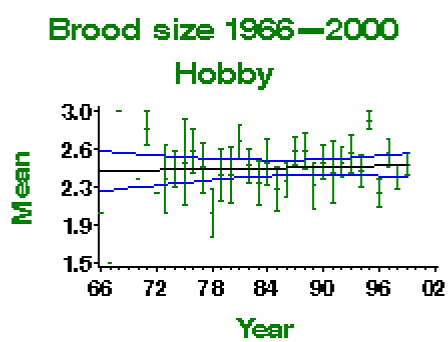
This species is poorly monitored by standard BTO monitoring schemes due to its low population density and unobtrusive habits. Its distribution has spread markedly northwards in England since the 1970s (Gibbons *et al.* 1993), perhaps linked to increases in its dragonfly prey supplies (Prince & Clarke 1995) and a decreasing dependency on its traditional heathland habitat. Small annual samples of nest record cards permit analysis only of brood size, which appears not to have changed substantially over the last 30 years.

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

Table of productivity information for Hobby

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	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 available for this species

Insufficient data on CES available for this species

PEREGRINE FALCON
Falco peregrinus

Conservation Listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Increase
North-west Scotland: Decline

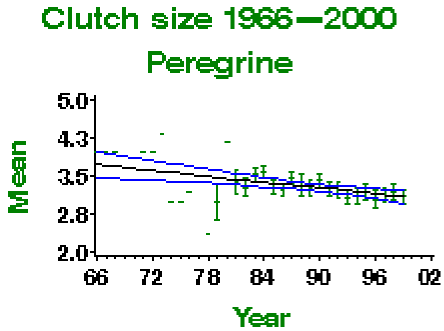
Status Summary

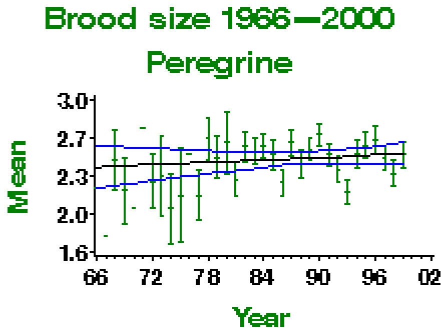
Although Peregrine has an unfavourable conservation status in Europe, its population size and distribution in the UK have largely recovered from the detrimental effects of organochlorine pesticides in the 1950s and 1960s; however, populations have declined recently in north-west Scotland and the Northern Isles (Crick & Ratcliffe 1995). The breeding performance of this species appears to have fully recovered but declined in the latter areas. Nest record information, for the UK as a whole, shows a significant decline in clutch size. The change of -0.60 eggs (below) is calculated over the full 31-year time-period, whereas only small samples are available for the first 10 years. So a better estimate would be to suggest a clutch size decline of 0.41 eggs over the 21-year period 1978-99. Population size of breeding pairs has been censused every 10 years by BTO/JNCC/RSPB/Raptor Study Groups since 1961. 1961, 385 pairs; 1971, 489 pairs; 1981, 728 pairs; 1991, 1283 pairs (Ratcliffe 1996).

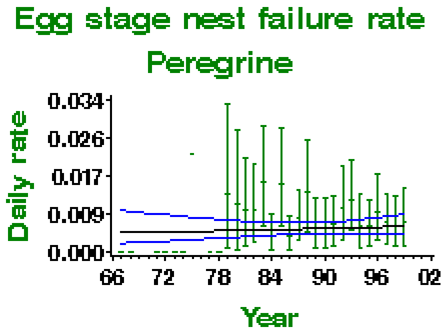
Annual population changes are not monitored for this species

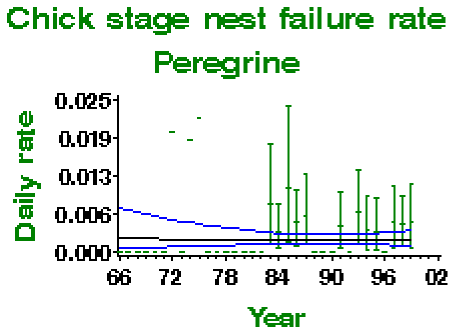
Table of productivity information for Peregrine Falcon

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	16	Linear decline	3.7 eggs	3.1 eggs	-0.6 eggs	Small sample
Brood size	31	1968-1999	40	None				
Daily failure rate (eggs)	31	1968-1999	21	None				Small sample
Daily failure rate (chicks)	31	1968-1999	21	None				Small sample









Insufficient data on laying date available for this species

Insufficient data on CES available for this species

RED GROUSE
Lagopus lagopus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Decline

Status Summary

The distinctive dark-winged race *scoticus* is endemic to Britain and Ireland and has the vast bulk of its population within the UK. The BBS shows no overall trend in the size of the Red Grouse population. However, Game Conservancy Trust surveys have revealed long-term declines, apparently driven by moorland loss and degradation and increased predation from corvids and foxes (Hudson 1992). Raptor predation is believed not to affect breeding populations significantly, but can reduce post-breeding abundance (Redpath & Thirgood 1997). Red Grouse abundance varies in cycles, whose period varies regionally, that are linked to the dynamics of infection by a nematode parasite (Dobson & Hudson 1992, Gibbons *et al.* 1993). All population trends should therefore be interpreted in this context.

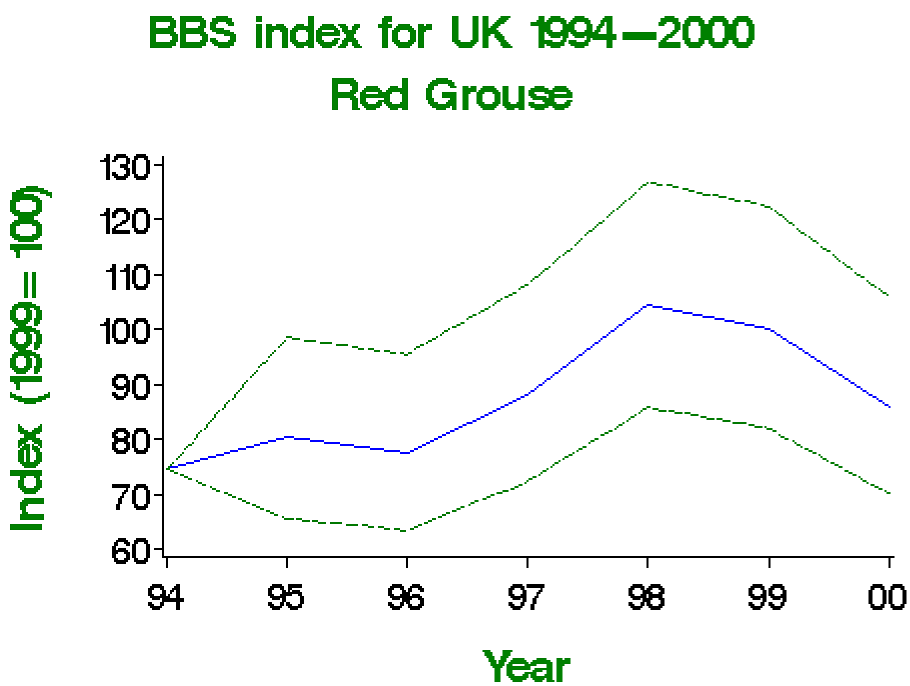
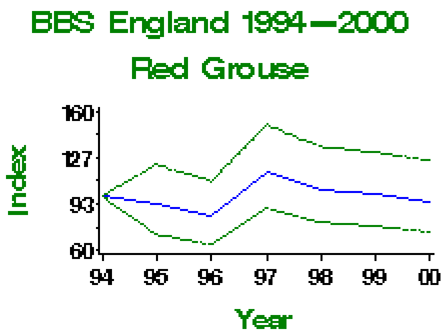


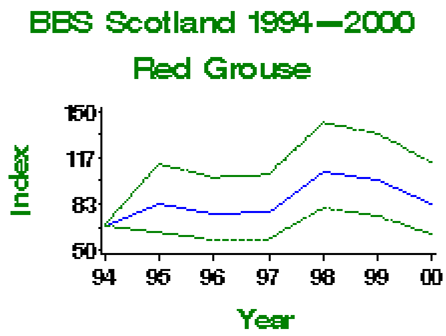
Table of population changes for Red Grouse

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	102	15	-6	42		
BBS England	6	1994-2000	39	-4	-26	26		Small sample

BBS Scotland	**6**	**1994-2000**	**59**	**23**	**-9**	**67**		

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





Productivity information is not currently available for this species

RED-LEGGED PARTRIDGE
Alectoris rufa

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: 20-year decline

Status Summary

Red-legged Partridge is an introduced species whose abundance is probably very closely related to the numbers released for shooting. No BTO Alert is issued, therefore, for the decline in the CBC index from 1978 to the present. In fact, there has been no significant change from the beginning of the CBC, so the peak in the mid-1970s might best be viewed as transient rather than as a baseline for abundance.

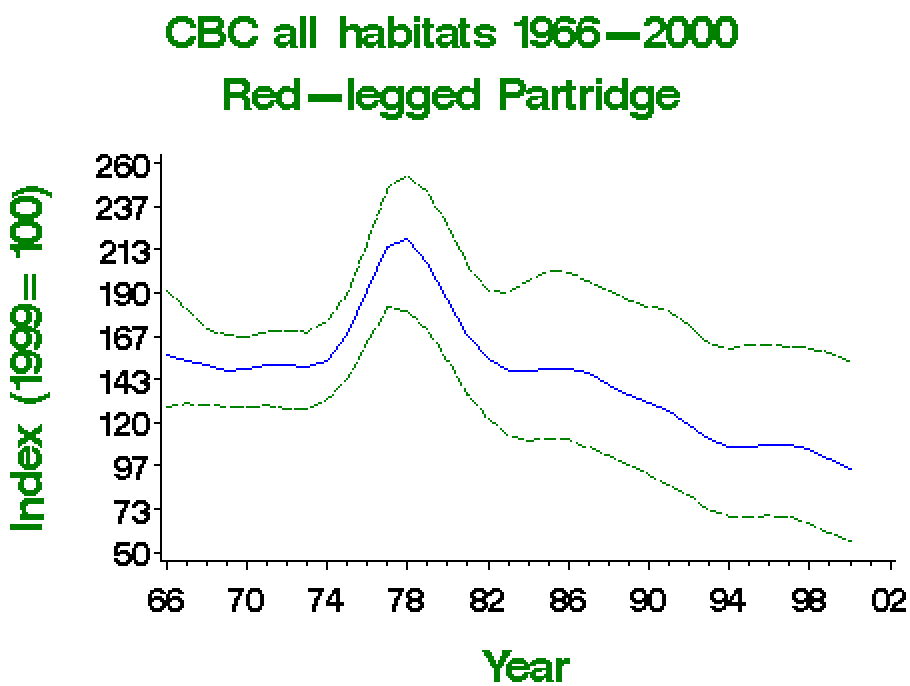
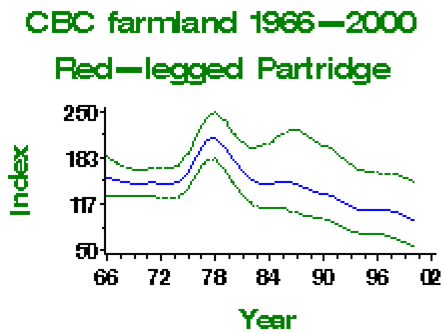


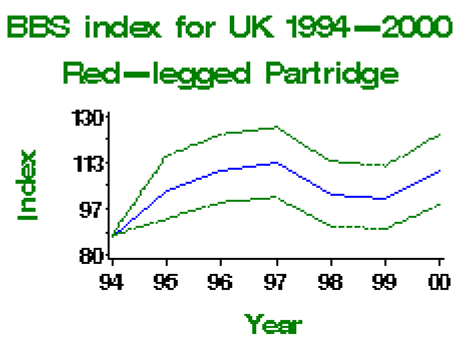
Table of population changes for Red-legged Partridge

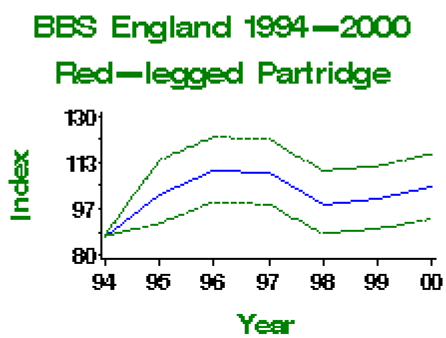
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	34	-34	-57	6		
	25	1974-1999	36	-35	-58	-4	>25	
	10	1989-1999	33	-26	-42	-5	>25	
	5	1994-1999	32	-7	-24	11		

CBC farmland	**31**	**1968-1999**	**27**	**-33**	**-60**	**4**		
	25	**1974-1999**	**28**	**-33**	**-56**	**0**		
	10	**1989-1999**	**29**	**-25**	**-45**	**-6**	**>25**	
	5	**1994-1999**	**29**	**-9**	**-29**	**11**		
BBS UK	**6**	**1994-2000**	**371**	**27**	**13**	**42**		
BBS England	**6**	**1994-2000**	**366**	**20**	**7**	**34**		

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







Productivity information is not currently available for this species

GREY PARTRIDGE
Perdix perdix

Conservation Listings

Table 3/Red (50% Population decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Rapid decline

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 presence of a Government Biodiversity Action Plan, the continuing decline shown by the BBS and CBC since 1994 suggests that recent efforts to boost the population have not been successful.

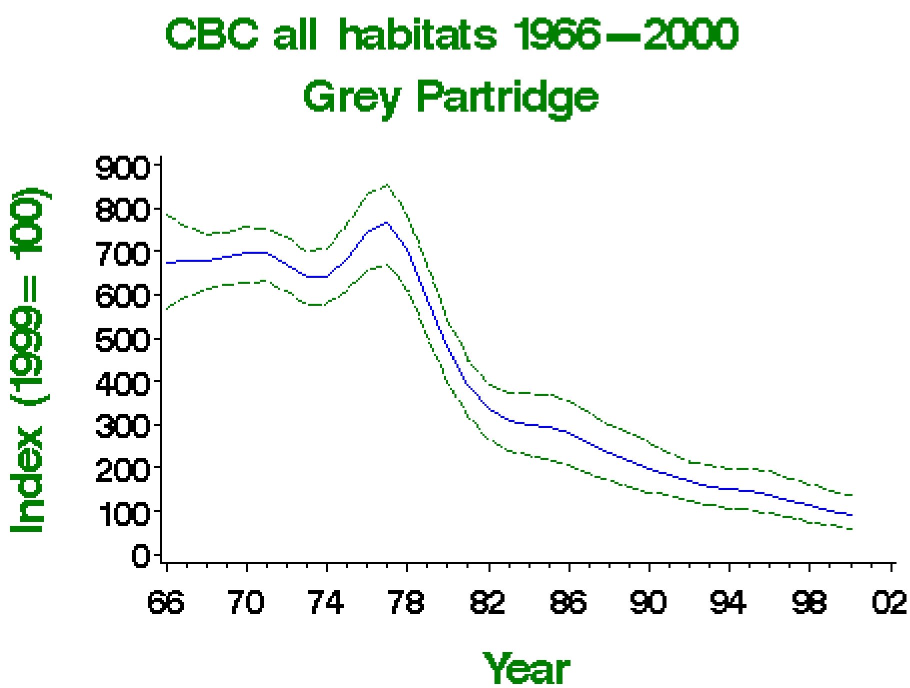
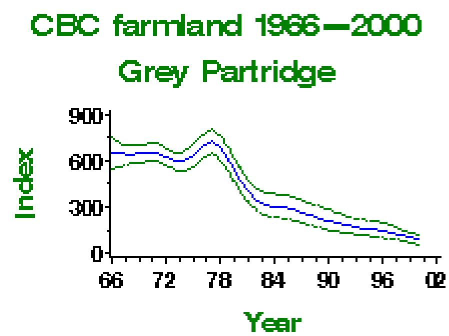


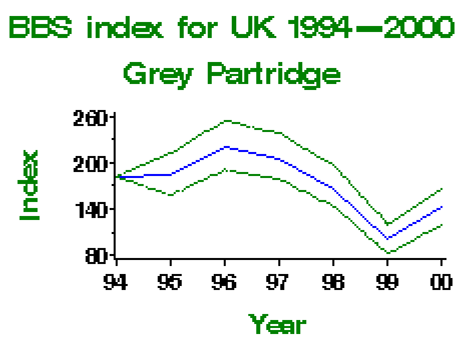
Table of population changes for Grey Partridge

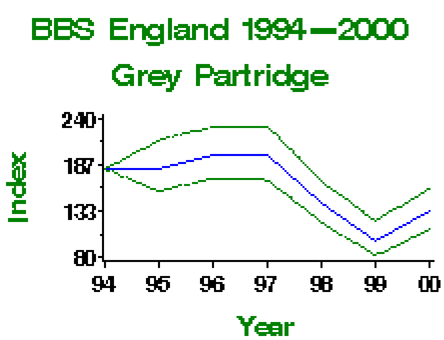
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	59	-85	-90	-78	>50	
	25	1974-1999	55	-84	-89	-78	>50	
	10	1989-1999	39	-54	-63	-42	>50	
	5	1994-1999	37	-33	-43	-21	>25	

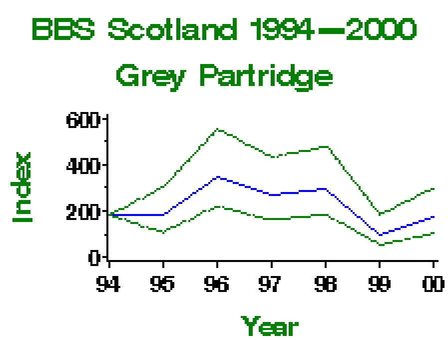
CBC farmland	31	1968-1999	44	-84	-89	-79	>50	
	25	1974-1999	40	-83	-88	-77	>50	
	10	1989-1999	32	-56	-66	-45	>50	
	5	1994-1999	31	-38	-50	-28	>25	
BBS UK	6	1994-2000	220	-22	-34	-8		
BBS England	6	1994-2000	193	-26	-38	-12	(>25)	
BBS Scotland	6	1994-2000	25	-3	-43	65		Small sample

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









Productivity information is not currently available for this species

GREY PARTRIDGE
Perdix perdix

Conservation Listings

Table 3/Red (50% Population decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Rapid decline

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 presence of a Government Biodiversity Action Plan, the continuing decline shown by the BBS and CBC since 1994 suggests that recent efforts to boost the population have not been successful.

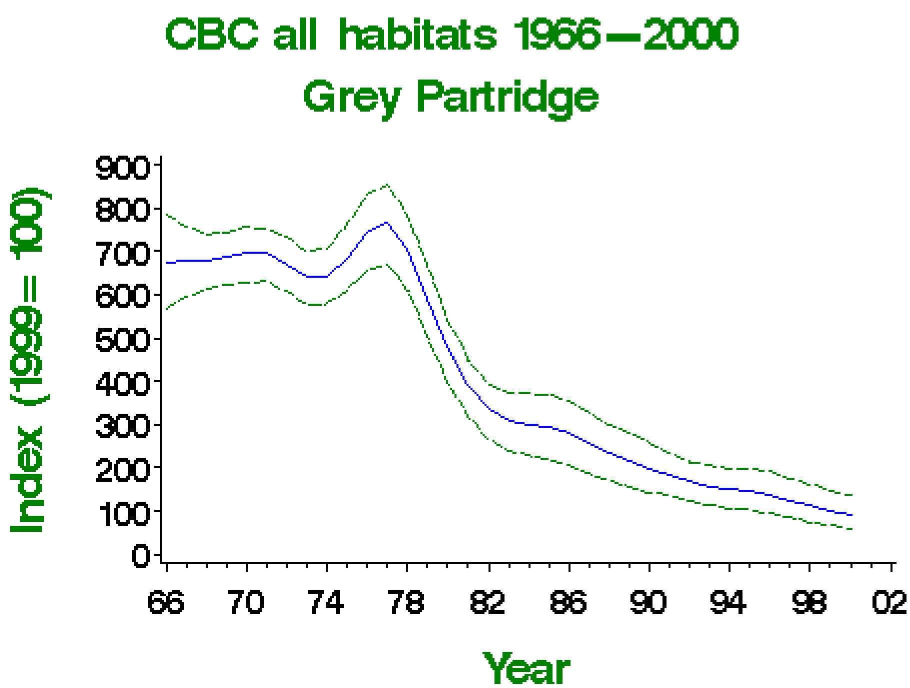
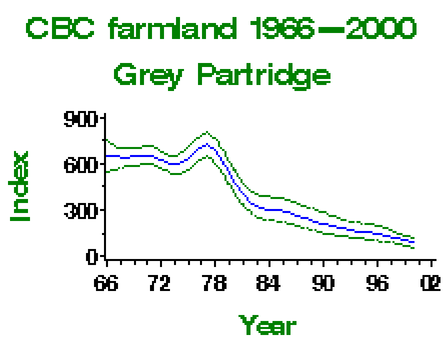


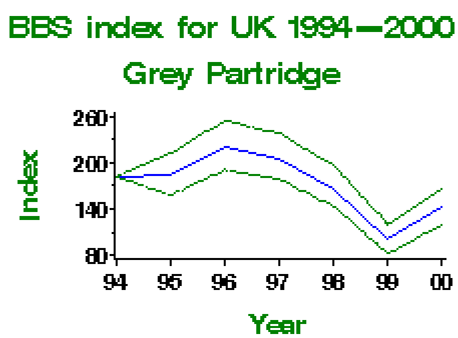
Table of population changes for Grey Partridge

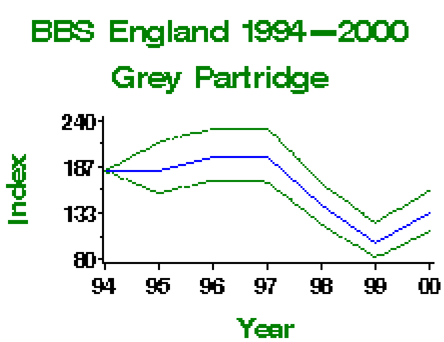
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	59	-85	-90	-78	>50	
	25	1974-1999	55	-84	-89	-78	>50	
	10	1989-1999	39	-54	-63	-42	>50	
	5	1994-1999	37	-33	-43	-21	>25	

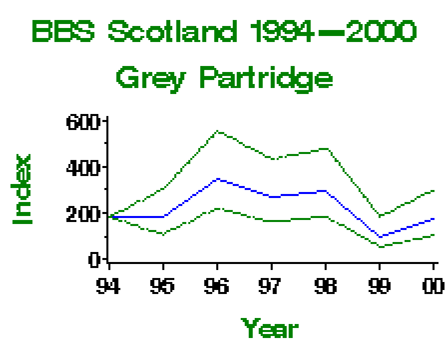
CBC farmland	31	1968-1999	44	-84	-89	-79	>50	
	25	1974-1999	40	-83	-88	-77	>50	
	10	1989-1999	32	-56	-66	-45	>50	
	5	1994-1999	31	-38	-50	-28	>25	
BBS UK	6	1994-2000	220	-22	-34	-8		
BBS England	6	1994-2000	193	-26	-38	-12	(>25)	
BBS Scotland	6	1994-2000	25	-3	-43	65		Small sample

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









Productivity information is not currently available for this species

PHEASANT
Phasianus colchicus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Moderate increase

Status Summary

Pheasants have increased in abundance since 1980, although the CBC index indicates a sharp drop in the size of the population in the late 1990s. The BBS shows a large increase in Pheasant abundance in Wales, an area less well-covered by the CBC, during 2000. Numbers of this introduced gamebird are determined principally by releases for shooting (**Marchant *et al.* 1990**).

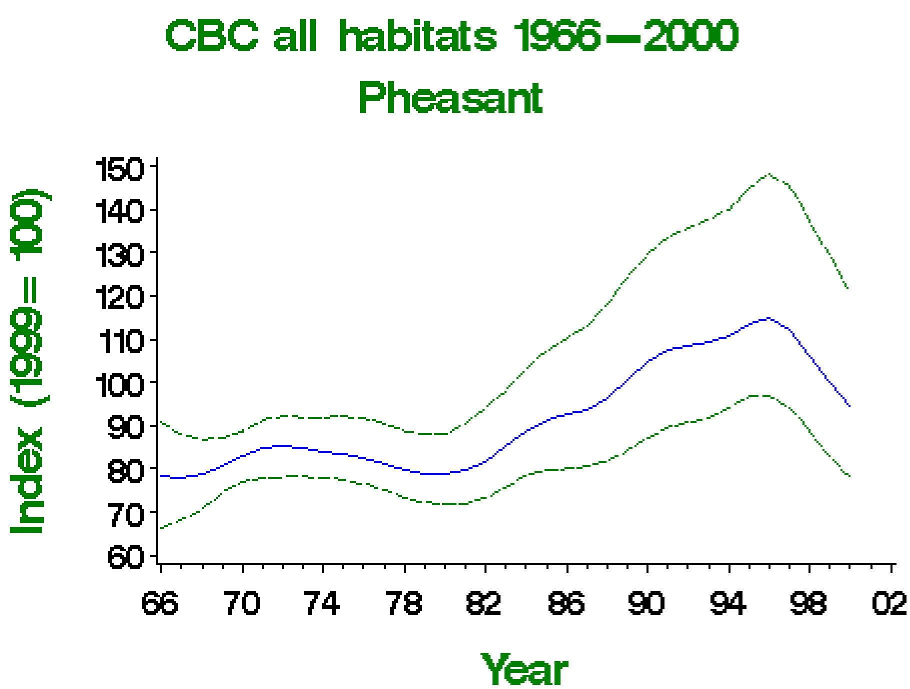
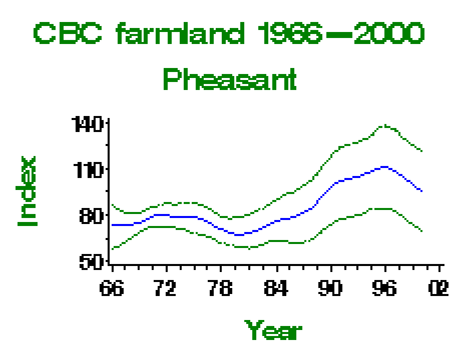


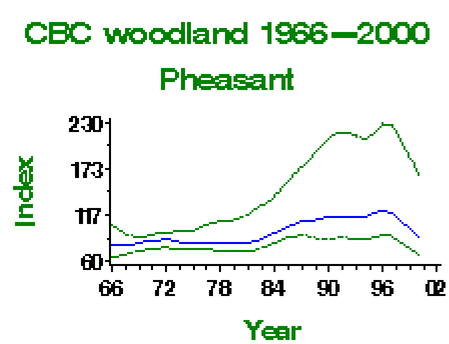
Table of population changes for Pheasant

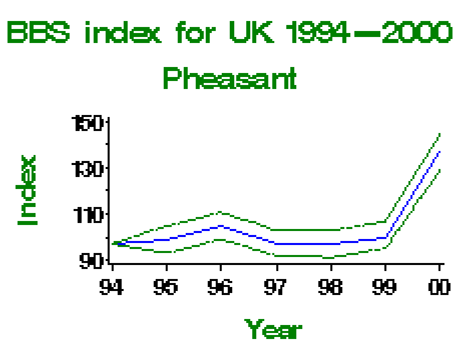
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	126	27	4	64		
	25	1974-1999	133	19	0	50		
	10	1989-1999	143	0	-12	12		

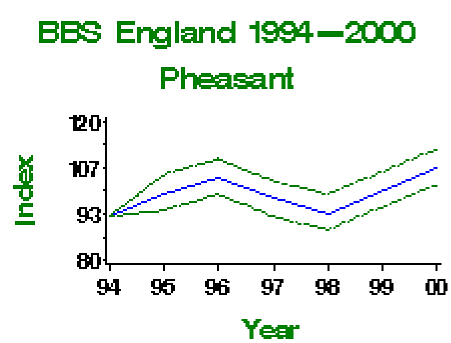
	5	1994-1999	148	-10	-17	-2		
CBC farmland	31	1968-1999	64	36	2	95		
	25	1974-1999	65	26	-1	53		
	10	1989-1999	75	9	-5	24		
	5	1994-1999	78	-7	-18	4		
CBC woodland	31	1968-1999	41	24	0	144		
	25	1974-1999	46	20	-6	107		
	10	1989-1999	53	-11	-25	7		
	5	1994-1999	55	-13	-25	-3		
BBS UK	6	1994-2000	1223	41	33	49		
BBS England	6	1994-2000	1036	15	10	21		
BBS Scotland	6	1994-2000	99	-14	-30	5		
BBS Wales	6	1994-2000	61	627	418	921		

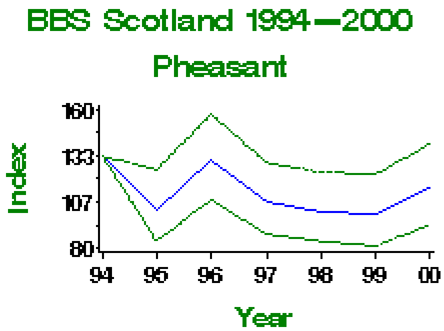
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

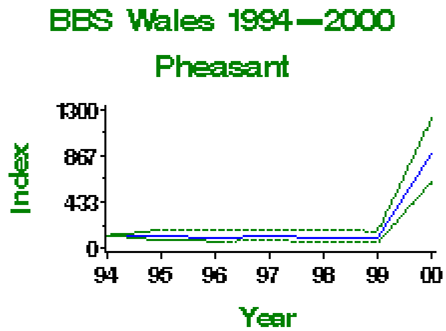












Productivity information is not currently available for this species

MOORHEN
Gallinula chloropus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Fluctuating with no long-term trend
Lowland farmland: Moderate decline

Status Summary

Moorhen numbers on linear waterways have fluctuated and show no long-term trend. However, numbers on farmland CBC plots have shown a moderate decline since 1972, which may indicate a decline in number and quantity of farm ponds and other standing waterbodies. The decline has been associated with significant reductions in breeding performance. Average clutch size has declined by nearly half an egg and the failure rate of nests over the full 25-day egg period (20 days for incubation and 5 days for laying) has increased from 31% to 41%.

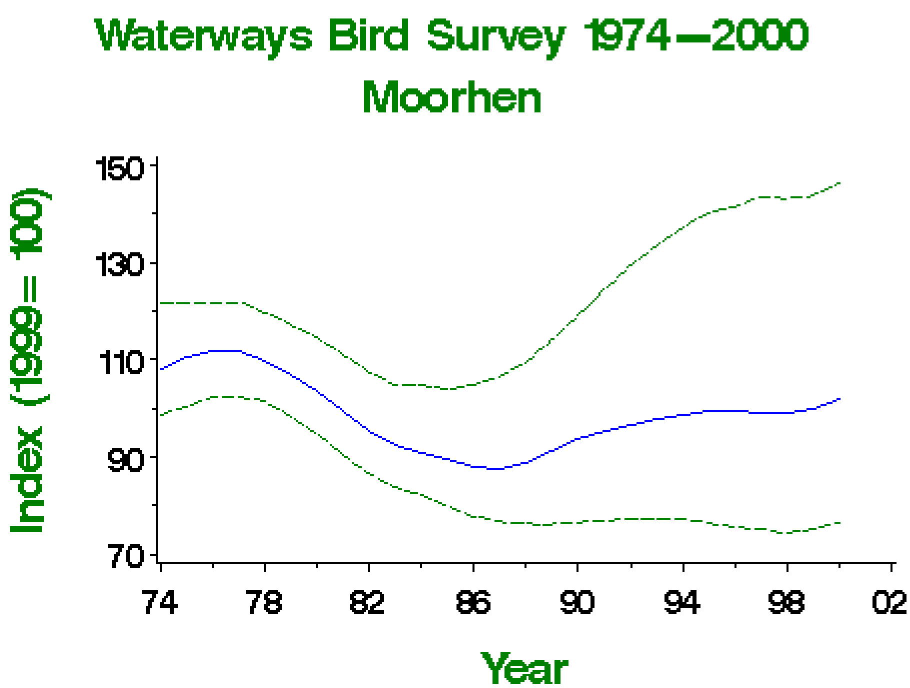
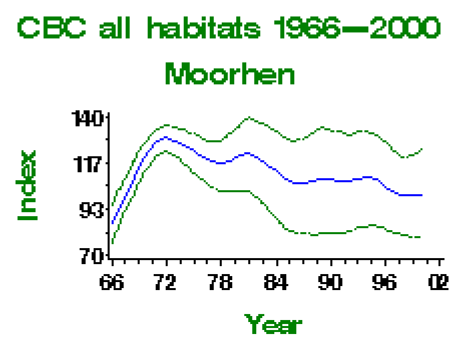


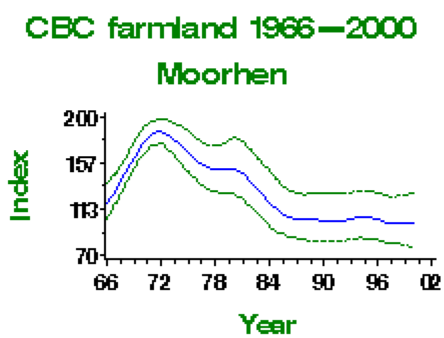
Table of population changes for Moorhen

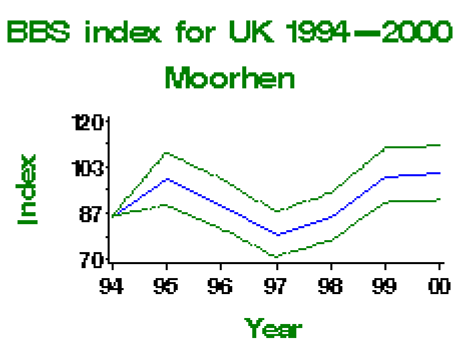
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	99	-5	-25	16		
	25	1974-1999	101	-20	-36	-4		
	10	1989-1999	90	-8	-22	7		
	5	1994-1999	93	-8	-17	1		

CBC farmland	31	1968-1999	57	-32	-48	-10	>25	
	25	1974-1999	55	-43	-52	-29	>25	
	10	1989-1999	51	-3	-13	10		
	5	1994-1999	51	-5	-15	9		
WBS waterways	24	1975-1999	79	-9	-30	24		
	10	1989-1999	91	10	-8	33		
	5	1994-1999	95	1	-7	9		
BBS UK	6	1994-2000	498	18	7	30		
BBS England	6	1994-2000	457	18	6	30		

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







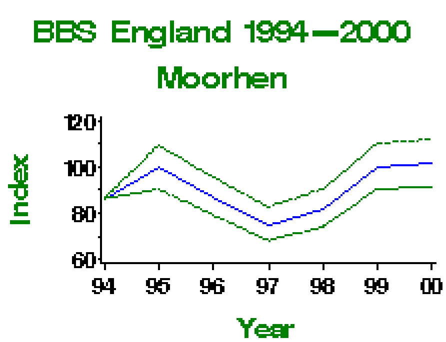
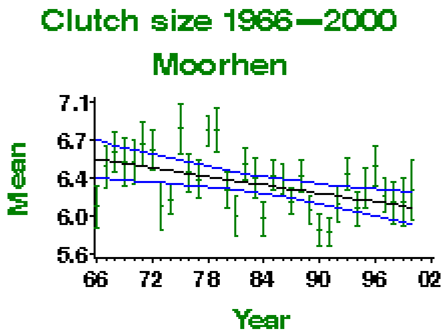
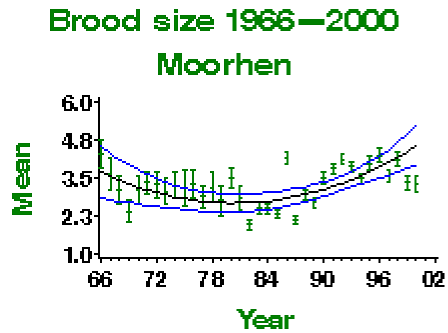


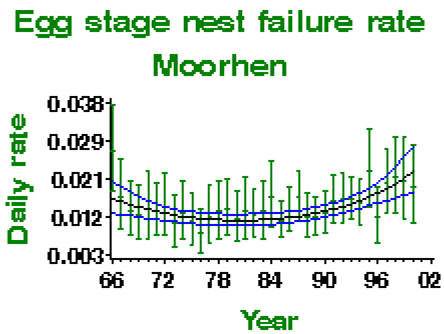
Table of productivity information for Moorhen

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	97	Linear decline	6.51 eggs	6.07 eggs	-0.44 eggs	
Brood size	31	1968-1999	79	Curvilinear	3.43 chicks	4.38 chicks	0.95 chicks	
Daily failure rate (eggs)	31	1968-1999	112	Curvilinear	0.0146 nests/day	0.0207 nests/day	0.0061 nests/day	
Daily failure	31	1968-	32	None				

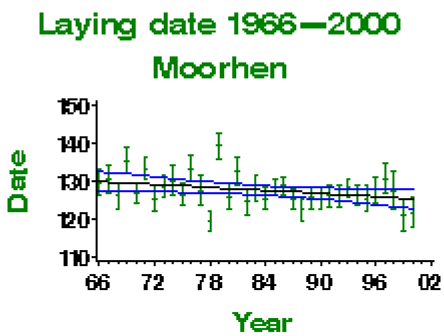
rate (chicks)		1999						
Laying date	31	1968-1999	73	Linear decline	day 130	day 126	-4 days	







Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

COOT
Fulica atra

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Moderate increase

Status Summary

Both WBS and CBC trends for Coot suggest consistent moderate increases since the early 1970s, a pattern replicated in winter abundance on large still waters, as monitored by WeBS (Musgrove *et al.* 2001).

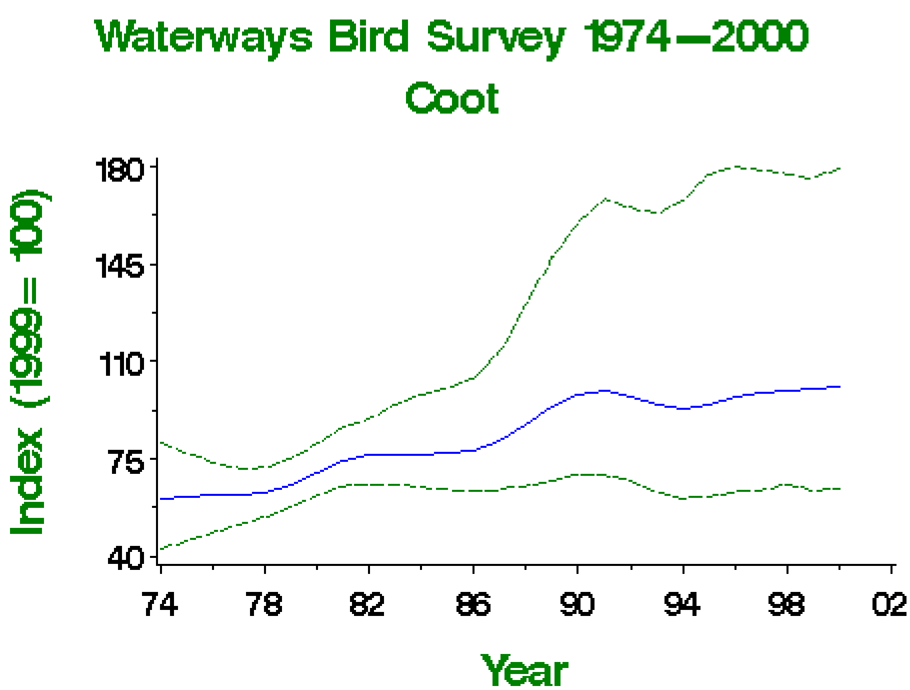
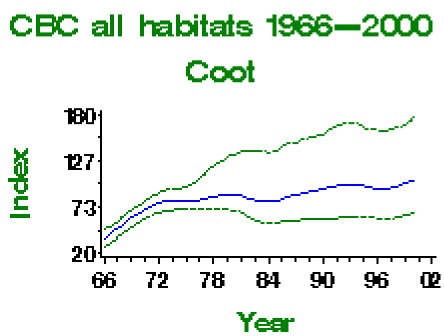


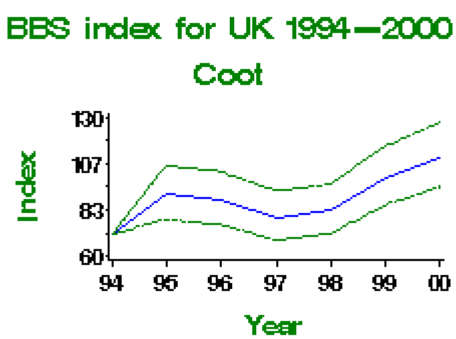
Table of population changes for Coot

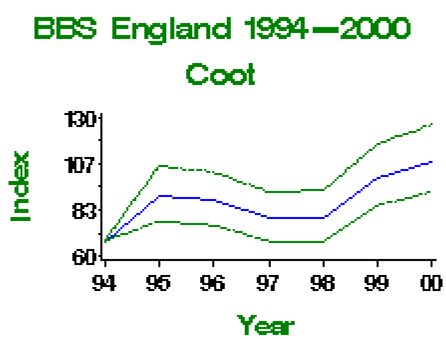
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	31	87	23	292		Unrepresentative?
	25	1974-1999	33	23	-25	107		Unrepresentative?
	10	1989-1999	32	8	-13	44		Unrepresentative?
	5	1994-1999	36	2	-20	30		Unrepresentative?
WBS		1975-						

waterways	24	1999	39	62	3	214		
	10	1989-1999	51	7	-15	39		
	5	1994-1999	54	8	-8	27		
BBS UK	6	1994-2000	188	55	34	80		
BBS England	6	1994-2000	170	60	37	87		

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







Productivity information is not currently available for this species

OYSTERCATCHER
Haematopus ostralegus

Conservation Listings

Table 4/Amber (Wintering population)
Biodiversity Steering Group: Unlisted

Long term trend

UK Waterways: Stable after rapid increase
Scotland: Stable

Status Summary

Oystercatchers increased along inland waterways between 1974 and 1986, as the species colonised inland areas in England and Wales (Gibbons *et al.* 1993). Thereafter, the WBS index stabilised, so showing a pattern parallel to that in winter abundance revealed by WeBS (Musgrove *et al.* 2001). The increase in nest failure rates for the 27-day egg stage (25 days for incubation + 2 days for laying) is from 30% to 43% and probably results from the spread of the species into less favourable areas. The trend towards earlier laying can be partially explained by recent climate change (Crick & Sparks 1999).

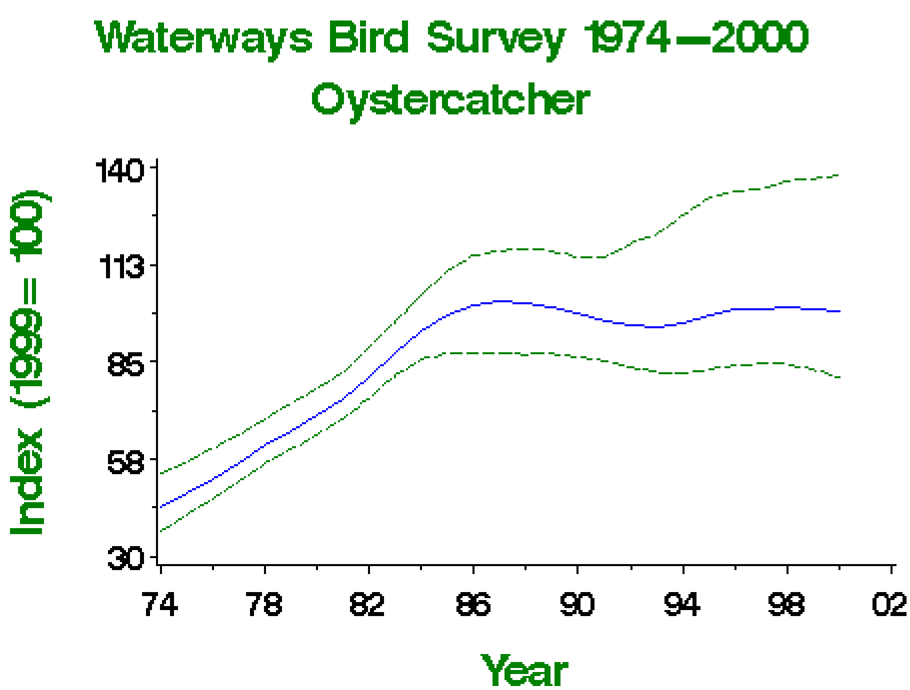
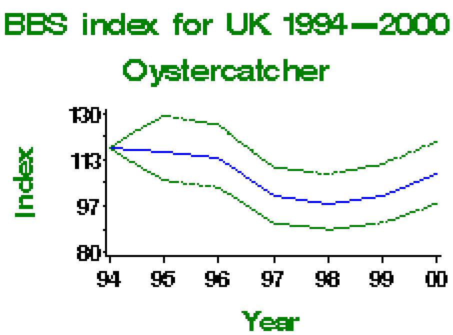


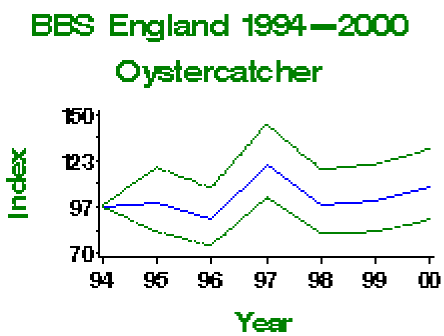
Table of population changes for Oystercatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1975-1999	23	110	73	164		
	10	1989-1999	29	0	-18	30		
	5	1994-1999	31	4	-5	16		

[BBS UK]	6	1994-2000	231	-8	-17	2		
[BBS England]	6	1994-2000	103	11	-8	34		
[BBS Scotland]	6	1994-2000	117	-13	-24	1		

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





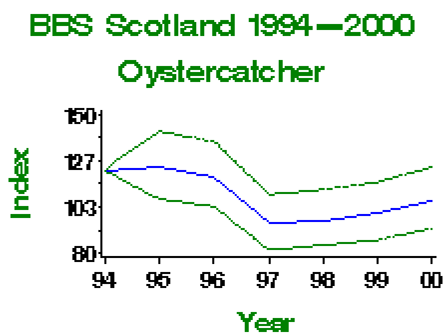
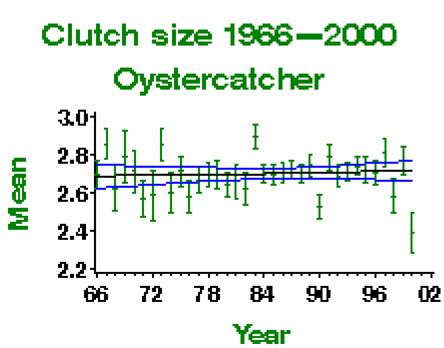
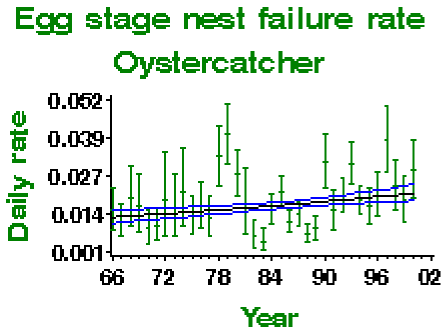


Table of productivity information for Oystercatcher

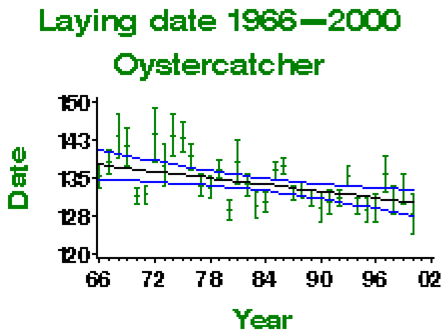
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[Clutch size]	31	1968-1999	105	None				
[Daily failure rate (eggs)]	31	1968-1999	112	Linear increase	0.0131 nests/day	0.0204 nests/day	0.0073 nests/day	
[Laying date]	31	1968-1999	47	Linear decline	day 137	day 130	-7 days	



Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

RINGED PLOVER
Charadrius hiaticula

Conservation Listings

Table 4/Amber (Wintering populations)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown

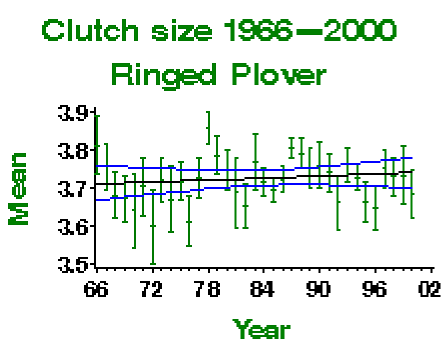
Status Summary

Although the breeding population is not monitored annually by the BTO, its distribution has spread inland, especially in England, probably associated with the increase in number of gravel pits and reservoirs (Gibbons *et al.* 1993). The recent marked trend towards increasing nest failures at the egg stage is potentially worrying and warrants further investigation. The failure rate for the 27-day egg stage (24 days for incubation + 3 days for laying) has increased from 55% to 71%.

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

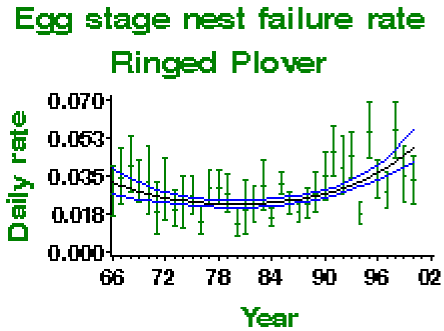
Table of productivity information for Ringed Plover

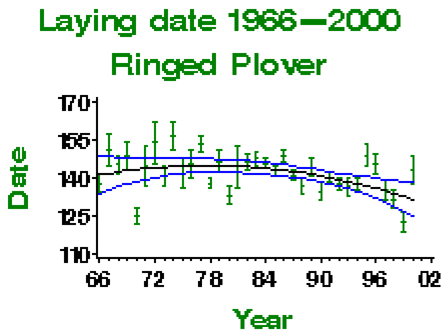
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	89	None				
Daily failure rate (eggs)	31	1968-1999	129	Curvilinear	0.0292 nests/day	0.0449 nests/day	0.0157 nests/day	
Laying date	31	1968-1999	42	Curvilinear	day 143	day 133	-10 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

GOLDEN PLOVER
Pluvialis apricaria

Conservation Listings

Table 4/Amber (Wintering population)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown

Status Summary

Generally thought to have declined (Gibbons *et al.* 1993), Golden Plovers in the UK were monitored only poorly monitored (in summer and in winter) before the inception of the BBS. No clear trend in BBS abundance has yet emerged, however. Nest survival on grass moors, unlike that on heather moors, may have declined over time (Crick 1992a); perhaps linked to increased sheep stocking densities (Fuller 1996).

The relatively small average clutch sizes in 1996-98 are due to the receipt of a number of late-season records, that provide an unusual proportion of 2 and 3-egg clutches, from an intensive study (Pearce-Higgins, pers. comm.).

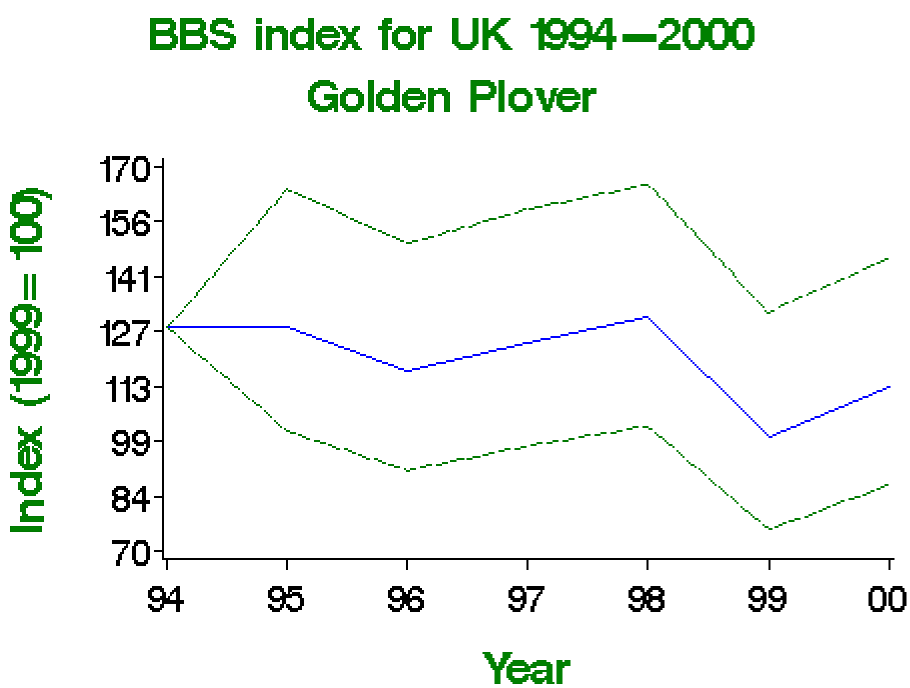
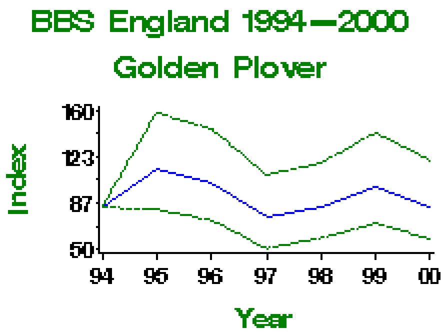


Table of population changes for Golden Plover

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	78	-12	-32	14		
BBS England	6	1994-2000	25	1	-30	45		Small sample

BBS Scotland	6	1994-2000	44	-17	-39	14		Small sample

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



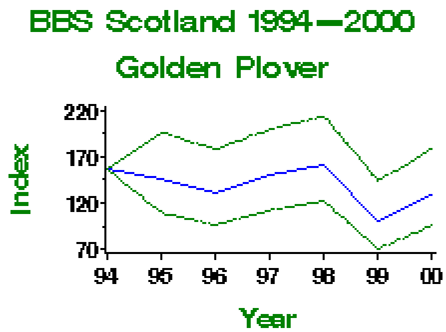
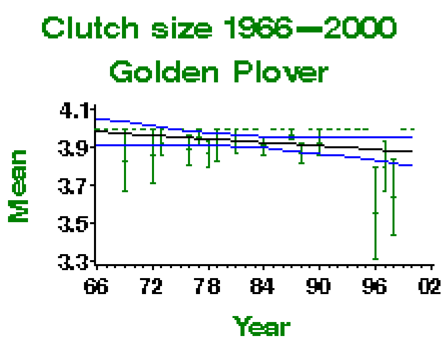


Table of productivity information for Golden Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	16	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

LAPWING
Vanellus vanellus

Conservation Listings

Table 4/Amber (Wintering population)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Shallow decline in late 1990s
England and Wales: Moderate decline (1987-1998)
Lowland: Moderate decline
Scotland: Moderate decline in late 1990s

Status Summary

National surveys in England and Wales showed a 49% population decline between 1987 and 1998 (Wilson *et al.* 2001). Lapwings declined rapidly in lowland Britain through the 1980s, probably because of changes in agricultural practice that have led to reduced productivity (Hudson *et al.* 1994, Siriwardena *et al.* 2000). Population declines in excess of 50% over 15 years in Northern Ireland (Henderson *et al.* in press) mirror similar declines throughout grassland areas of Wales and south-east England (Wilson *et al.* 2001). Adult and first-year survival rates show no trend through time (Peach *et al.* 1994, Catchpole *et al.* 1999), but the nest record data show an increase in failure rates at the egg stage (29 days, comprising 26 days incubation + 3 days laying) from 40% to 49%. Abundance on CBC plots has been stable since the early 1990s, but the CBC cannot be representative of the whole population, which is densest in northern Britain. It may therefore be of critical significance that the BBS shows a decline through the late 1990s particularly in the size of the Scottish population. The WBS shows a near-significant long-term increase, perhaps showing a concentration of breeding birds where undrained land remains, i.e. near water courses.

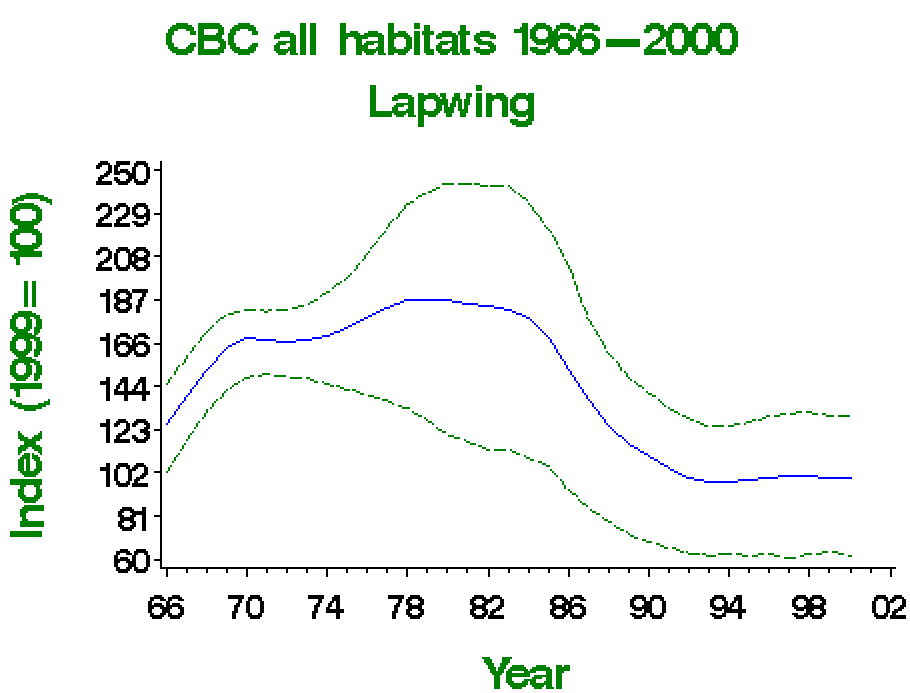
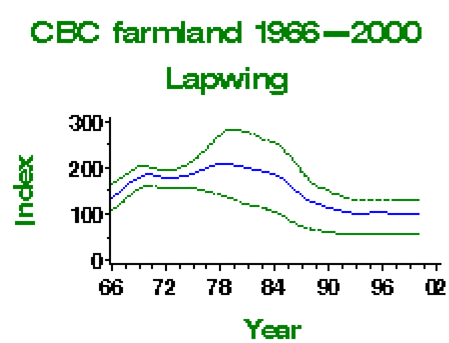


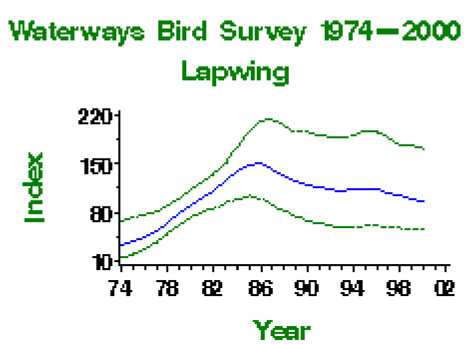
Table of population changes for Lapwing

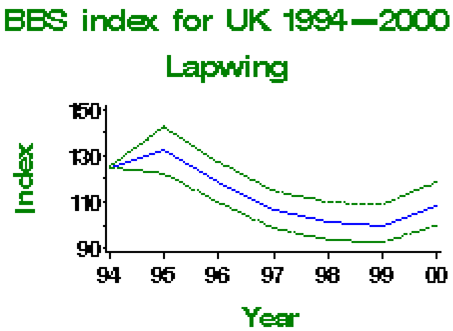
Source	Period	Years	Plots	Change	Lower	Upper	Alert	Comment

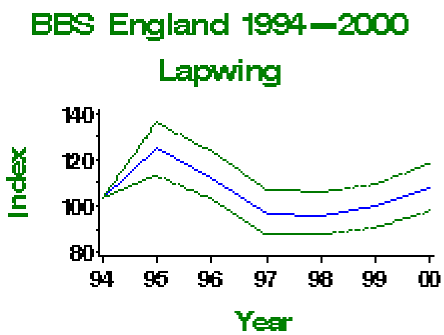
	(yrs)		(n)	(%)	limit	limit		
CBC all habitats	31	1968-1999	53	-34	-64	-6	>25	Unrepresentative
	25	1974-1999	52	-41	-61	-24	>25	Unrepresentative
	10	1989-1999	36	-14	-30	6		Unrepresentative
	5	1994-1999	36	2	-15	18		Unrepresentative
CBC farmland	31	1968-1999	41	-40	-68	-7	>25	Unrepresentative
	25	1974-1999	38	-45	-69	-31	>25	Unrepresentative
	10	1989-1999	29	-17	-31	5		Unrepresentative
	5	1994-1999	30	-2	-16	14		Unrepresentative
WBS waterways	24	1975-1999	33	161	-14	600		
	10	1989-1999	40	-20	-35	0		
	5	1994-1999	42	-12	-26	2		
BBS UK	6	1994-2000	534	-13	-20	-5		
BBS England	6	1994-2000	426	5	-5	15		
BBS Scotland	6	1994-2000	85	-29	-43	-13	(>25)	

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









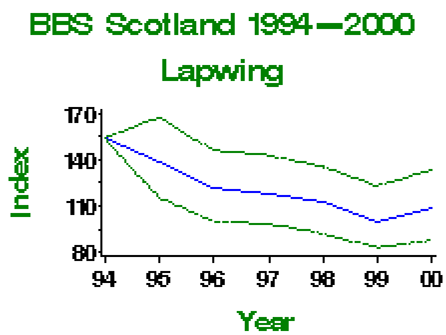
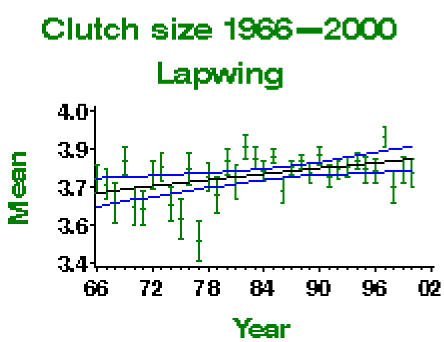
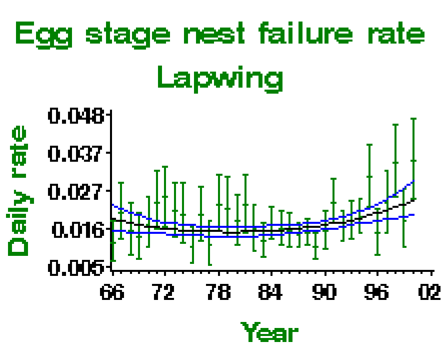


Table of productivity information for Lapwing

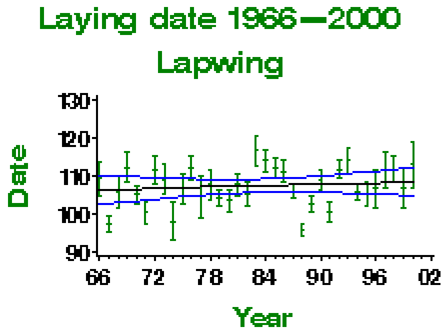
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	130	Linear increase	3.69 eggs	3.82 eggs	0.13 eggs	
Daily failure rate (eggs)	31	1968-1999	141	Curvilinear	0.0173 nests/day	0.0229 nests/day	0.0056 nests/day	
Laying date	31	1968-1999	33	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

SNIPE
Gallinago gallinago

Conservation Listings

Unlisted/Amber (25-49% population decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Probable decline

Status Summary

Although Snipe are poorly monitored by the CBC because of their northern, western and upland breeding distribution, index values indicate numbers on farmland have fallen considerably since the early 1980s. The decline and range contraction in lowland Britain is probably due to the drainage of farmland during agricultural intensification affecting productivity (Gibbons *et al.* 1993, Siriwardena *et al.* 2000). The BBS shows no clear population trend in the 1990s in either England or Scotland.

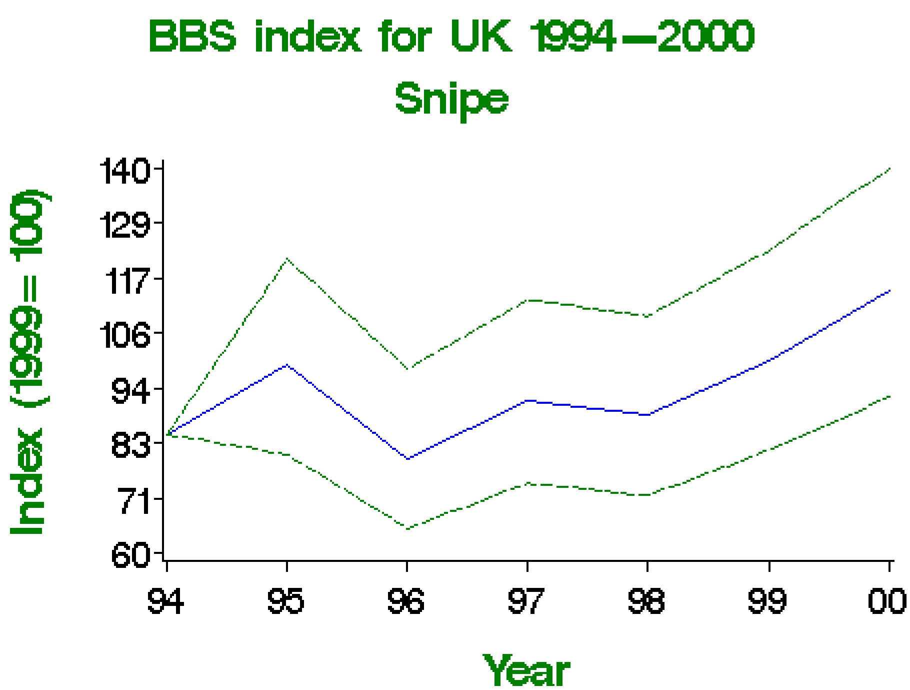
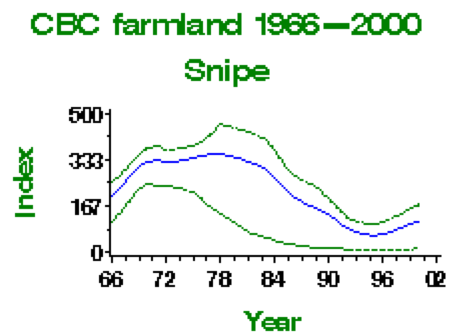


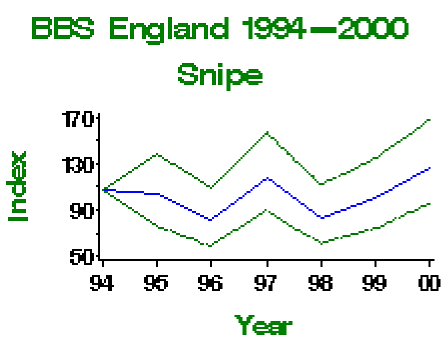
Table of population changes for Snipe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC farmland	31	1968-1999	9	-64	-96	-39	>50	Small sample
	25	1974-1999	7	-70	-96	-53	>50	Small sample
	10	1989-1999	5	-36	-74	15		Small sample
	5	1994-1999	4	54	1	111		Small sample

BBS UK	6	1994-2000	116	35	9	65		
BBS England	6	1994-2000	50	18	-11	57		Small sample
BBS Scotland	6	1994-2000	53	43	2	99		

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





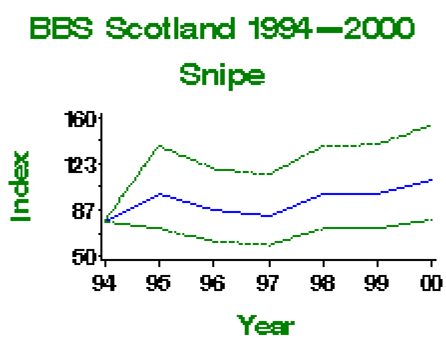
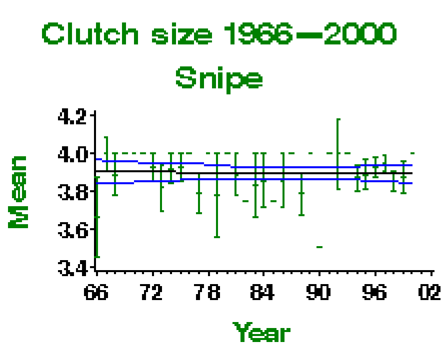
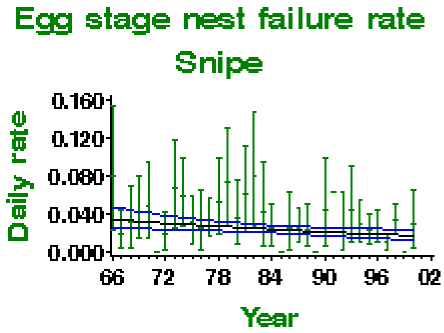


Table of productivity information for Snipe

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	14	None				Small sample
Daily failure rate (eggs)	31	1968-1999	18	Linear decline	0.0328 nests/day	0.0173 nests/day	-0.0155 nests/day	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

CURLEW
Numenius arquata

Conservation Listings

Table 4/Amber (>20% of European population)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Uncertain, probable decline

Status Summary

The UK's breeding Curlew are not covered well by the CBC and the species' range has contracted away from the core area of CBC coverage, probably because of the drainage of farmland (Gibbons *et al.* 1993). Wintering Curlew abundance has shown a shallow, long-term increase (Musgrove *et al.* 2001), but the BBS shows a recent decline, particularly in England and Scotland. In Northern Ireland, breeding declines greater than 50% occurred between the mid-1980s and 1999 (Henderson *et al.* in press), but numbers recorded by the BBS increased substantially in 2000. Although samples are small, failure rate of nests at the egg stage have improved: over the 34-day egg stage (28 days incubation + 6 days laying) nest failures have fallen from 64% to 55%.

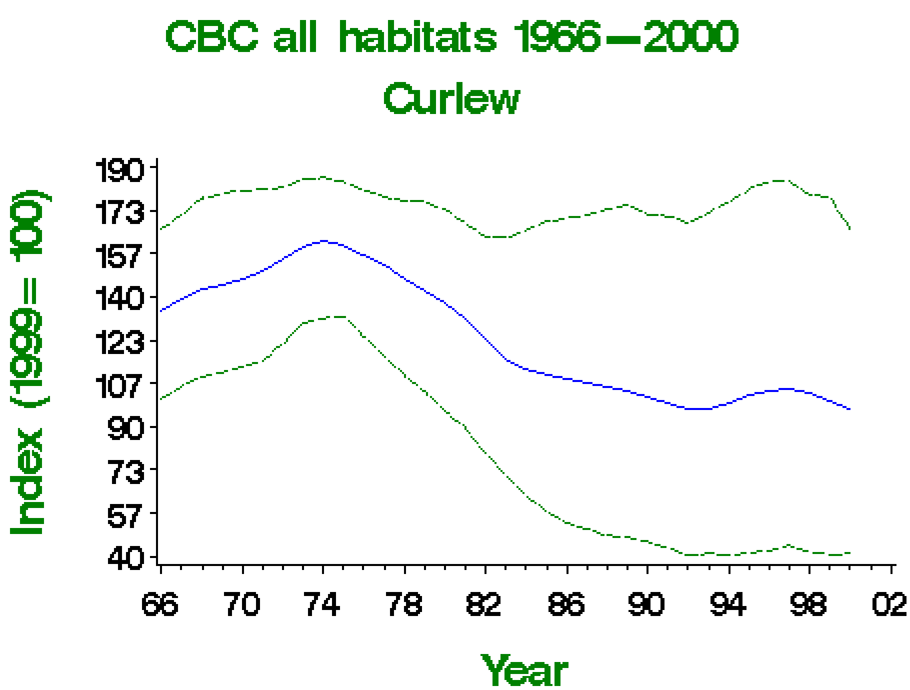
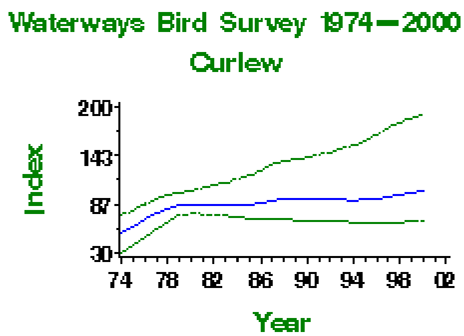


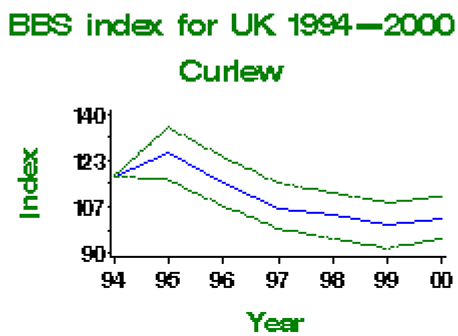
Table of population changes for Curlew

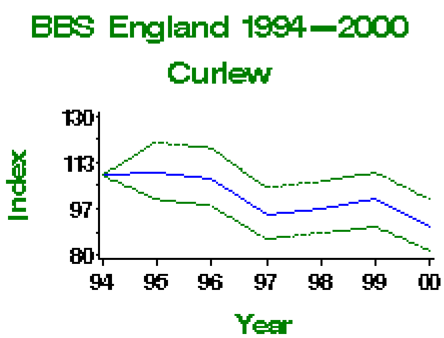
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	23	-30	-65	7		Unrepresentative?
	25	1974-1999	24	-38	-71	-1	>25	Unrepresentative?
	10	1989-1999	23	-4	-27	21		Unrepresentative?

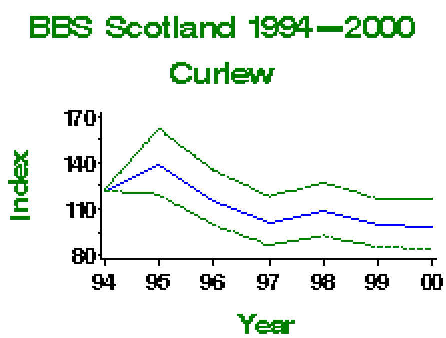
	5	1994-1999	25	1	-12	12		Unrepresentative?
WBS waterways	24	1975-1999	20	63	4	364		Small sample
	10	1989-1999	26	8	-13	47		
	5	1994-1999	27	9	-6	32		
BBS UK	6	1994-2000	431	-13	-19	-6		
BBS England	6	1994-2000	244	-17	-25	-8		
BBS Scotland	6	1994-2000	125	-19	-31	-4		
BBS Wales	6	1994-2000	37	-3	-32	38		Small sample
BBS N.Ireland	6	1994-2000	21	226	67	536		Small sample

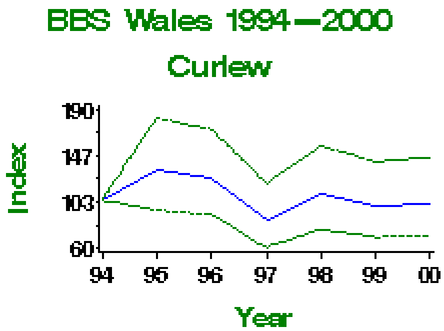
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











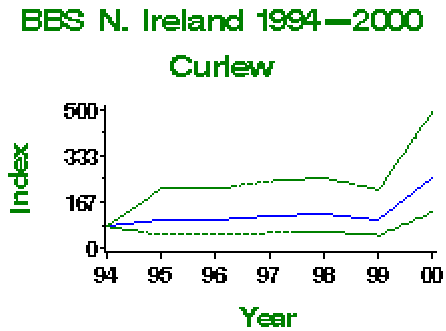
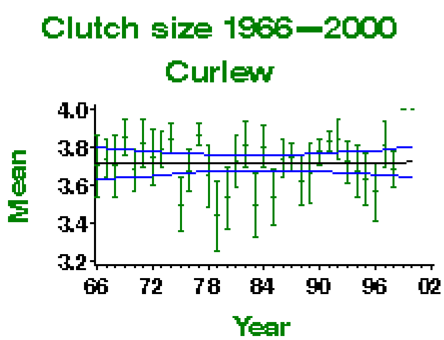
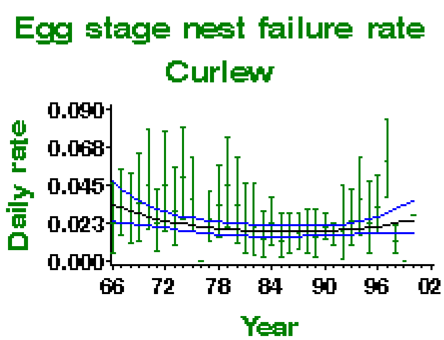


Table of productivity information for Curlew

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	24	None				Small sample
Daily failure rate (eggs)	31	1968-1999	27	Curvilinear	0.0296 nests/day	0.0231 nests/day	-0.0065 nests/day	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

WOODCOCK
Scolopax rusticola

Conservation Listings

Table 4/Amber (25-49% population decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Probable rapid decline

Status Summary

The Woodcock has declined significantly on CBC plots. Although the CBC does not cover all of the species' range well, range contractions that probably have the same cause as the decline in abundance have occurred concurrently (Gibbons *et al.* 1993). The drying out of natural woodlands and the maturation of plantations are possible causes of the Woodcock's decline.

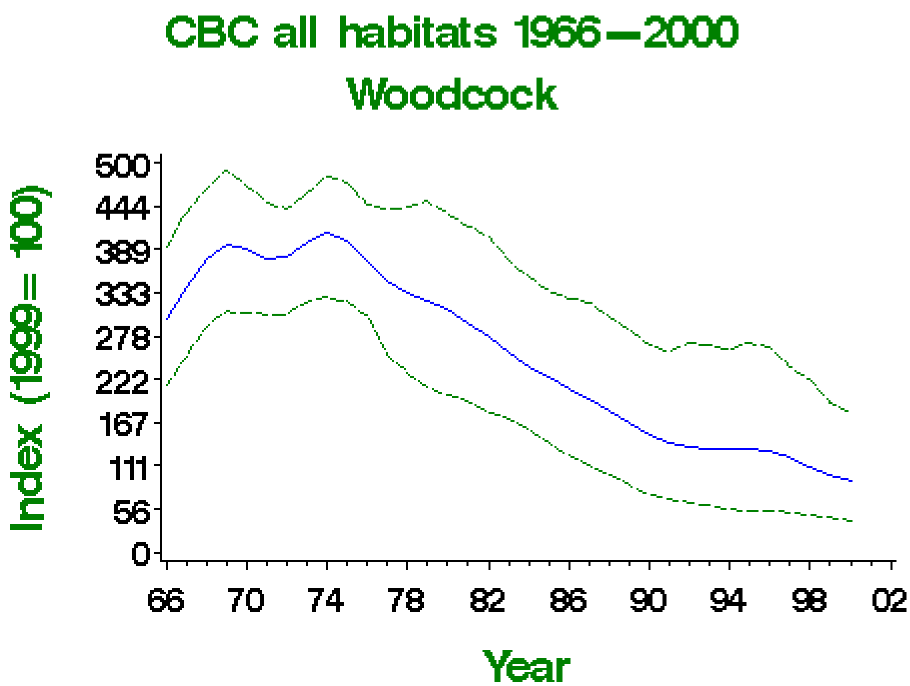


Table of population changes for Woodcock

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

Productivity information is not currently available for this species

REDSHANK
Tringa totanus

Conservation Listings

Table 4/Amber (Wintering population)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Moderate decline

Status Summary

Geographical biases mean that Redshank were not monitored well by BTO surveys before the advent of the BBS, but considerable range contraction has occurred from many areas of the UK, probably as a result of the drainage of farmland (Gibbons *et al.* 1993). Although WBS data suggests that numbers have declined since the mid-1970s, wintering populations (augmented by Icelandic and Arctic breeders) are stable (Musgrove et al. 2001) and the BBS shows no clear trend in abundance over the last six years. The substantial section of the British population that nests on saltmarshes decreased by 23% between 1985 and 1996 (Brindley et al. 1998).

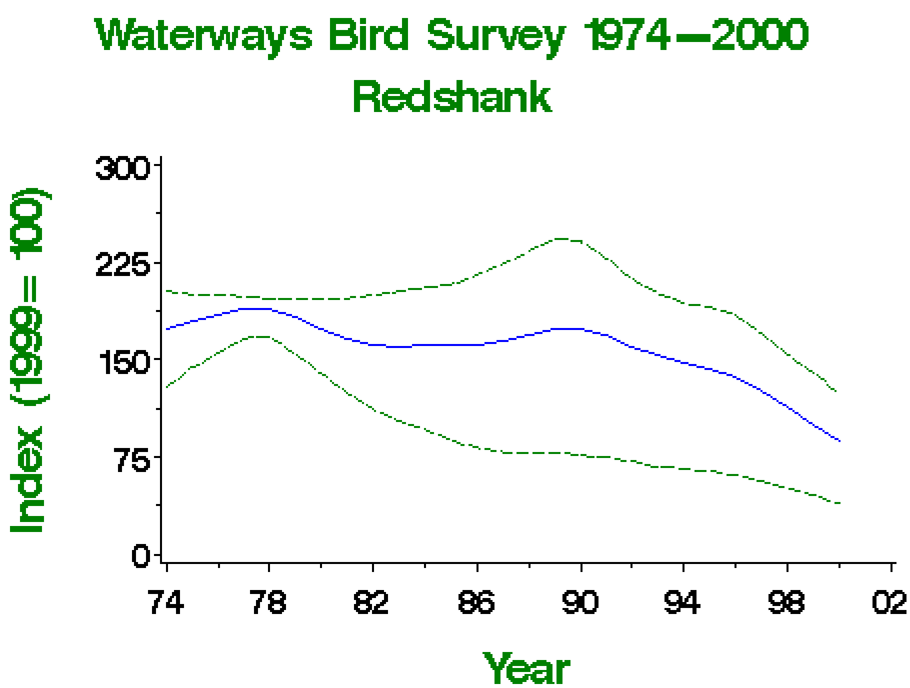
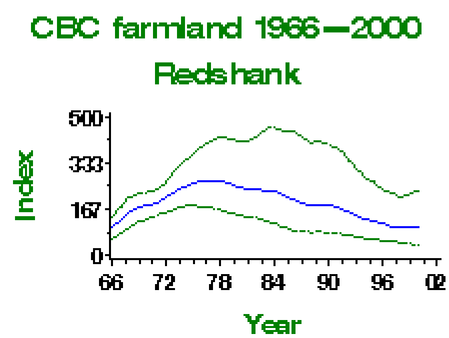


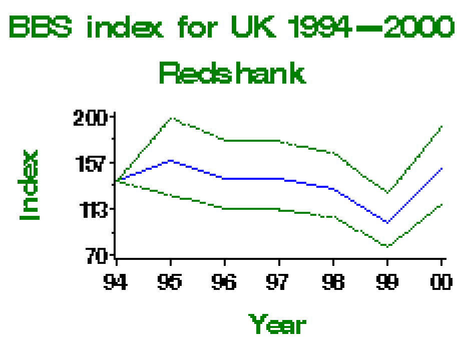
Table of population changes for Redshank

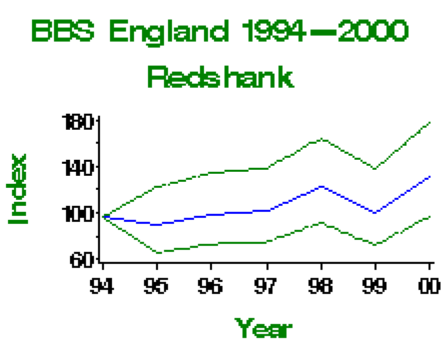
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC farmland	31	1968-1999	9	-36	-76	86		Small sample
	25	1974-1999	9	-60	-82	-19	>50	Small sample
	10	1989-1999	8	-45	-68	17		Small sample
		1994-						Small

	5	1999	8	-23	-56	67		sample
WBS waterways	24	1975-1999	19	-44	-78	-9	>25	Small sample
	10	1989-1999	19	-43	-54	-31	>25	Small sample
	5	1994-1999	18	-32	-44	-20	>25	Small sample
BBS UK	6	1994-2000	67	8	-15	37		
BBS England	6	1994-2000	43	37	1	86		Small sample
BBS Scotland	6	1994-2000	21	-6	-38	41		Small sample

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







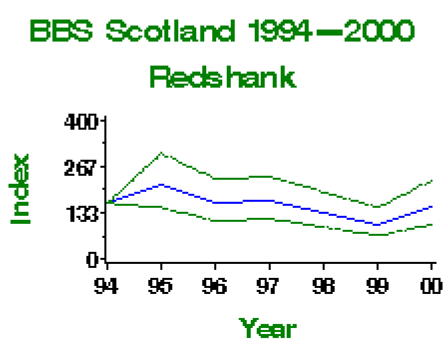
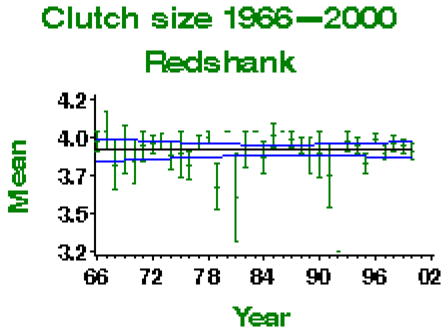


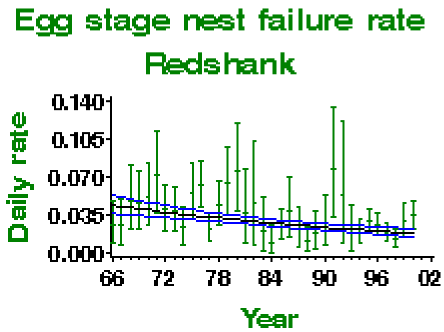
Table of productivity information for Redshank

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	26	None				Small sample

Daily failure rate (eggs)	31	1968-1999	32	Linear decline	0.0419 nests/day	0.0185 nests/day	-0.0234 nests/day	



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

COMMON SANDPIPER
Actitis hypoleucos

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Shallow decline

Status Summary

The WBS is ideal for monitoring the breeding Common Sandpiper population, and it shows a decline from 1985 onwards (after a more gradual increase) that has yet to be explained. No BTO Alert is triggered by this decline because no year used in an inter-annual comparison falls near the population peak.

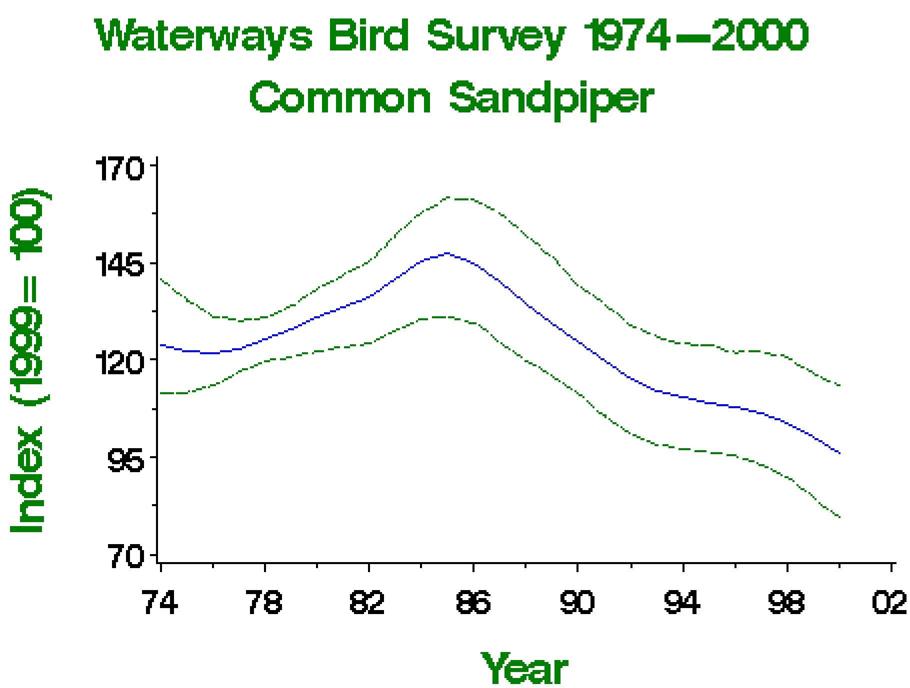
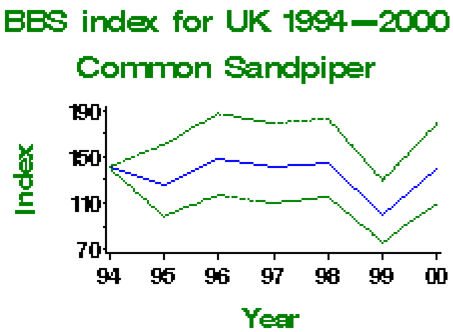


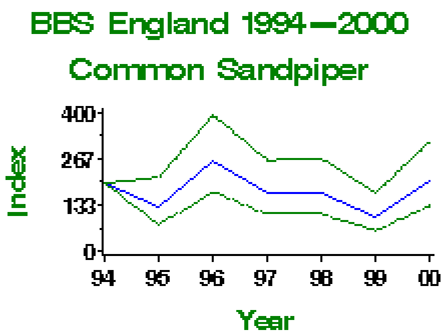
Table of population changes for Common Sandpiper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1975-1999	27	-18	-36	-4		
	10	1989-1999	30	-23	-34	-15		
	5	1994-1999	28	-9	-19	-1		
BBS UK	6	1994-2000	63	-1	-22	27		

[BBS England]	6	1994-2000	23	4	-33	62		Small sample
[BBS Scotland]	6	1994-2000	37	-3	-31	37		Small sample

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





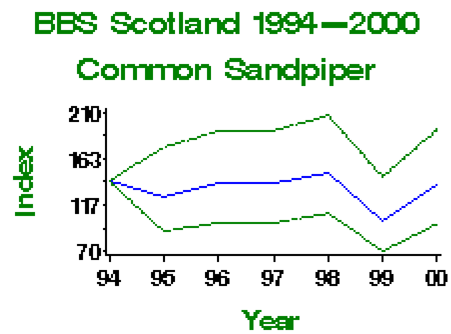
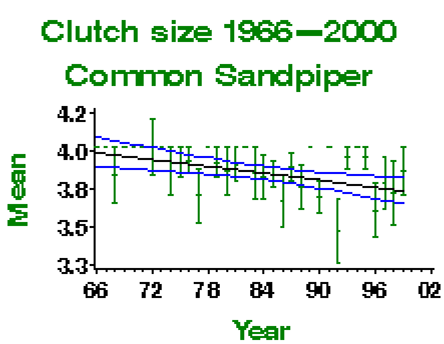


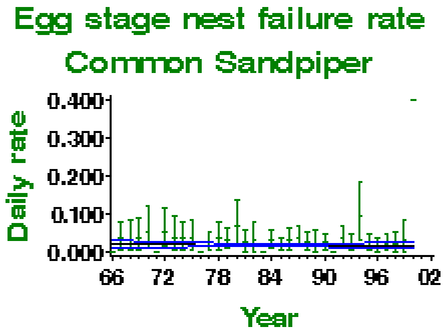
Table of productivity information for Common Sandpiper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[Clutch size]	31	1968-1999	12	Linear decline	3.96 eggs	3.74 eggs	-0.22 eggs	Small sample
[Daily failure rate (eggs)]	31	1968-1999	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

STOCK DOVE
Columba oenas

Conservation Listings

Unlisted/Amber (Important breeding population)
Biodiversity Steering Group: Unlisted

Long term trend

UK: Rapid increase

Status Summary

Populations have increased substantially, probably showing a recovery from the deleterious effects of organochlorine seed-dressings in the 1950s and early 1960s (O'Connor & Mead 1984). The increases in breeding performance are slight: the improvement in nest failure rates at the egg stage (17 days in length) was from 18% down to 11%, and were not detectable in farmland habitats alone (Siriwardena *et al.* 2000b). BBS indices suggest that abundance is currently stable.

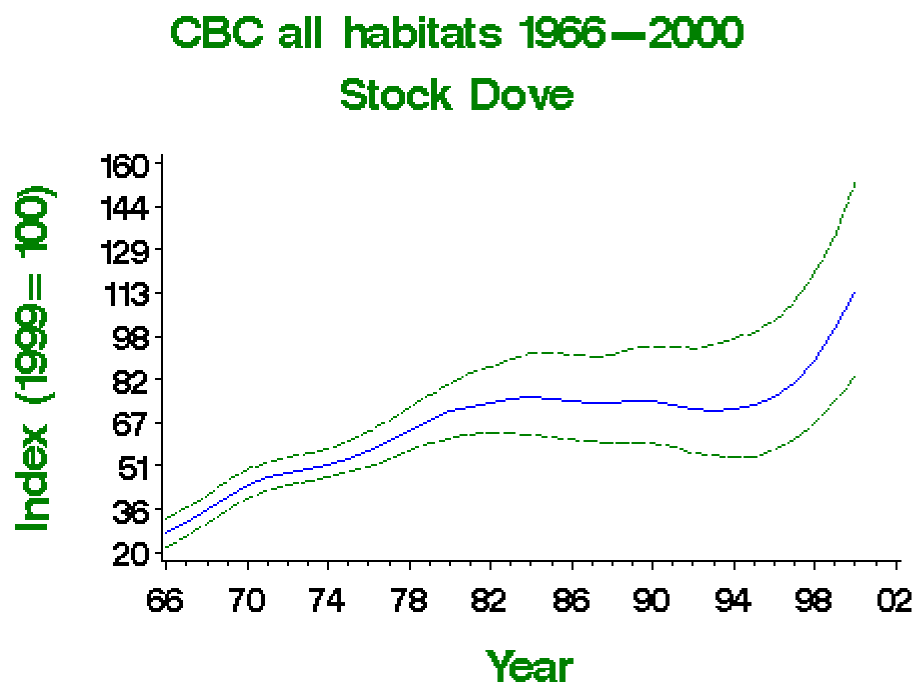
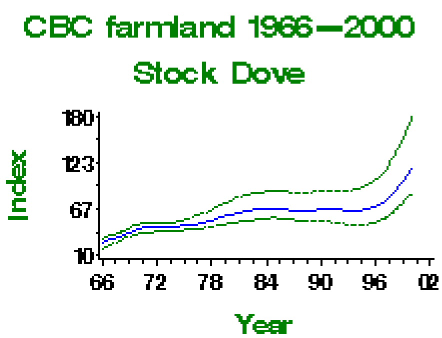


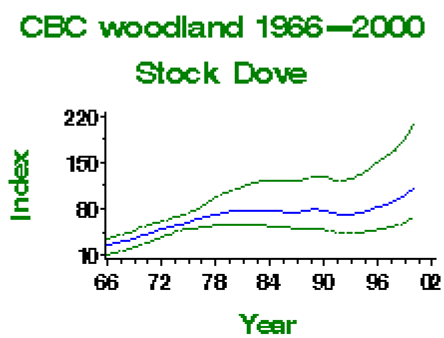
Table of population changes for Stock Dove

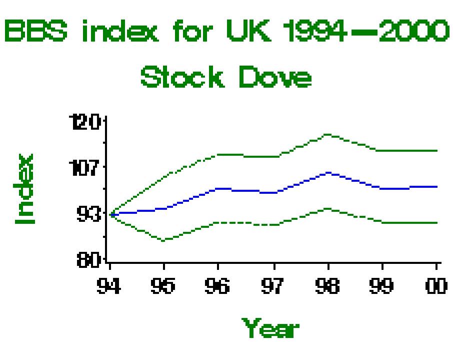
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	75	183	108	306		
	25	1974-1999	80	93	51	158		
	10	1989-1999	75	34	19	59		
	5	1994-1999	71	39	26	55		

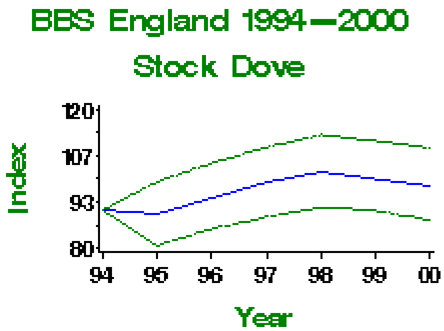
CBC farmland	31	1968-1999	37	199	117	372		
	25	1974-1999	38	124	73	229		
	10	1989-1999	37	53	26	96		
	5	1994-1999	35	55	38	89		
CBC woodland	31	1968-1999	27	221	51	865		
	25	1974-1999	30	76	8	226		
	10	1989-1999	31	27	0	61		
	5	1994-1999	30	33	13	61		
BBS UK	6	1994-2000	582	9	-2	20		
BBS England	6	1994-2000	538	8	-3	20		
BBS Wales	6	1994-2000	23	59	-13	190		Small sample

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









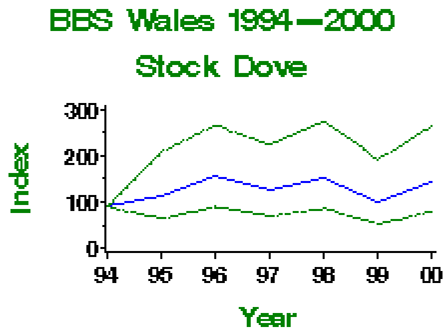
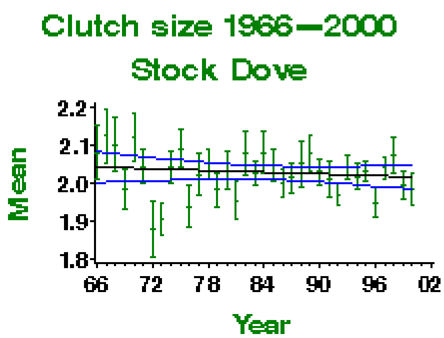
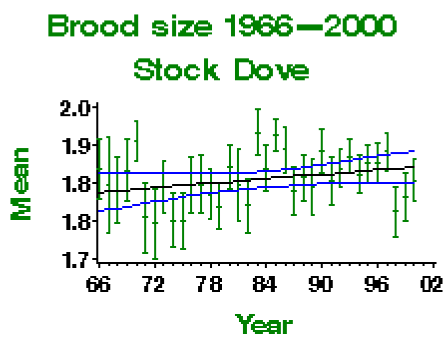
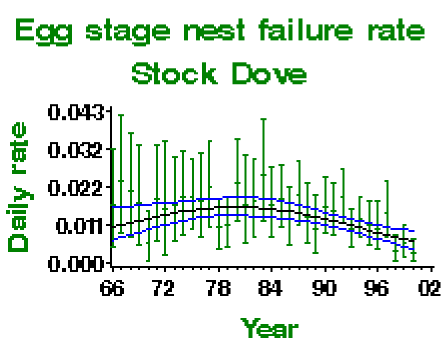


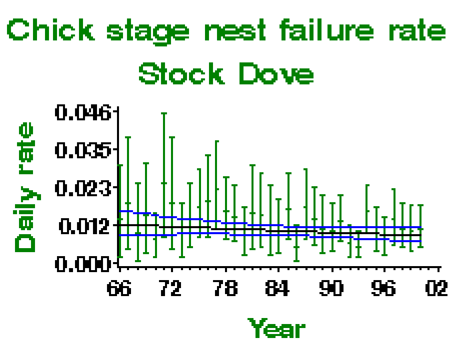
Table of productivity information for Stock Dove

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	64	None				
Brood size	31	1968-1999	87	None				
Daily failure rate (eggs)	31	1968-1999	63	Curvilinear	0.0113 nests/day	0.0067 nests/day	-0.0046 nests/day	
Daily failure rate (chicks)	31	1968-1999	47	None				
Laying date	31	1968-1999	13	None				Small sample

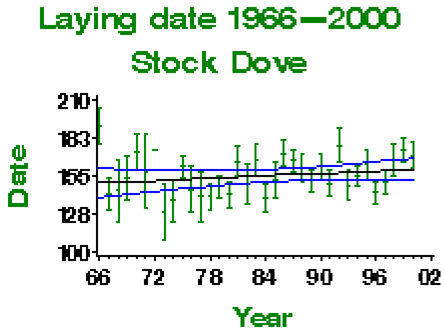








Insufficient data on CES
available for this species


Laying date 1966–2000
Stock Dove
Date
210
183
155
128
100
66
72
78
84
90
96
02
Year

WOODPIGEON
Columba palumbus

Conservation Listings
Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend
UK: Moderate increase

Status Summary
Woodpigeons are difficult to survey accurately, but the CBC nevertheless shows a significant increase in abundance since the mid-1970s. This increase is apparent in both farmland and woodland habitats. The species is a pest on arable crops and the spread of intensive arable cultivation, especially of oilseed rape, may explain the rise in numbers (**Gibbons *et al.* 1993**).

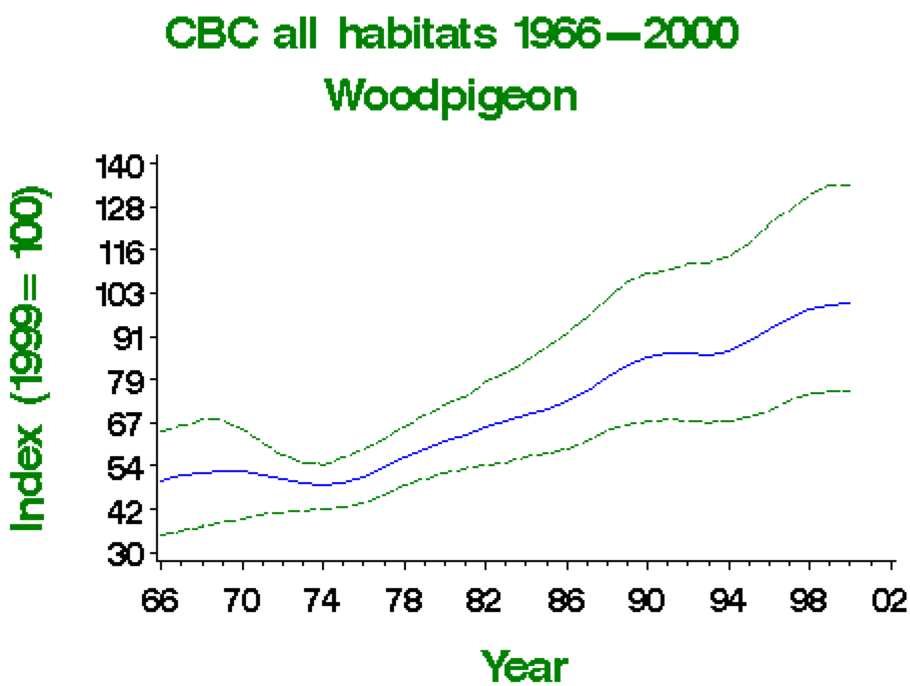
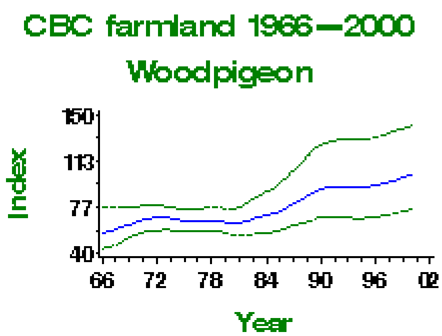


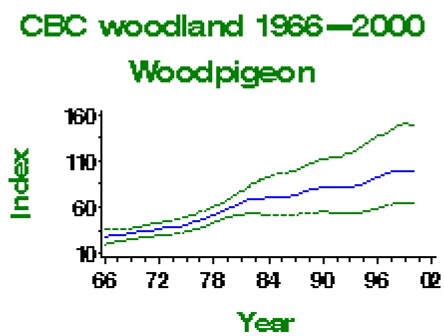
Table of population changes for Woodpigeon

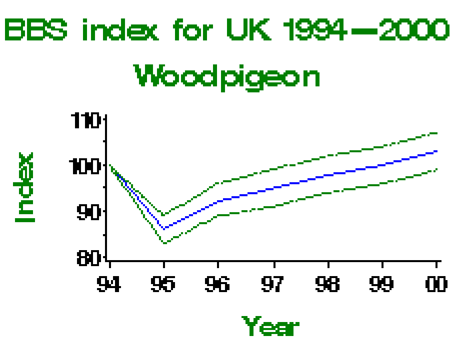
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	98	90	14	218		
	25	1974-1999	118	104	53	170		
	10	1989-1999	152	21	10	31		
	5	1994-1999	162	15	9	20		
CBC		1968-						

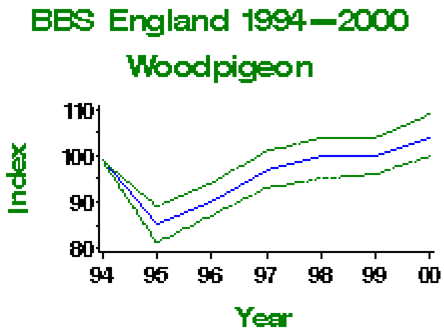
farmland	31	1999	40	66	9	159		
	25	1974-1999	48	48	12	124		
	10	1989-1999	70	15	3	29		
	5	1994-1999	74	9	0	18		
CBC woodland	31	1968-1999	42	228	117	385		
	25	1974-1999	50	153	70	257		
	10	1989-1999	67	25	3	50		
	5	1994-1999	74	19	10	29		
BBS UK	6	1994-2000	1812	3	-1	7		
BBS England	6	1994-2000	1456	5	1	10		
BBS Scotland	6	1994-2000	158	-16	-27	-2		
BBS Wales	6	1994-2000	138	10	-4	25		
BBS N.Ireland	6	1994-2000	51	49	11	99		

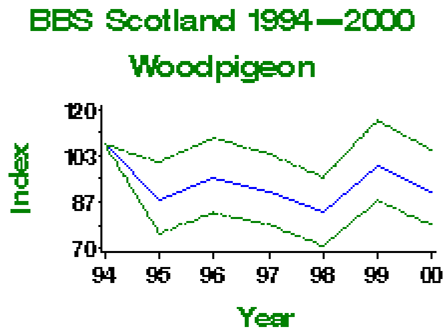
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

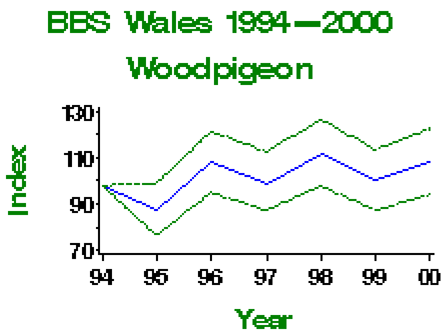


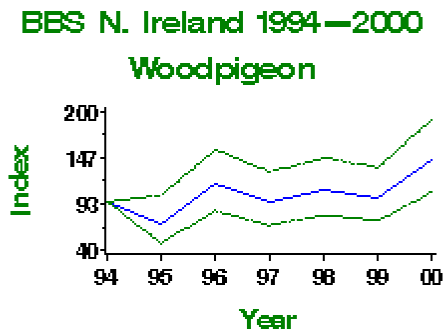












Productivity information is not currently available for this species

TURTLE DOVE
Streptopelia turtur

Conservation Listings

Table 2/Red (>=50% population decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Rapid decline

Status Summary

The CBC shows severe declines in Turtle Dove abundance and the BBS confirms that these declines are continuing. Although not statistically significant, analysis of nest record cards and ringing data for farmland Turtle Doves suggests that productivity has increased while annual survival has fallen (Siriwardena *et al.* 2000, 2000b). 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).

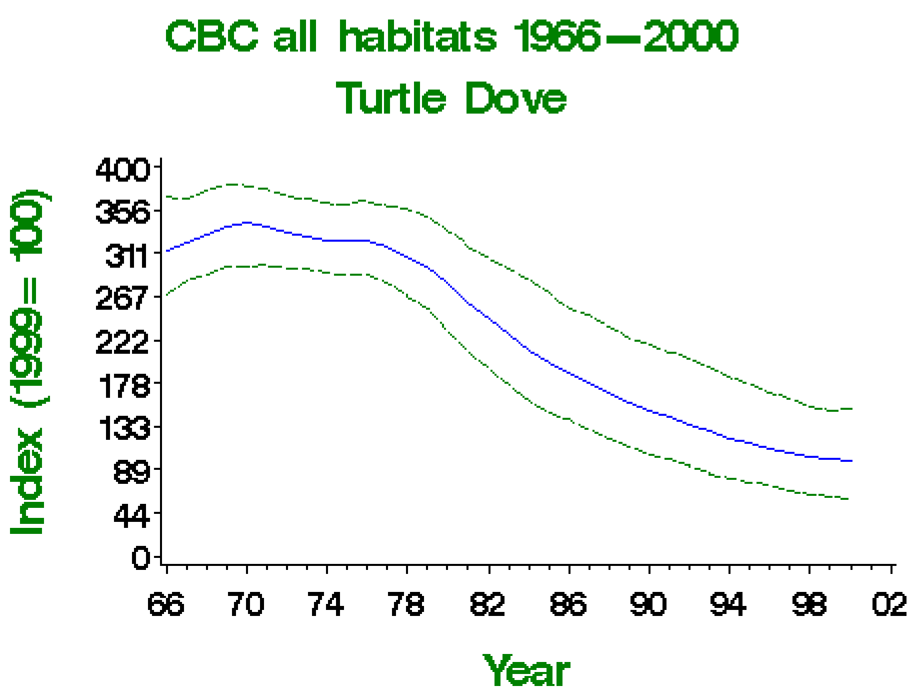
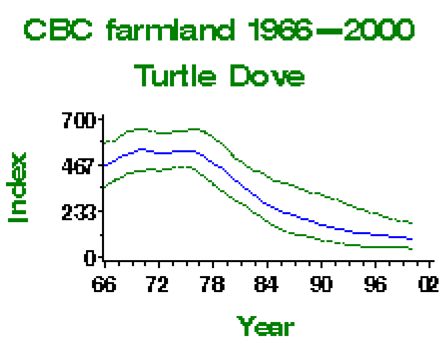


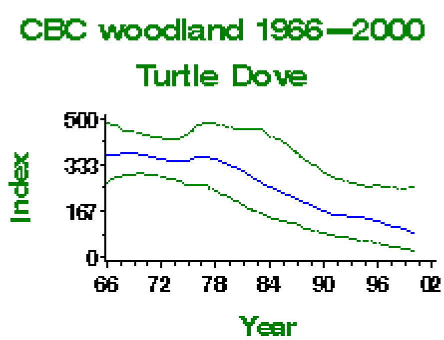
Table of population changes for Turtle Dove

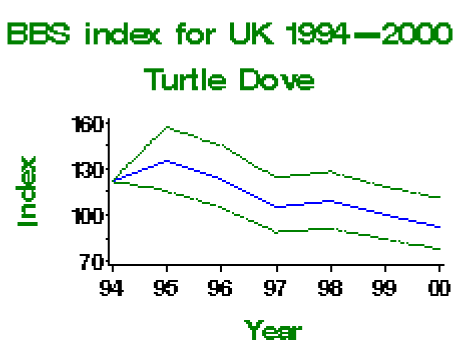
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	59	-70	-81	-54	>50	
	25	1974-1999	58	-69	-81	-53	>50	
	10	1989-1999	39	-37	-55	-20	>25	

	5	1994-1999	34	-18	-36	2		
[CBC farmland](#)	31	1968-1999	27	-80	-91	-66	>50	
	25	1974-1999	25	-81	-90	-67	>50	
	10	1989-1999	19	-44	-61	-25	>25	Small sample
	5	1994-1999	17	-20	-36	-3		Small sample
[CBC woodland](#)	31	1968-1999	20	-73	-92	-34	>50	Small sample
	25	1974-1999	20	-71	-91	-27	>50	Small sample
	10	1989-1999	14	-44	-76	8		Small sample
	5	1994-1999	12	-30	-62	17		Small sample
[BBS UK](#)	6	1994-2000	192	-24	-36	-9		
[BBS England](#)	6	1994-2000	189	-23	-36	-9		

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







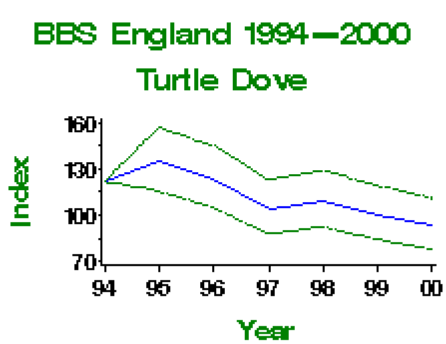
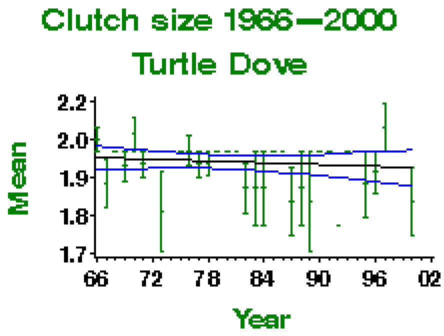
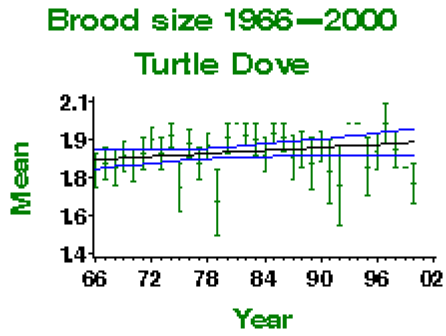


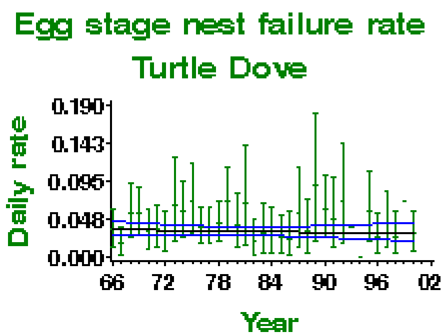
Table of productivity information for Turtle Dove

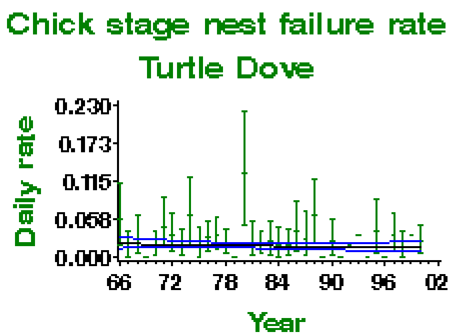
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[Clutch size](#)	31	1968-1999	13	None				Small sample

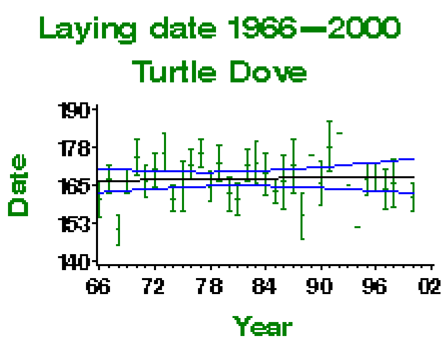
Brood size	31	1968-1999	17	None				Small sample
Daily failure rate (eggs)	31	1968-1999	17	None				Small sample
Daily failure rate (chicks)	31	1968-1999	13	None				Small sample
Laying date	31	1968-1999	14	None				Small sample











Insufficient data on CES available for this species

COLLARED DOVE
Streptopelia decaocto

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Rapid increase

Status Summary

Collared Dove abundance has increased rapidly since the species first colonized Britain in the 1950s and, although the CBC trend has levelled off to some extent, the BBS shows continuing increases (except in Scotland). The changes in breeding performance per nesting attempt have been very slight.

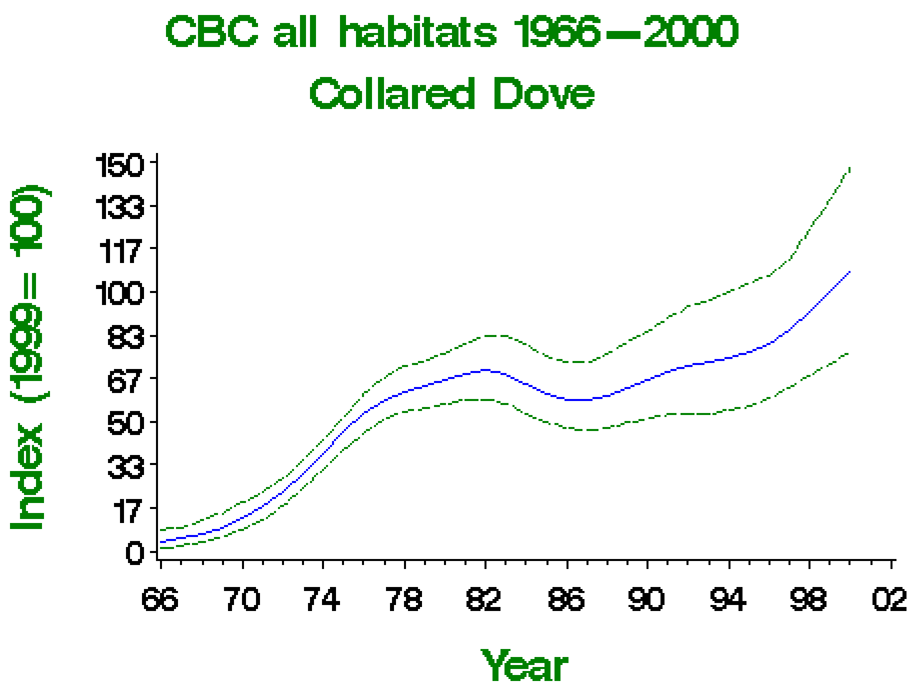
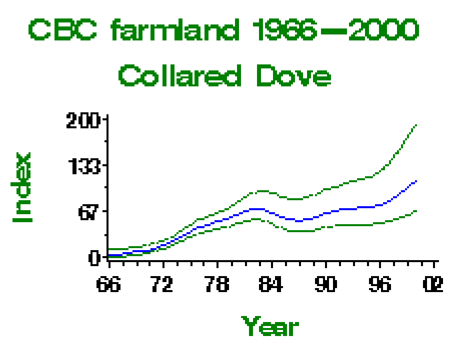


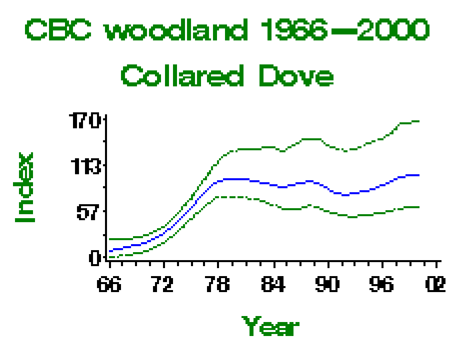
Table of population changes for Collared Dove

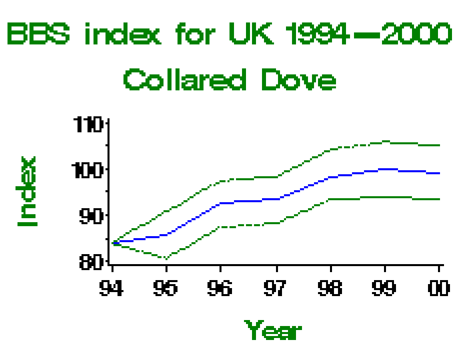
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	71	1389	631	3524		
	25	1974-1999	81	165	101	257		
	10	1989-1999	77	59	28	86		
	5	1994-1999	75	35	18	50		
CBC farmland	31	1968-1999	40	1581	620	7894		

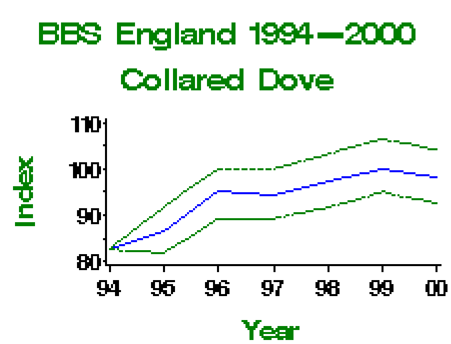
	25	1974-1999	46	228	120	452		
	10	1989-1999	48	71	31	127		
	5	1994-1999	48	40	19	70		
CBC woodland	31	1968-1999	16	761	267	4014		Small sample
	25	1974-1999	19	104	38	247		Small sample
	10	1989-1999	17	11	-17	36		Small sample
	5	1994-1999	17	23	3	42		Small sample
BBS UK	6	1994-2000	977	18	11	25		
BBS England	6	1994-2000	876	19	12	26		
BBS Scotland	6	1994-2000	34	-21	-47	18		Small sample
BBS Wales	6	1994-2000	48	23	-9	67		Small sample

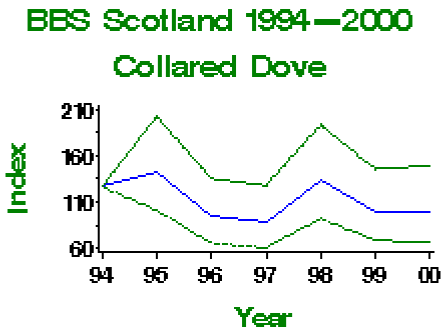
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











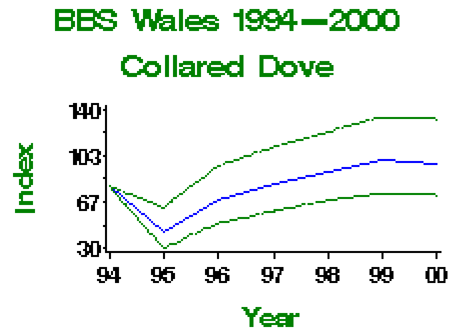
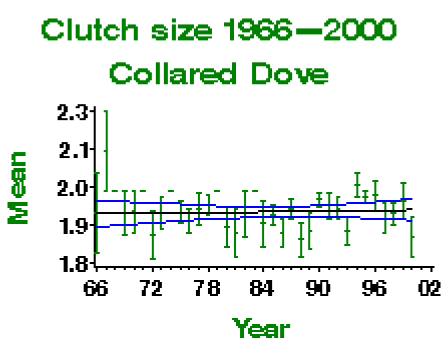
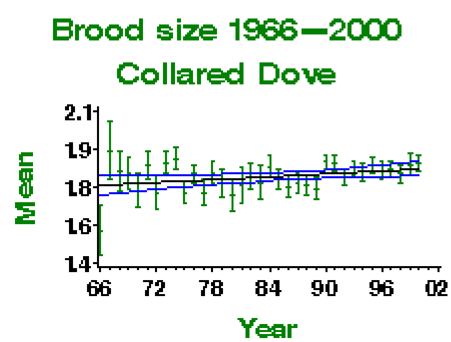
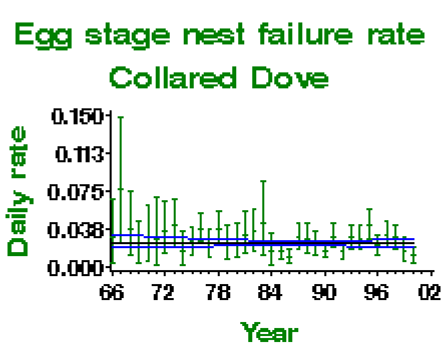


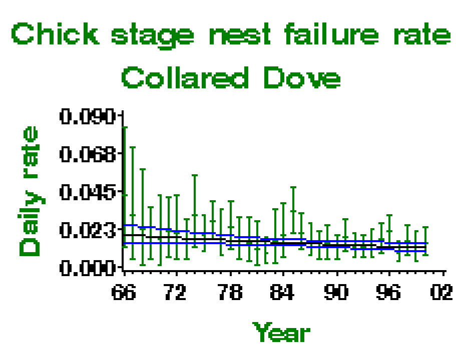
Table of productivity information for Collared Dove

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	42	None				
Brood size	31	1968-1999	67	Linear increase	1.76 chicks	1.83 chicks	0.07 chicks	
Daily failure rate (eggs)	31	1968-1999	57	None				
Daily failure rate (chicks)	31	1968-1999	51	Linear decline	0.0184 nests/day	0.0116 nests/day	-0.0068 nests/day	
Laying date	31	1968-1999	41	None				

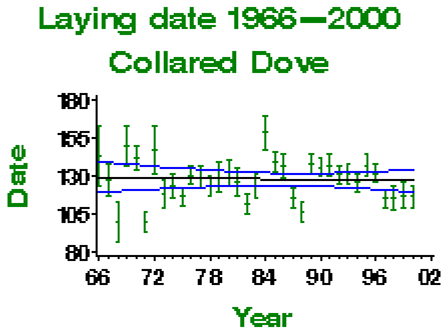








Insufficient data on CES available for this species


Laying date 1966–2000
Collared Dove
Date
180
155
130
105
80
66
72
78
84
90
96
02
Year

CUCKOO
Cuculus canorus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Moderate decline
Woodland: Rapid decline

Status Summary

The CBC shows Cuckoo abundance to have been in decline since the early 1980s. CBC methods may not be the most suitable for monitoring Cuckoos because of their large territories and use of habitats that the CBC does not cover well (such as wetland: **Marchant *et al.* 1990**). However, the BBS is not subject to these biases and shows a continuing decline, especially in England. Cuckoo abundance may have fallen because the populations of key host species such as Dunnock and Meadow Pipit have declined (**Brooke & Davies 1987**).

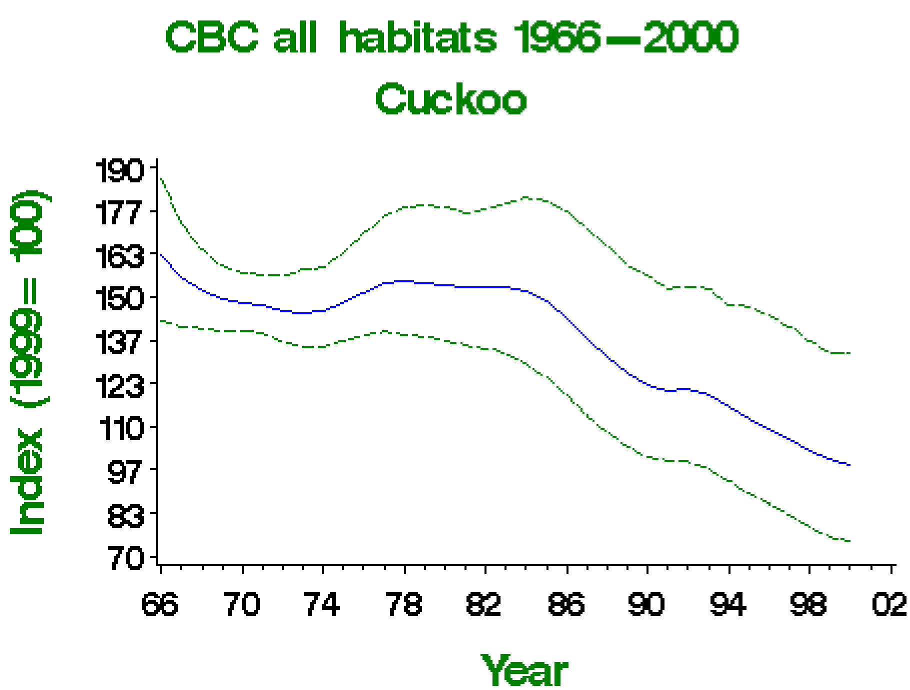
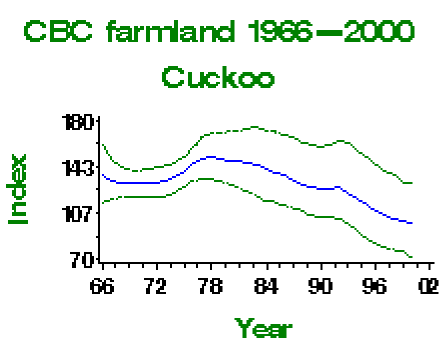


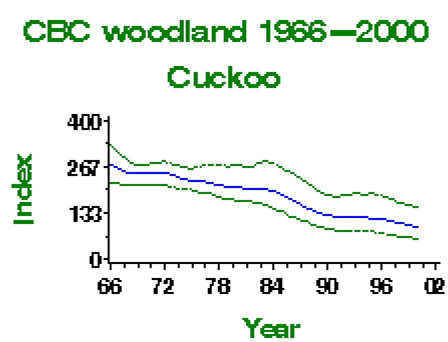
Table of population changes for Cuckoo

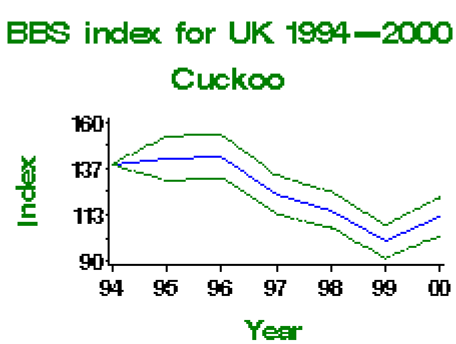
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	104	-34	-49	-10	>25	
	25	1974-1999	108	-31	-44	-13	>25	
	10	1989-1999	90	-21	-32	-8		

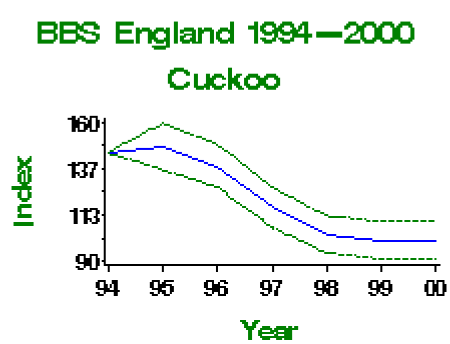
	5	1994-1999	84	-14	-24	-2		
CBC farmland	31	1968-1999	49	-24	-43	1		
	25	1974-1999	50	-26	-45	-2	>25	
	10	1989-1999	46	-21	-35	-6		
	5	1994-1999	42	-15	-31	-2		
CBC woodland	31	1968-1999	35	-60	-75	-37	>50	
	25	1974-1999	37	-57	-73	-33	>50	
	10	1989-1999	32	-26	-46	-6	>25	
	5	1994-1999	30	-17	-36	7		
BBS UK	6	1994-2000	749	-19	-26	-12		
BBS England	6	1994-2000	611	-31	-37	-24	(>25)	
BBS Scotland	6	1994-2000	67	38	1	88		
BBS Wales	6	1994-2000	54	-11	-36	24		

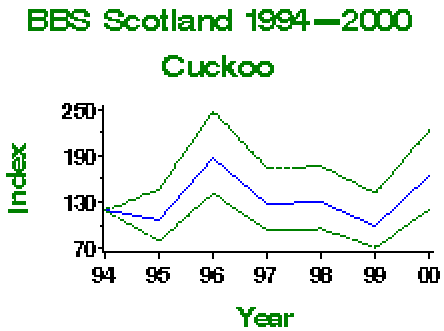
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

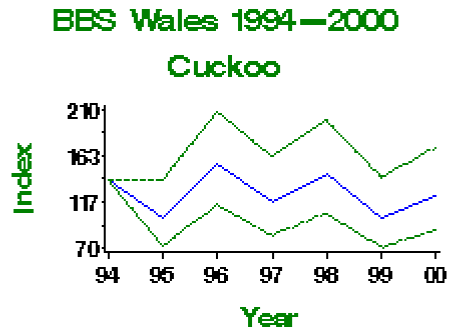












Productivity information is not currently available for this species

BARN OWL
Tyto alba

Conservation Listings

Table 4/Amber (25-50% Distribution decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Uncertain

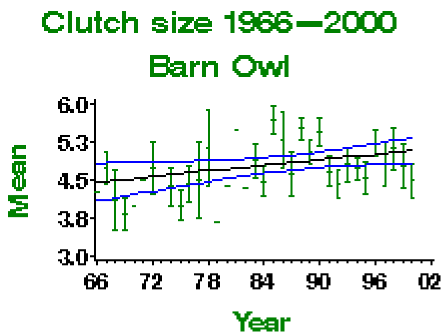
Status Summary

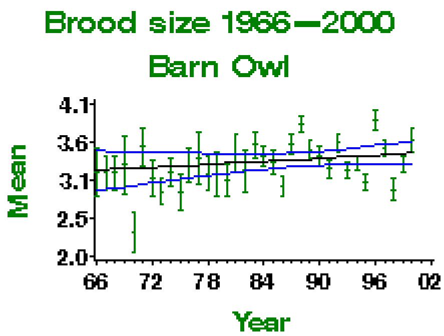
Productivity has tended to improve since the 1950s and 1960s when Barn Owls appear to have been affected by organochlorine pesticides (Percival 1990). In addition to an increase in clutch size, nest failure rates have fallen at the egg stage (34 days) from 21% to 6% and at the nestling stage (60 days) from 13% to 2%. A national census, organised jointly by Hawk & Owl Trust and BTO 1995-97, has provided a replicable baseline estimate of population size of c.4000 breeding pairs in the UK (Toms *et al.* 2001), but population trends are currently not monitored annually.

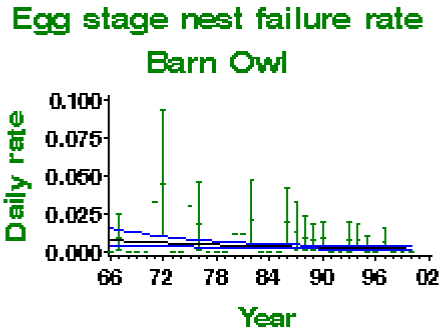
Annual breeding population changes for this species
are not currently monitored by BTO

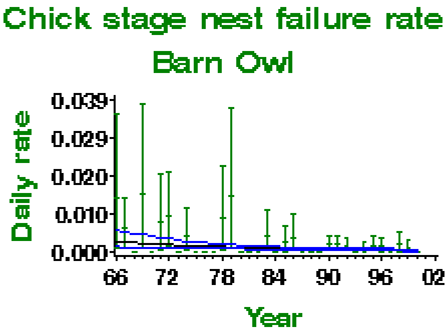
Table of productivity information for Barn Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	13	Linear increase	4.5 eggs	5.07 eggs	0.57 eggs	Small sample
Brood size	31	1968-1999	65	None				
Daily failure rate (eggs)	31	1968-1999	12	Linear decline	0.0069 nests/day	0.0018 nests/day	-0.0051 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	40	Linear decline	0.0023 nests/day	0.0003 nests/day	-0.002 nests/day	









Insufficient data on laying date
available for this species

Insufficient data on CES
available for this species

LITTLE OWL
Athene noctua

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Uncertain

Status Summary

The CBC trend for Little Owl shows fluctuations but no clear trend over the long term, as does the BBS for the late 1990s. However, these trends may not be very reliable because the species is crepuscular or nocturnal and therefore not ideally suited to standard survey methods. 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 and reliable estimate for the UK. Although annual sample sizes are small, there are no trends evident in breeding performance for the species.

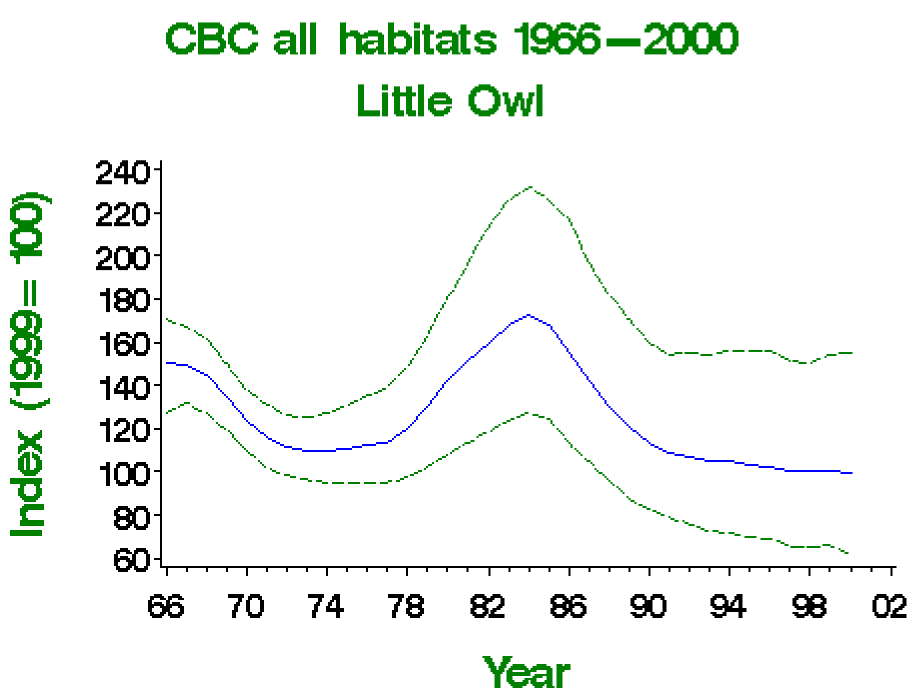
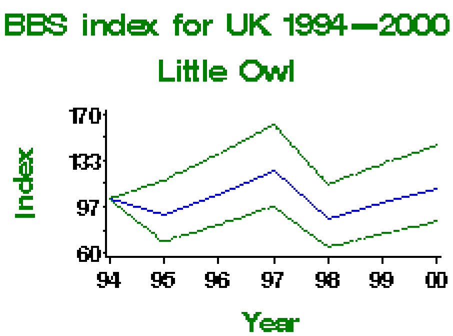


Table of population changes for Little Owl

CBC all habitats	31	1968-1999	29	-31	-57	12		
	25	1974-1999	30	-9	-39	34		

	10	1989-1999	28	-17	-39	7		
	5	1994-1999	28	-5	-22	16		
BBS UK	6	1994-2000	89	8	-17	41		
BBS England	6	1994-2000	86	11	-16	46		

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



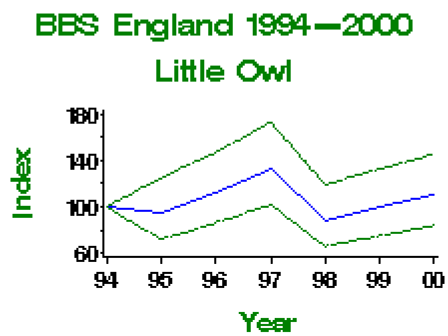
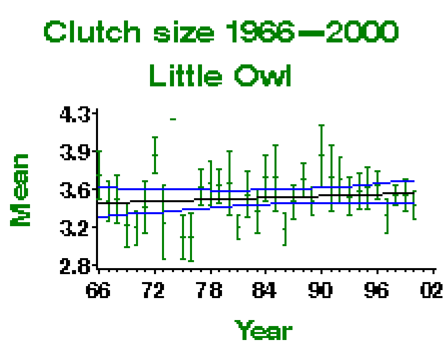
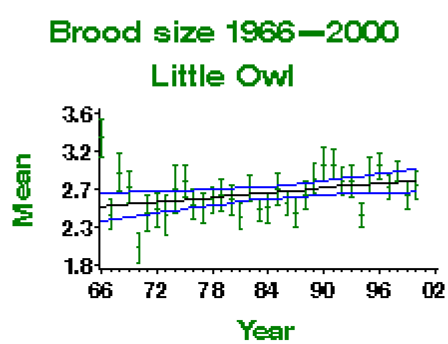
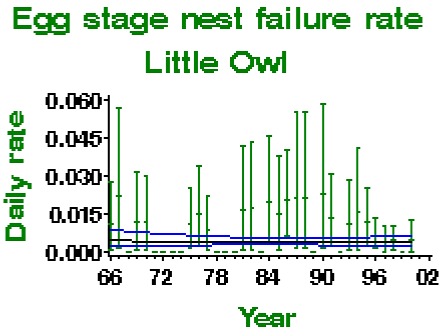


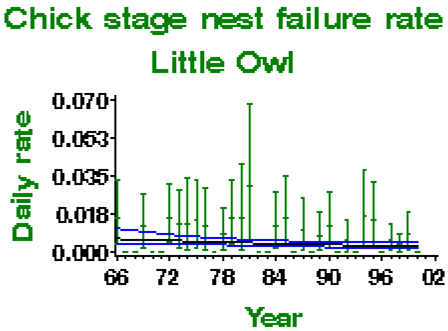
Table of productivity information for Little Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	16	None				Small sample
Brood size	31	1968-1999	36	Linear increase	2.51 chicks	2.8 chicks	0.29 chicks	
Daily failure rate (eggs)	31	1968-1999	15	None				Small sample
Daily failure rate (chicks)	31	1968-1999	19	None				Small sample









Insufficient data on laying dates available for this species

Insufficient data on CES available for this species

TAWNY OWL
Strix aluco

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Uncertain

Status Summary

As a nocturnal species, Tawny Owl is probably poorly covered by the CBC and the BBS. The non-significant long-term changes shown by both surveys may not, therefore, reflect real trends well. It may be notable that Gibbons *et al.* (1993) found evidence for a contraction of the species' UK range. The improvements in egg-stage nesting success could be linked to the declining impact of organochlorine pesticides. For the c.29-day egg stage, nest failure rates have fallen, on average, from 26% to 6%.

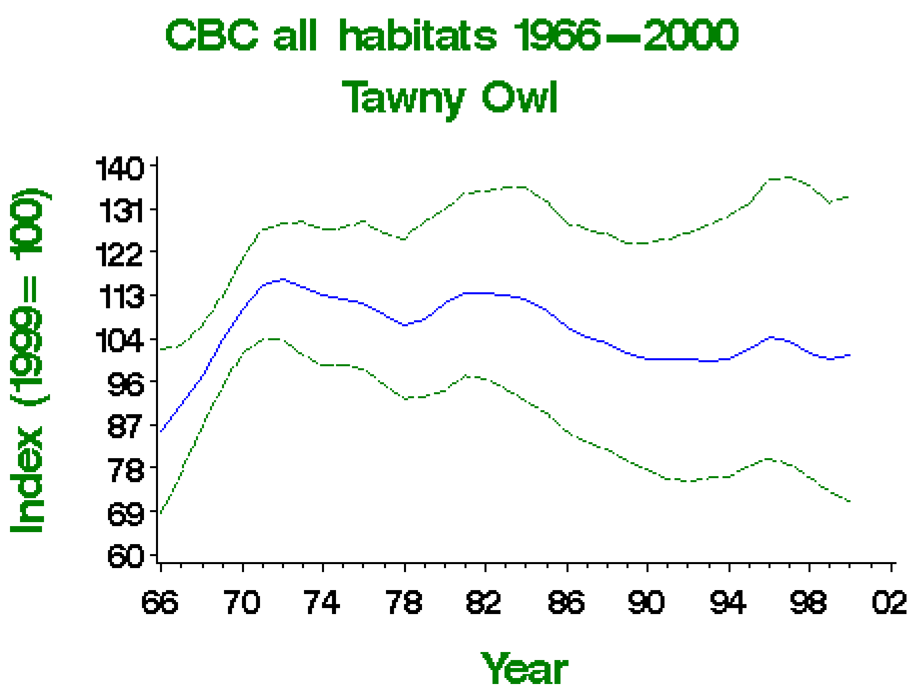
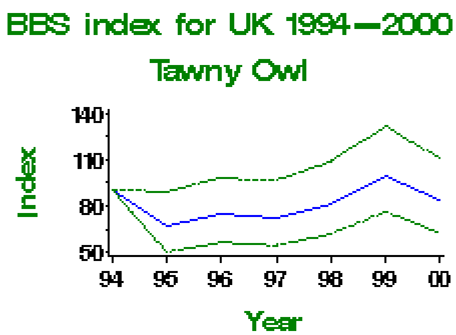


Table of population changes for Tawny Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	59	3	-29	41		
	25	1974-1999	63	-12	-32	11		
	10	1989-1999	58	-1	-17	15		

	5	1994-1999	56	0	-14	10		
BBS UK	6	1994-2000	77	-8	-31	22		
BBS England	6	1994-2000	63	-5	-32	31		

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



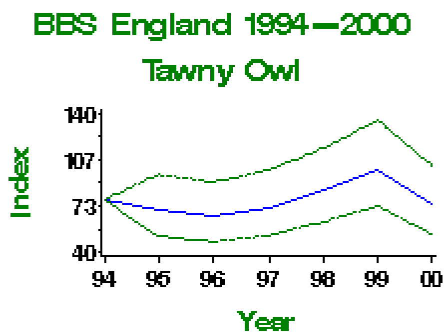
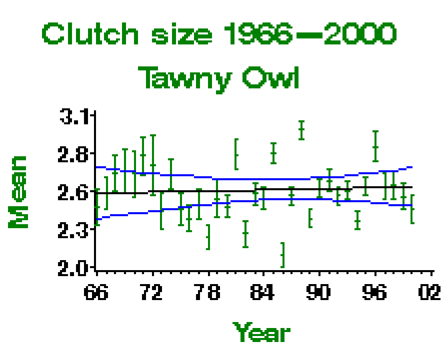
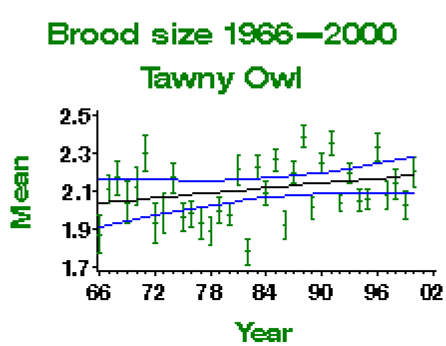
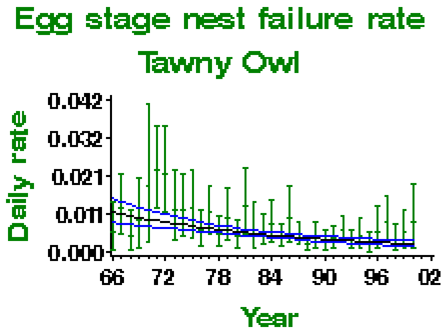


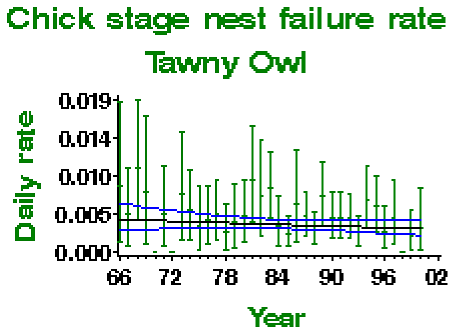
Table of productivity information for Tawny Owl

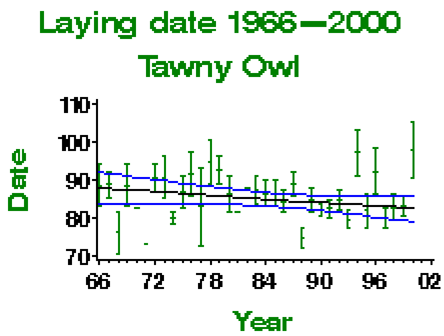
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	78	None				
Brood size	31	1968-1999	133	None				
Daily failure rate (eggs)	31	1968-1999	54	Linear decline	0.01 nests/day	0.0023 nests/day	-0.0077 nests/day	
Daily failure rate (chicks)	31	1968-1999	80	None				
Laying date	31	1968-1999	13	None				Small sample











Insufficient data on CES
available for this species

LONG-EARED OWL
Asio otus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown

Status Summary

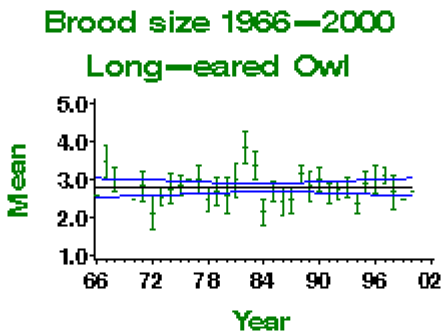
This is one of the most poorly monitored UK species, being very secretive and nocturnal. Only brood size is recorded in sufficient numbers for this species, and indicates no trend over time. Its distribution appears to have decreased markedly but for unknown reasons (**Gibbons *et al.* 1993**).

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

Table of productivity information for Long-eared Owl

Table to be added

Insufficient data on clutch size available for this species



Insufficient data on egg 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

NIGHTJAR
Caprimulgus europaeus

Conservation Listings

Table 2/Red (>=50% Distribution decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Increase

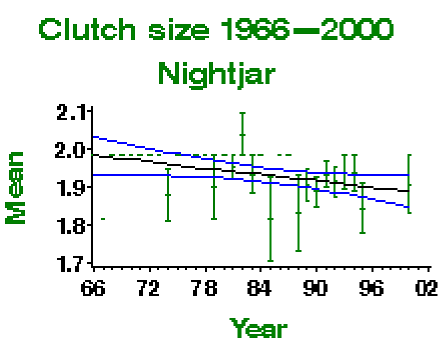
Status Summary

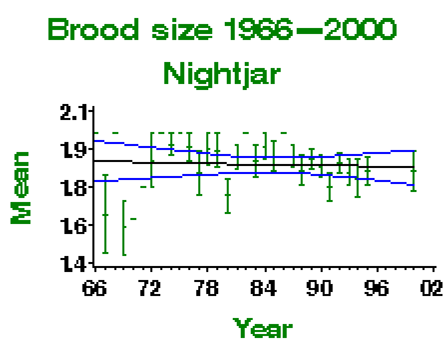
Having suffered a decline in range of more than 50% between breeding atlases, the 1992 national survey revealed a welcome increase of 50% in population size since 1981, probably due to increased availability of young forest habitat as plantations have been felled and replanted (Morris *et al.* 1994). The apparent increase in nest failure rates at the chick stage are probably an artefact of very small sample sizes in the early years. (Nest Record Scheme data for 1996-99 will soon be added to this dataset.)

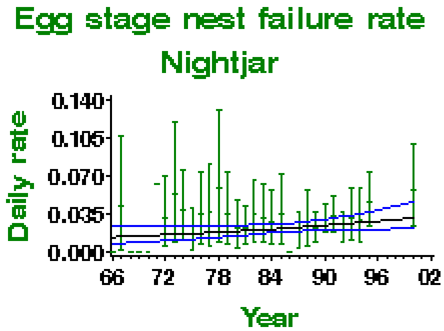
Annual breeding population estimates for this species
are not currently monitored by BTO

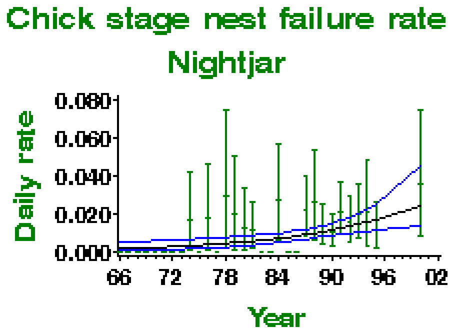
Table of productivity information for Nightjar

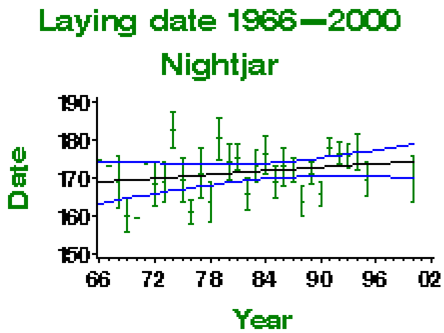
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	27	1968-1995	16	Linear decline	1.99 eggs	1.91 eggs	-0.08 eggs	Small sample
Brood size	27	1968-1995	24	None				Small sample
Daily failure rate (eggs)	27	1968-1995	20	None				Small sample
Daily failure rate (chicks)	27	1968-1995	20	Linear increase	0.0019 nests/day	0.0167 nests/day	0.0148 nests/day	Small sample
Laying date	27	1968-1995	18	None				Small sample











Insufficient data on CES
available for this species

COMMON SWIFT
Apus apus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Unknown

Status Summary

Swifts were not monitored before in the inception of the BBS and the latter scheme shows large fluctuations in abundance since 1994. A long BBS time-series may therefore have to be accrued before definitive statements can be made about population trends. Concern for Swifts, a small organisation of private individuals, is trying to promote provision of nesting sites for this species as so many are being lost to development. It is also gathering information on populations to assess whether the species should be listed in the next *Birds of Conservation Concern*.

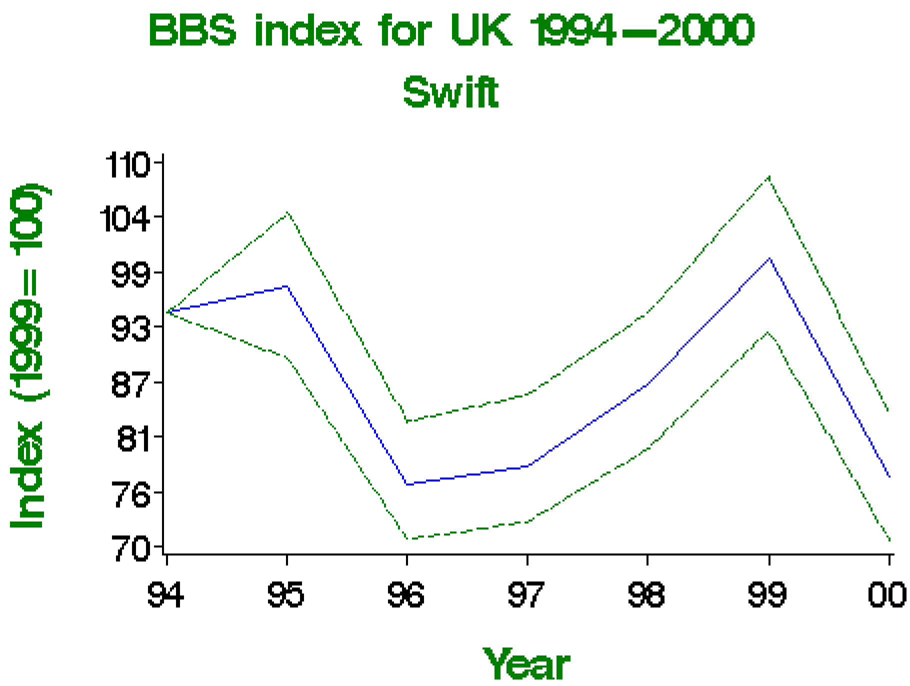
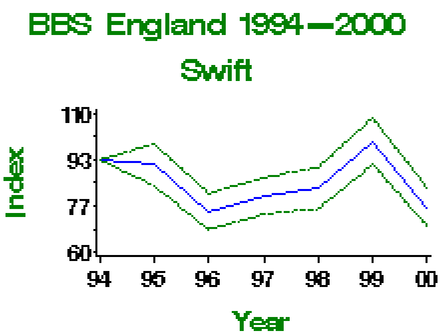


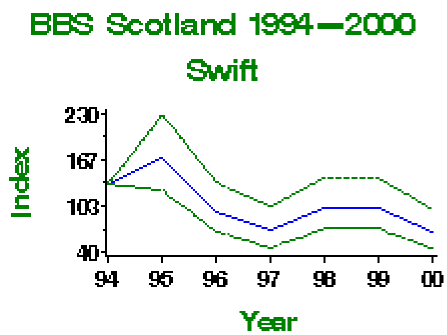
Table of population changes for Swift

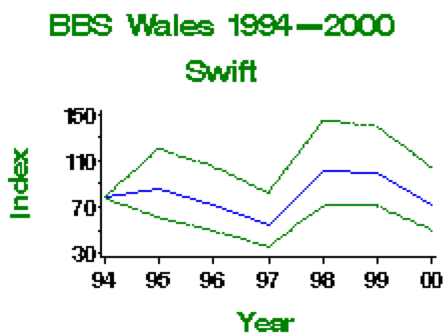
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	848	-18	-25	-11		

BBS England	**6**	**1994-2000**	**741**	**-19**	**-26**	**-11**		
BBS Scotland	**6**	**1994-2000**	**39**	**-50**	**-66**	**-26**	**(>50)**	**Small sample**
BBS Wales	**6**	**1994-2000**	**53**	**-7**	**-36**	**33**		

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







Productivity information is not currently available for this species

KINGFISHER
Alcedo atthis

Conservation Listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Fluctuating with no long-term trend

Status Summary

The Kingfisher declined along linear waterways (its principal habitat) until the mid 1980s, since when it seems to have recovered. The wide confidence interval around the WBS trend means, however, that we cannot be confident that this recovery has been complete. The decline was associated with a contraction of range in England (Gibbons *et al.* 1993).

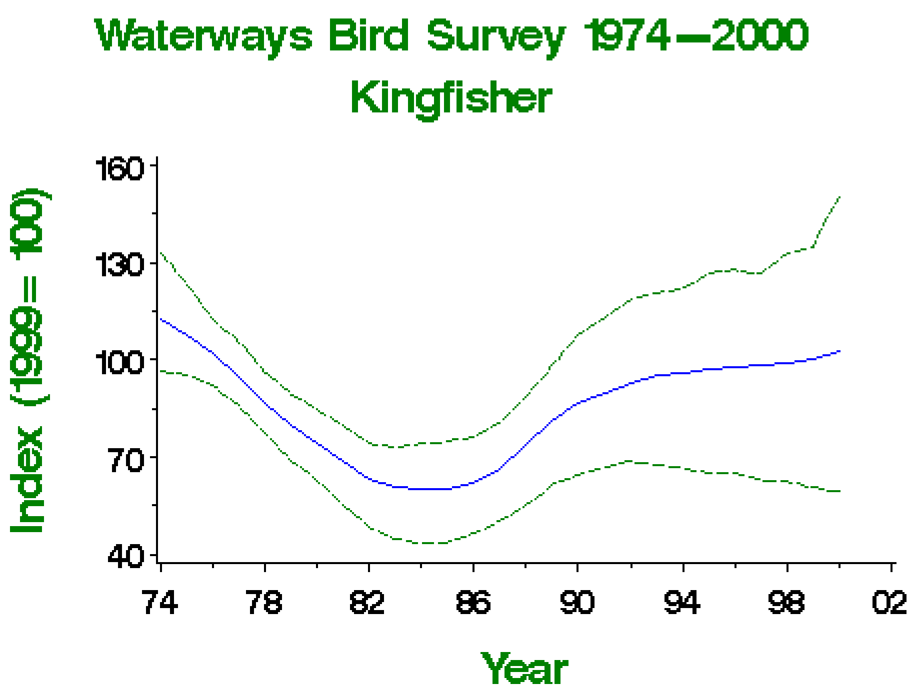


Table of population changes for Kingfisher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1975-1999	32	-7	-43	31		
	10	1989-1999	37	23	-10	58		
	5	1994-1999	37	4	-16	23		

Productivity information is not currently available for this species

GREEN WOODPECKER
Picus viridis

Conservation Listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: rapid increase

Status Summary

Green Woodpecker populations have increased steadily since 1966, except for a period of stability or shallow decline centred on the late 1970s. The BBS indicates that the increases are continuing across most of the UK, although the size of the Welsh population appears to be stable. The ecological factors underlying the increase are not yet known.

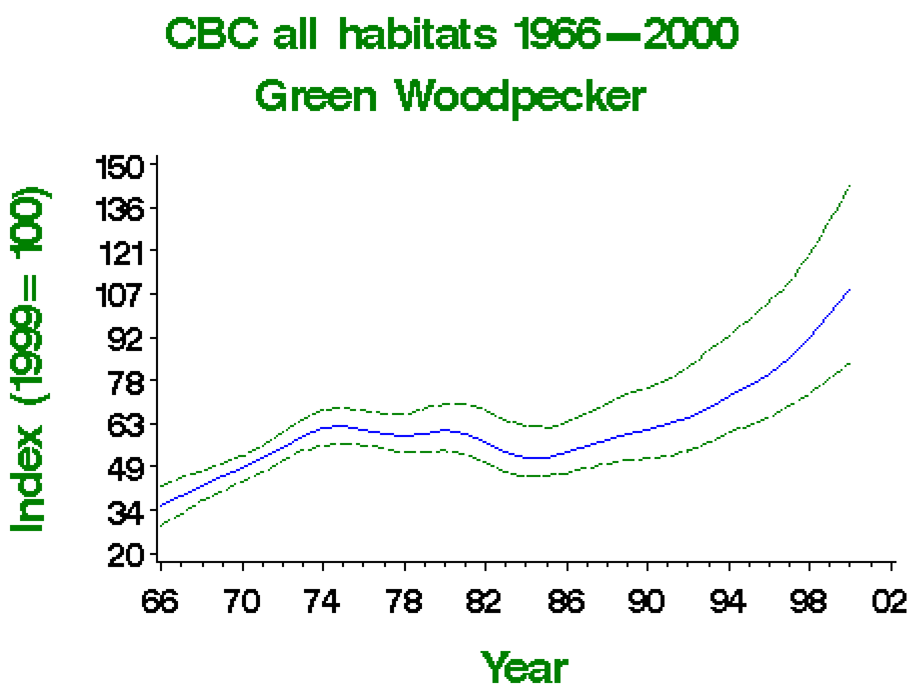
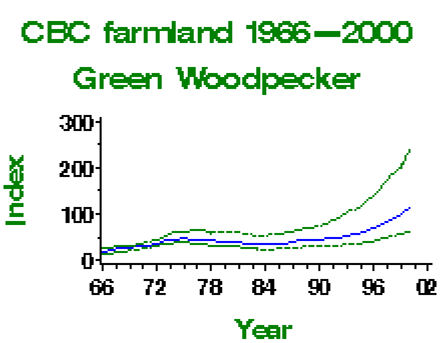


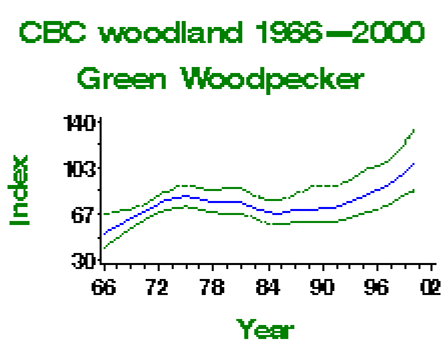
Table of population changes for Green Woodpecker

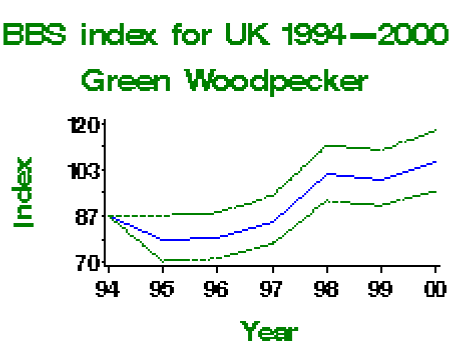
CBC all habitats	31	1968-1999	80	136	86	230		
	25	1974-1999	87	62	30	106		

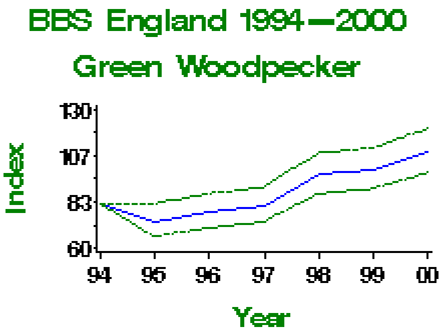
	10	1989-1999	96	67	44	96		
	5	1994-1999	103	38	23	53		
[CBC farmland]()	31	1968-1999	23	304	126	1034		
	25	1974-1999	25	118	32	279		
	10	1989-1999	29	126	59	239		
	5	1994-1999	33	72	42	119		
[CBC woodland]()	31	1968-1999	44	69	26	117		
	25	1974-1999	48	25	2	50		
	10	1989-1999	55	42	23	60		
	5	1994-1999	57	26	13	40		
[BBS UK]()	6	1994-2000	538	22	10	35		
[BBS England]()	6	1994-2000	495	31	19	46		
[BBS Wales]()	6	1994-2000	37	25	-20	94		Small sample

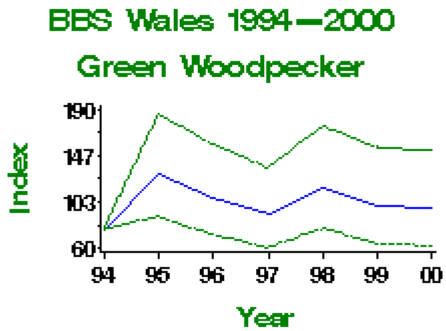
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











Productivity information is not currently available for this species

GREAT SPOTTED WOODPECKER
Dendrocopos major

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Rapid increase

Status Summary

This species increased rapidly in the 1970s and again in the late 1990s. The increase in the CBC trend in the 1990s is replicated in the BBS across most of the UK. The ecological factors underlying the increase are not yet known.

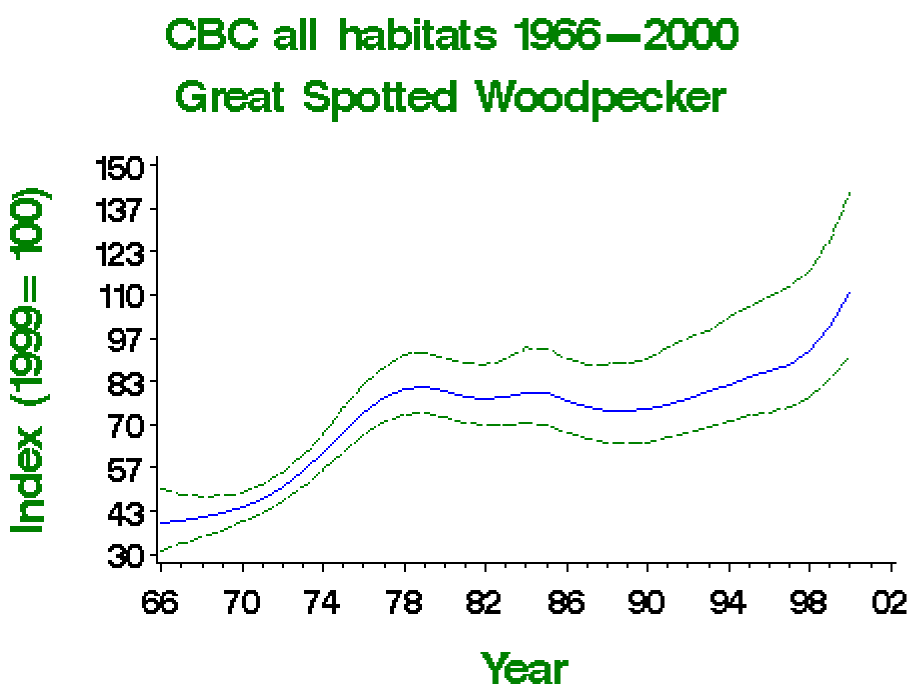
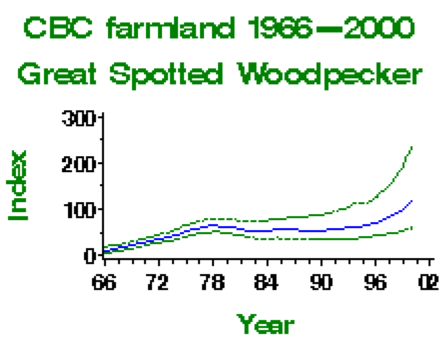


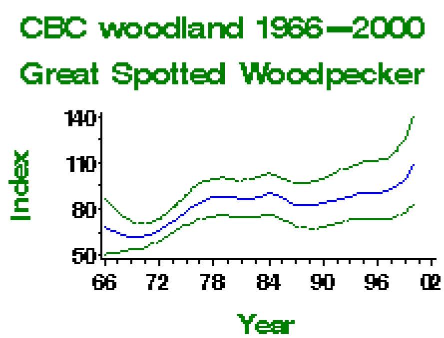
Table of population changes for Great Spotted Woodpecker

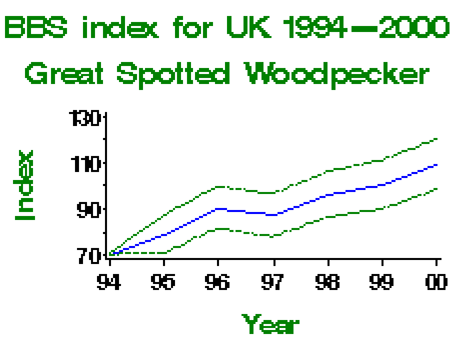
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	98	142	89	239		
	25	1974-1999	110	63	37	104		
	10	1989-1999	115	35	22	56		
	5	1994-	123	21	12	33		

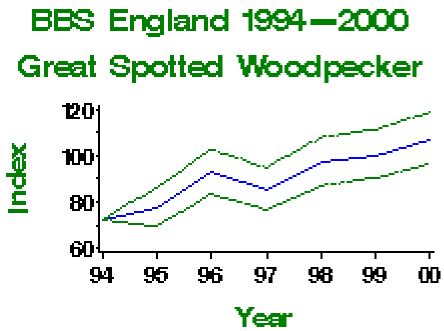
		1999						
CBC farmland	31	1968-1999	28	464	162	1068		
	25	1974-1999	31	125	39	284		
	10	1989-1999	34	86	40	147		
	5	1994-1999	35	59	32	83		
CBC woodland	31	1968-1999	58	57	14	118		
	25	1974-1999	65	35	6	66		
	10	1989-1999	74	20	6	36		
	5	1994-1999	79	11	2	20		
BBS UK	6	1994-2000	576	55	40	71		
BBS England	6	1994-2000	515	48	33	64		
BBS Wales	6	1994-2000	42	49	1	120		Small sample

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









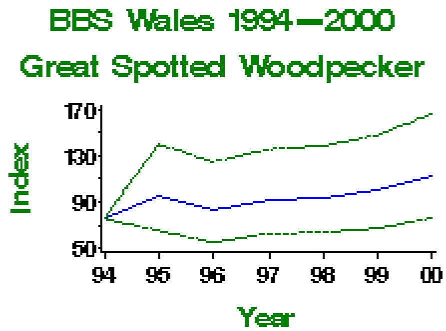
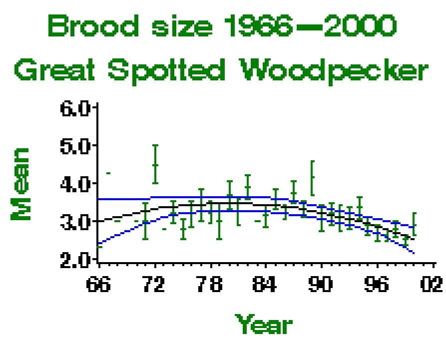


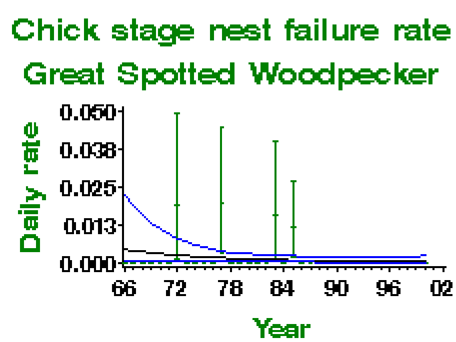
Table of productivity information for Great Spotted Woodpecker

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	15	Curvilinear	3.12 chicks	2.6 chicks	-0.52 chicks	Small sample
Daily failure rate (chicks)	31	1968-1999	16	None				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

LESSER SPOTTED WOODPECKER
Dendrocopos minor

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Rapid 25-year decline

Status Summary

The Lesser Spotted Woodpecker has declined rapidly and significantly since around 1980, following a more shallow increase. Although monitoring through the CBC is limited by census plot sample size, a range contraction (Gibbons *et al.* 1993) suggests that the UK-wide pattern is similar. Reductions in the area of mature broadleaved woodland, losses of non-woodland trees such as elms, increases in woodland isolation and reductions in the occurrence of dead wood in woodland are candidate causes for the decline (Vanhinsbergh *et al.* 2001).

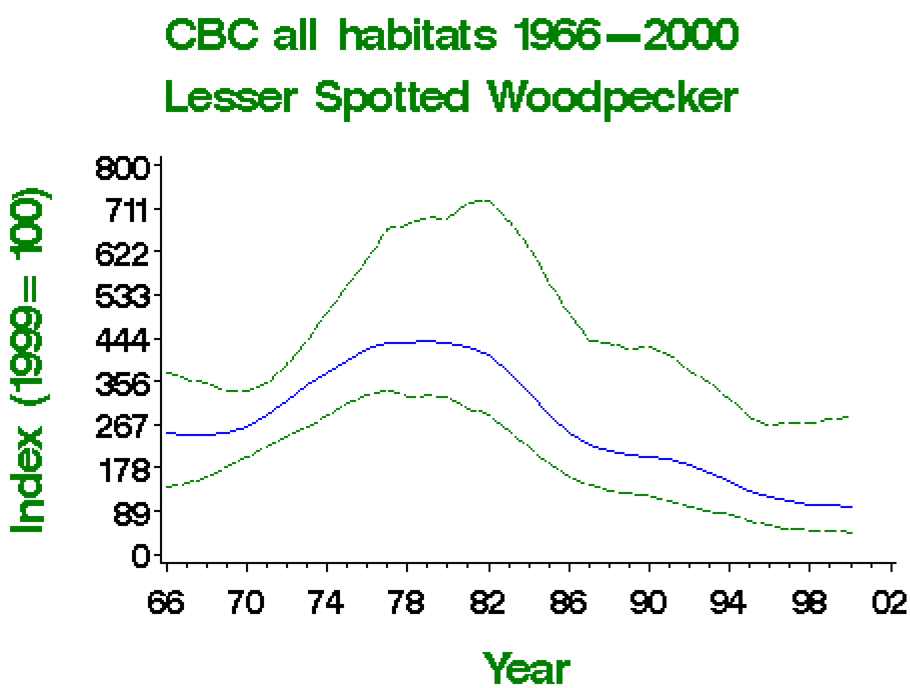


Table of population changes for Lesser Spotted Woodpecker

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
		1994-						Small

	5	1999	9	-33	-56	0		sample

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

Productivity information is not currently available for this species

WOODLARK
Lullula arborea

Conservation Listings

Table 2/Red (>=50% Distribution decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Increase

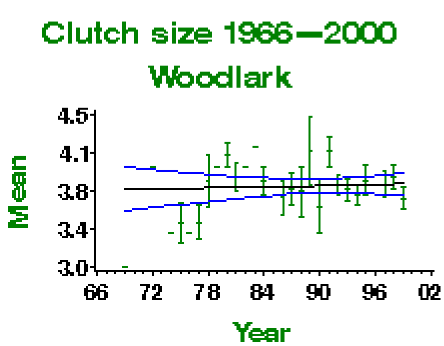
Status Summary

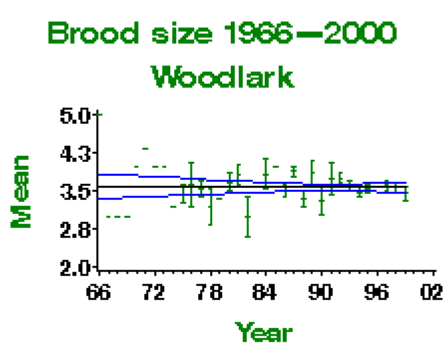
Sitters *et al.* (1996) report that the population of this rare breeding bird increased from c.250 pairs in 1986 to c.600 pairs in 1993, probably helped by recent mild winters and increased habitat availability due to forest storm damage, forest restocking, and heathland management. A national survey in 1997 showed that the population had increased further to c.1550 pairs (Wotton & Gillings 2000; see http://www.bto.org/research/archive/arch3.htm). Strong trends are not generally evident in breeding performance, although failure rates at the egg stage (17 days, comprising 14 days incubation + 3 days laying) have declined from 43% to 23% between 1975 and 1999 (extrapolation before 1975 is not reliable because of paucity of data).

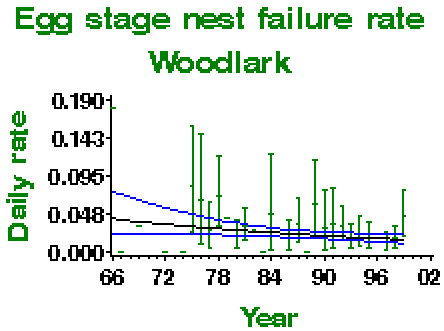
Annual breeding population changes for this species
are not currently monitored by BTO

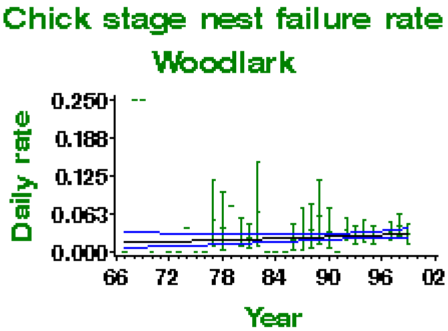
Table of productivity information for Woodlark

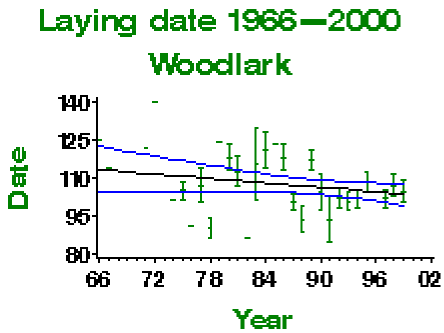
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	15	None				Small sample
Brood size	31	1968-1999	23	None				Small sample
Daily failure rate (eggs)	31	1968-1999	17	Linear decline	0.0397 nests/day	0.0153 nests/day	-0.0244 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	24	None				Small sample
Laying date	31	1968-1999	16	None				Small sample











Insufficient data on CES
available for this species

SKYLARK
Alauda arvensis

Conservation Listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long term trend

UK: Rapid decline

Status Summary

The Skylark declined rapidly from the mid-1970s until the mid-1980s, when the rate of decline slowed; the BBS shows, however, that the decline is continuing 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 available area of stubbles (**Wilson *et al.* 1997**, **Donald & Vickery 2000**). Breeding success per attempt has increased during the decline (**Chamberlain & Crick 1999**, **Siriwardena *et al.* 2000b**). For a general review of the effects of agricultural practice on Skylark population trends see **Chamberlain & Siriwardena (2000)**.

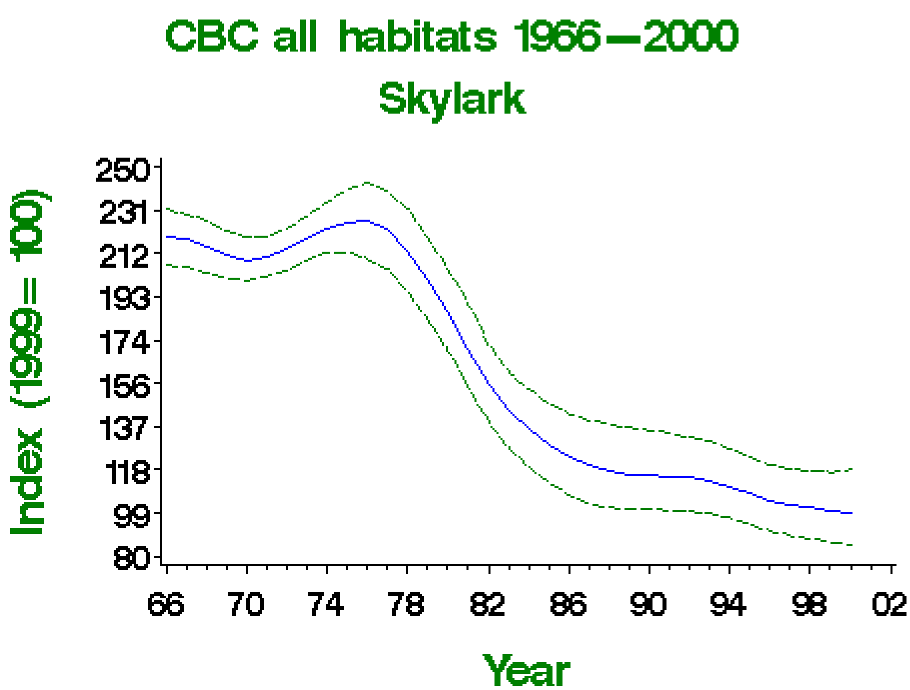
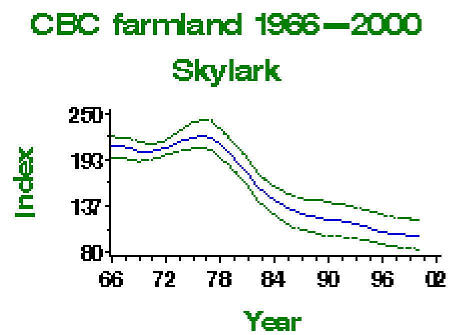


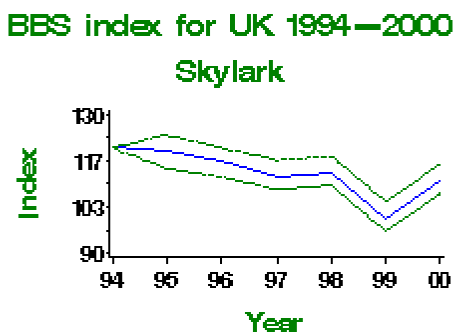
Table of population changes for Skylark

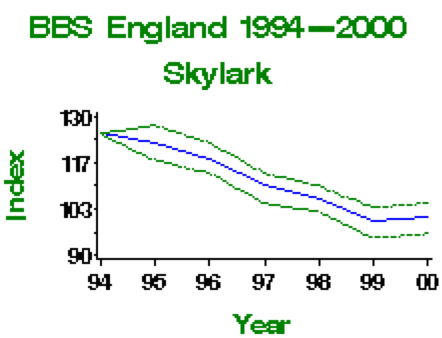
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	120	-54	-61	-45	>50	
	25	1974-1999	120	-55	-61	-48	>50	

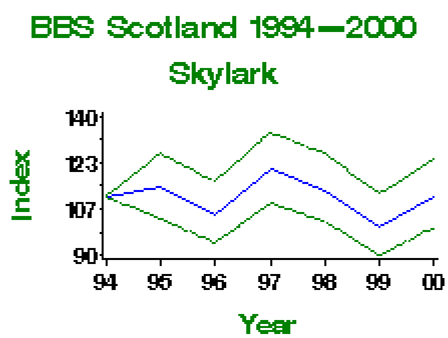
	10	1989-1999	105	-14	-21	-5		
	5	1994-1999	105	-9	-15	-2		
CBC farmland	31	1968-1999	85	-52	-59	-40	>50	
	25	1974-1999	83	-54	-60	-44	>50	
	10	1989-1999	80	-18	-25	-9		
	5	1994-1999	80	-10	-16	-4		
BBS UK	6	1994-2000	1382	-8	-11	-4		
BBS England	6	1994-2000	1075	-19	-23	-16		
BBS Scotland	6	1994-2000	191	0	-10	12		
BBS Wales	6	1994-2000	85	1	-13	18		
BBS N.Ireland	6	1994-2000	29	143	75	239		Small sample

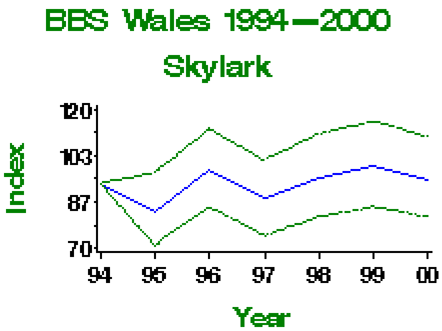
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











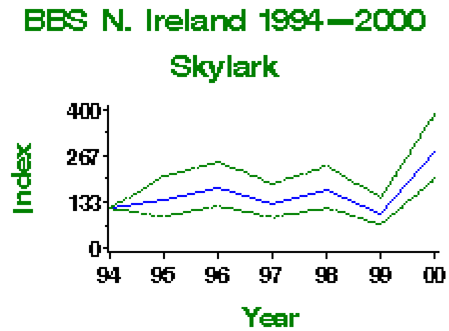
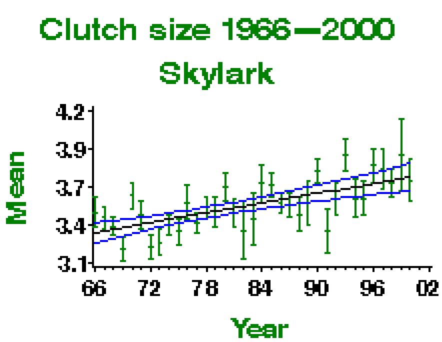
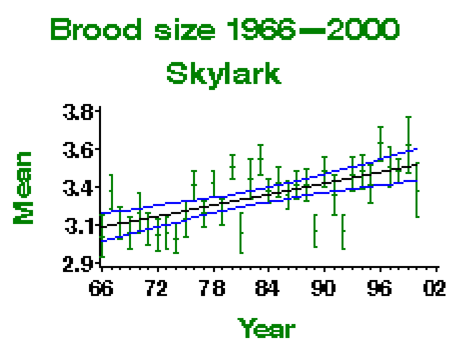
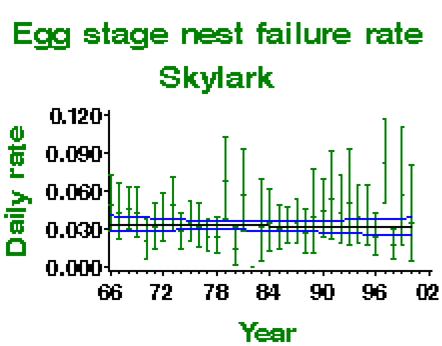


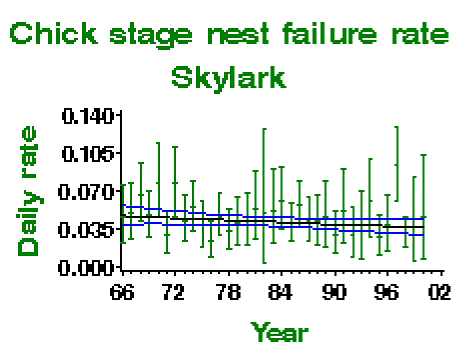
Table of productivity information for Skylark

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	42	Linear increase	3.35 eggs	3.72 eggs	0.37 eggs	
Brood size	31	1968-1999	73	Linear increase	3.13 chicks	3.47 chicks	0.34 chicks	
Daily failure rate (eggs)	31	1968-1999	51	None				
Daily failure rate (chicks)	31	1968-1999	60	None				
Laying date	31	1968-1999	22	Curvilinear	day 146	day 149	3 days	Small sample

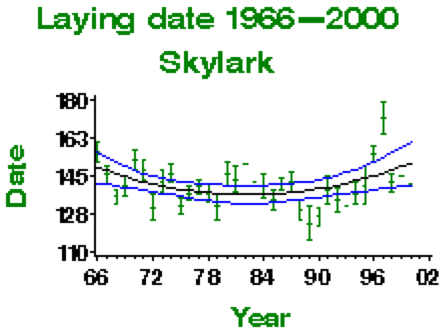








Insufficient data on CES available for this species


Laying date 1966—2000
Skylark
Date
180
163
145
128
110
66
72
78
84
90
96
02
Year

SWALLOW
Hirundo rustica

Conservation Listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Fluctuations with recent shallow increase

Status Summary

The Amber listing of the Swallow was based on a statistical artefact that is avoided by the techniques now used with CBC data. The present CBC trend suggests that numbers are actually on the increase. Nevertheless, the species is probably not censused ideally by the CBC because of its semi-colonial habits, and some conservationists remain concerned about it. The BBS, however, also suggests that Swallow populations are currently increasing. Aspects of breeding performance have shown small contrasting changes, with slight increases in the daily nest failure rate at the egg stage in the 1980s and at the nestling stage in the 1990s. Detailed analysis has shown that population fluctuations are most strongly related to losses on their wintering grounds (Baillie & Peach 1992). The trend towards earlier laying can be partially explained by recent climate change (Crick & Sparks 1999).

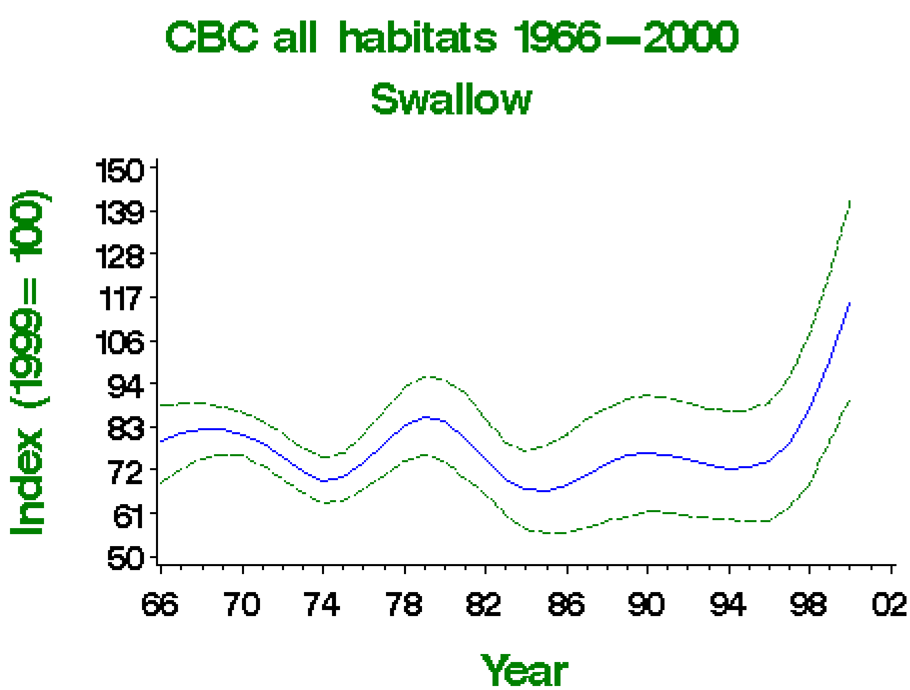
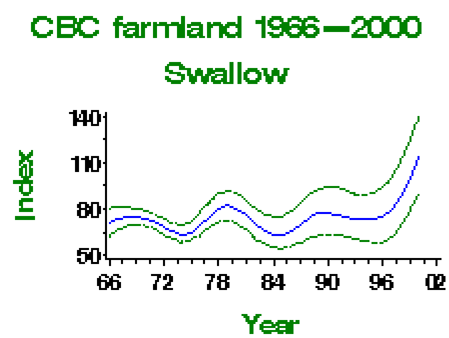


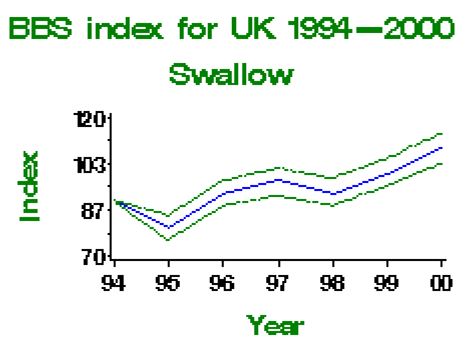
Table of population changes for Swallow

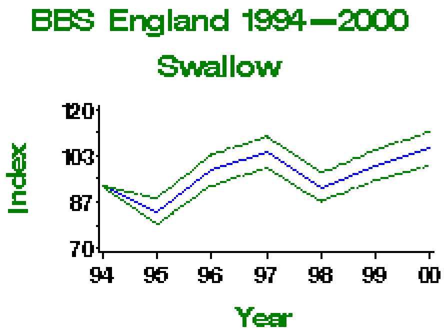
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	78	21	-6	52		
	25	1974-1999	80	44	15	73		
	10	1989-	78	31	11	52		

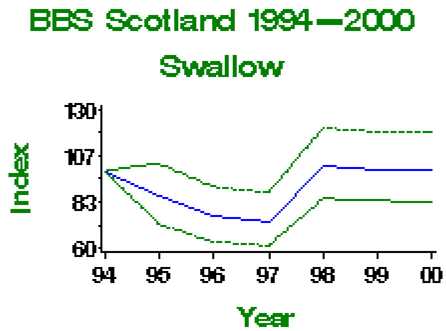
		1999						
	5	1994-1999	77	38	24	53		
CBC farmland	31	1968-1999	62	34	4	76		
	25	1974-1999	63	57	26	94		
	10	1989-1999	64	30	10	52		
	5	1994-1999	63	37	22	53		
BBS UK	6	1994-2000	1407	21	15	27		
BBS England	6	1994-2000	1089	15	8	21		
BBS Scotland	6	1994-2000	131	1	-16	20		
BBS Wales	6	1994-2000	125	41	17	69		
BBS N.Ireland	6	1994-2000	53	67	23	126		

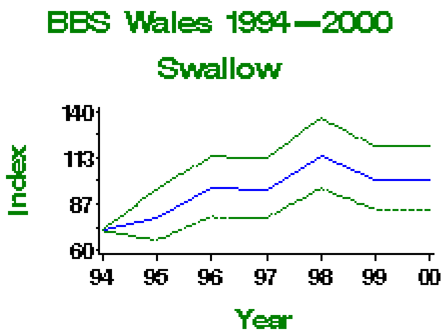
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











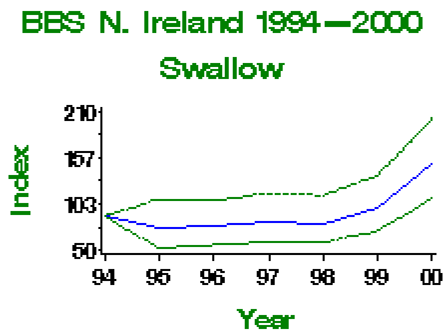
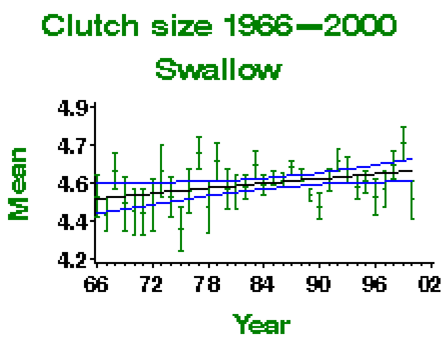
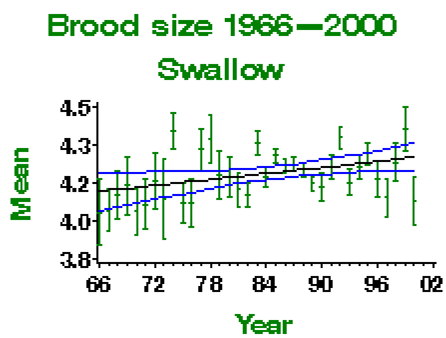
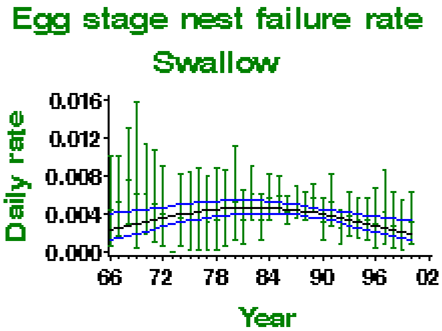


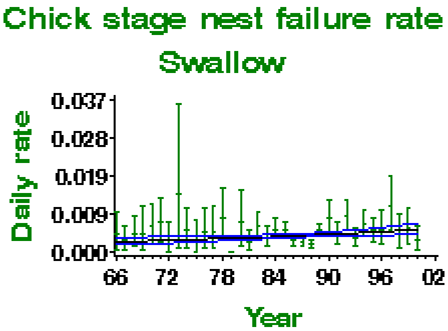
Table of productivity information for Swallow

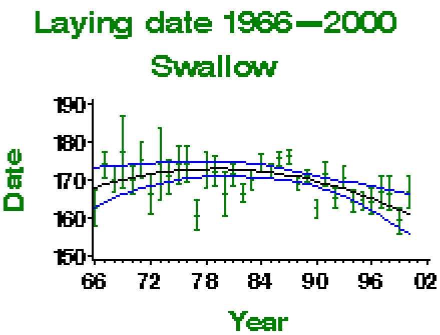
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	183	Linear increase	4.49 eggs	4.61 eggs	0.12 eggs	
Brood size	31	1968-1999	297	Linear increase	4.12 chicks	4.27 chicks	0.15 chicks	
Daily failure rate (eggs)	31	1968-1999	228	Curvilinear	0.0027 nests/day	0.0022 nests/day	-0.0005 nests/day	
Daily failure rate (chicks)	31	1968-1999	201	Linear increase	0.0025 nests/day	0.0052 nests/day	0.0027 nests/day	
Laying date	31	1968-1999	92	Curvilinear	day 170	day 162	-8 days	











Insufficient data on CES available for this species

SAND MARTIN
Riparia riparia

Conservation Listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Fluctuating with no long-term trend

Status Summary

New analytical techniques now allow long-term population trends to be produced for Sand Martin for the first time. The WBS shows a stable population with some fluctuations, but movements of whole colonies may cause problems with the survey and may have obscured the true long-term trends. Winter rainfall in the species' trans-Saharan wintering grounds are believed to affect annual survival and thus abundance in the following breeding season.

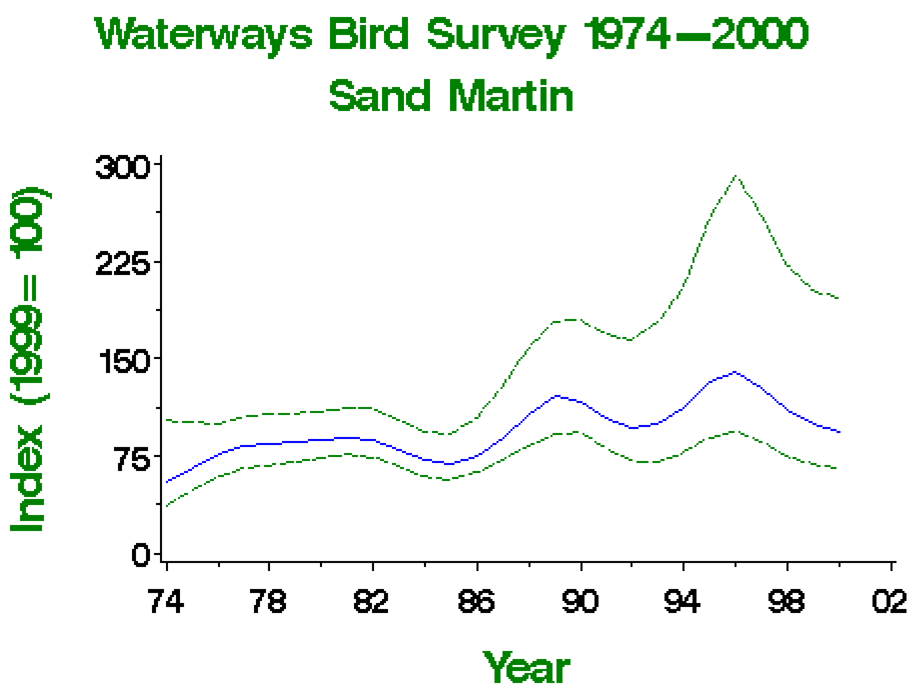
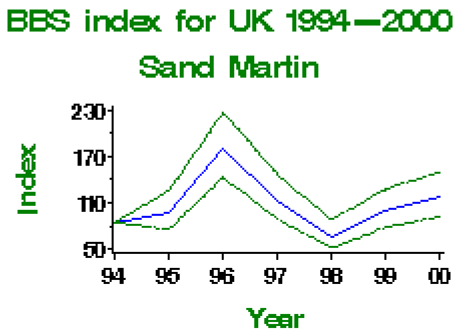


Table of population changes for Sand Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1975-1999	18	53	-5	228		Small sample
	10	1989-1999	24	-17	-44	38		
	5	1994-1999	27	-11	-24	9		
BBS UK	6	1994-2000	96	39	9	77		
BBS		1994-						

England	6	2000	65	113	64	177		

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



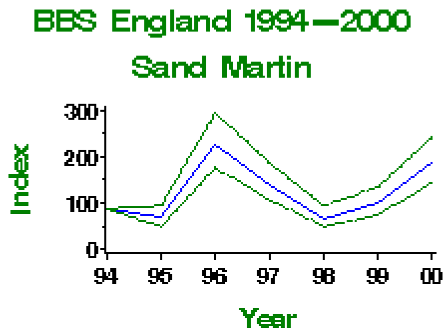
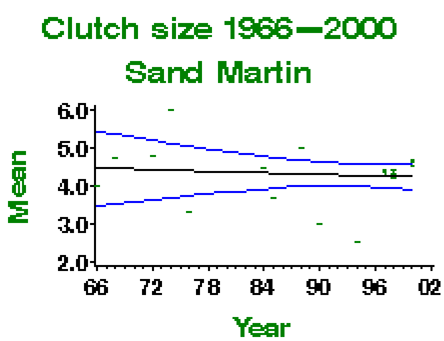
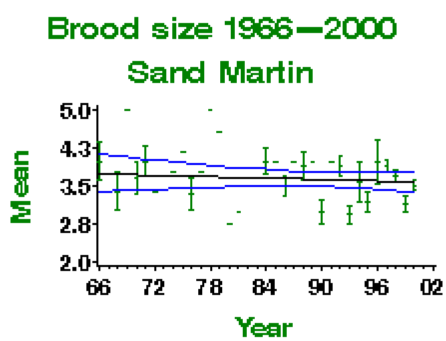


Table of productivity information for Sand Martin

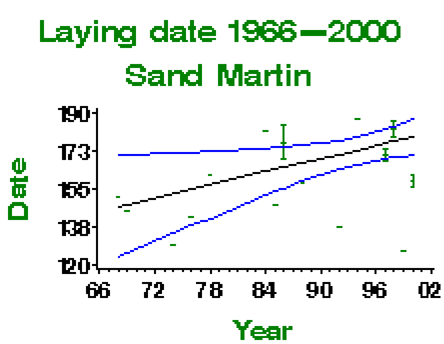
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	11	None				Small sample
Brood size	31	1968-1999	12	None				Small sample
Laying date	31	1968-1999	10	Linear increase	day 147	day 178	31 days	Small sample





Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species



Insufficient data on CES available for this species

HOUSE MARTIN
Delichon urbica

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Stable

Status Summary

The House Martin's colonial habits and tendency to nest in human settlements mean that it is not censused well by the CBC, so the stability apparent in the CBC trend should not be regarded as definitive. The BBS shows fluctuations or a shallow increase in recent years.

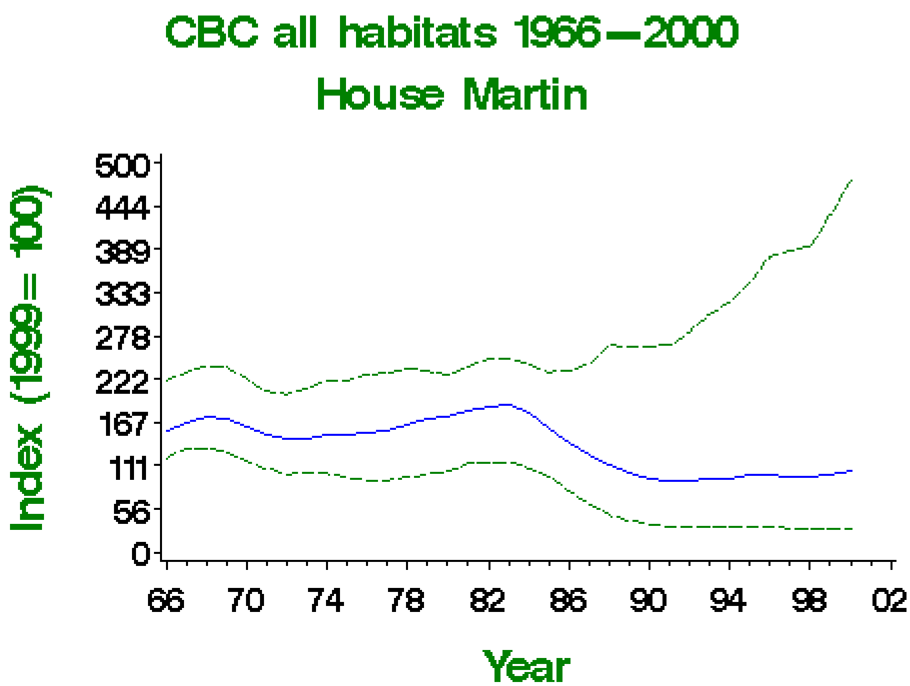
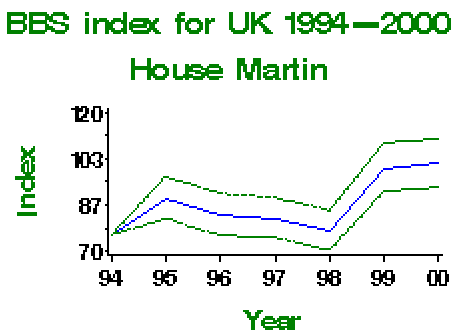


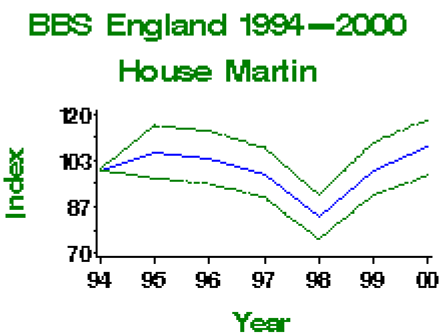
Table of population changes for House Martin

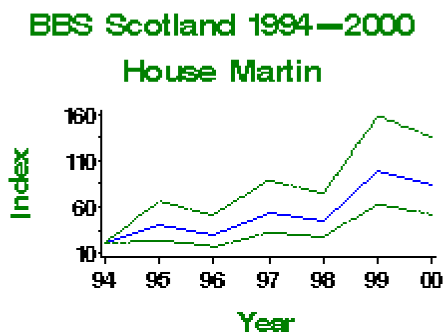
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	22	-42	-81	92		
	25	1974-1999	22	-33	-74	150		
	10	1989-1999	21	-2	-45	130		
	5	1994-1999	21	5	-23	60		
BBS UK	6	1994-2000	721	34	23	46		

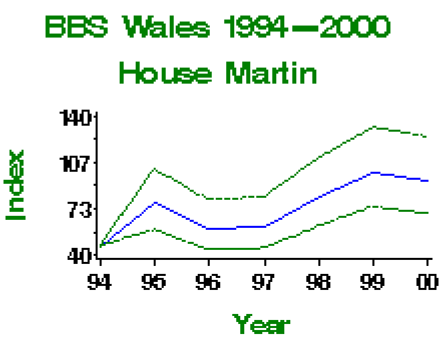
BBS England	6	1994-2000	577	8	-2	18		
BBS Scotland	6	1994-2000	43	310	154	561		Small sample
BBS Wales	6	1994-2000	72	100	50	168		
BBS N.Ireland	6	1994-2000	24	129	28	313		Small sample

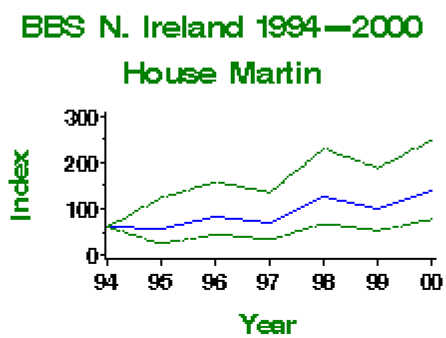
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











Productivity information is not currently available for this species

TREE PIPIT
Anthus trivialis

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown
Lowland England: Rapid decline

Status Summary

Tree Pipits occur in greatest abundance in Wales, north England and Scotland, and thus the marked CBC decline may reflect the range contraction that has occurred in central and south-east England (Gibbons *et al.* 1993). This is suggested by the contrasting patterns of change shown by the BBS in Scotland and England. While populations increased in Scotland during the mid to late 1990s, English populations declined substantially. Improvements have occurred in breeding performance with a substantial increase in brood size and a decline in failure rates over the 17-day egg stage (13 days incubation + 4 days laying) from 55% to 15%. The causes of the population decline are unclear, but may be linked to changing forest structure (with maturity) and increased grazing pressure in woodland (Vanhinsbergh *et al.* 2001).

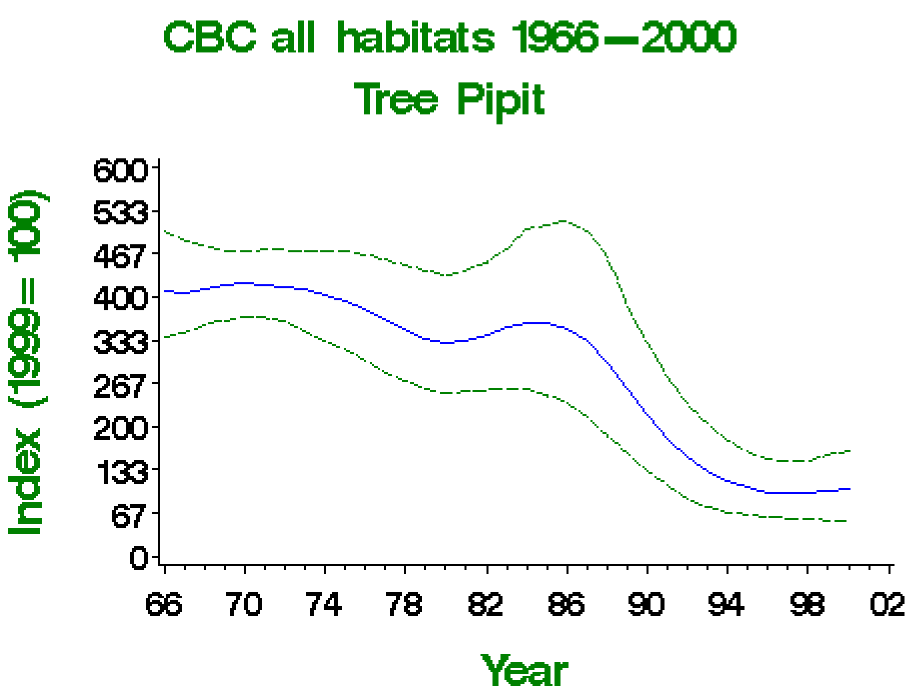
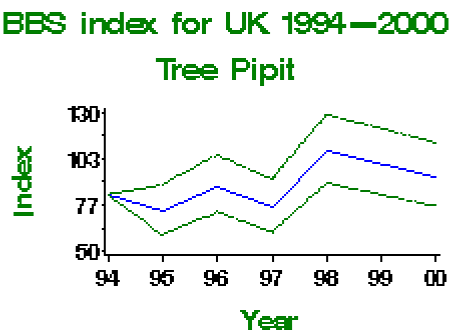


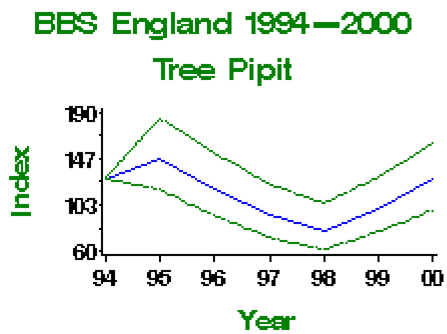
Table of population changes for Tree Pipit

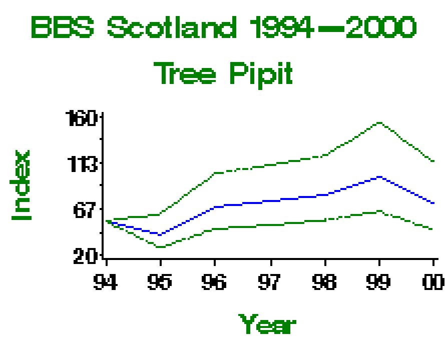
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	33	-76	-87	-62	>50	Unrepresentative
	25	1974-1999	31	-75	-86	-61	>50	Unrepresentative

	10	1989-1999	20	-61	-76	-47	>50	Unrepresentative, small sample
	5	1994-1999	19	-14	-44	12		Unrepresentative, small sample
BBS UK	6	1994-2000	124	12	-8	36		
BBS England	6	1994-2000	66	-1	-23	26		
BBS Scotland	6	1994-2000	28	31	-17	107		Small sample
BBS Wales	6	1994-2000	30	6	-28	55		Small sample

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







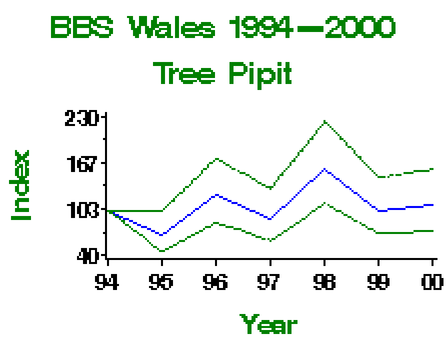
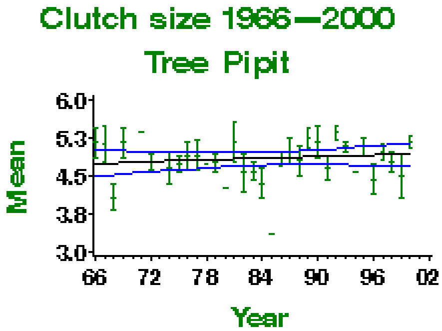
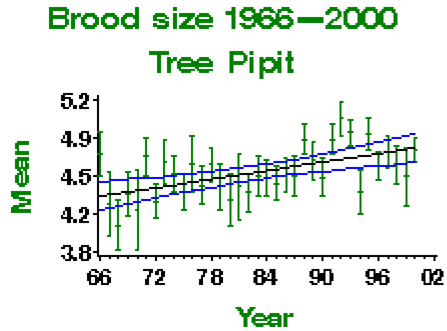
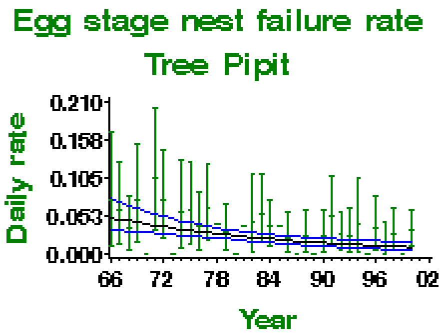


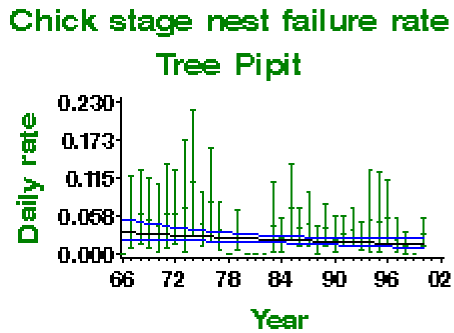
Table of productivity information for Tree Pipit

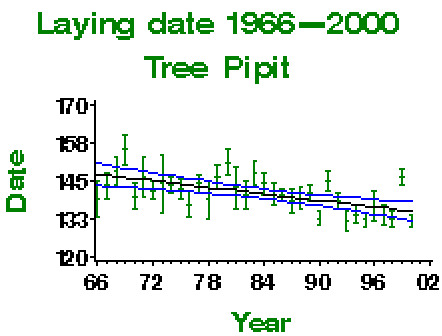
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	28	Linear increase	4.34 chicks	4.75 chicks	0.41 chicks	Small sample
Daily failure rate (eggs)	31	1968-1999	11	Linear decline	0.0457 nests/day	0.0096 nests/day	-0.0361 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	17	None				Small sample
Laying date	31	1968-1999	17	Linear decline	day 147	day 135	-12 days	Small sample











Insufficient data on CES
available for this species

MEADOW PIPIT
Anthus pratensis

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown
Lowland England: Moderate decline

Status Summary

Key Meadow Pipit habitats such as moorland are not covered well by the CBC, but the decline in the CBC trend since the mid 1970s may warrant conservation attention, especially because it was accompanied by a range contraction from lowland England (Gibbons *et al.* 1993). Meadow Pipits are partial migrants and conditions on the species' Iberian wintering grounds have been linked to the decline, as have losses of marginal land from breeding habitats (Gibbons *et al.* 1993). Nest failure rates at the 12-day nestling stage have declined from 30% to 13%, which may reflect the loss of birds from suboptimal areas. Changes in laying date are related to climate change (Crick & Sparks 1999).

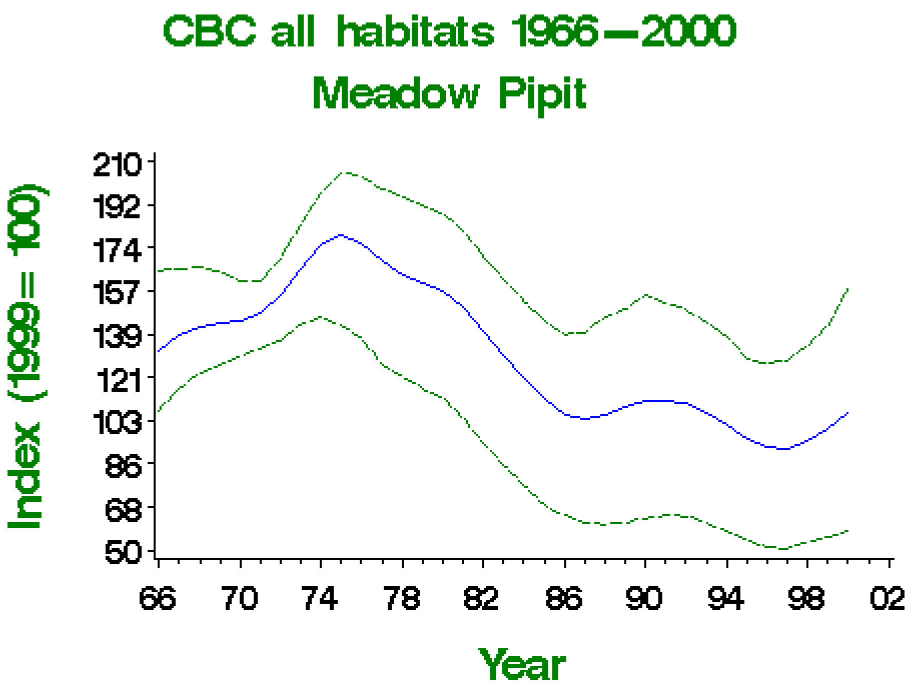
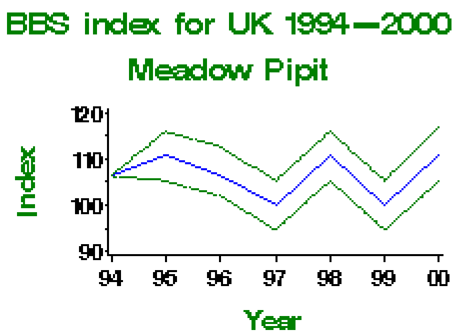


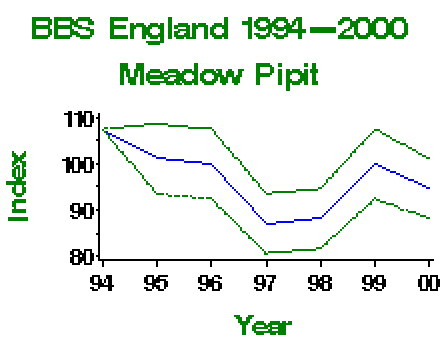
Table of population changes for Meadow Pipit

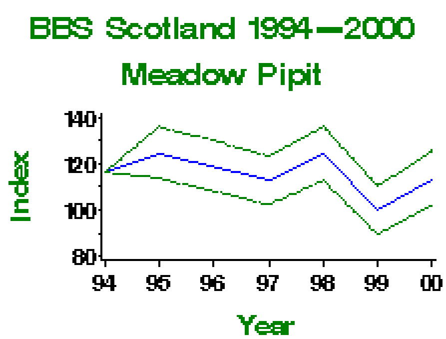
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	44	-30	-63	9		Unrepresentative
	25	1974-1999	45	-43	-66	-21	>25	Unrepresentative
	10	1989-1999	37	-8	-33	14		Unrepresentative

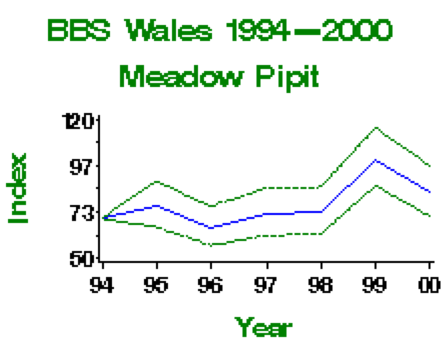
	5	1994-1999	37	-1	-24	19		Unrepresentative
BBS UK	6	1994-2000	620	4	-1	10		
BBS England	6	1994-2000	304	-12	-18	-6		
BBS Scotland	6	1994-2000	201	-3	-12	8		
BBS Wales	6	1994-2000	69	19	2	38		
BBS N.Ireland	6	1994-2000	44	126	76	191		Small sample

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









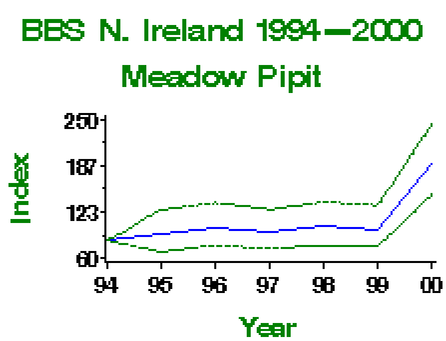
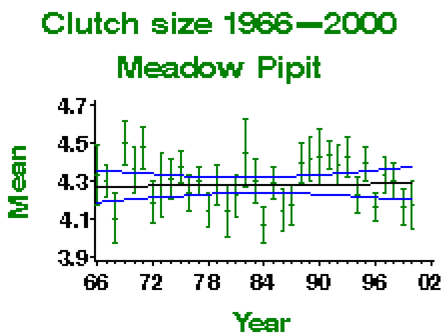
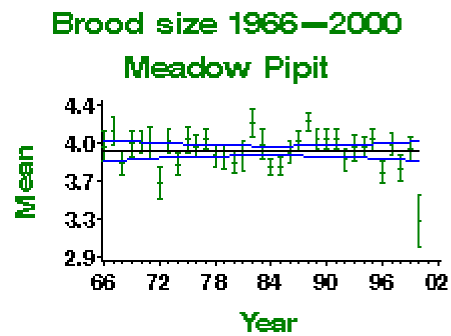


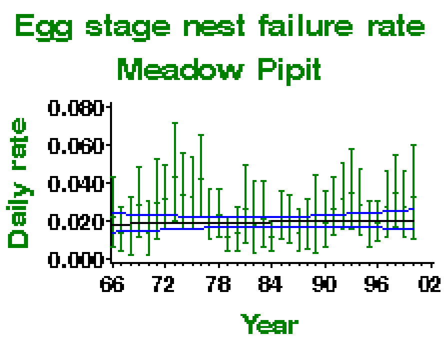
Table of productivity information for Meadow Pipit

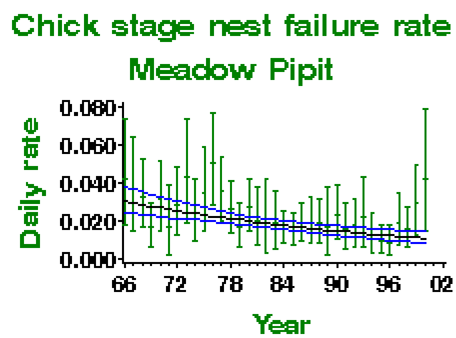
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	40	None				
Brood size	31	1968-1999	76	None				

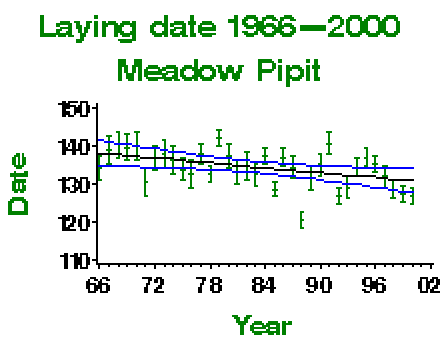
Daily failure rate (eggs)	31	1968-1999	51	None				
Daily failure rate (chicks)	31	1968-1999	70	Linear decline	0.0287 nests/day	0.0112 nests/day	-0.0175 nests/day	
Laying date	31	1968-1999	43	Linear decline	day 138	day 131	-7 days	











Insufficient data on CES available for this species

YELLOW WAGTAIL
Motacilla flava

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Probable decline
Waterways: Rapid decline

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 appear to have been in decline since the early 1980s, but the reduction in the CBC index is not significant and that in the WBS index may not be representative of the population as a whole. Gibbons *et al.* (1993) identified a concurrent range contraction towards a core area in central England. BBS results suggest that the decline may be continuing; farmland drainage and the conversion of pasture to arable land have been cited as potential causes (Gibbons *et al.* 1993). Although sample sizes are small, there has been a significant reduction in brood size over the past 30 years.

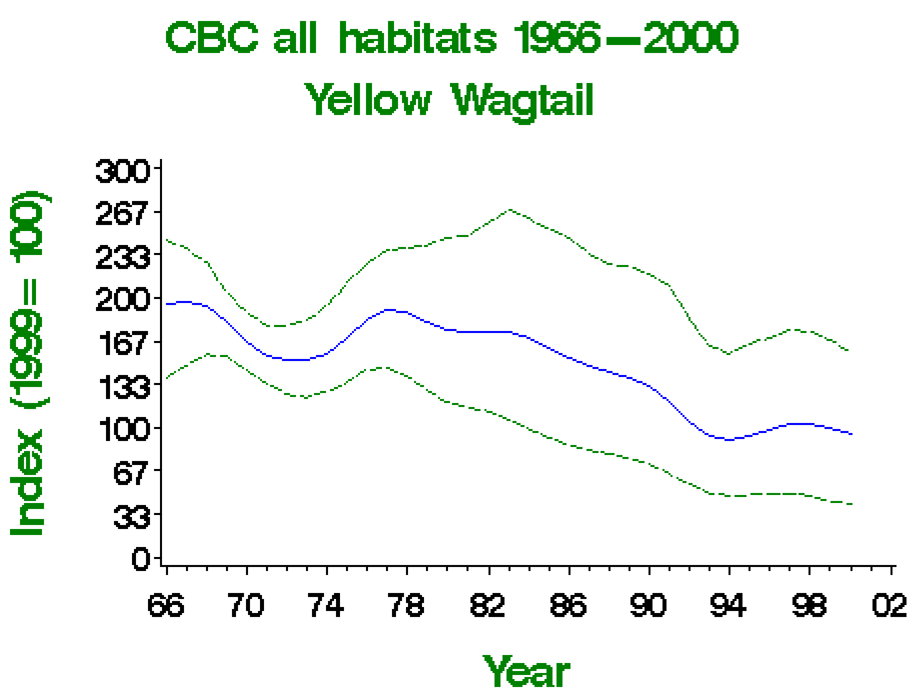
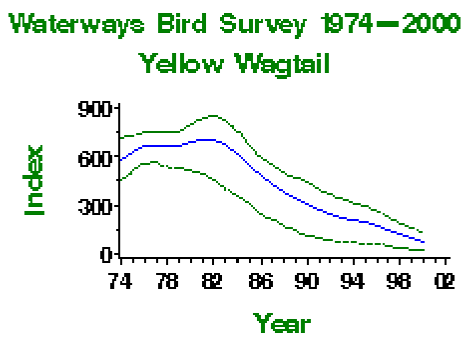


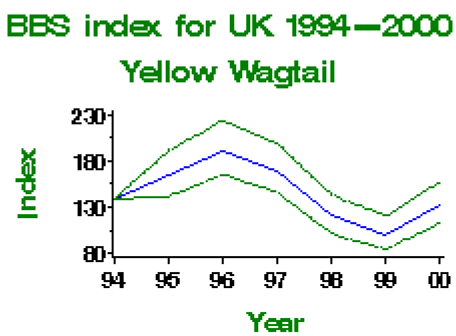
Table of population changes for Yellow Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	27	-48	-78	-11	>25	
	25	1974-1999	26	-36	-72	9		
	10	1989-1999	17	-28	-55	3		Small sample

	5	1994-1999	16	11	-27	49		Small sample
WBS waterways	24	1975-1999	21	-84	-95	-74	>50	
	10	1989-1999	17	-71	-83	-58	>50	Small sample
	5	1994-1999	15	-53	-69	-36	>50	Small sample
BBS UK	6	1994-2000	157	-5	-19	13		
BBS England	6	1994-2000	154	-4	-19	14		

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





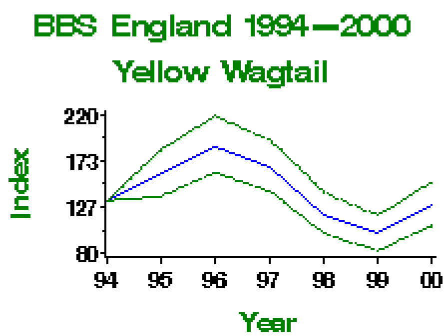
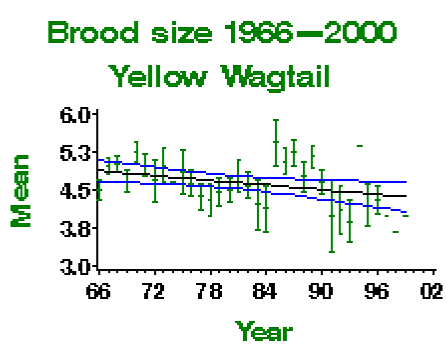


Table of productivity information for Yellow Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	13	Linear decline	4.86 chicks	4.38 chicks	-0.48 chicks	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

GREY WAGTAIL
Motacilla cinerea

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Uncertain
Linear Waterways: Moderate decline

Status Summary

Grey Wagtail populations are densest in northern and western Britain, where the CBC and WBS do not provide representative coverage, but the WBS covers the species' habitat very well. The trends shown by both surveys are very similar to those for Pied Wagtail, notably featuring a rapid decline through the 1970s, but subsequently remaining stable. The similarity in the trends suggests that they may have similar causes. Grey Wagtail breeding performance has improved markedly over time, suggesting that it cannot be responsible for the decline, nor for holding the population constant subsequently. The change in the 12-day nestling stage failure rates is from 17% to 9%.

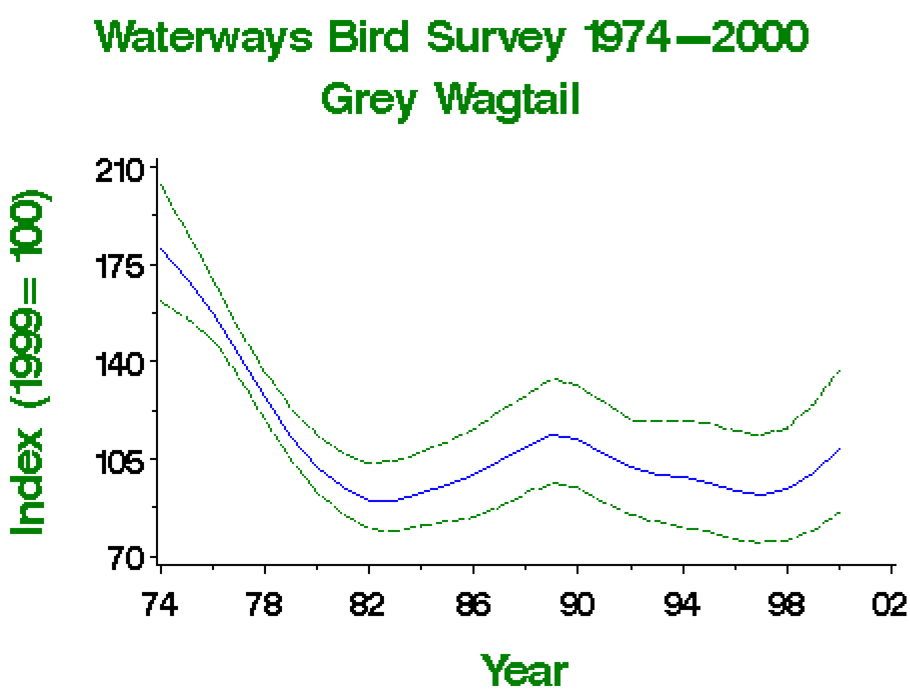
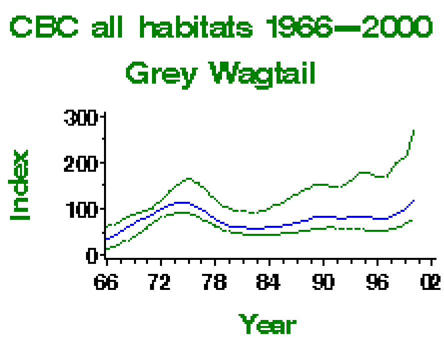


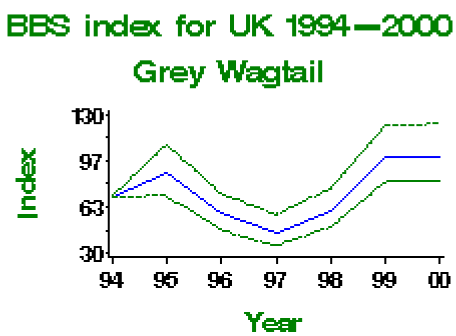
Table of population changes for Grey Wagtail

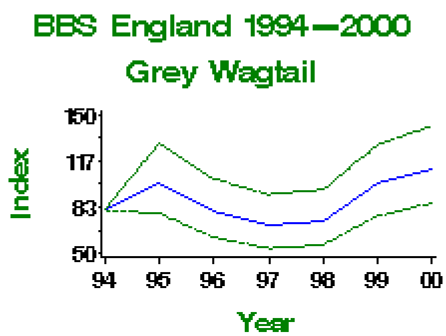
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	18	78	0	544		Unrepresentative? small sample
	25	1974-1999	19	-12	-40	56		Unrepresentative? small sample
	10	1989-1999	19	22	-8	70		Unrepresentative? small sample

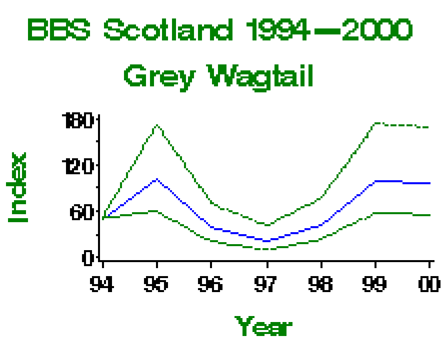
	5	1994-1999	19	20	-3	52		Unrepresentative? small sample
WBS waterways	24	1975-1999	57	-41	-55	-23	>25	
	10	1989-1999	64	-12	-24	4		
	5	1994-1999	65	2	-7	10		
BBS UK	6	1994-2000	148	41	15	74		
BBS England	6	1994-2000	93	36	6	75		
BBS Scotland	6	1994-2000	25	91	9	234		Small sample
BBS Wales	6	1994-2000	20	-34	-61	11		Small sample

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









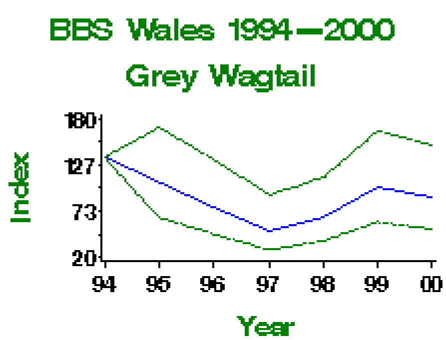
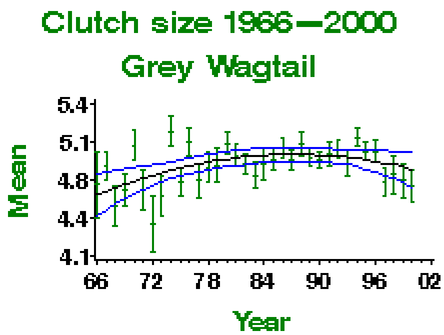
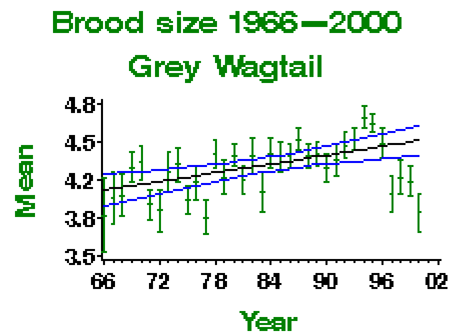


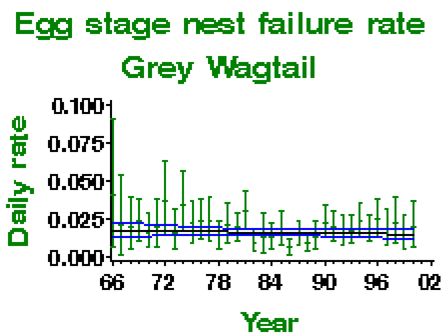
Table of productivity information for Grey Wagtail

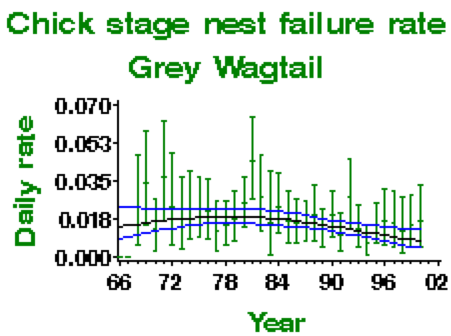
Variable	Period (yrs)	Years	Mean annual	Trend	Predicted in first	Predicted in last	Change	Comment

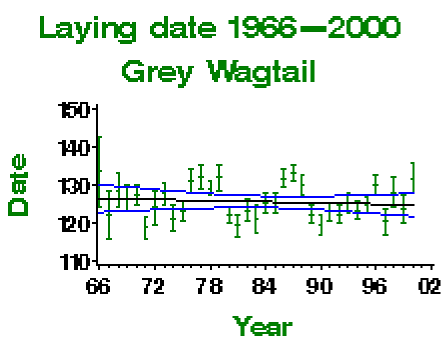
			sample		year	year		
Clutch size	31	1968-1999	43	Curvilinear	4.68 eggs	4.86 eggs	0.18 eggs	
Brood size	31	1968-1999	88	Linear increase	4.09 chicks	4.48 chicks	0.39 chicks	
Daily failure rate (eggs)	31	1968-1999	65	None				
Daily failure rate (chicks)	31	1968-1999	63	Curvilinear	0.015 nests/day	0.008 nests/day	-0.007 nests/day	
Laying date	31	1968-1999	67	None				











Insufficient data on CES available for this species

PIED WAGTAIL
Motacilla alba

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Uncertain
Lowland England: Fluctuating after a moderate increase
Waterways: Moderate decline

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. Pied Wagtails are most abundant in northern and western areas that are not covered well by the CBC or WBS, but the two schemes show similar trends for birds that breed in lowland Britain. Abundance has been stable since the mid-1980s, but this stable period was preceded by a decade of decline that is most apparent in the WBS index, perhaps suggesting particular habitat influences specific to linear waterways. The CBC shows that a strong increase preceded this period of decline, such that populations have increased, overall, since 1966 and there have been no trends in breeding performance that could explain the population trends. Although average clutch size has declined a little and chick-stage failure rates show little overall change, failure rates at the egg stage (17 days, comprising 13 days incubation + 4 days laying) have fallen from 26% to 19%. 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).

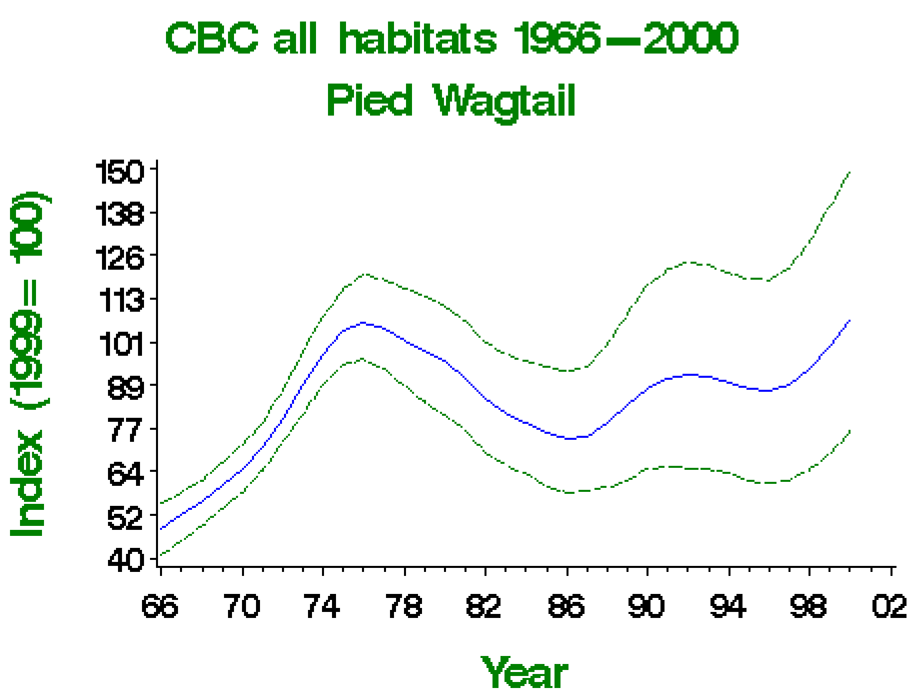
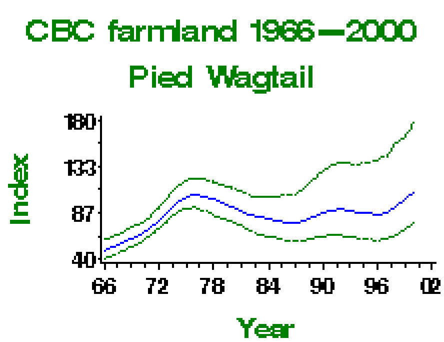


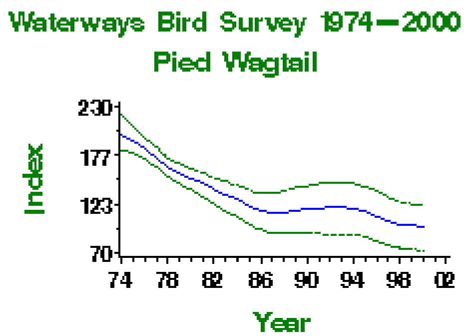
Table of population changes for Pied Wagtail

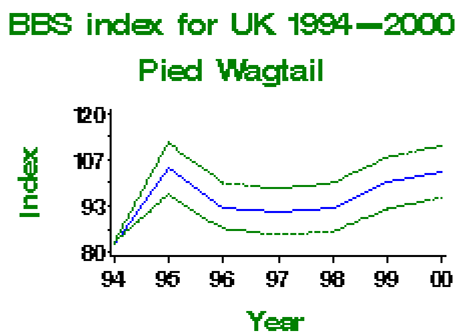
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all		1968-						

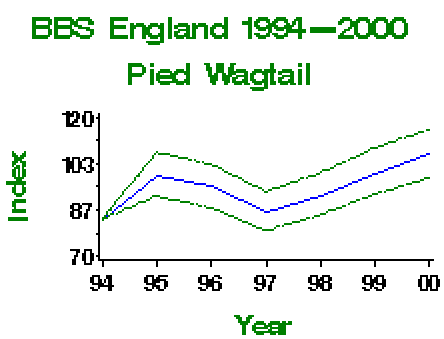
habitats	31	1999	84	78	29	160		Unrepresentative
	25	1974-1999	86	2	-26	34		Unrepresentative
	10	1989-1999	75	20	4	42		Unrepresentative
	5	1994-1999	76	12	3	24		Unrepresentative
CBC farmland	31	1968-1999	58	77	25	175		Unrepresentative
	25	1974-1999	59	4	-23	60		Unrepresentative
	10	1989-1999	60	20	3	53		Unrepresentative
	5	1994-1999	61	14	3	34		Unrepresentative
WBS waterways	24	1975-1999	67	-48	-62	-36	>25	
	10	1989-1999	69	-15	-27	-1		
	5	1994-1999	71	-16	-24	-8		
BBS UK	6	1994-2000	951	25	16	34		
BBS England	6	1994-2000	721	28	18	39		
BBS Scotland	6	1994-2000	116	25	0	56		
BBS Wales	6	1994-2000	87	5	-17	33		
BBS N.Ireland	6	1994-2000	24	49	-19	176		Small sample

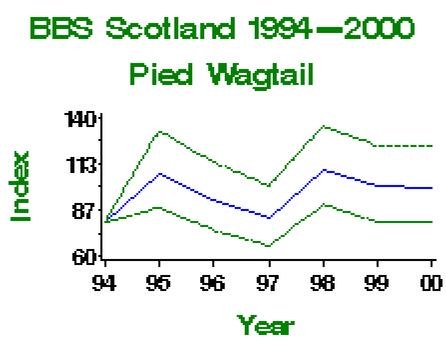
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

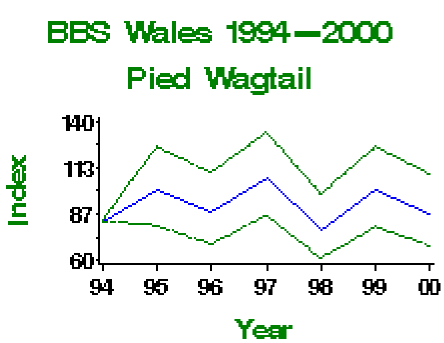












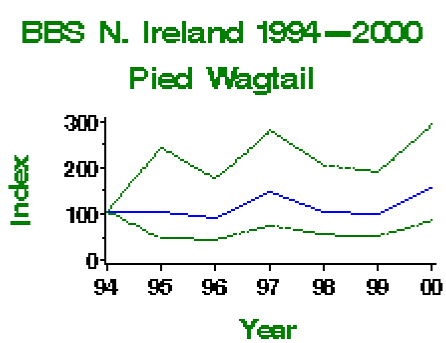
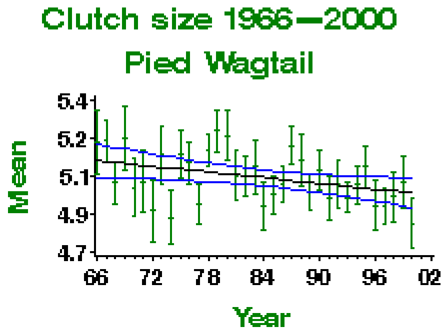
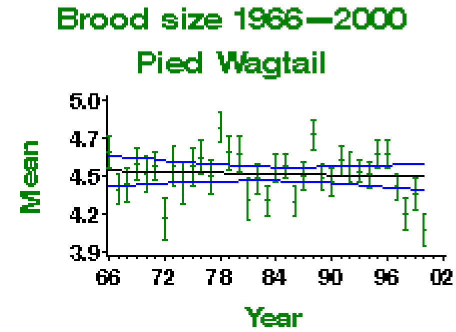


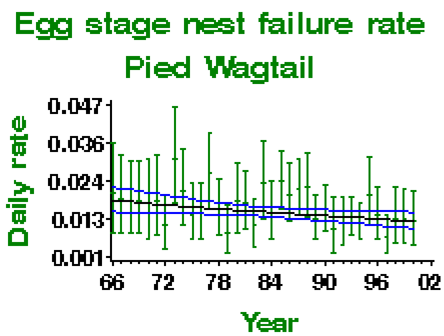
Table of productivity information for Pied Wagtail

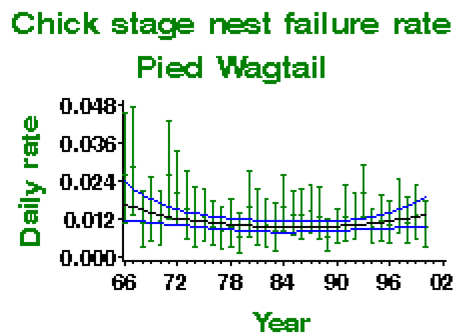
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	61	Linear decline	5.11 eggs	4.98 eggs	-0.13 eggs	
Brood size	31	1968-1999	113	None				
Daily failure rate (eggs)	31	1968-1999	84	Linear decline	0.0177 nests/day	0.012 nests/day	-0.0057 nests/day	
Daily failure rate (chicks)	31	1968-1999	91	Curvilinear	0.0149 nests/day	0.0127 nests/day	-0.0022 nests/day	
		1968-						

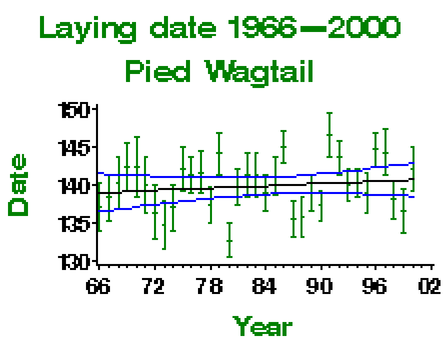
Laying date	31	1999	80	None				











Insufficient data on CES available for this species

DIPPER
Cinclus cinclus

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Fluctuating with no long-term trend

Status Summary

The WBS trend shows that Dipper populations have fluctuated considerably over the last 30 years. The species is a good indicator of acidity and other water pollution (Ormerod & Tyler 1989, 1990), so the trend warrants careful monitoring. Breeding performance has improved strongly over time as laying dates have become earlier, perhaps because of climate change (Crick & Sparks 1999). Although the change in nestling-stage failure rates is relatively minor, the decline for the 20-day egg stage (16 days incubation + 4 days laying) is from 41% down to 7%.

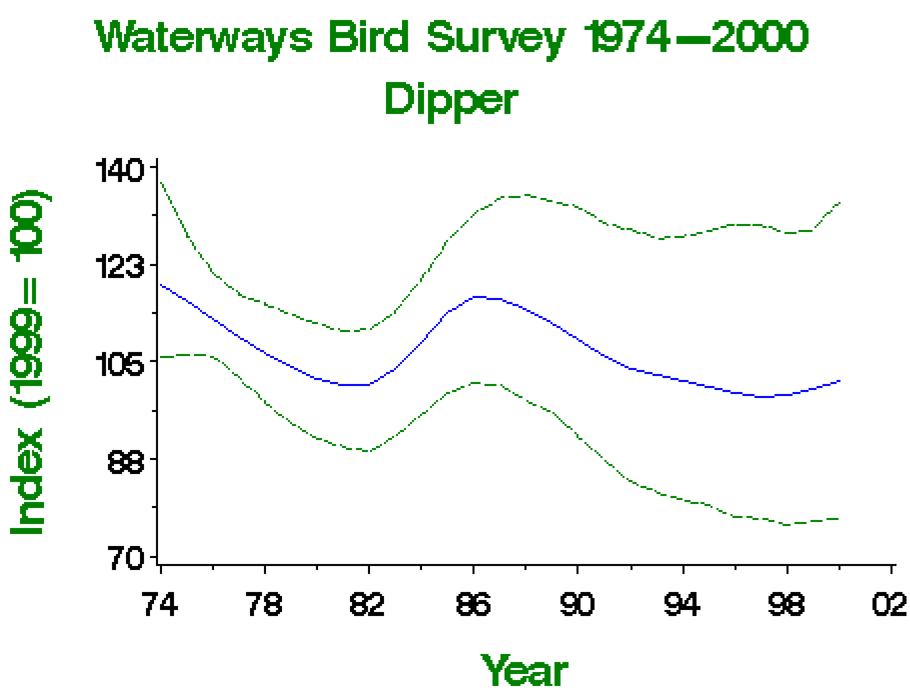


Table of population changes for Dipper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	24	1975-1999	37	-14	-36	13		
	10	1989-1999	38	-11	-24	3		
	5	1994-1999	36	-2	-11	9		

BBS Scotland	6	1994-2000	21	20	-35	123		Small sample

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

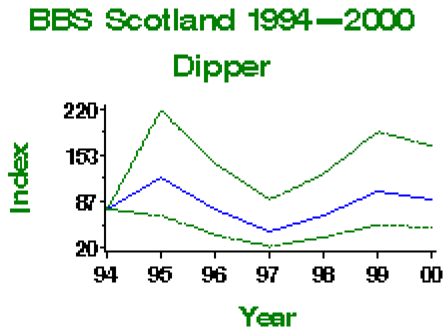
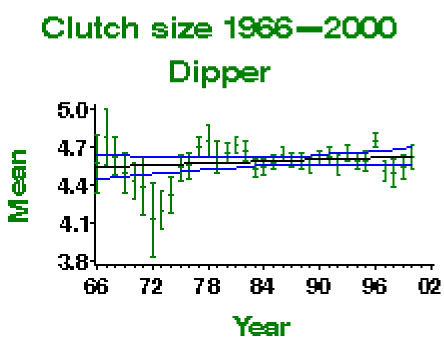
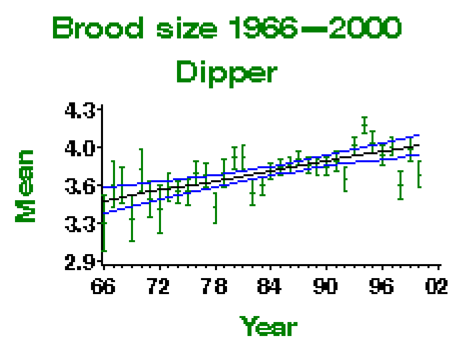
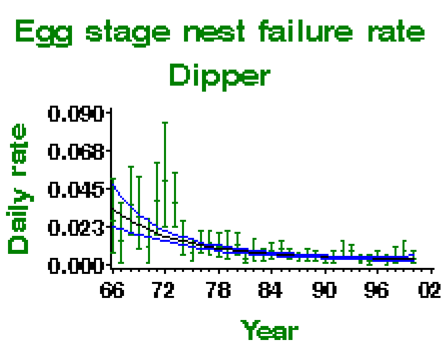


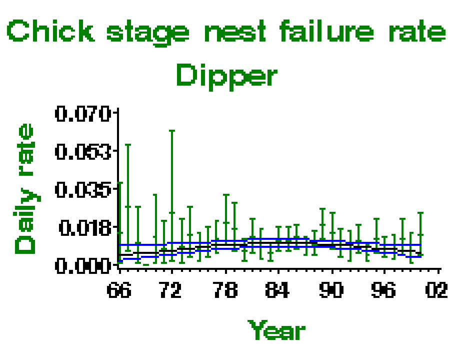
Table of productivity information for Dipper

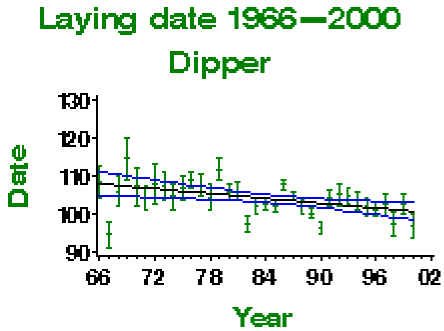
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	78	None				
Brood size	31	1968-1999	149	Linear increase	3.49 chicks	3.96 chicks	0.47 chicks	
Daily failure rate (eggs)	31	1968-1999	108	Curvilinear	0.026 nests/day	0.0034 nests/day	-0.0226 nests/day	
Daily failure rate (chicks)	31	1968-1999	85	Curvilinear	0.005 nests/day	0.006 nests/day	0.001 nests/day	
Laying date	31	1968-1999	65	Linear decline	day 108	day 101	-7 days	











Insufficient data on CES
available for this species

DUNNOCK
Prunella modularis

Conservation listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Moderate decline
Woodland: Rapid decline

Status summary

Dunnock abundance crashed between the mid-1970s and mid-1980s, after a period of population stability. Since the mid-1980s, no recovery has occurred but the CBC, CES and BBS all show abundance to have been stable. The cause of the decline remains unknown. There has been little variation in survival over time (**Siriwardena *et al.* 1998a**) and breeding performance tends to have increased.

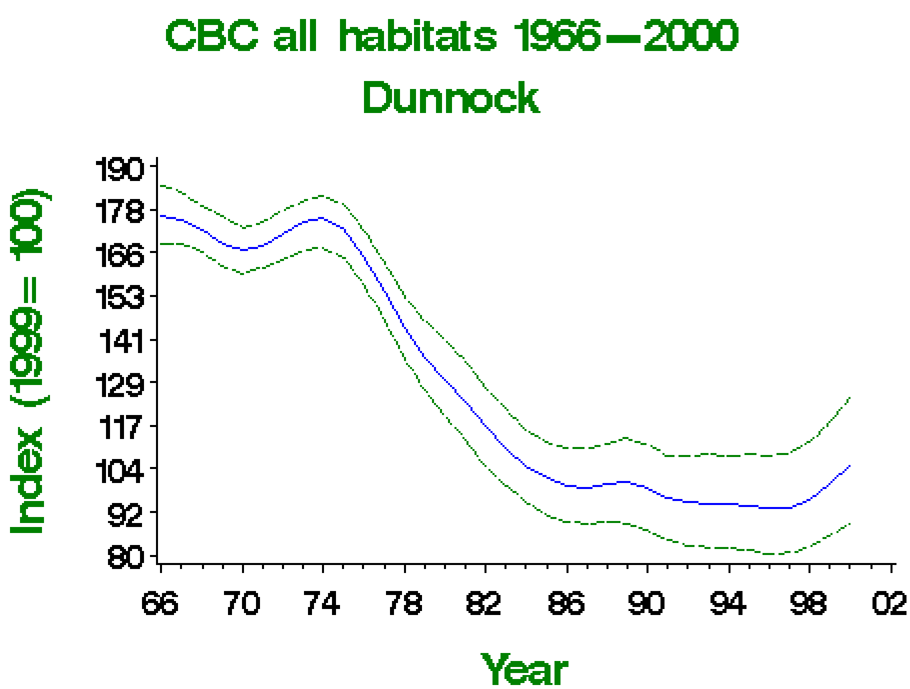
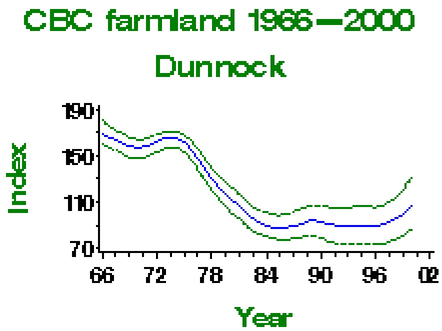


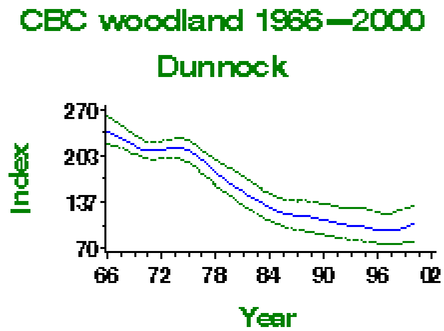
Table of population changes for Dunnock

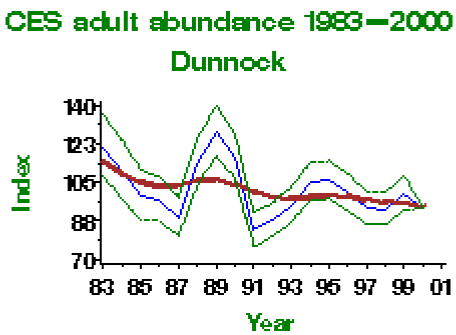
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	205	-42	-50	-32	>25	
	25	1974-1999	210	-43	-51	-34	>25	
	10	1989-1999	189	-1	-10	11		

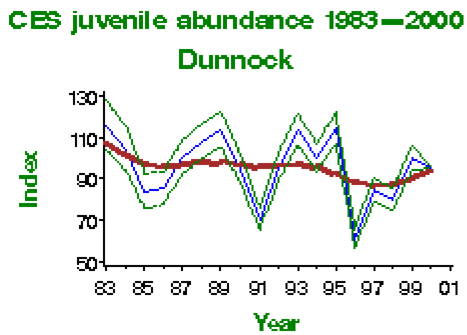
	5	1994-1999	191	6	0	12		
CBC farmland	31	1968-1999	93	-38	-49	-27	>25	
	25	1974-1999	93	-40	-51	-27	>25	
	10	1989-1999	92	7	-8	24		
	5	1994-1999	92	13	3	23		
CBC woodland	31	1968-1999	71	-56	-65	-44	>50	
	25	1974-1999	76	-54	-62	-42	>50	
	10	1989-1999	75	-12	-20	-1		
	5	1994-1999	77	-2	-9	5		
CES adults	15	1984-1999	93	-12	.	.		
	10	1989-1999	108	-10	.	.		
	5	1994-1999	115	-3	.	.		
CES juveniles	15	1984-1999	90	-11	.	.		
	10	1989-1999	105	-8	.	.		
	5	1994-1999	113	-6	.	.		
BBS UK	6	1994-2000	1467	8	3	13		
BBS England	6	1994-2000	1211	6	1	11		
BBS Scotland	6	1994-2000	100	10	-13	40		
BBS Wales	6	1994-2000	108	5	-13	26		
BBS N.Ireland	6	1994-2000	40	160	57	332		Small sample

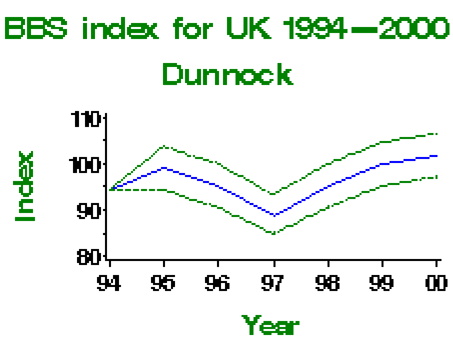
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

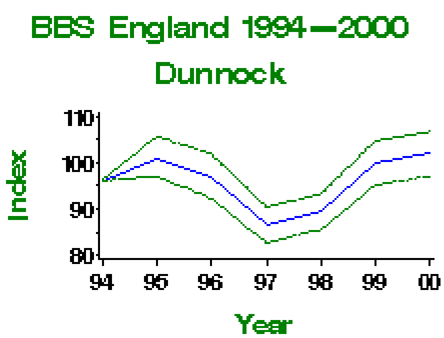


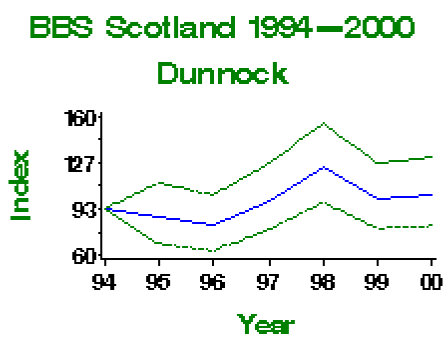


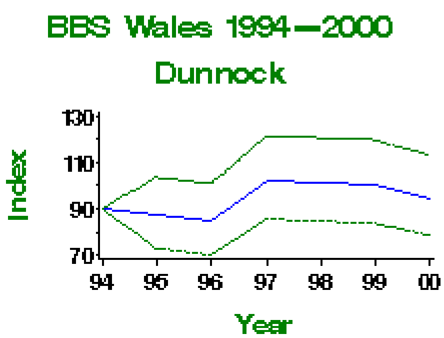












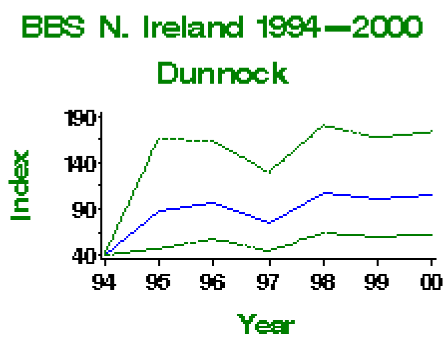
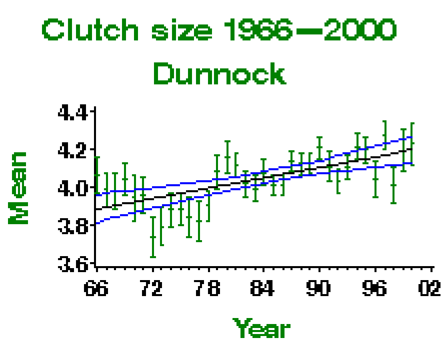
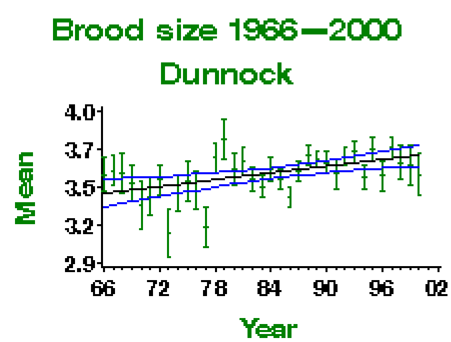


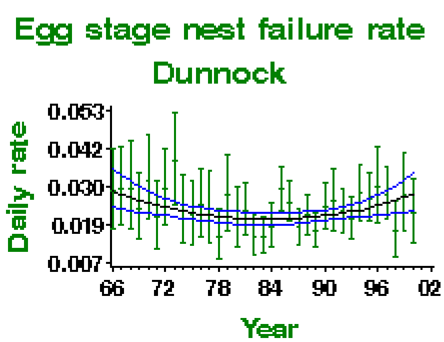
Table of productivity information for Dunnock

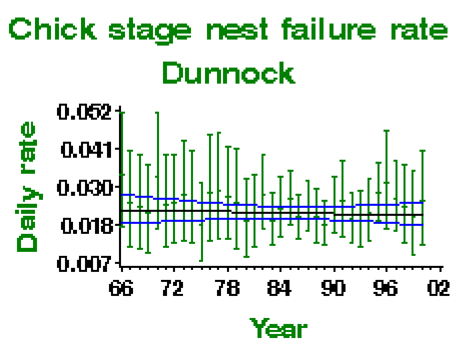
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

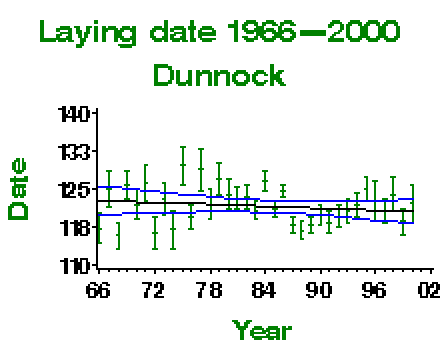
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	103	Linear increase	3.91 eggs	4.19 eggs	0.28 eggs	
Brood size	31	1968-1999	108	Linear increase	3.42 chicks	3.67 chicks	0.25 chicks	
Daily failure rate (eggs)	31	1968-1999	144	Curvilinear	0.0269 nests/day	0.0268 nests/day	-0.0001 nests/day	
Daily failure rate (chicks)	31	1968-1999	115	None				
Laying date	31	1968-1999	82	None				
Percentage juveniles (CES)	15	1984-1999	97	Smoothed trend	97 productivity index	100 productivity index	3%	
Percentage juveniles (CES)	10	1989-1999	113	Smoothed trend	99 productivity index	100 productivity index	1%	
Percentage juveniles (CES)	5	1994-1999	119	Smoothed trend	102 productivity index	100 productivity index	-2%	

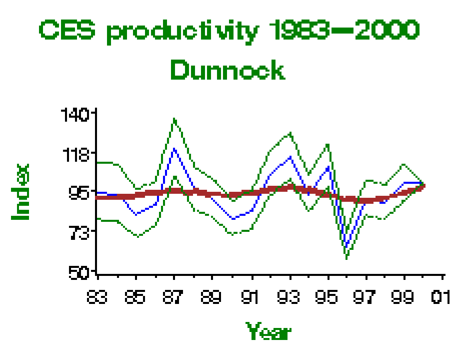












WREN
Troglodytes troglodytes

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Fluctuating after a rapid increase

Status summary

Following a rapid increase into the mid-1970s, Wren abundance has fluctuated, chiefly because of the effects of colder and milder winters (Peach *et al.* 1995b). Abundance, as shown by smoothed CBC trends, has been relatively stable over the last decade, but the BBS and CES reveal large and significant inter-annual fluctuations. Trends in most aspects of breeding performance have tended to improve in the long term. However, the decline in egg-stage failures (from 29% to 22%) is approximately counterbalanced by the increase in chick-stage failures (from 15% to 23%). The long-term trend towards earlier laying is explained by recent climatic warming (Crick & Sparks 1999).

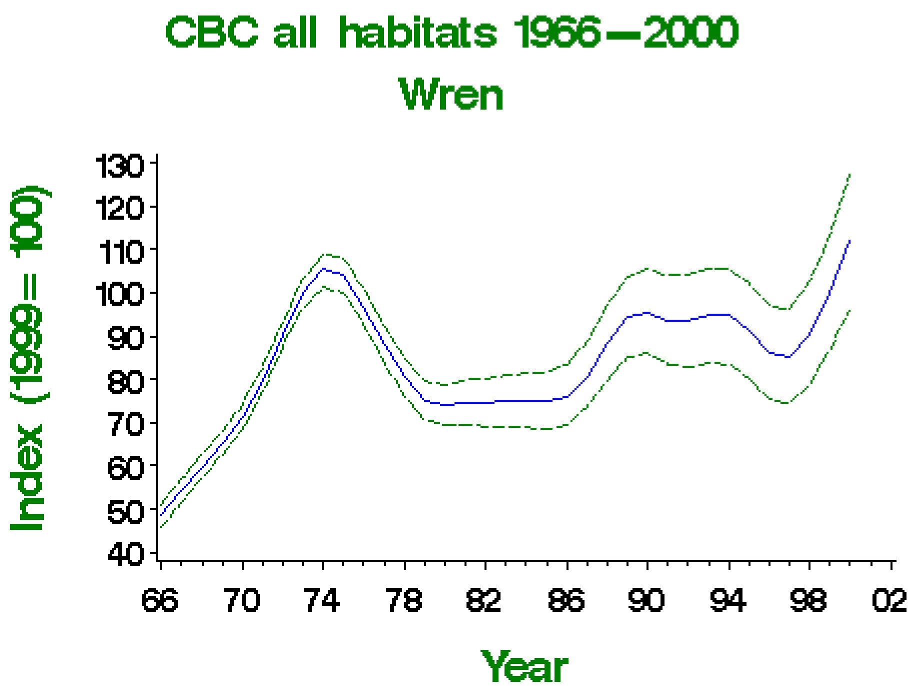
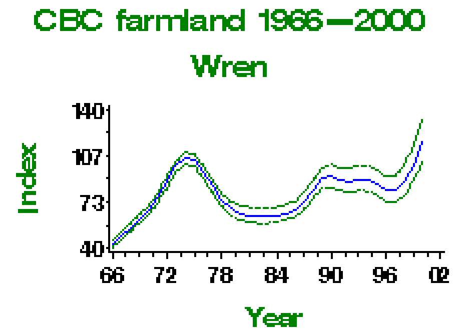


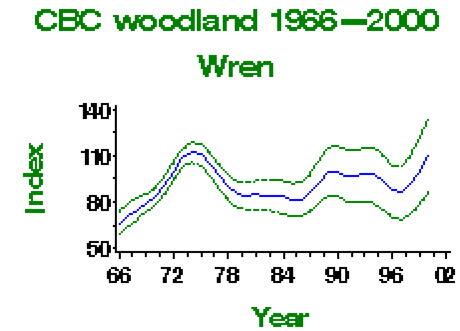
Table of population changes for Wren

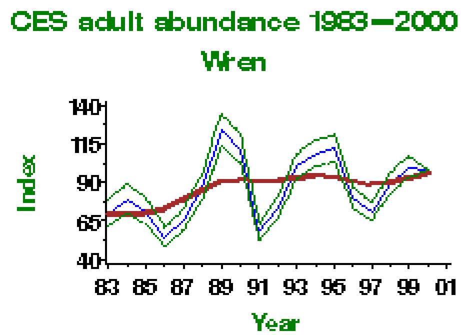
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	220	67	45	88		
	25	1974-1999	228	-5	-17	7		
	10	1989-1999	215	6	-1	12		
		1994-						

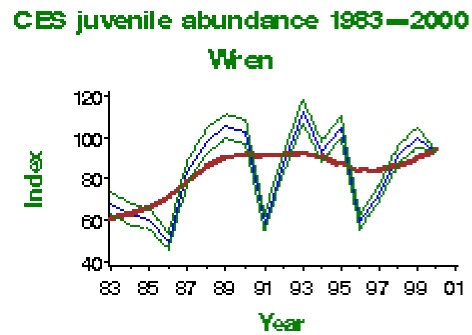
	5	1999	220	6	1	10		
CBC farmland	31	1968-1999	93	82	62	102		
	25	1974-1999	93	-5	-14	5		
	10	1989-1999	94	11	3	19		
	5	1994-1999	95	12	5	18		
CBC woodland	31	1968-1999	86	33	5	60		
	25	1974-1999	93	-12	-28	4		
	10	1989-1999	98	1	-8	9		
	5	1994-1999	101	2	-4	9		
CES adults	15	1984-1999	94	33	.	.		
	10	1989-1999	109	3	.	.		
	5	1994-1999	117	-2	.	.		
CES juveniles	15	1984-1999	92	44	.	.		
	10	1989-1999	108	0	.	.		
	5	1994-1999	115	-1	.	.		
BBS UK	6	1994-2000	1764	24	20	28		
BBS England	6	1994-2000	1375	11	8	14		
BBS Scotland	6	1994-2000	178	87	62	116		
BBS Wales	6	1994-2000	144	13	2	24		
BBS N.Ireland	6	1994-2000	57	96	52	151		

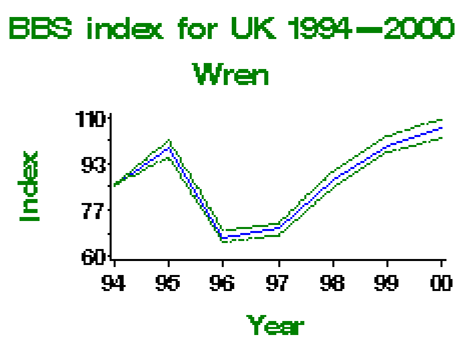
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

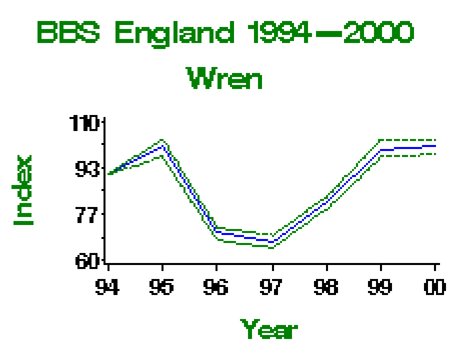


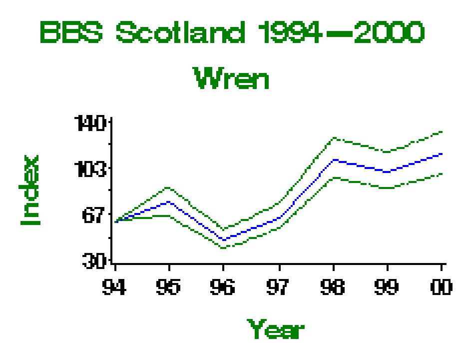


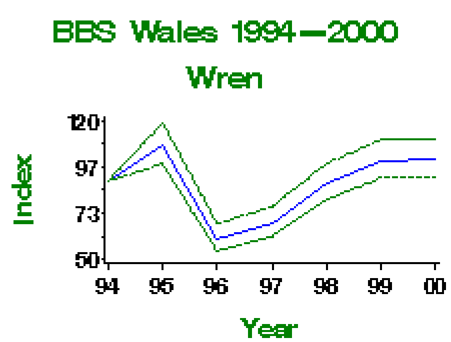












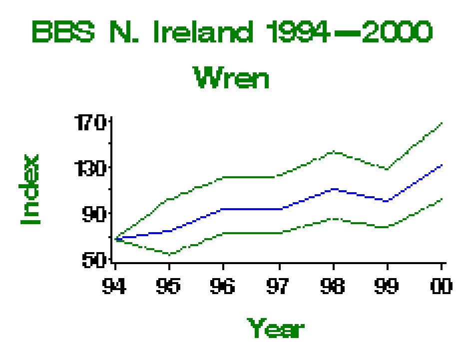
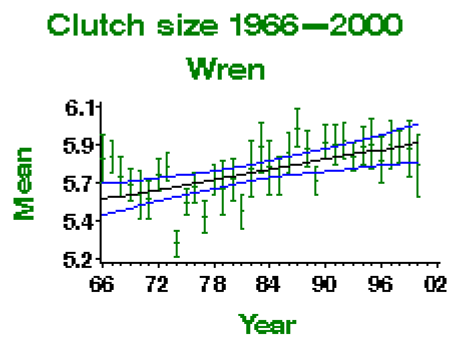
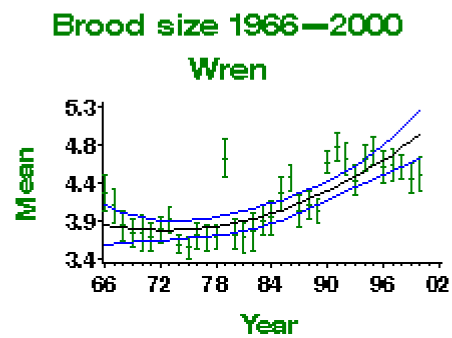


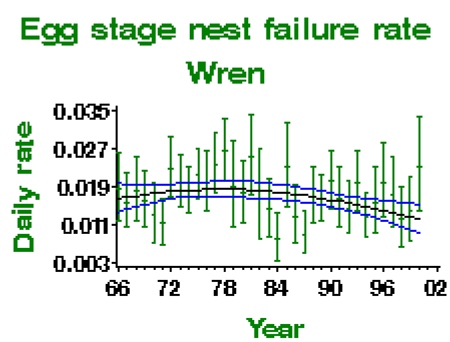
Table of productivity information for Wren

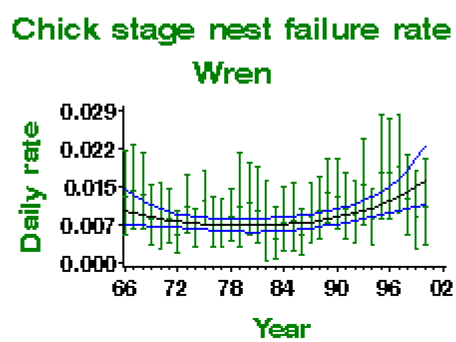
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

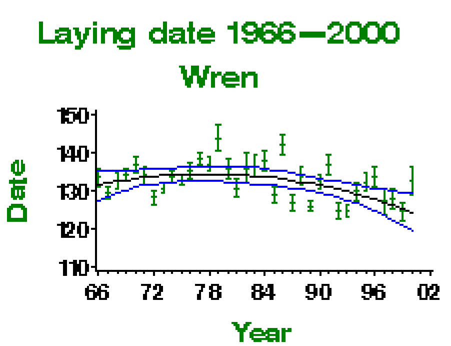
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	101	Linear increase	5.58 eggs	5.88 eggs	0.3 eggs	
Brood size	31	1968-1999	129	Curvilinear	3.79 chicks	4.88 chicks	1.09 chicks	
Daily failure rate (eggs)	31	1968-1999	149	Curvilinear	0.0171 nests/day	0.0125 nests/day	-0.0046 nests/day	
Daily failure rate (chicks)	31	1968-1999	103	Curvilinear	0.0092 nests/day	0.0144 nests/day	0.0052 nests/day	
Laying date	31	1968-1999	91	Curvilinear	day 133	day 125	-8 days	
Percentage juveniles (CES)	15	1984-1999	98	Smoothed trend	90 productivity index	100 productivity index	11%	
Percentage juveniles (CES)	10	1989-1999	114	Smoothed trend	106 productivity index	100 productivity index	-6%	
Percentage juveniles (CES)	5	1994-1999	120	Smoothed trend	101 productivity index	100 productivity index	-1%	

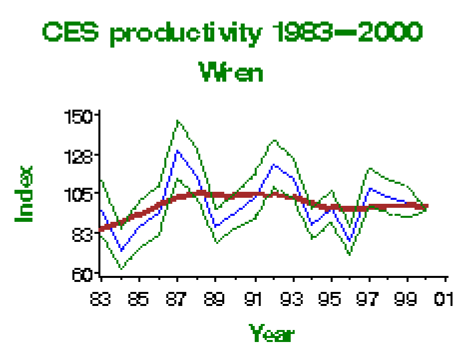












ROBIN
Erithacus rubecula

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Shallow increase
Farmland: Shallow increase

Status summary

Robins have increased since the mid-1980s according to both the CBC and the CES. Concurrently, significant improvements have occurred in breeding performance due to reductions in nest failure rates at the egg stage: for the 17-day egg stage (13 days incubation + 4 days laying) failure rates have fallen from 35% to 19%. Before the large population increase, abundance fluctuated, perhaps in response to winter weather. The CES and BBS show that marked, significant fluctuations have also occurred over the last 15 years.

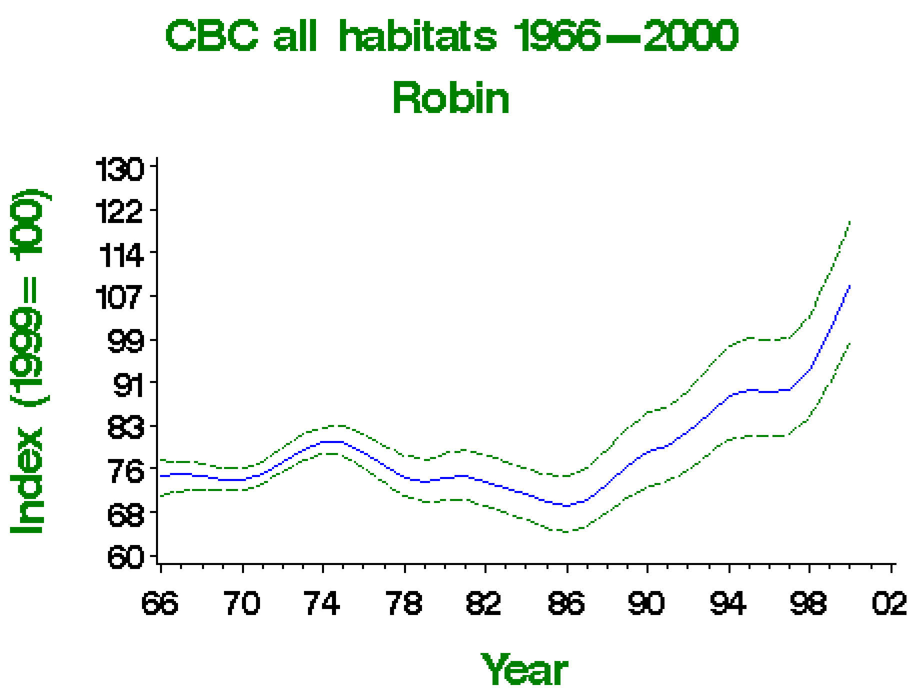
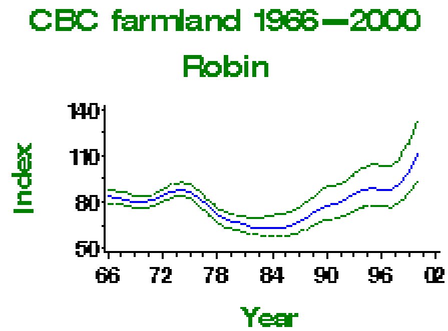


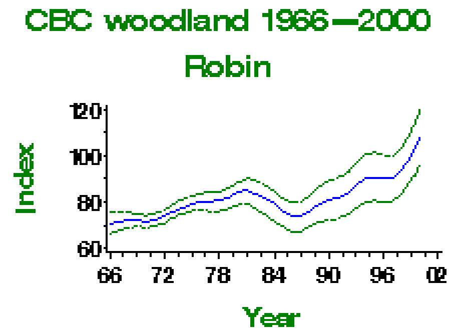
Table of population changes for Robin

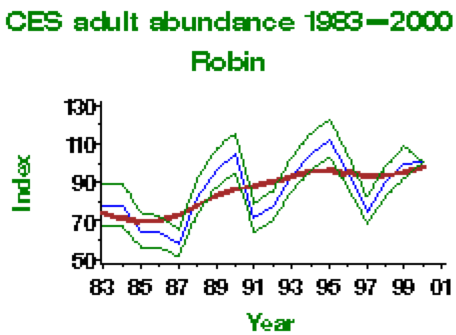
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	217	35	22	50		
	25	1974-1999	225	24	13	36		
	10	1989-1999	212	31	25	38		

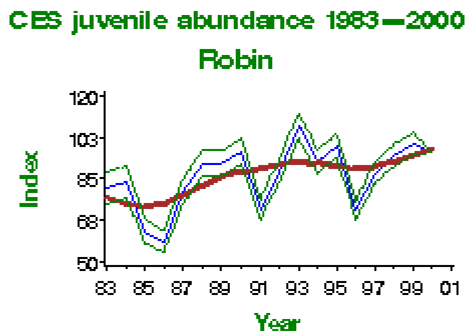
	5	1994-1999	216	13	9	18		
CBC farmland	31	1968-1999	92	22	6	45		
	25	1974-1999	91	14	-2	34		
	10	1989-1999	92	34	21	48		
	5	1994-1999	93	14	6	22		
CBC woodland	31	1968-1999	86	39	20	54		
	25	1974-1999	93	29	14	42		
	10	1989-1999	98	26	19	34		
	5	1994-1999	101	11	5	18		
CES adults	15	1984-1999	88	34	.	.		
	10	1989-1999	103	15	.	.		
	5	1994-1999	110	0	.	.		
CES juveniles	15	1984-1999	93	27	.	.		
	10	1989-1999	108	10	.	.		
	5	1994-1999	116	3	.	.		
BBS UK	6	1994-2000	1703	20	16	24		
BBS England	6	1994-2000	1346	18	14	22		
BBS Scotland	6	1994-2000	152	23	6	42		
BBS Wales	6	1994-2000	141	19	7	32		
BBS N.Ireland	6	1994-2000	56	50	19	89		

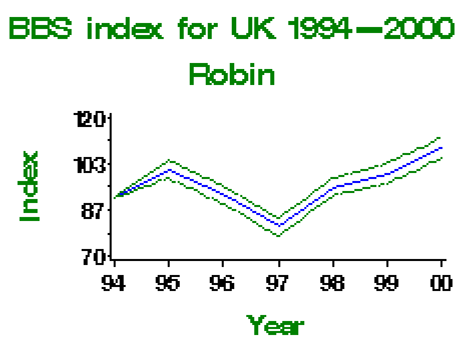
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

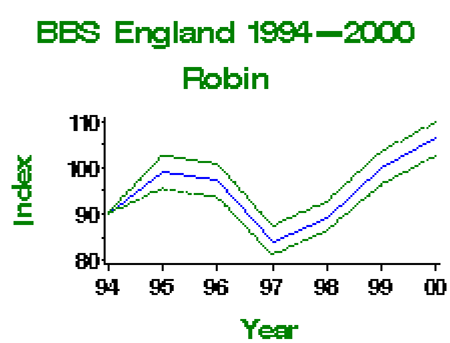


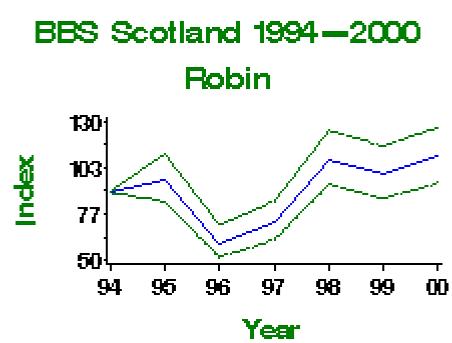


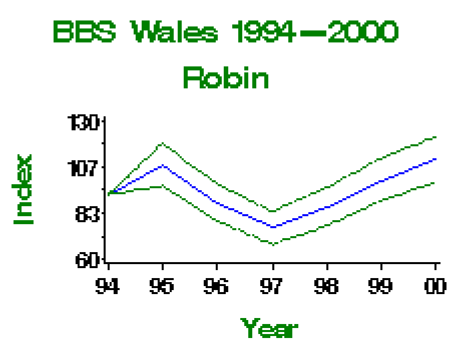












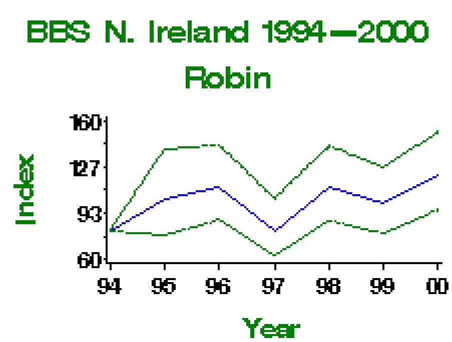
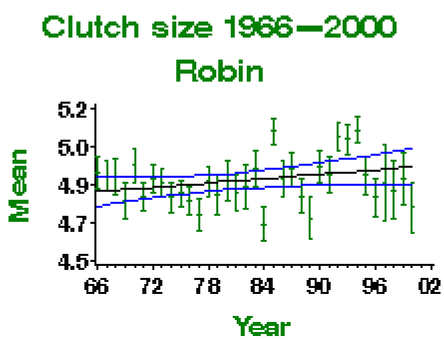
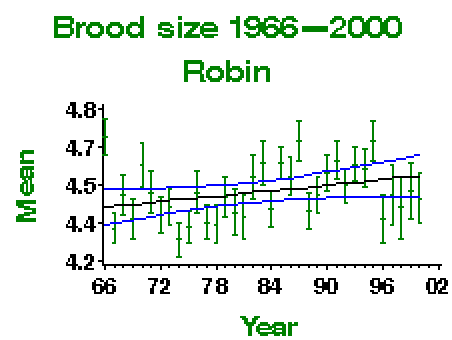


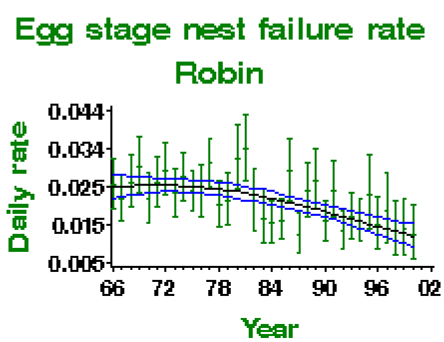
Table of productivity information for Robin

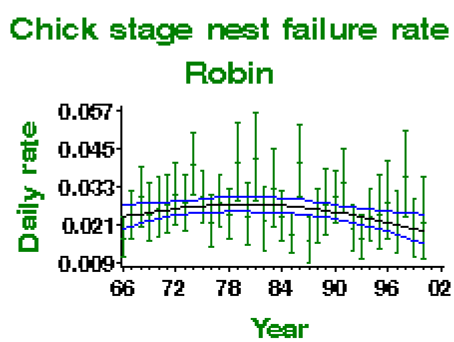
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

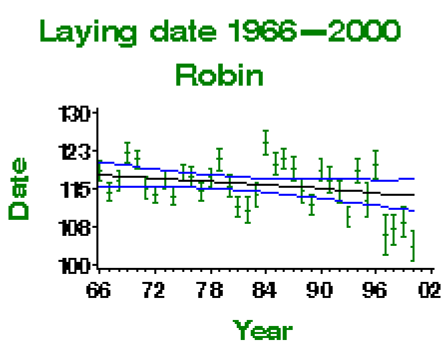
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	124	None				
Brood size	31	1968-1999	164	None				
Daily failure rate (eggs)	31	1968-1999	184	Curvilinear	0.0248 nests/day	0.0124 nests/day	-0.0124 nests/day	
Daily failure rate (chicks)	31	1968-1999	154	Curvilinear	0.0244 nests/day	0.0199 nests/day	-0.0045 nests/day	
Laying date	31	1968-1999	121	None				
Percentage juveniles (CES)	15	1984-1999	97	Smoothed trend	117 productivity index	100 productivity index	-14%	
Percentage juveniles (CES)	10	1989-1999	113	Smoothed trend	111 productivity index	100 productivity index	-10%	
Percentage juveniles (CES)	5	1994-1999	120	Smoothed trend	102 productivity index	100 productivity index	-2%	

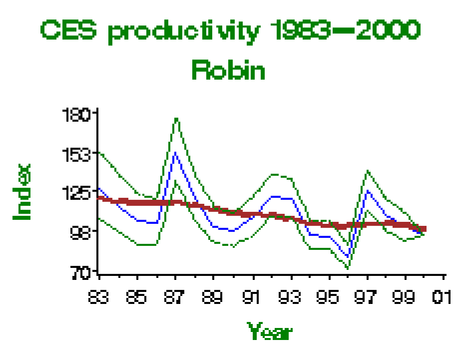












NIGHTINGALE
Luscinia megarhynchos

Conservation listings

Table 4/Amber (25-49% Distribution decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Probable decline

Status summary

In 1999, the BTO organised a national survey of Nightingales which showed marked range contractions, but only a small overall population decline (8%) since the previous survey in 1980 (Wilson *et al.* 2002). Nightingales are restricted in distribution in the UK and their preferred habitats are not covered well by the CBC. Nevertheless, detailed analysis of the available CBC data show a smooth, continuing decline (G.M. Siriwardena, unpubl.) and the CES is suggestive of a similar pattern, at least until 1997. Nightingales may be affected by cold and wet springs, and the CES indicates a decline in productivity in the 1980s.

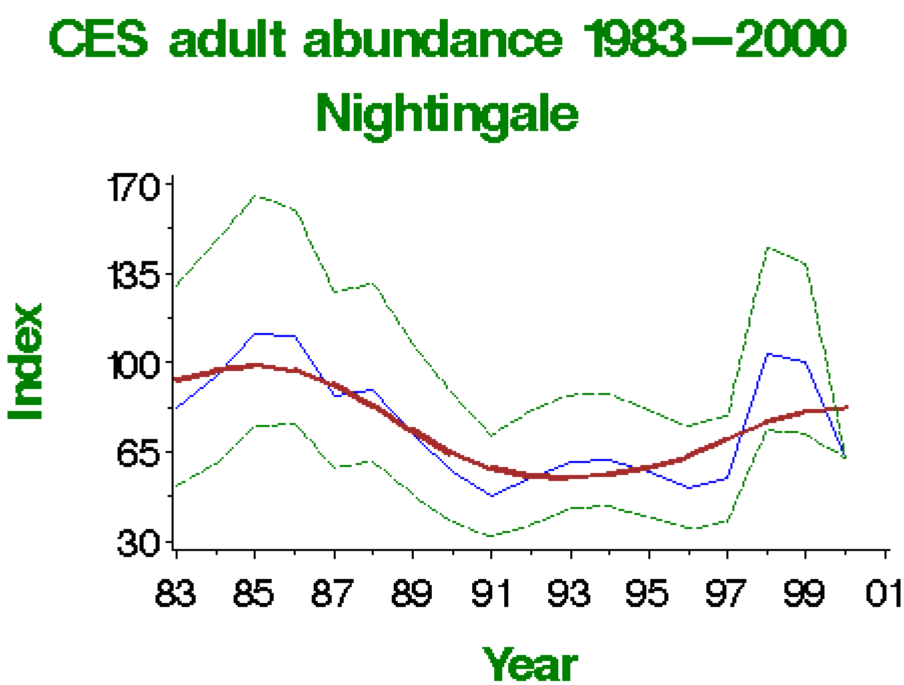


Table of population changes for Nightingale

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CES adults	15	1984-1999	11	-17	.	.		Small sample
	10	1989-1999	11	10	.	.		Small sample
	5	1994-1999	14	44	.	.		Small sample

CES juveniles	15	1984-1999	7	-59	.	.	[>50]	Small sample
	10	1989-1999	7	4	.	.		Small sample
	5	1994-1999	8	-19	.	.		Small sample

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

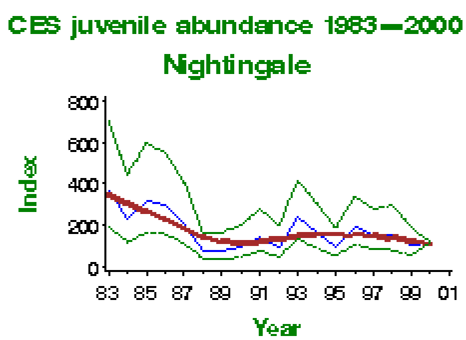


Table of productivity information for Nightingale

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Percentage juveniles (CES)	15	1984-1999	13	Smoothed trend	265 productivity index	100 productivity index	-62% [>50]	Small sample
Percentage juveniles (CES)	10	1989-1999	13	Smoothed trend	125 productivity index	100 productivity index	-20%	Small sample
Percentage juveniles (CES)	5	1994-1999	17	Smoothed trend	229 productivity index	100 productivity index	-56% [>50]	Small sample

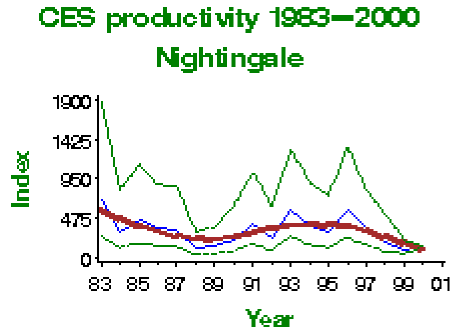
Insufficient data on clutch size available for this species

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


CES productivity 1983–2000
Nightingale
Index
1900
1425
950
475
0
83 85 87 89 91 93 95 97 99 01
Year

REDSTART
Phoenicurus phoenicurus

Conservation listings

Table 4/Amber (European Status)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Uncertain
Lowland: Fluctuating with no long-term trend

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**). The subsequent recovery appears to be continuing. The population increase has been associated with improving breeding performance and progressively earlier laying dates. Failure rate at the egg stage (17 days, comprising 12 days incubation + 5 days laying) is down from 18% to 7%. The trend towards earlier laying can be partially explained as a result of recent climate change (**Crick & Sparks 1999**).

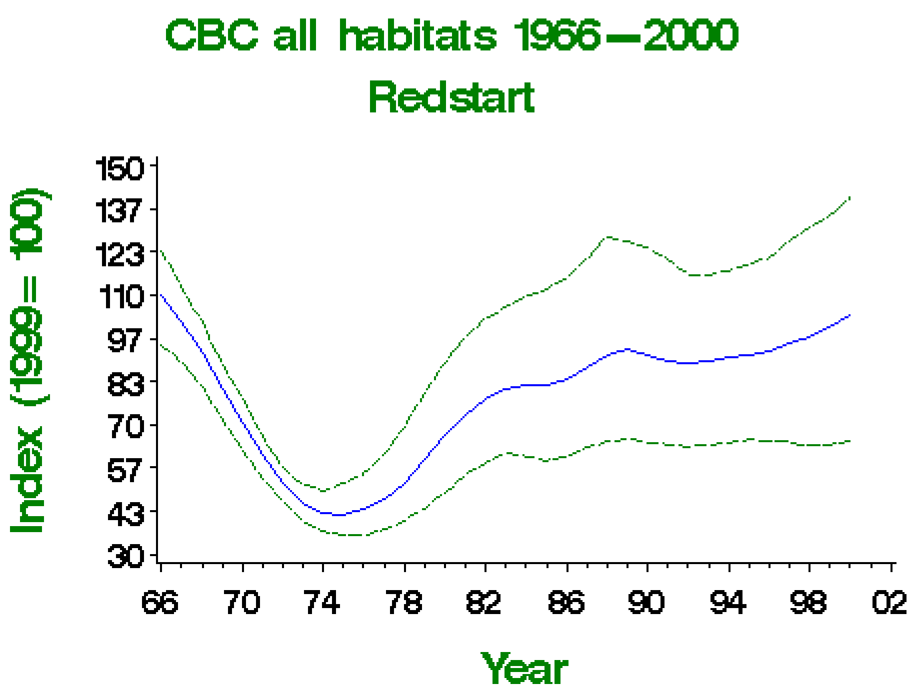
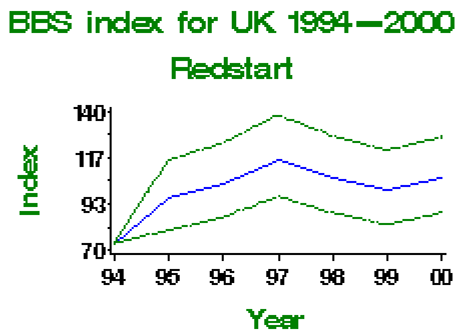


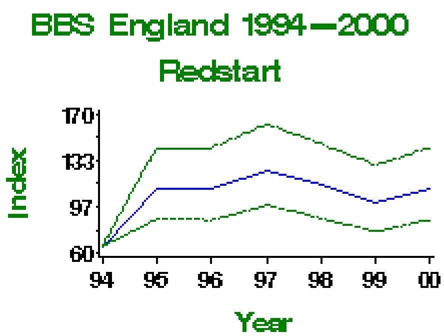
Table of population changes for Redstart

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	23	9	-31	68		Unrepresentative
	25	1974-1999	23	134	48	231		Unrepresentative
	10	1989-1999	26	7	-15	21		Unrepresentative

	5	1994-1999	27	10	-14	31		Unrepresentative
BBS UK	6	1994-2000	132	45	21	73		
BBS England	6	1994-2000	70	71	33	121		
BBS Wales	6	1994-2000	50	19	-7	53		Small sample

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





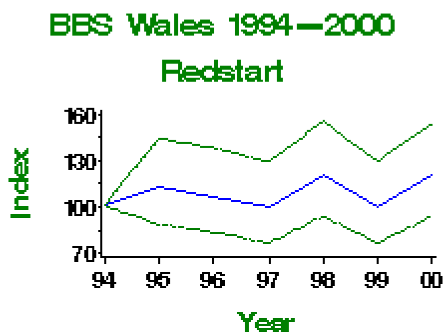
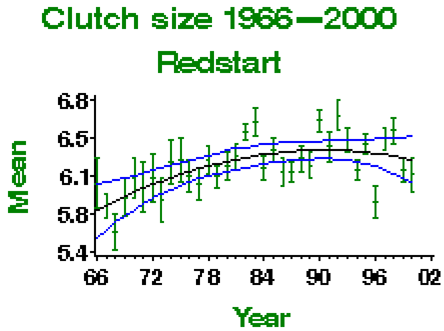
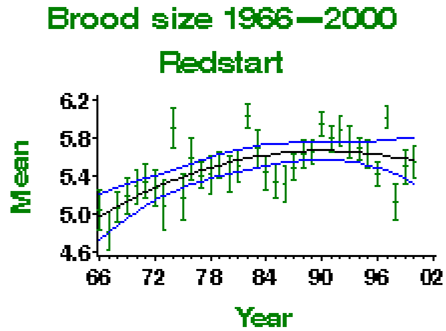
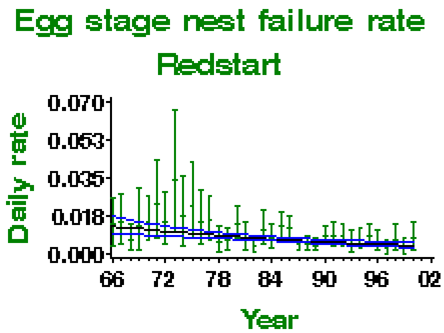


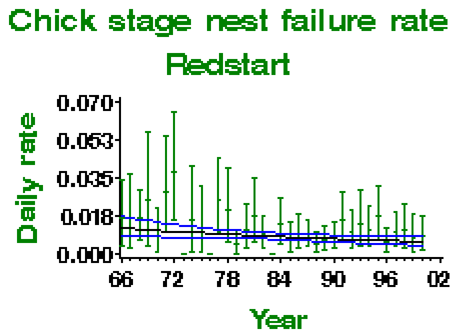
Table of productivity information for Redstart

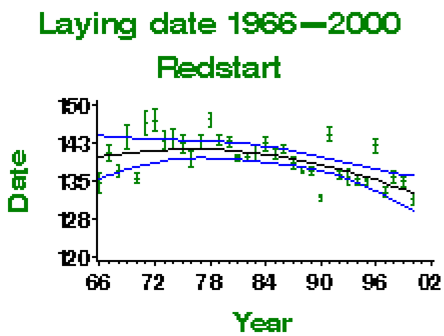
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	52	Curvilinear	5.86 eggs	6.27 eggs	0.41 eggs	
Brood size	31	1968-1999	91	Curvilinear	5.08 chicks	5.59 chicks	0.51 chicks	
Daily failure rate (eggs)	31	1968-1999	78	Linear decline	0.0119 nests/day	0.004 nests/day	-0.0079 nests/day	
Daily failure rate (chicks)	31	1968-1999	55	Linear decline	0.0112 nests/day	0.0056 nests/day	-0.0056 nests/day	
Laying date	31	1968-1999	66	Curvilinear	day 140	day 133	-7 days	











Insufficient data on CES available for this species

WHINCHAT
Saxicola rubetra

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Uncertain, possible decline

Status summary

The Whinchat's preferred habitats were not covered well by BTO surveys before the advent of the BBS, which shows no clear temporal trend since 1994. There has also been no clear trend in breeding performance except for an increase in average clutch size. However, Gibbons *et al.* (1993) identified a range contraction from lowland England that was probably due to the loss of marginal farmland habitats.

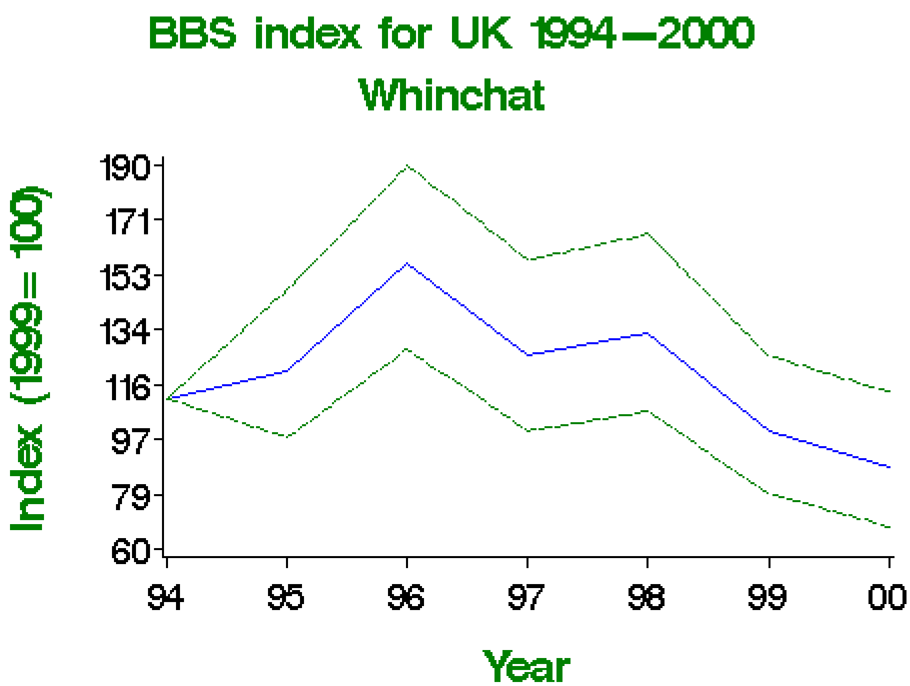
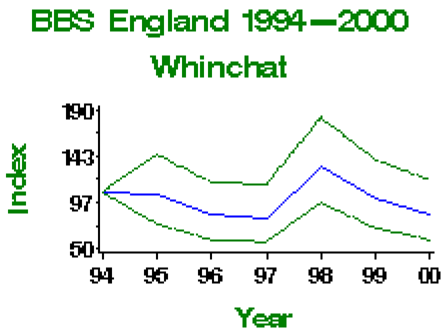


Table of population changes for Whinchat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	80	-21	-39	2		
BBS England	6	1994-2000	31	-22	-45	11		Small sample
BBS Scotland	6	1994-2000	32	-28	-61	34		Small sample

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



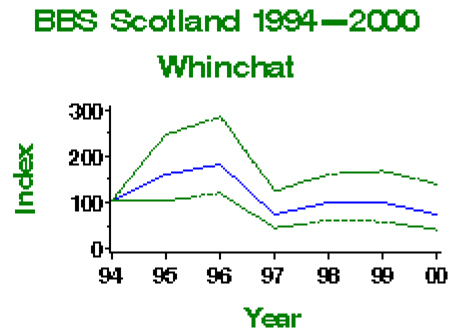
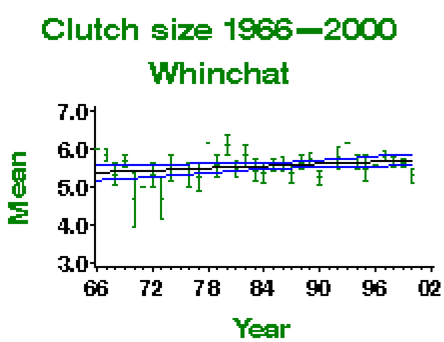
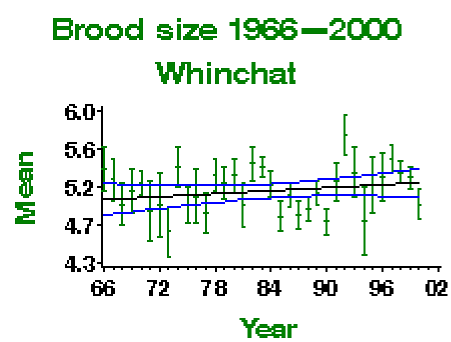
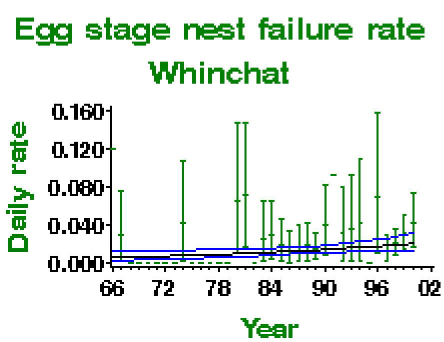


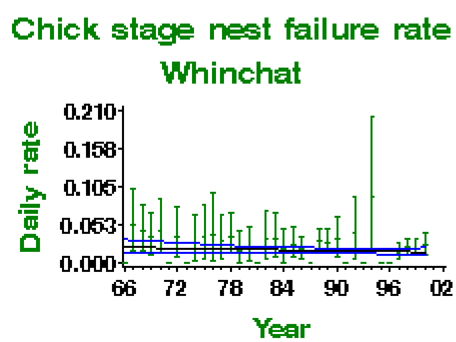
Table of productivity information for Whinchat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	13	Linear increase	5.41 eggs	5.71 eggs	0.3 eggs	Small sample
Brood size	31	1968-1999	43	None				
Daily failure rate (eggs)	31	1968-1999	16	Linear increase	0.0058 nests/day	0.0197 nests/day	0.0139 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	28	None				Small sample
Laying date	31	1968-1999	31	Curvilinear	day 148	day 145	-3 days	

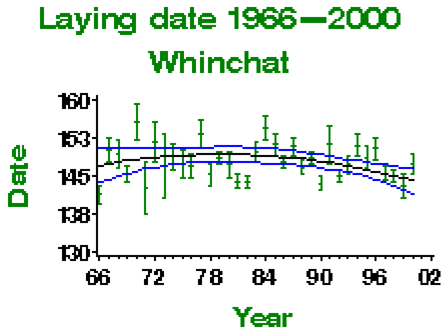








Insufficient data on CES available for this species


Laying date 1966–2000
Whinchat
Date
160
153
145
138
130
66
72
78
84
90
96
02
Year

STONECHAT
Saxicola torquata

Conservation listings

Table 4/Amber (European status)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Uncertain, possible decline

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 trends to be investigated. Abundance has fluctuated since 1994, but with a net increase, and breeding performance has improved over the long term.

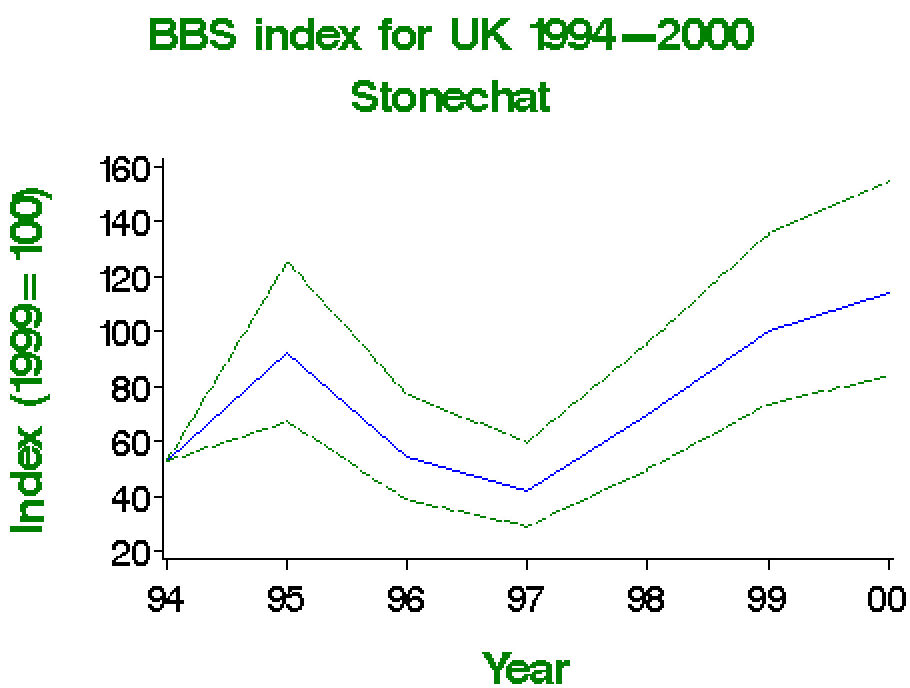


Table of population changes for Stonechat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	74	115	58	192		
BBS England	6	1994-2000	28	85	16	195		Small sample

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

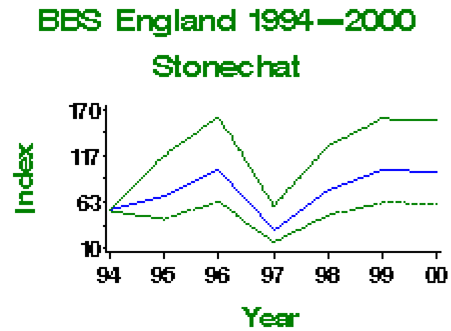
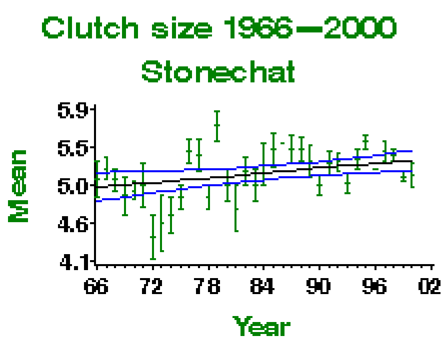
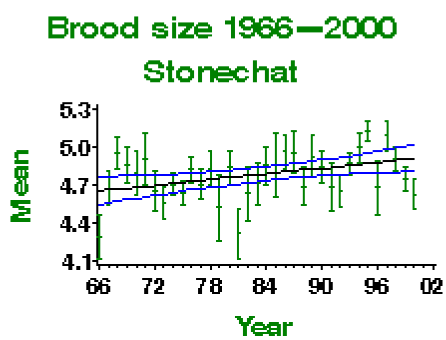
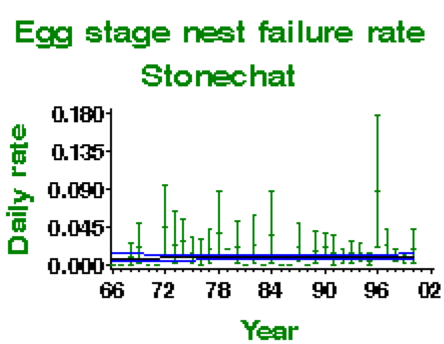


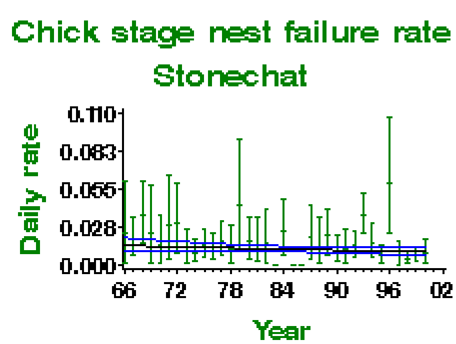
Table of productivity information for Stonechat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	23	Linear increase	5 eggs	5.29 eggs	0.29 eggs	Small sample
Brood size	31	1968-1999	54	Linear increase	4.67 chicks	4.91 chicks	0.24 chicks	
Daily failure rate (eggs)	31	1968-1999	27	None				Small sample
Daily failure rate (chicks)	31	1968-1999	48	None				
Laying date	31	1968-1999	31	None				

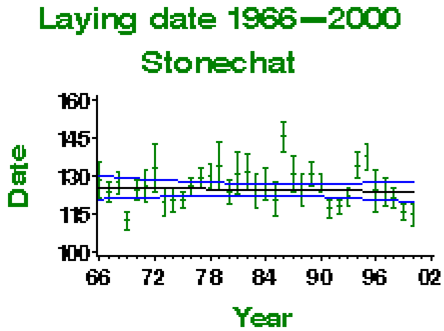








Insufficient data on CES available for this species


Laying date 1966–2000
Stonechat
Date
160
145
130
115
100
66
72
78
84
90
96
02
Year

WHEATEAR
Oenanthe oenanthe

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Uncertain, possible decline

Status summary

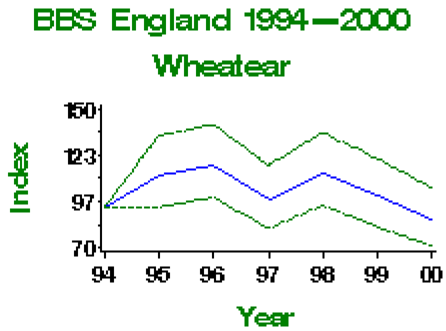
Although common, the Wheatear was not monitored adequately until the inception of the BBS because of its habitat preferences. Gibbons *et al.* (1993) identified range contractions from lowland Britain, perhaps due to losses of grassland and declines in rabbit abundance. Breeding performance tends to have increased over time (failure rates at the egg stage (18 days, comprising 14 days incubation + 4 days laying) have fallen from 24% in 1975 to 5% in 1999). The BBS shows no clear trend in abundance since 1994.

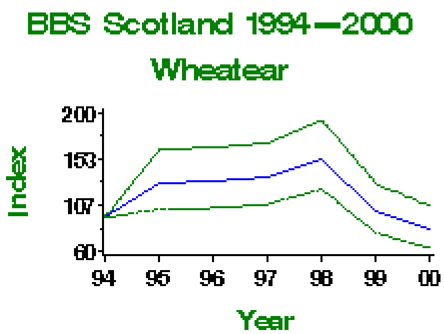
Table of population changes for Wheatear

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	236	-6	-18	7		
BBS England	6	1994-2000	112	-8	-24	12		
BBS Scotland	6	1994-2000	74	-13	-33	12		
BBS		1994-						Small

Wales	6	2000	41	15	-18	64		sample

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





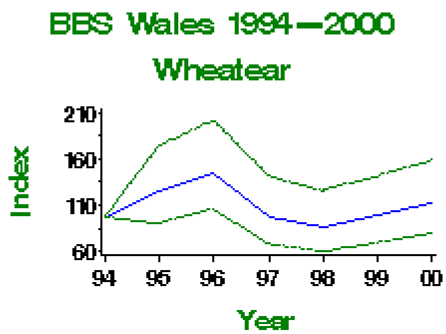
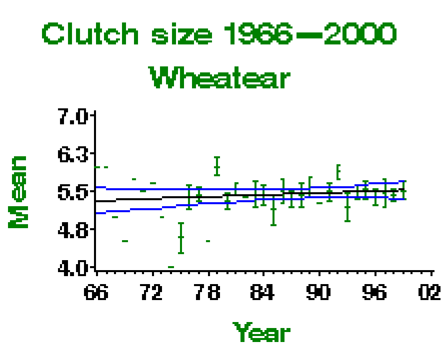
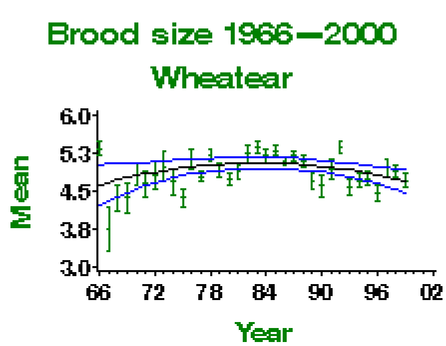
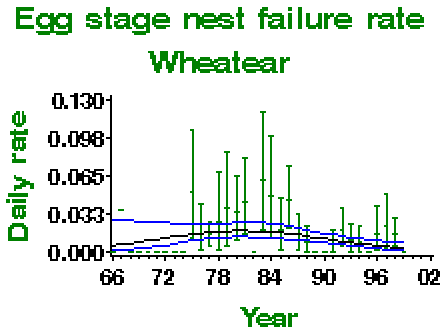


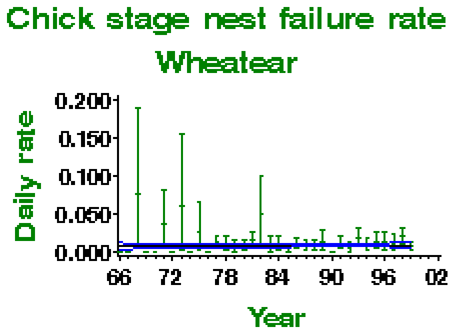
Table of productivity information for Wheatear

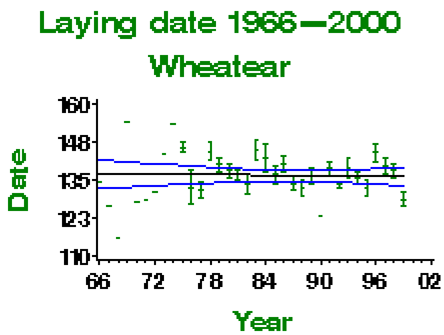
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	15	None				Small sample
Brood size	31	1968-1999	67	Curvilinear	4.73 chicks	4.71 chicks	-0.02 chicks	
Daily failure rate (eggs)	31	1968-1999	22	Curvilinear	0.0074 nests/day	0.003 nests/day	-0.0044 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	46	None				
Laying date	31	1968-1999	16	None				Small sample











Insufficient data on CES
available for this species

RING OUZEL
Turdus torquatus

Conservation listings

Table 4/Amber (25-49% distribution decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

Probable decline

Status summary

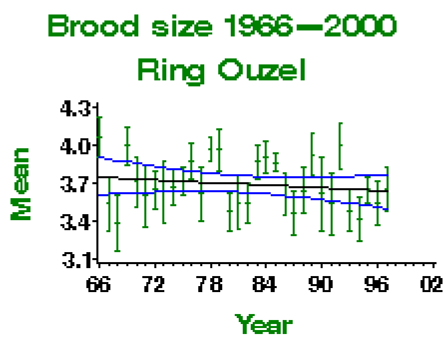
The *1998-91 Breeding Atlas* showed a decline throughout its range of 27% in the number of 10-km squares occupied between 1968-72 and 1988-91 (Gibbons *et al*. 1993). Reasons for the decline are unknown but the following have been suggested: afforestation, disturbance, climatic warming and competition with Blackbirds. Declines in chick-stage failure rates (14 days) from 28% to 8% may have occurred as the species retreats to its most favoured areas.

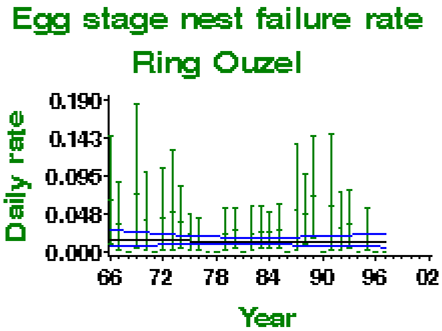
Annual breeding population changes for this species
are not currently monitored by BTO

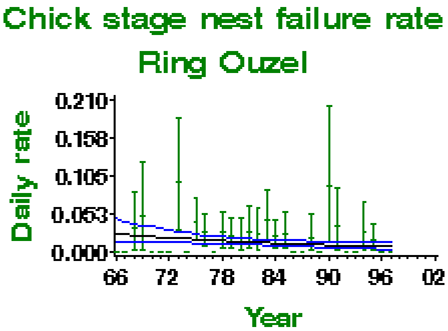
Table of productivity information for Ring Ouzel

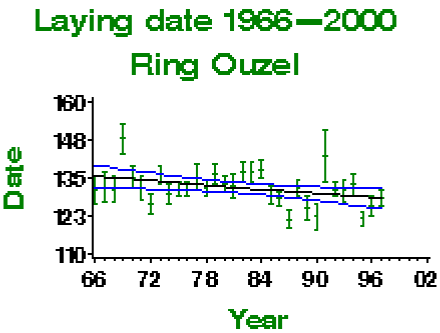
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	25	None				Small sample
Daily failure rate (eggs)	31	1968-1999	12	None				Small sample
Daily failure rate (chicks)	31	1968-1999	16	Linear decline	0.0229 nests/day	0.0062 nests/day	-0.0167 nests/day	Small sample
Laying date	31	1968-1999	27	Linear decline	day 135	day 128	-7 days	Small sample

Insufficient data on clutch size
available for this species









Insufficient data on CES
available for this species

BLACKBIRD
Turdus merula

Conservation listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Shallow/moderate decline

Status summary

Both the CBC and the CES show long-term declines in Blackbird abundance. CBC data indicate that this decline began in the mid-1970s although recent CBC and BBS data both suggest that the population may be starting to recover. Productivity shows no clear temporal trend and it is likely that changes in survival have driven the decline (Siriwardena *et al.* 1998a). Agricultural intensification is likely to have contributed to the decline (Fuller *et al.* 1995), but the fact that numbers have fallen in woodland as well as farmland suggests that additional causes may exist. Recent increases apparent in the CBC and BBS index series suggest that the decline may have ceased.

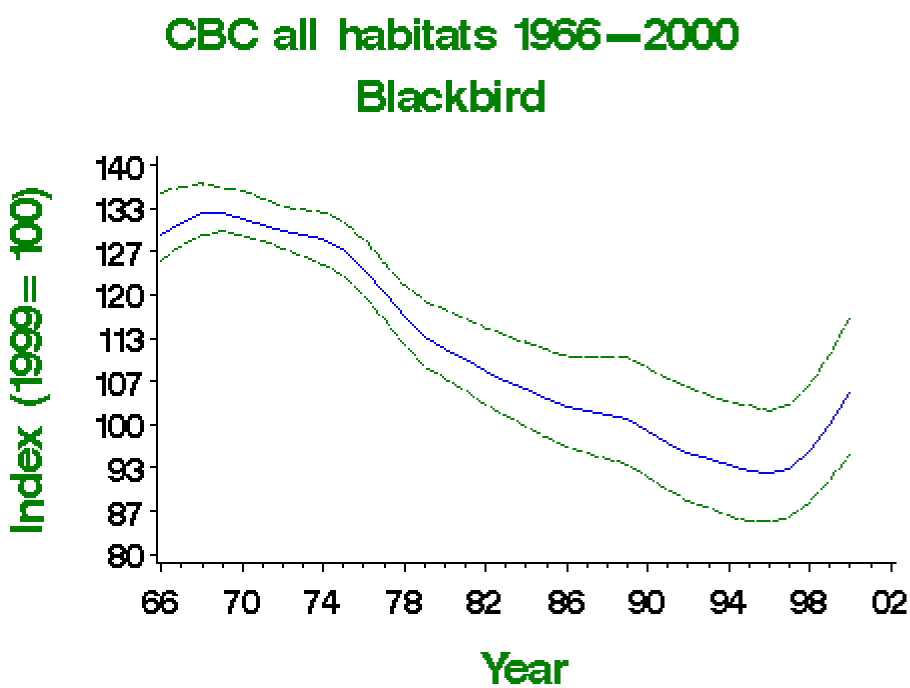
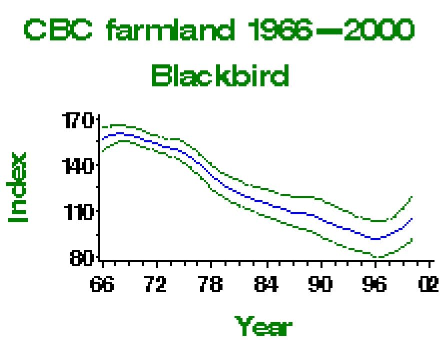


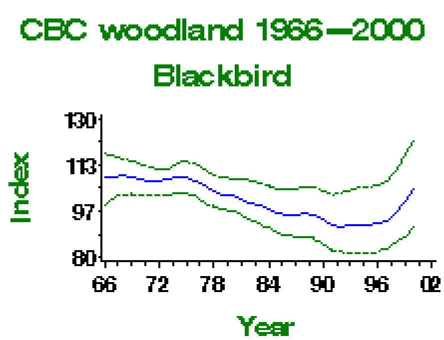
Table of population changes for Blackbird

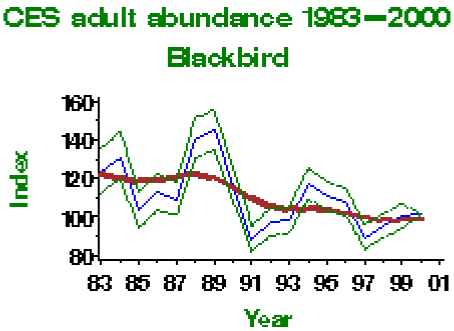
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	225	-25	-30	-17		
	25	1974-1999	232	-22	-28	-15		
	10	1989-1999	216	-1	-5	4		
	5	1994-1999	221	7	4	10		

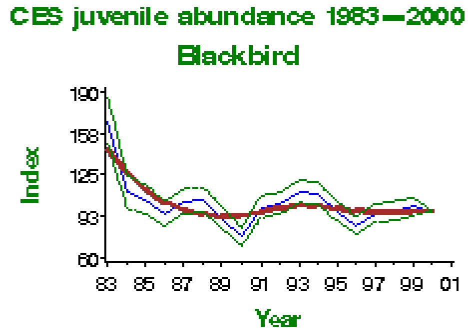
CBC farmland	31	1968-1999	97	-38	-46	-30	>25	
	25	1974-1999	96	-34	-41	-27	>25	
	10	1989-1999	96	-7	-13	-1		
	5	1994-1999	96	5	-1	9		
CBC woodland	31	1968-1999	85	-9	-22	5		
	25	1974-1999	92	-8	-18	6		
	10	1989-1999	97	5	-3	15		
	5	1994-1999	101	9	3	15		
CES adults	15	1984-1999	95	-18	.	.		
	10	1989-1999	110	-18	.	.		
	5	1994-1999	117	-5	.	.		
CES juveniles	15	1984-1999	85	-24	.	.		
	10	1989-1999	99	4	.	.		
	5	1994-1999	105	-5	.	.		
BBS UK	6	1994-2000	1787	13	10	16		
BBS England	6	1994-2000	1438	10	7	13		
BBS Scotland	6	1994-2000	144	2	-10	15		
BBS Wales	6	1994-2000	141	19	8	32		
BBS N.Ireland	6	1994-2000	55	125	76	188		

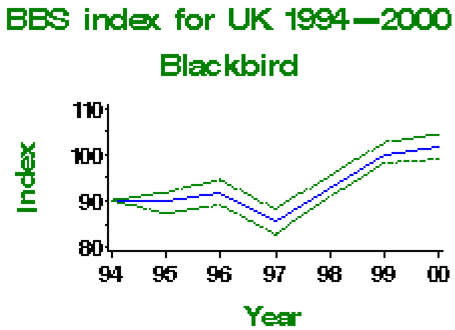
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

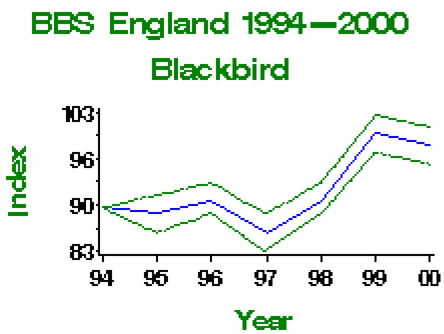


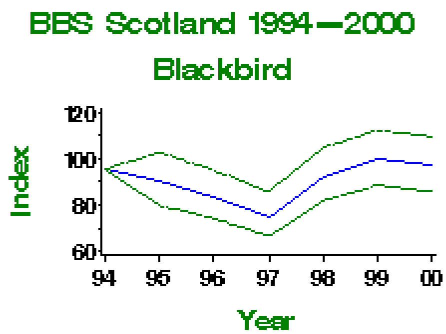


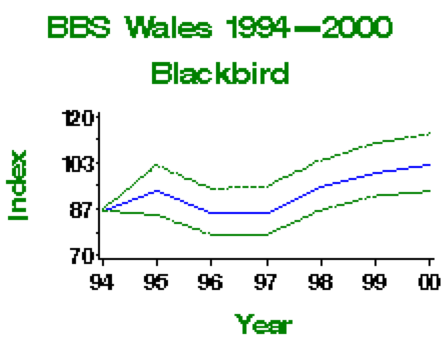












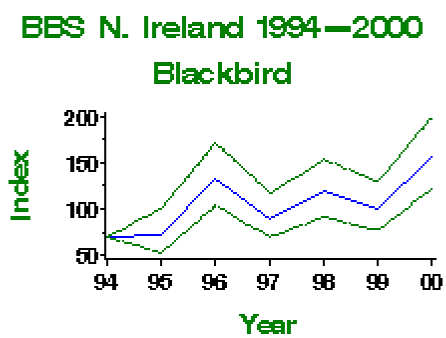
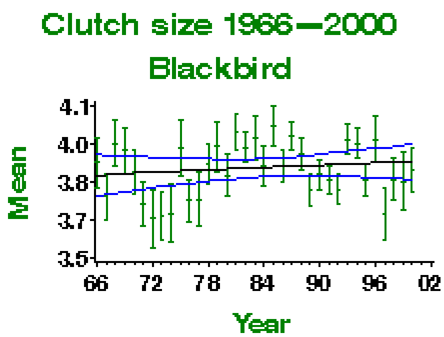
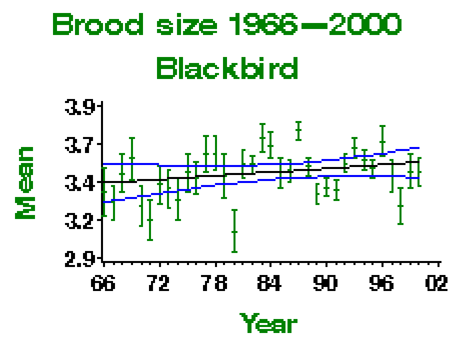


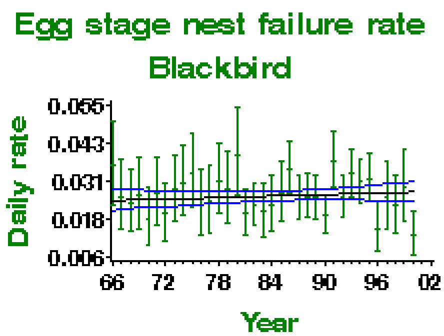
Table of productivity information for Blackbird

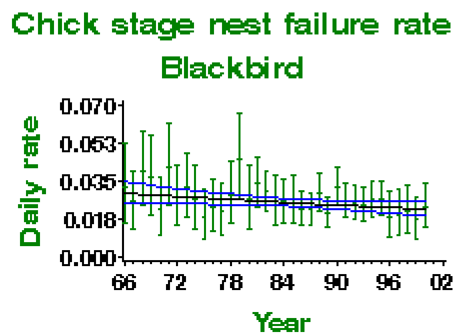
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	95	None				
Brood size	31	1968-1999	119	None				
Daily failure rate (eggs)	31	1968-1999	136	None				
Daily failure rate	31	1968-1999	115	Linear decline	0.0289 nests/day	0.0223 nests/day	-0.0066 nests/day	

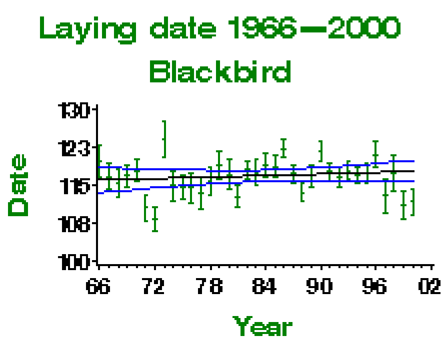
(chicks)								
Laying date	31	1968-1999	116	None				
Percentage juveniles (CES)	15	1984-1999	97	Smoothed trend	104 productivity index	100 productivity index	-4%	
Percentage juveniles (CES)	10	1989-1999	113	Smoothed trend	81 productivity index	100 productivity index	24%	
Percentage juveniles (CES)	5	1994-1999	119	Smoothed trend	96 productivity index	100 productivity index	4%	

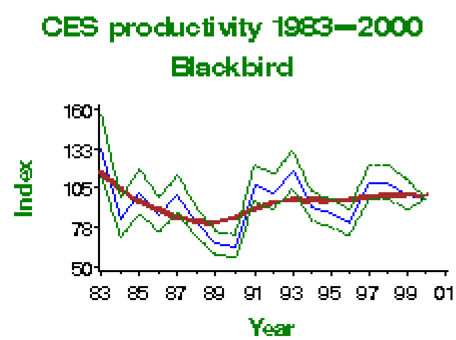












SONG THRUSH
Turdus philomelos

Conservation listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species Group

Long-term trend

UK: Rapid decline
Farmland: Rapid decline
Woodland: Moderate decline

Status summary

The CBC shows a rapid decline in Song Thrush abundance that began in the mid-1970s. The latter half of this decline can also be seen in the CES index. CES productivity shows no clear temporal trend and NRS data indicate that breeding performance has improved during this period (failure rates at the egg stage (16 days, comprising 13 days incubation + 3 days laying) decreased from 50% in 1981 to 40% in 1999); 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 and BBS trends suggest that the decline has levelled off. Decreasing Song Thrush abundance has been linked to agricultural intensification (**Fuller *et al.* 1995**), but woodland-specific factors such as drainage and the depletion of the shrub layer may also be implicated (**Vanhinsbergh *et al.* 2001**).

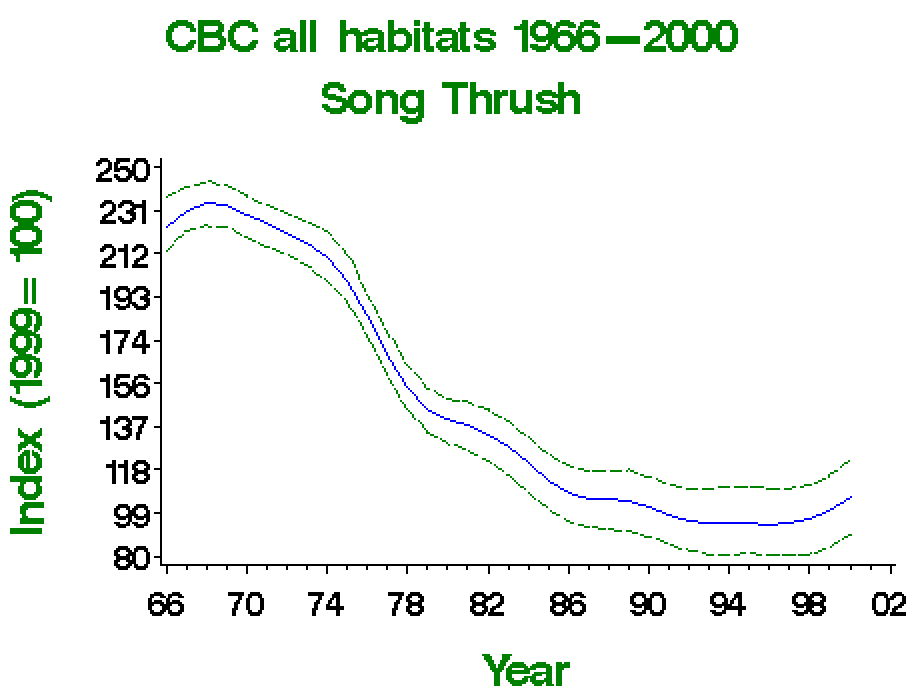
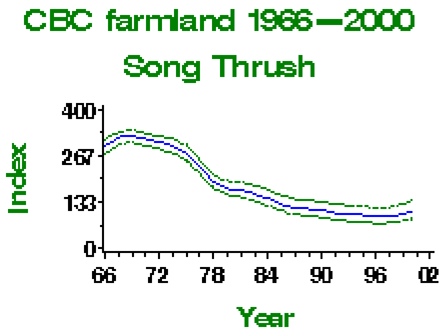


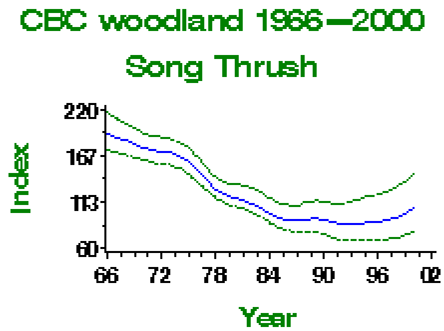
Table of population changes for Song Thrush

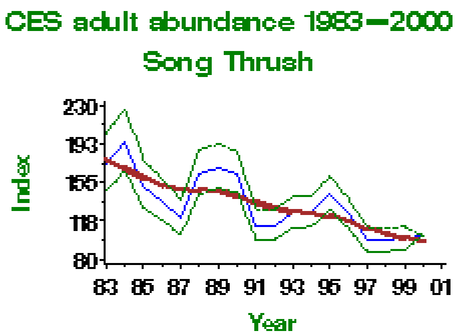
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	204	-57	-64	-51	>50	

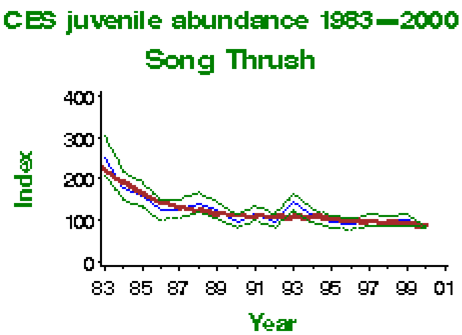
	25	1974-1999	208	-53	-59	-46	>50	
	10	1989-1999	187	-4	-13	6		
	5	1994-1999	189	6	-2	14		
CBC farmland	31	1968-1999	85	-69	-76	-60	>50	
	25	1974-1999	82	-66	-73	-57	>50	
	10	1989-1999	76	-12	-24	1		
	5	1994-1999	74	4	-8	14		
CBC woodland	31	1968-1999	81	-46	-58	-30	>25	
	25	1974-1999	87	-40	-52	-20	>25	
	10	1989-1999	91	6	-10	24		
	5	1994-1999	95	13	4	24		
CES adults	15	1984-1999	81	-40	.	.	[>25*]	
	10	1989-1999	93	-31	.	.	[>25*]	
	5	1994-1999	96	-19	.	.		
CES juveniles	15	1984-1999	65	-53	.	.	[>50*]	
	10	1989-1999	74	-21	.	.		
	5	1994-1999	77	-15	.	.		
BBS UK	6	1994-2000	1371	12	6	18		
BBS England	6	1994-2000	1067	7	1	13		
BBS Scotland	6	1994-2000	131	18	-3	44		
BBS Wales	6	1994-2000	119	34	15	57		
BBS N.Ireland	6	1994-2000	46	27	-11	83		Small sample

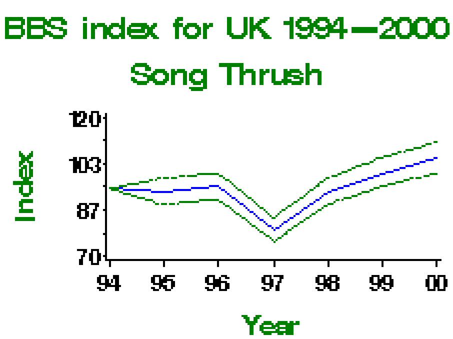
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

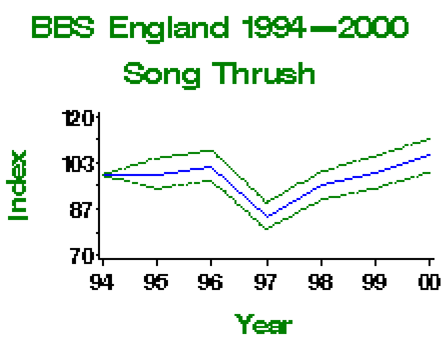


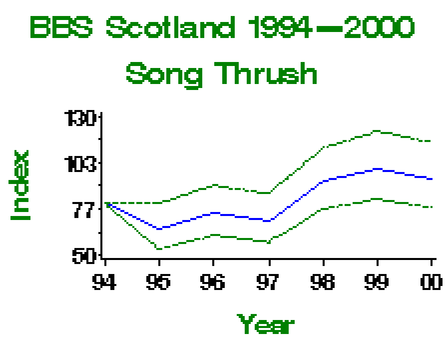


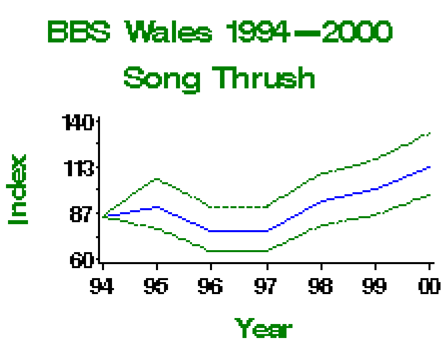












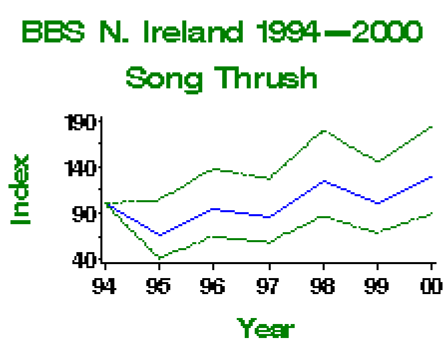
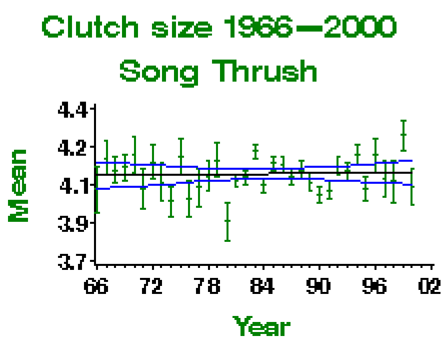
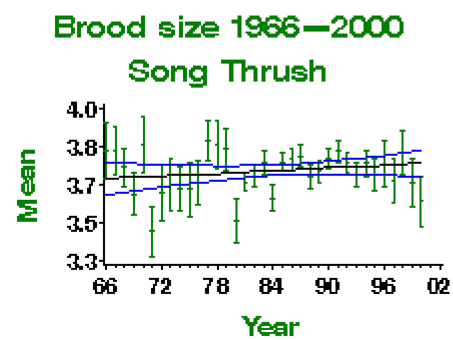


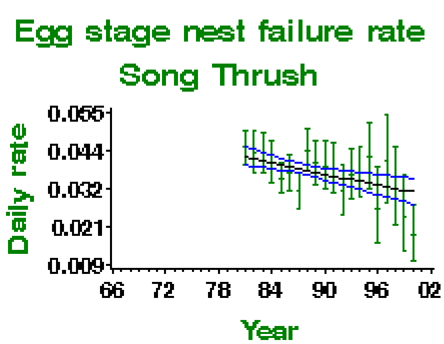
Table of productivity information for Song Thrush

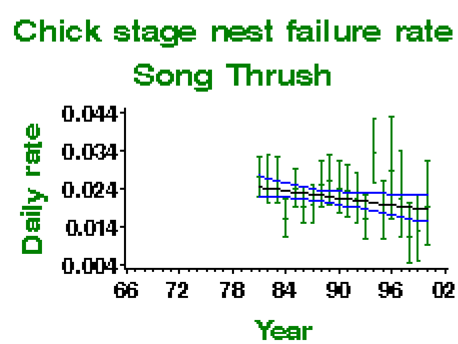
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

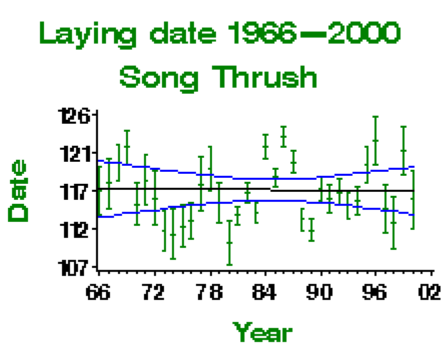
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	178	None				
Brood size	31	1968-1999	197	None				
Daily failure rate (eggs)	18	1981-1999	360	Linear decline	0.0421 nests/day	0.0317 nests/day	-0.0104 nests/day	
Daily failure rate (chicks)	18	1981-1999	267	Linear decline	0.0247 nests/day	0.0189 nests/day	-0.0058 nests/day	
Laying date	31	1968-1999	206	None				
Percentage juveniles (CES)	15	1984-1999	87	Smoothed trend	127 productivity index	100 productivity index	-21%	
Percentage juveniles (CES)	10	1989-1999	101	Smoothed trend	81 productivity index	100 productivity index	23%	
Percentage juveniles (CES)	5	1994-1999	106	Smoothed trend	91 productivity index	100 productivity index	10%	

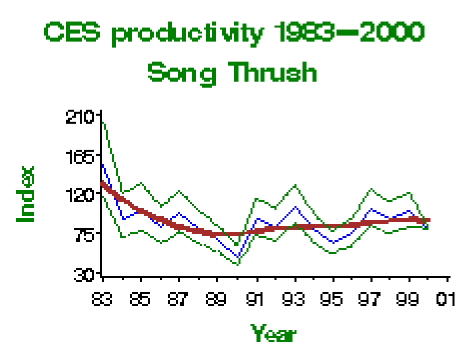












MISTLE THRUSH
Turdus viscivorus

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Moderate decline
Farmland: Rapid decline

Status summary

Like those of **Song Thrush** and **Blackbird**, Mistle Thrush populations have declined significantly since the mid-1970s, especially on farmland, but both CBC and particularly BBC data suggest that the decline may now have ceased. 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**).

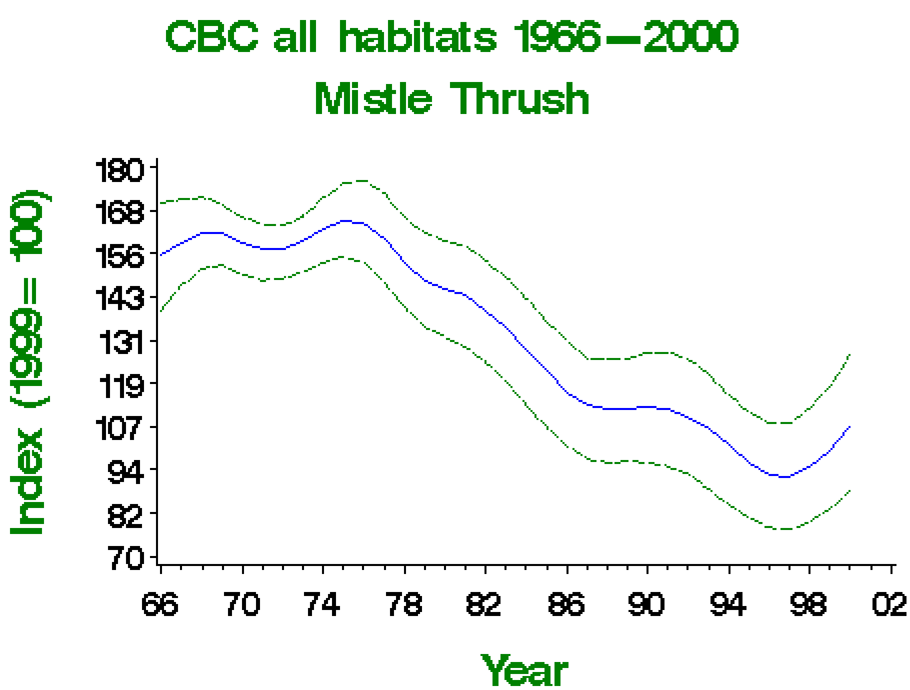
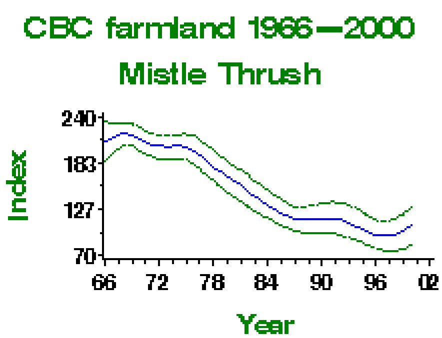


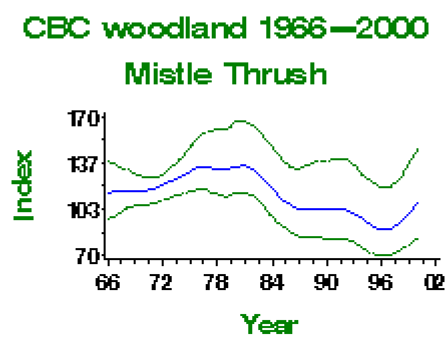
Table of population changes for Mistle Thrush

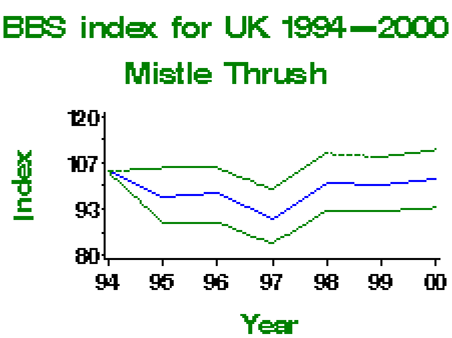
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	142	-38	-49	-26	>25	
	25	1974-1999	147	-38	-48	-29	>25	
	10	1989-1999	127	-11	-21	1		
		1994-						

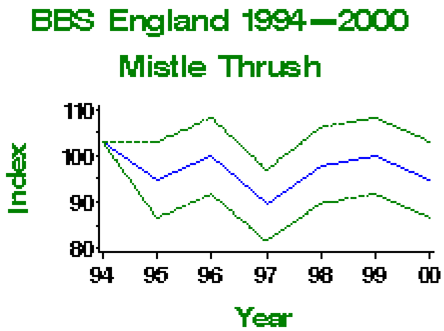
	5	1999	123	-1	-9	7		
CBC farmland	31	1968-1999	60	-54	-64	-44	>50	
	25	1974-1999	59	-51	-61	-43	>50	
	10	1989-1999	53	-13	-27	-1		
	5	1994-1999	51	-6	-18	2		
CBC woodland	31	1968-1999	57	-15	-38	35		
	25	1974-1999	63	-21	-37	4		
	10	1989-1999	62	-4	-18	13		
	5	1994-1999	61	5	-9	20		
BBS UK	6	1994-2000	939	-2	-10	6		
BBS England	6	1994-2000	764	-8	-16	0		
BBS Scotland	6	1994-2000	59	43	1	101		
BBS Wales	6	1994-2000	77	-3	-27	28		
BBS N.Ireland	6	1994-2000	35	-35	-61	7		Small sample

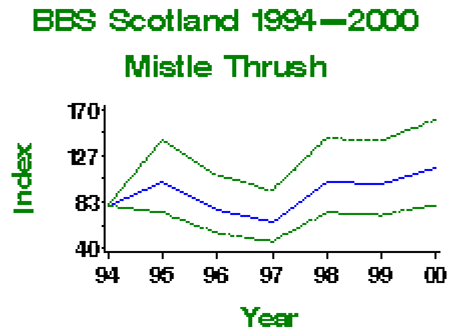
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

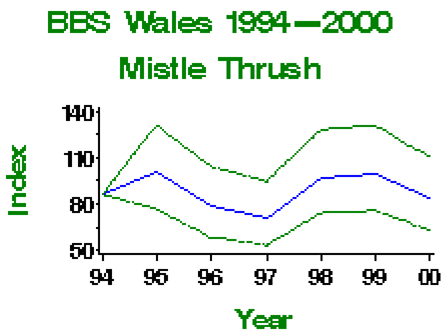












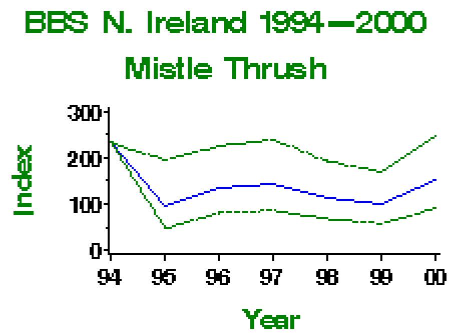
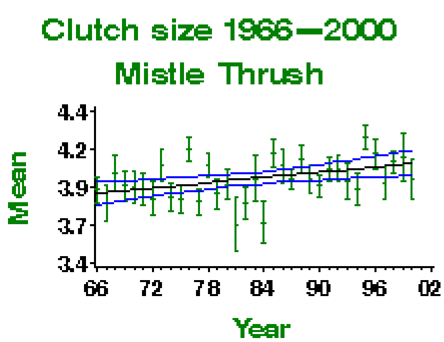
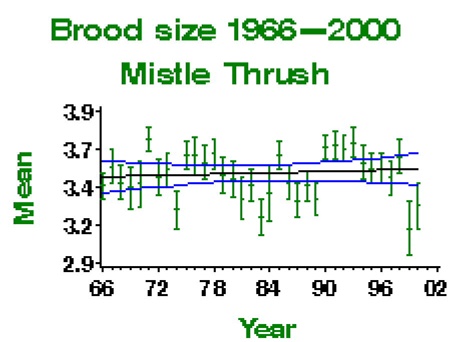
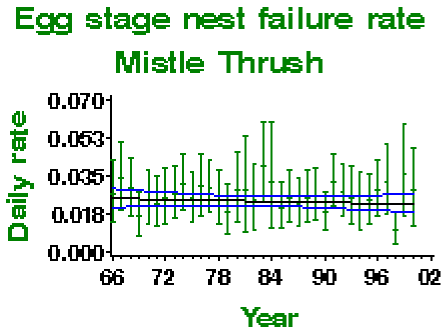


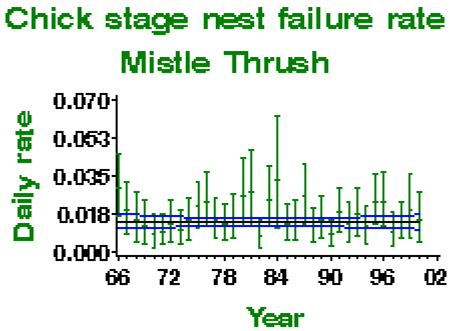
Table of productivity information for Mistle Thrush

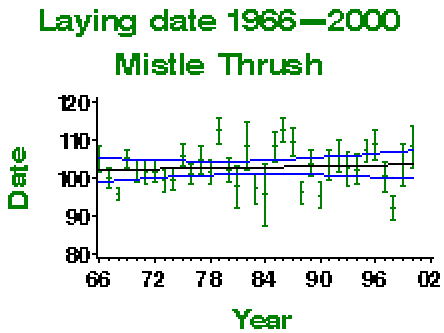
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	39	Linear increase	3.87 eggs	4.05 eggs	0.18 eggs	
Brood size	31	1968-1999	73	None				
Daily failure rate (eggs)	31	1968-1999	64	None				
Daily failure rate (chicks)	31	1968-1999	66	None				
Laying date	31	1968-1999	33	None				











Insufficient data on CES available for this species

GRASSHOPPER WARBLER
Locustella naevia

Conservation listings

Table 4/Amber (25-49% Distribution decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Probable decline

Status summary

Grasshopper Warbler was Amber-listed because of a contraction in range during the period preceeding the 1988-91 Atlas, reportedly due to habitat loss (**Gibbons *et al.* 1993**). CBC analysis cannot be conducted reliably because of small sample sizes but a rapid population decline is believed to have occurred. The BBS shows fluctuations in abundance but no net change. If given suitable habitat and conditions, the species has a high reproductive potential, as demonstrated by a detailed analysis of the NRS dataset (**Glue 1990**).

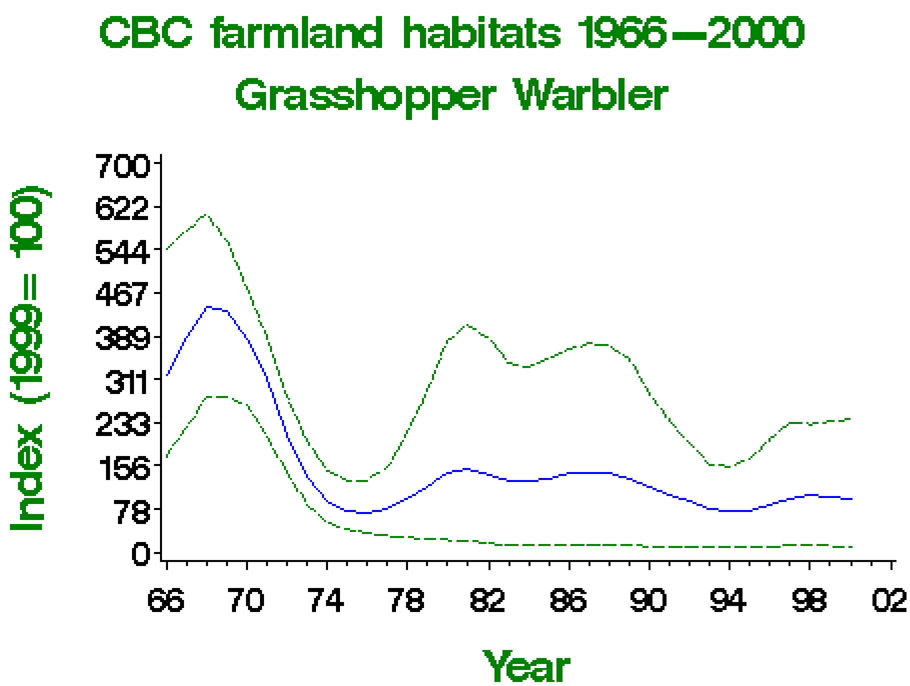
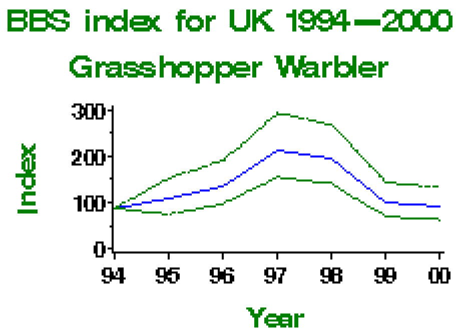
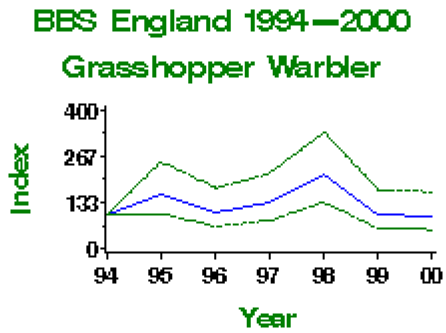


Table of population changes for Grasshopper Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC farmland	31	1968-1999	5	-77	-98	-33	>50	Small sample
	25	1974-1999	4	9	-88	146		Small sample
	10	1989-1999	3	-25	-63	71		Small sample
	5	1994-1999	3	38	-36	115		Small sample
BBS UK	6	1994-2000	59	5	-28	52		
BBS England	6	1994-2000	27	-5	-45	63		Small sample

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





No productivity information available for this species

SEDGE WARBLER
Acrocephalus schoenobaenus

Conservation listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend
Farmland: Moderate decline

Status summary

Prior to the inception of BBS, Sedge Warbler populations were not represented well by any UK monitoring scheme. However, the CBC identified a decline, especially on farmland, that ceased in the mid-1970s. The populations monitored by the CBC and WBS have since remained more-or-less stable, a pattern also seen in the BBS results for the last seven years. The CES provides the biggest sample for Sedge Warbler and it shows large inter-annual fluctuations and a suggestion of a decline through the 1990s. Detailed analysis of BTO datasets has shown that much of the variation in population size is related to changes in adult survival rates which, in turn, are related to changes in rainfall on their Sahel (trans-Saharan) wintering grounds (**Peach *et al.* 1991**). No strong trends are apparent in breeding performance, but CES productivity has shown a steady decline since 1983.

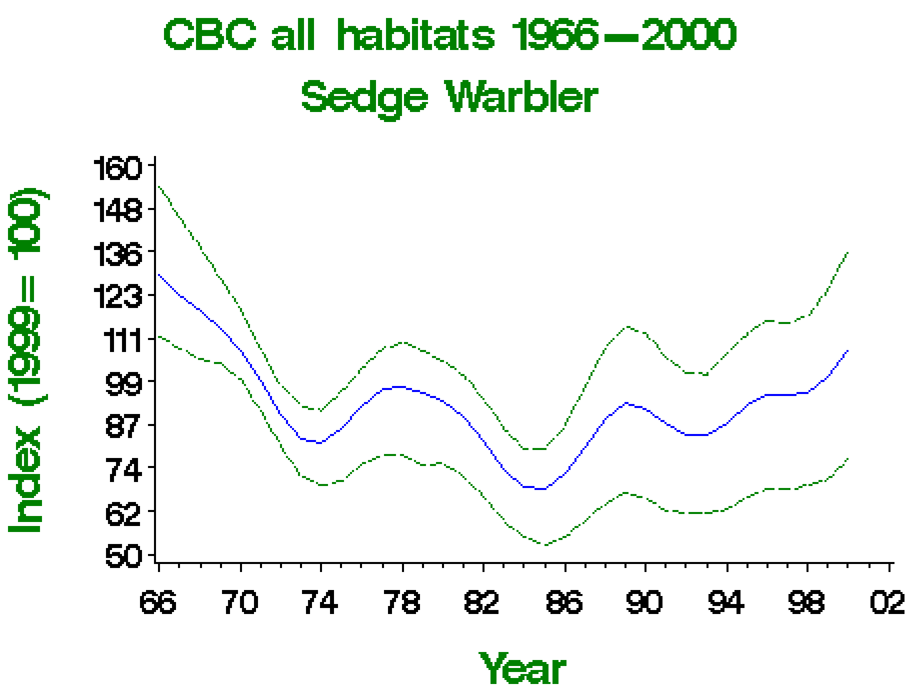
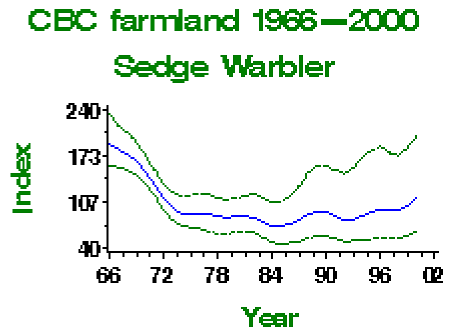


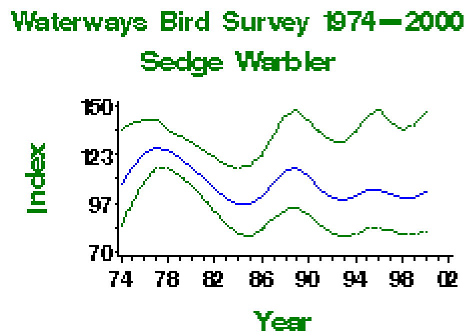
Table of population changes for Sedge Warbler

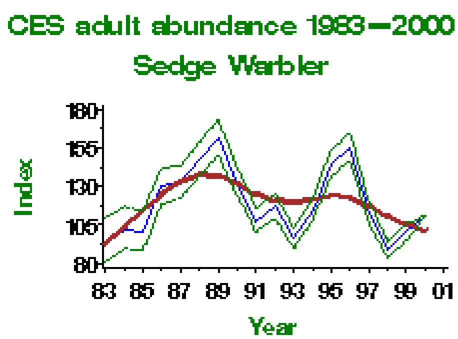
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment

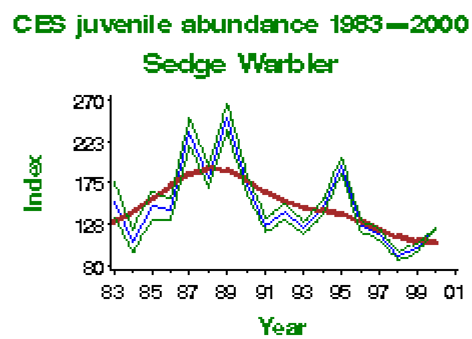
CBC all habitats	**31**	**1968-1999**	**44**	**-16**	**-43**	**7**		**Unrepresentative**
	25	**1974-1999**	**44**	**23**	**-7**	**47**		**Unrepresentative**
	10	**1989-1999**	**39**	**8**	**-10**	**34**		**Unrepresentative**
	5	**1994-1999**	**41**	**15**	**1**	**28**		**Unrepresentative**
CBC farmland	**31**	**1968-1999**	**24**	**-44**	**-69**	**9**		**Unrepresentative**
	25	**1974-1999**	**23**	**11**	**-31**	**95**		**Unrepresentative**
	10	**1989-1999**	**23**	**7**	**-15**	**43**		**Unrepresentative**
	5	**1994-1999**	**24**	**16**	**-5**	**33**		**Unrepresentative**
WBS waterways	**24**	**1975-1999**	**44**	**-14**	**-40**	**39**		
	10	**1989-1999**	**54**	**-14**	**-24**	**1**		
	5	**1994-1999**	**57**	**0**	**-8**	**11**		
CES adults	**15**	**1984-1999**	**63**	**2**	**.**	**.**		
	10	**1989-1999**	**76**	**-23**	**.**	**.**		
	5	**1994-1999**	**85**	**-13**	**.**	**.**		
CES juveniles	**15**	**1984-1999**	**59**	**-24**	**.**	**.**		
	10	**1989-1999**	**72**	**-43**	**.**	**.**	**[>25*]**	
	5	**1994-1999**	**80**	**-24**	**.**	**.**		
BBS UK	**6**	**1994-2000**	**241**	**55**	**37**	**76**		
BBS England	**6**	**1994-2000**	**152**	**30**	**11**	**52**		
BBS Scotland	**6**	**1994-2000**	**48**	**86**	**37**	**153**		**Small sample**
BBS N.Ireland	**6**	**1994-2000**	**21**	**36**	**-8**	**102**		**Small sample**

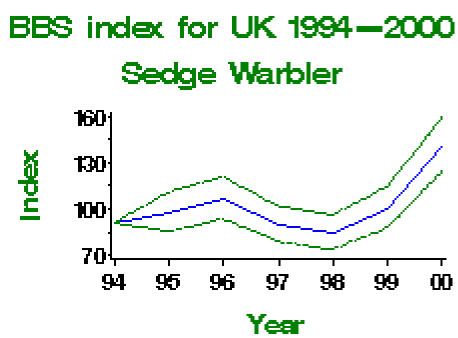
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

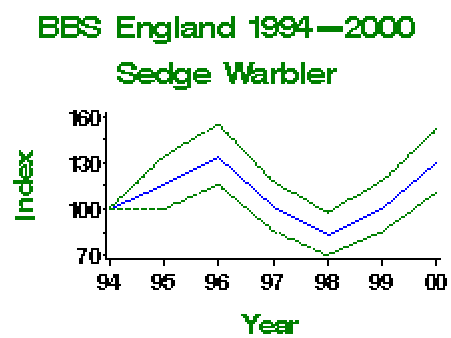


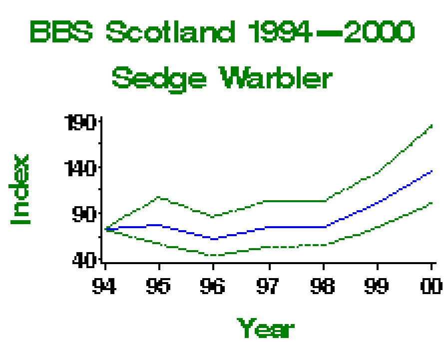












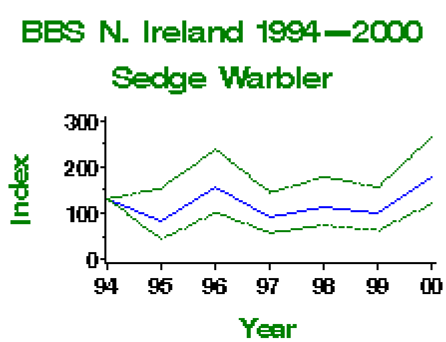
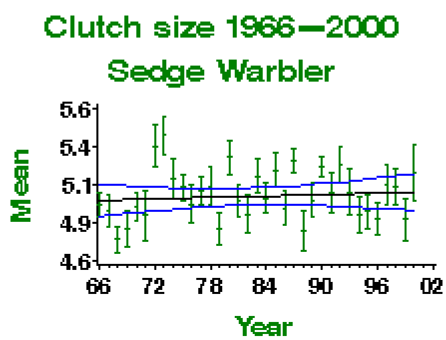
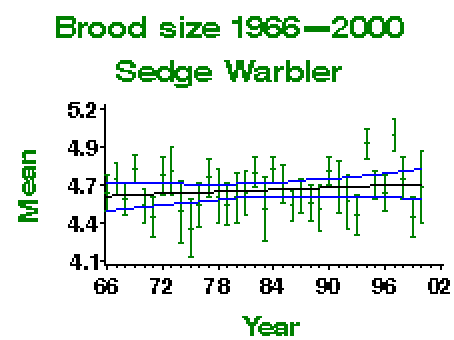


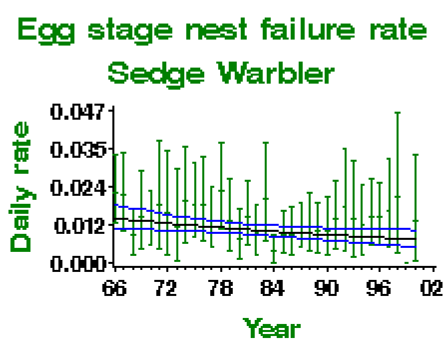
Table of productivity information

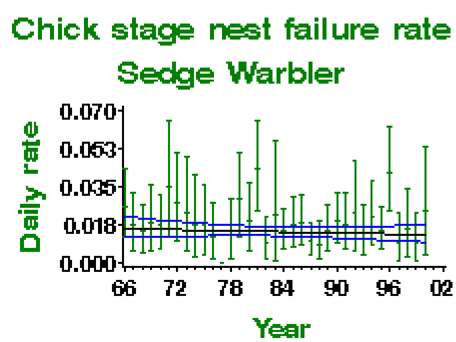
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

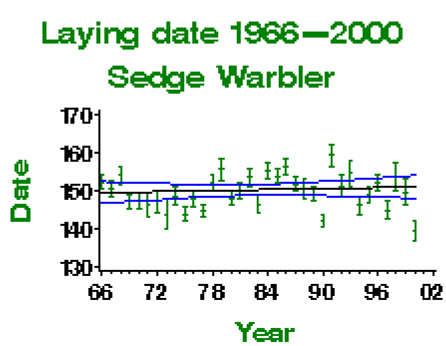
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	41	None				
Brood size	31	1968-1999	64	None				
Daily failure rate (eggs)	31	1968-1999	48	Linear decline	0.0132 nests/day	0.0073 nests/day	-0.0059 nests/day	
Daily failure rate (chicks)	31	1968-1999	55	None				
Laying date	31	1968-1999	55	None				
Percentage juveniles (CES)	15	1984-1999	68	Smoothed trend	157 productivity index	100 productivity index	-36% [>25]	
Percentage juveniles (CES)	10	1989-1999	81	Smoothed trend	144 productivity index	100 productivity index	-31% [>25*]	
Percentage juveniles (CES)	5	1994-1999	90	Smoothed trend	129 productivity index	100 productivity index	-22%	

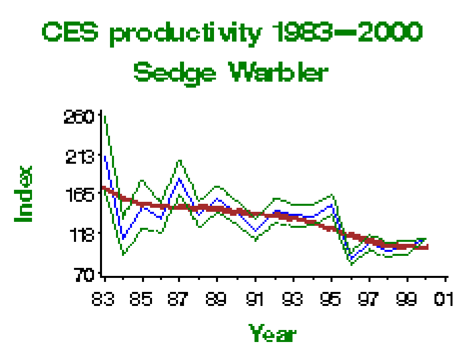












REED WARBLER
Acrocephalus scirpaceus

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Shallow decline over past 15 years
Linear waterways: Moderate increase

Status summary

The CBC and WBS show steady increases over time but are unlikely to be representative of the UK Reed Warbler population as a whole. (The CBC index is based on a relatively small sample of mainly coastal plots.) The CES, which may provide better coverage of the population, shows a decline from 1983 until the early 1990s, followed by stability or a partial recovery. NRS breeding performance has improved slightly over time (nest failures at the chick stage (12 days) fell from 20% to 12%) and a small improvement is apparent in CES productivity. The trend towards advancement of laying dates can be partially explained by recent climate change ([Crick & Sparks 1999]).

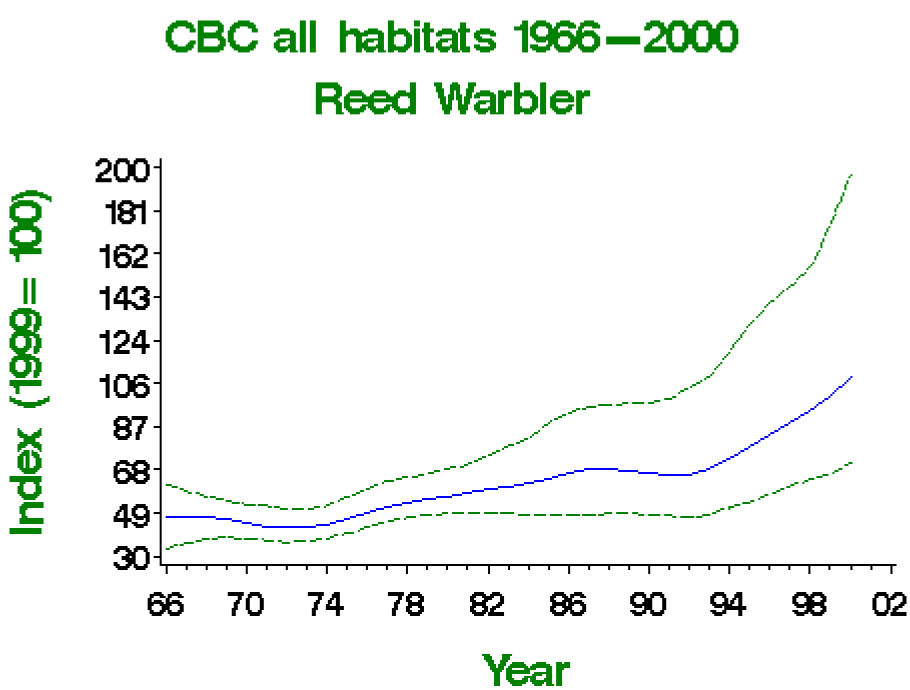
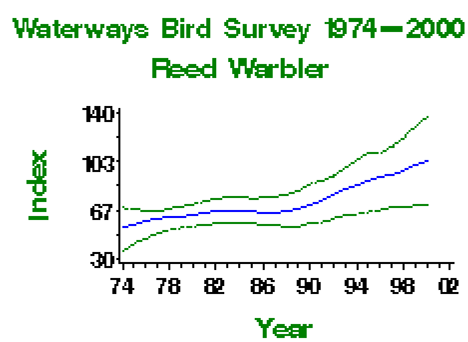


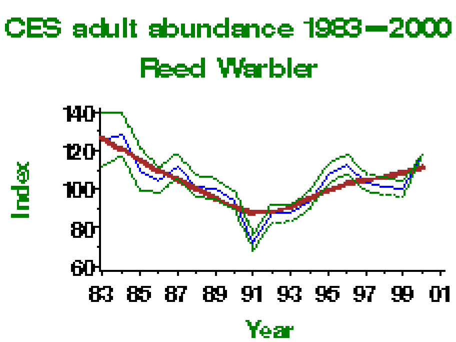
Table of population changes for Reed Warbler

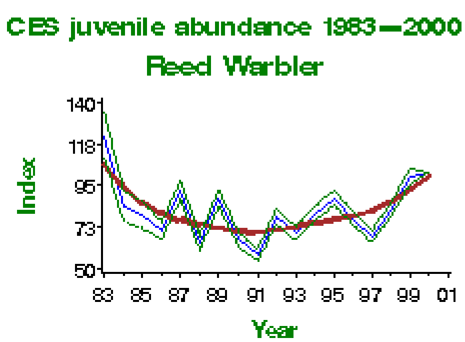
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	24	113	45	277		Unrepresentative?
	25	1974-1999	25	128	66	264		Unrepresentative?
	10	1989-1999	27	48	24	95		Unrepresentative?

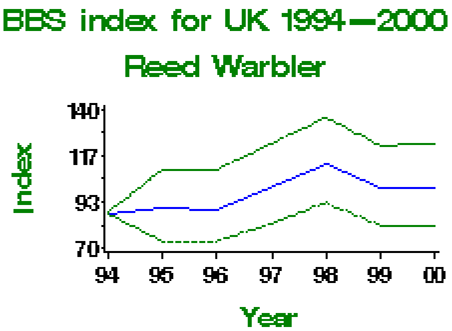
	5	1994-1999	29	39	27	55		Unrepresentative?
WBS waterways	24	1975-1999	19	77	16	181		Small sample
	10	1989-1999	26	47	18	65		
	5	1994-1999	30	16	-8	36		
CES adults	15	1984-1999	52	-10	.	.		
	10	1989-1999	62	14	.	.		
	5	1994-1999	67	14	.	.		
CES juveniles	15	1984-1999	54	-2	.	.		
	10	1989-1999	64	29	.	.		
	5	1994-1999	71	24	.	.		
BBS UK	6	1994-2000	85	14	-7	40		
BBS England	6	1994-2000	83	13	-8	39		

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









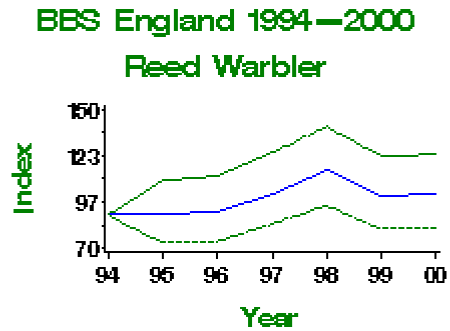
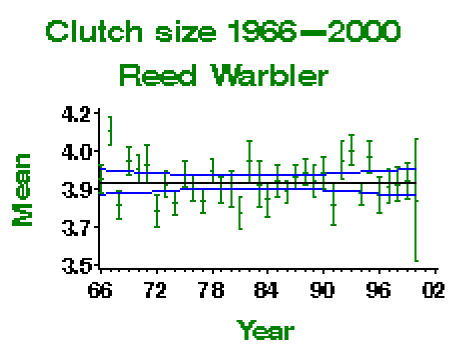
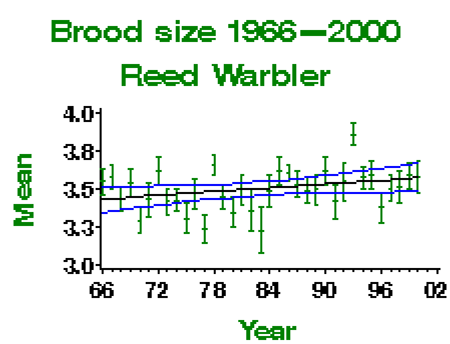
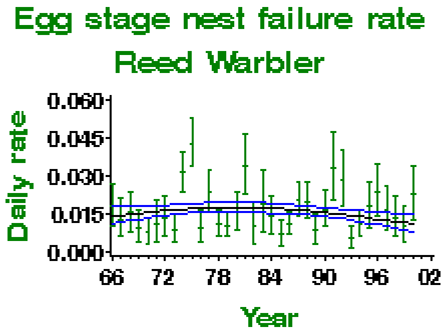


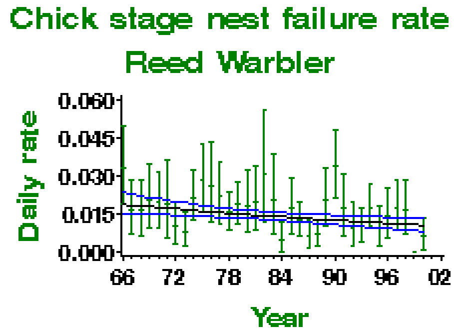
Table of productivity information for Reed Warbler

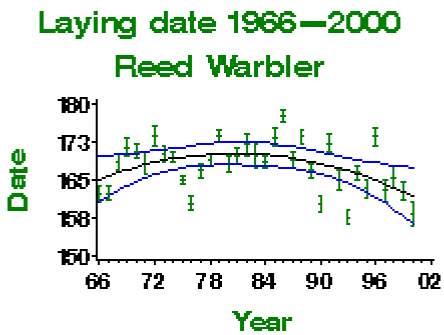
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	102	None				
Brood size	31	1968-1999	113	None				
Daily failure rate (eggs)	31	1968-1999	127	Curvilinear	0.015 nests/day	0.0115 nests/day	-0.0035 nests/day	
Daily failure rate (chicks)	31	1968-1999	90	Linear decline	0.0182 nests/day	0.0107 nests/day	-0.0075 nests/day	
Laying date	31	1968-1999	145	Curvilinear	day 166	day 163	-3 days	
Percentage juveniles (CES)	15	1984-1999	59	Smoothed trend	87 productivity index	100 productivity index	15%	
Percentage juveniles (CES)	10	1989-1999	70	Smoothed trend	92 productivity index	100 productivity index	8%	
Percentage juveniles (CES)	5	1994-1999	77	Smoothed trend	95 productivity index	100 productivity index	5%	

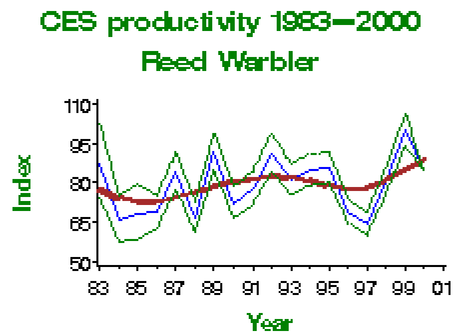





Egg stage nest failure rate
Reed Warbler
Daily rate
0.060
0.045
0.030
0.015
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Reed Warbler
Daily rate
0.060
0.045
0.030
0.015
0.000
66 72 78 84 90 96 02
Year


Laying date 1966-2000
Reed Warbler
Date
180
173
165
158
150
66 72 78 84 90 96 02
Year


CES productivity 1983-2000
Reed Warbler
Index
110
95
80
65
50
83 85 87 89 91 93 95 97 99 01
Year

BLACKCAP
Sylvia atricapilla

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Rapid increase

Status summary

Blackcap abundance has increased consistently since the late 1970s, a trend common to all habitats and evident from both the CBC and the CES indices. The last seven years' BBS results also show a trend towards increasing abundance, although the causal factors remain unknown. There have been no clear accompanying trends in productivity. The trend towards earlier laying can be explained by recent climate change (Crick & Sparks 1999).

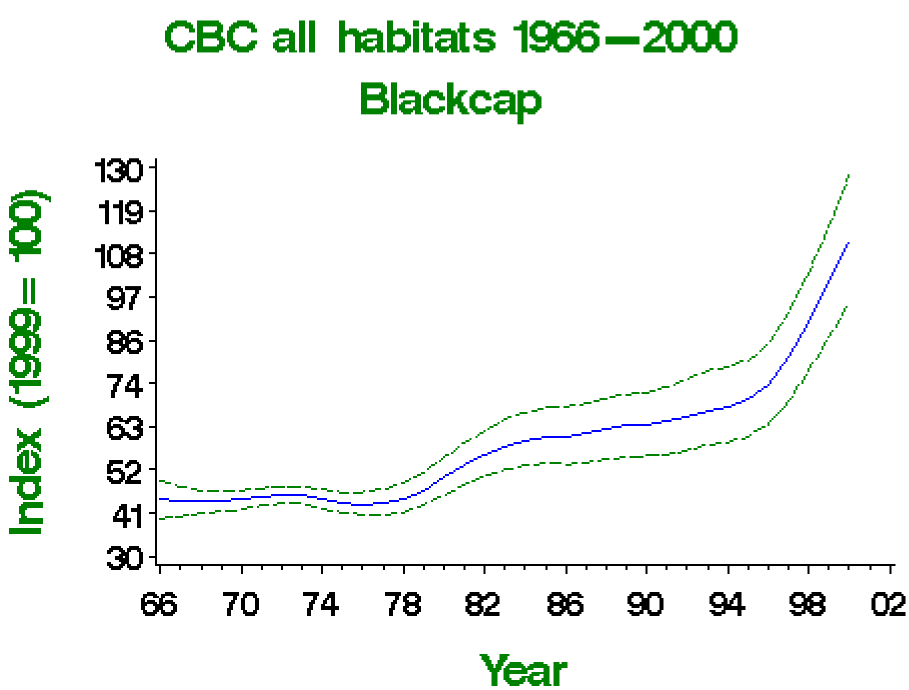
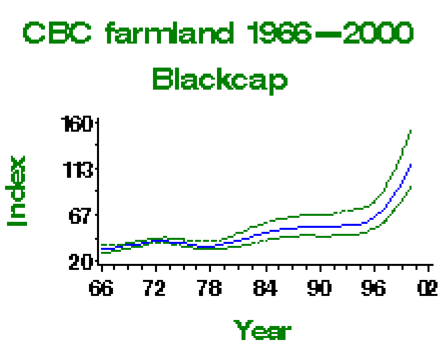


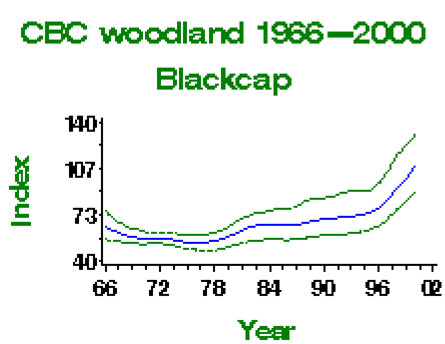
Table of population changes for Blackcap

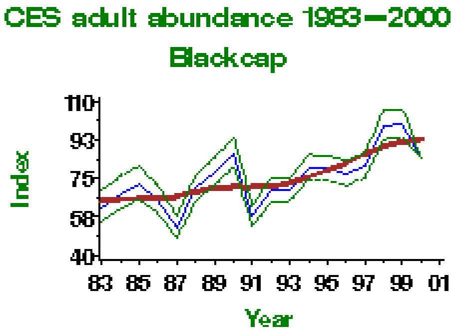
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	156	127	91	170		
	25	1974-1999	166	124	95	153		
	10	1989-1999	177	57	49	68		
	5	1994-	184	46	39	54		

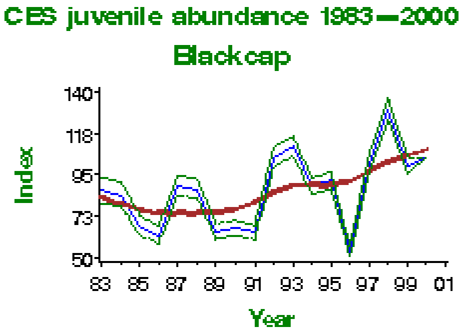
		1999						
CBC farmland	31	1968-1999	57	192	124	284		
	25	1974-1999	59	153	101	214		
	10	1989-1999	68	85	62	104		
	5	1994-1999	70	74	58	89		
CBC woodland	31	1968-1999	72	68	31	121		
	25	1974-1999	79	84	58	116		
	10	1989-1999	88	44	35	56		
	5	1994-1999	93	36	29	45		
CES adults	15	1984-1999	85	40	.	.		
	10	1989-1999	99	30	.	.		
	5	1994-1999	106	21	.	.		
CES juveniles	15	1984-1999	86	34	.	.		
	10	1989-1999	100	42	.	.		
	5	1994-1999	108	18	.	.		
BBS UK	6	1994-2000	1026	49	41	59		
BBS England	6	1994-2000	902	44	36	53		
BBS Scotland	6	1994-2000	27	61	1	156		Small sample
BBS Wales	6	1994-2000	83	66	32	109		

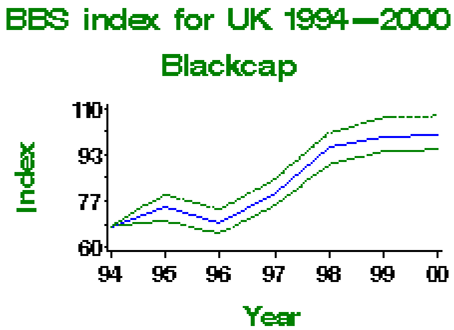
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

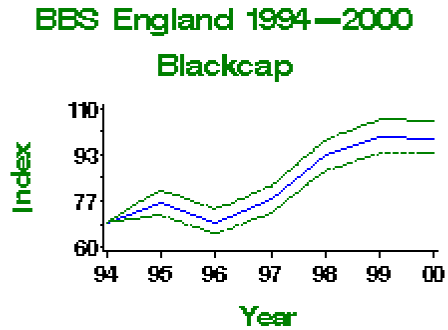


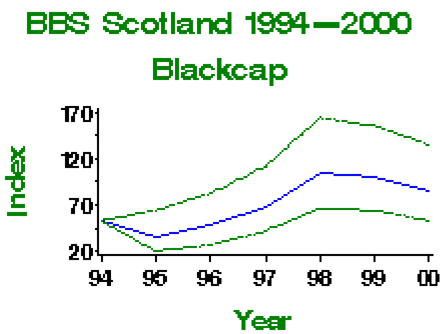












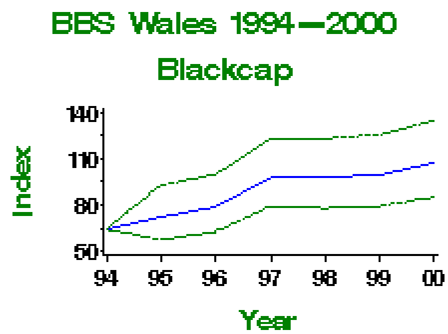
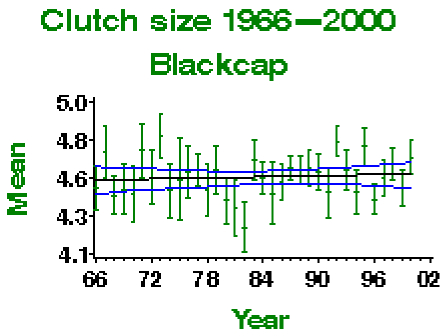
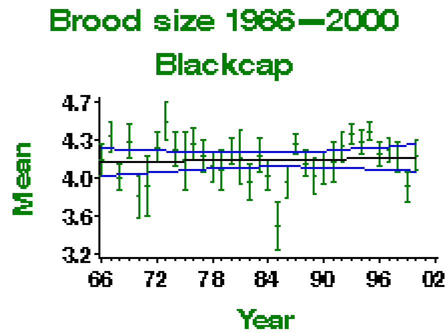
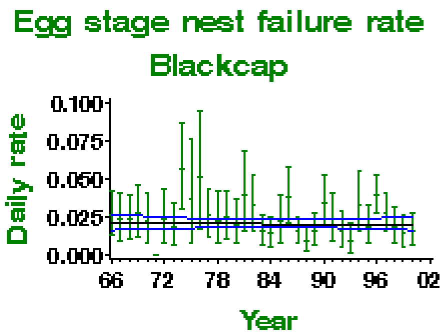


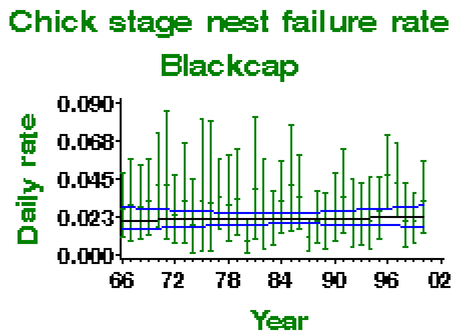
Table of productivity information

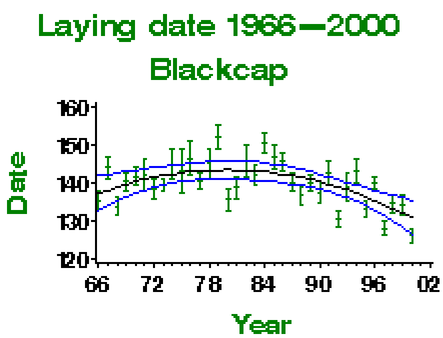
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	35	None				
Brood size	31	1968-1999	42	None				
Daily failure rate (eggs)	31	1968-1999	46	None				
Daily failure rate (chicks)	31	1968-1999	35	None				
Laying date	31	1968-1999	37	Curvilinear	day 139	day 132	-7 days	
Percentage juveniles (CES)	15	1984-1999	93	Smoothed trend	108 productivity index	100 productivity index	-8%	
Percentage juveniles (CES)	10	1989-1999	108	Smoothed trend	100 productivity index	100 productivity index	0%	
Percentage juveniles (CES)	5	1994-1999	115	Smoothed trend	110 productivity index	100 productivity index	-9%	

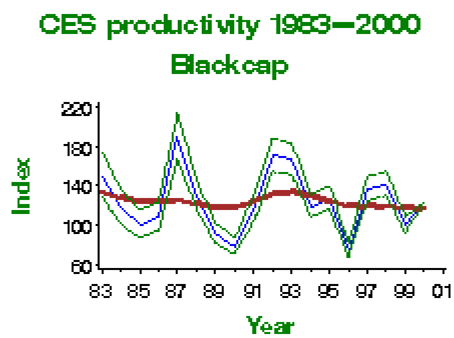

Clutch size 1966–2000
Blackcap
Mean
5.0
4.8
4.6
4.3
4.1
66 72 78 84 90 96 02
Year


Brood size 1966–2000
Blackcap
Mean
4.7
4.3
4.0
3.6
3.2
66 72 78 84 90 96 02
Year


Egg stage nest failure rate
Blackcap
Daily rate
0.100
0.075
0.050
0.025
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Blackcap
Daily rate
0.090
0.068
0.045
0.023
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–2000
Blackcap
Date
160
150
140
130
120
66 72 78 84 90 96 02
Year


CES productivity 1983–2000
Blackcap
Index
220
180
140
100
60
83 85 87 89 91 93 95 97 99 01
Year

GARDEN WARBLER
Sylvia borin

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend

Status summary

Garden Warbler abundance has varied in parallel, to some extent, with that of other trans-Saharan migrant warblers (**Siriwardena *et al.* 1998b**), probably reflecting the influence of the environment on the wintering grounds. Despite large short-term fluctuations in abundance, the CBC, CES and BBS all suggest long-term population stability. Productivity, measured by the CES, has declined recently.

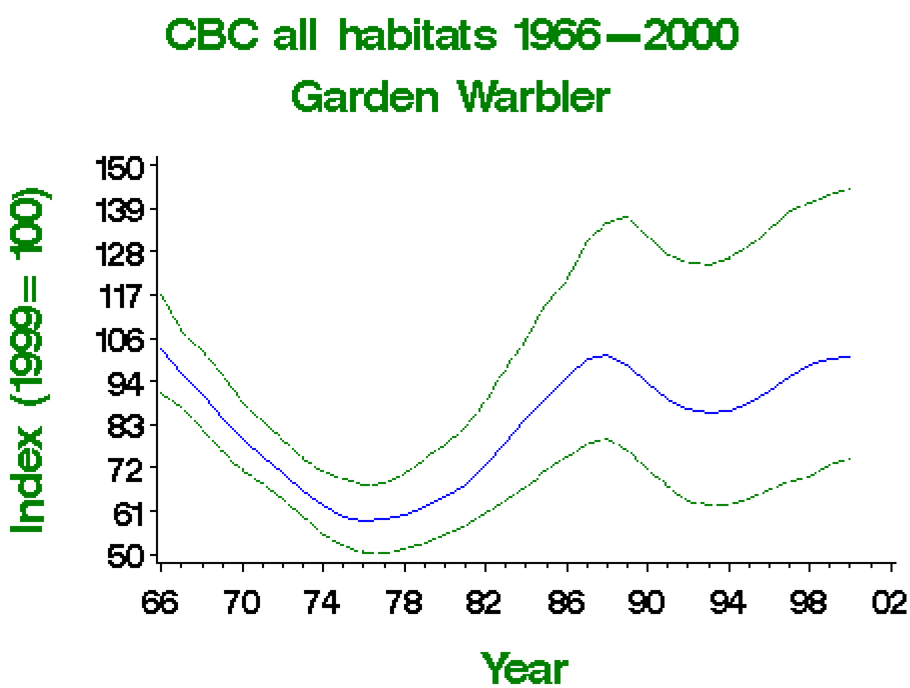
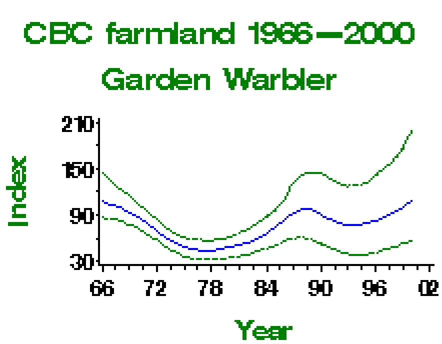


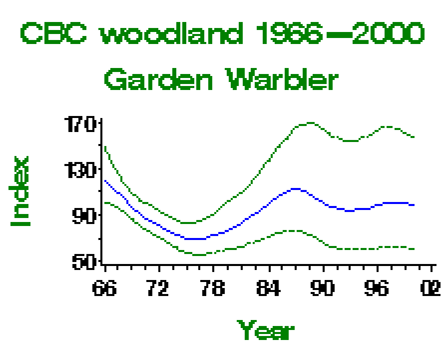
Table of population changes for Garden Warbler

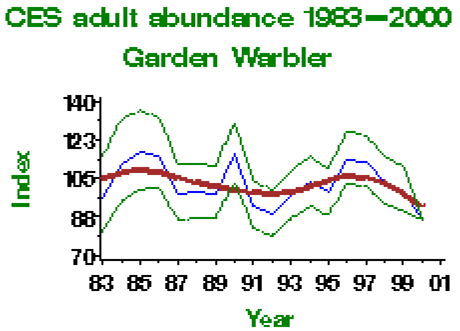
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	85	10	-20	59		
	25	1974-1999	89	60	22	115		
	10	1989-1999	93	1	-11	17		
		1994-						

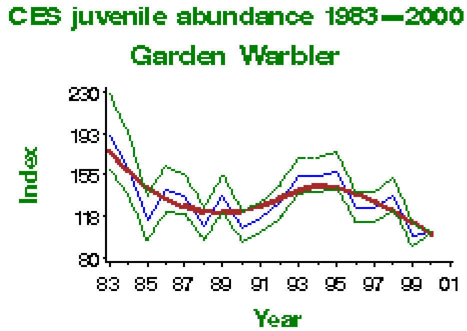
	5	1999	99	15	4	28		
CBC farmland	31	1968-1999	27	0	-48	61		
	25	1974-1999	27	84	12	227		
	10	1989-1999	33	3	-24	36		
	5	1994-1999	35	30	10	64		
CBC woodland	31	1968-1999	45	-5	-42	75		
	25	1974-1999	48	38	-7	118		
	10	1989-1999	51	-6	-19	10		
	5	1994-1999	53	6	-7	19		
CES adults	15	1984-1999	67	-8	.	.		
	10	1989-1999	79	-3	.	.		
	5	1994-1999	83	-3	.	.		
CES juveniles	15	1984-1999	65	-29	.	.	[>25*]	
	10	1989-1999	75	-7	.	.		
	5	1994-1999	79	-22	.	.		
BBS UK	6	1994-2000	373	-5	-16	8		
BBS England	6	1994-2000	306	-8	-19	6		
BBS Wales	6	1994-2000	50	-3	-29	33		Small sample

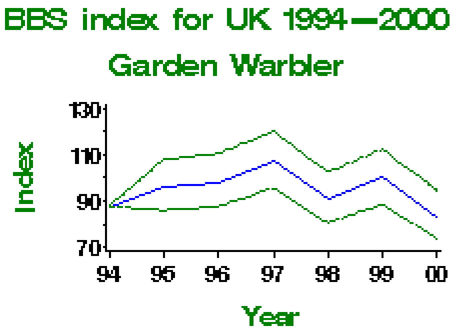
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

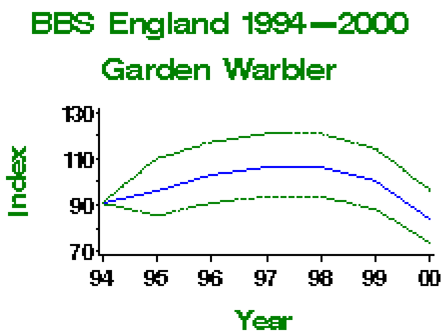












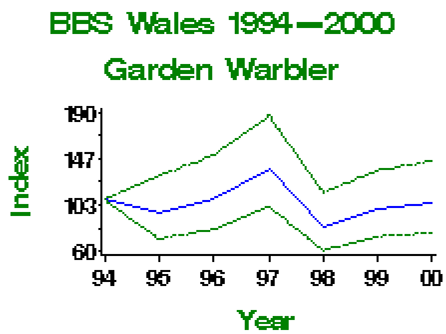
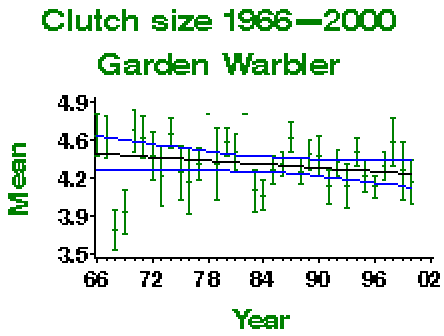
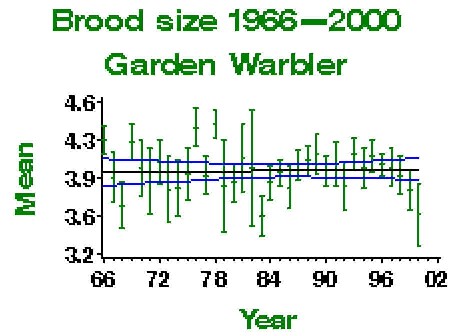


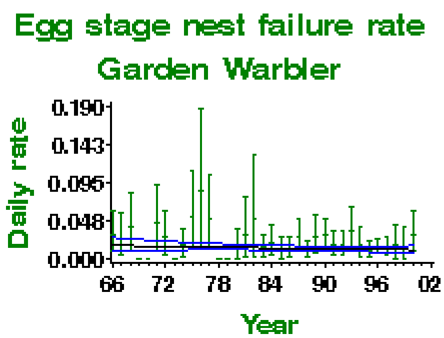
Table of productivity information

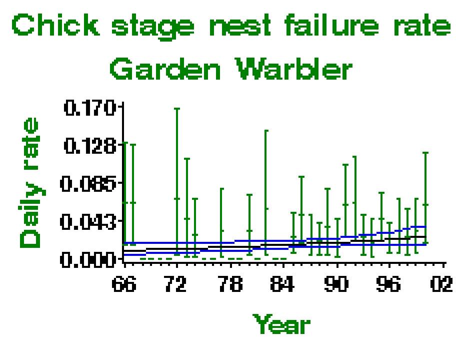
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	17	None				Small sample
Brood size	31	1968-1999	26	None				Small sample
Daily failure rate (eggs)	31	1968-1999	23	None				Small sample
Daily failure rate (chicks)	31	1968-1999	20	Linear increase	0.0096 nests/day	0.0236 nests/day	0.014 nests/day	Small sample
Laying date	31	1968-1999	22	None				Small sample
Percentage juveniles (CES)	15	1984-1999	79	Smoothed trend	167 productivity index	100 productivity index	-40% [>25*]	
Percentage juveniles (CES)	10	1989-1999	92	Smoothed trend	125 productivity index	100 productivity index	-20%	
Percentage		1994-		Smoothed	146	100	-32%	

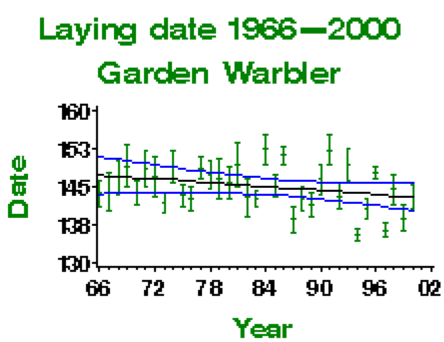
juveniles (CES)	5	1999	96	trend	productivity index	productivity index	[>25*]	

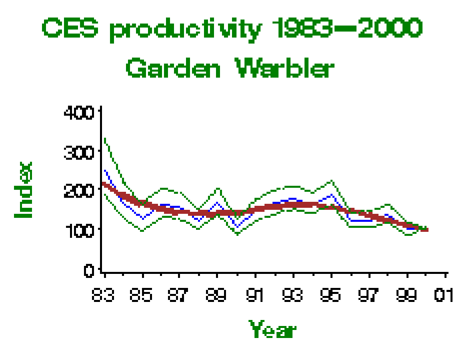












LESSER WHITETHROAT
Sylvia curruca

Conservation listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend
Scrub (CES): Moderate decline

Status summary

Lesser Whitethroat abundance tended to be stable (albeit with short-term fluctuations) from the 1960s until the late 1980s, but there is evidence for a subsequent moderate decline during the 1990s in the CBC, CES and BBS trends. These changes were significant and large enough over the relevant period to trigger BTO Alerts from all three schemes. This decline warrants conservation concern and possible causes should be investigated. A reduction in brood productivity, recently observed on CES plots, may explain the drop in numbers.

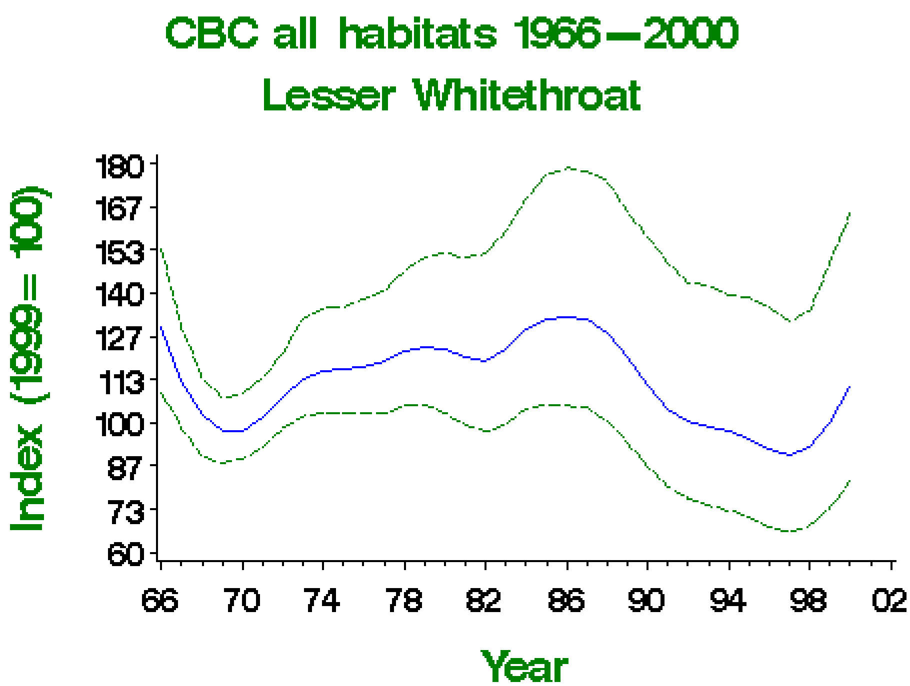
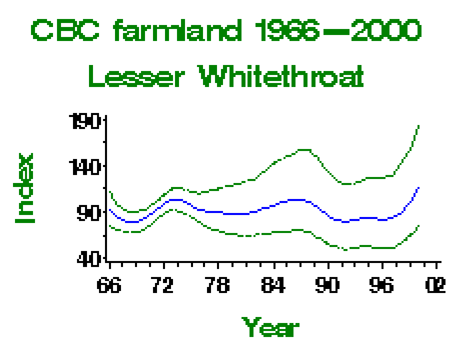


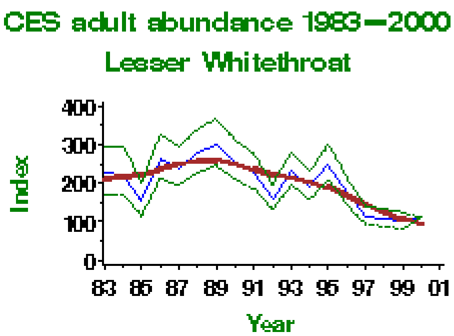
Table of population change for Lesser Whitethroat

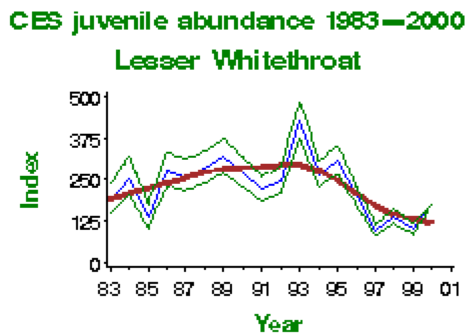
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
[CBC all habitats]	31	1968-1999	55	-2	-28	50		
	25	1974-1999	59	-14	-34	20		

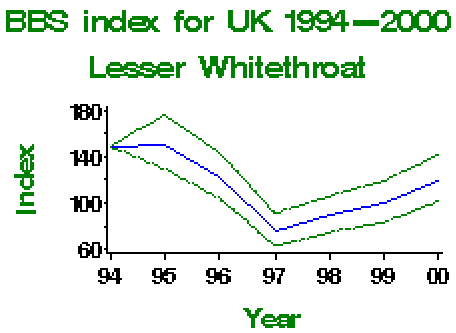
	10	1989-1999	52	-17	-29	-1		
	5	1994-1999	50	3	-8	17		
CBC farmland	31	1968-1999	31	26	-25	111		
	25	1974-1999	32	-3	-38	63		
	10	1989-1999	32	6	-7	23		
	5	1994-1999	31	20	0	43		
CES adults	15	1984-1999	43	-50	.	.	[>25*]	
	10	1989-1999	49	-58	.	.	[>50*]	
	5	1994-1999	48	-47	.	.	[>25*]	
CES juveniles	15	1984-1999	45	-37	.	.	[>25*]	
	10	1989-1999	52	-53	.	.	[>50*]	
	5	1994-1999	50	-53	.	.	[>50*]	
BBS UK	6	1994-2000	202	-20	-32	-5		
BBS England	6	1994-2000	192	-20	-33	-5		

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









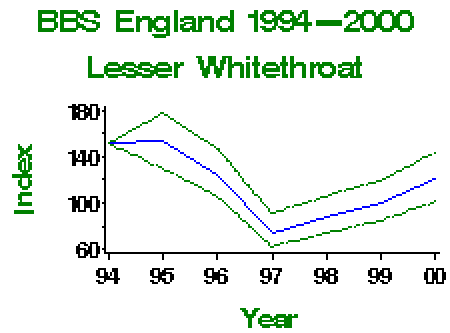


Table of productivity information for Lesser Whitethroat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Percentage juveniles (CES)	15	1984-1999	57	Smoothed trend	92 productivity index	100 productivity index	9%	
Percentage juveniles (CES)	10	1989-1999	66	Smoothed trend	105 productivity index	100 productivity index	-4%	
Percentage juveniles (CES)	5	1994-1999	64	Smoothed trend	128 productivity index	100 productivity index	-22%	

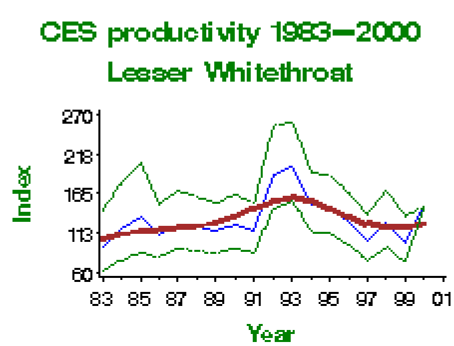
Insufficient data on clutch size available for this species

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



WHITETHROAT
Sylvia communis

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Rapid decline followed by shallow recovery since early 1970s
Linear waterways: Moderate recovery
Scrub (CES): Moderate decline

Status summary

Whitethroat populations crashed in the late 1960s because of droughts in their wintering grounds (**Winstanley *et al.* 1974**). Population sizes have since remained stable, although there is some evidence of recovery in farmland areas. Inter-annual fluctuations in abundance are related to over-winter survival (**Baillie & Peach 1992**). Other trans-Saharan migrant warblers have shared similarly timed population changes (**Siriwardena *et al.* 1998b**). Productivity, measured by the CES, shows a recent decline which may be associated with a reduction in average clutch size.

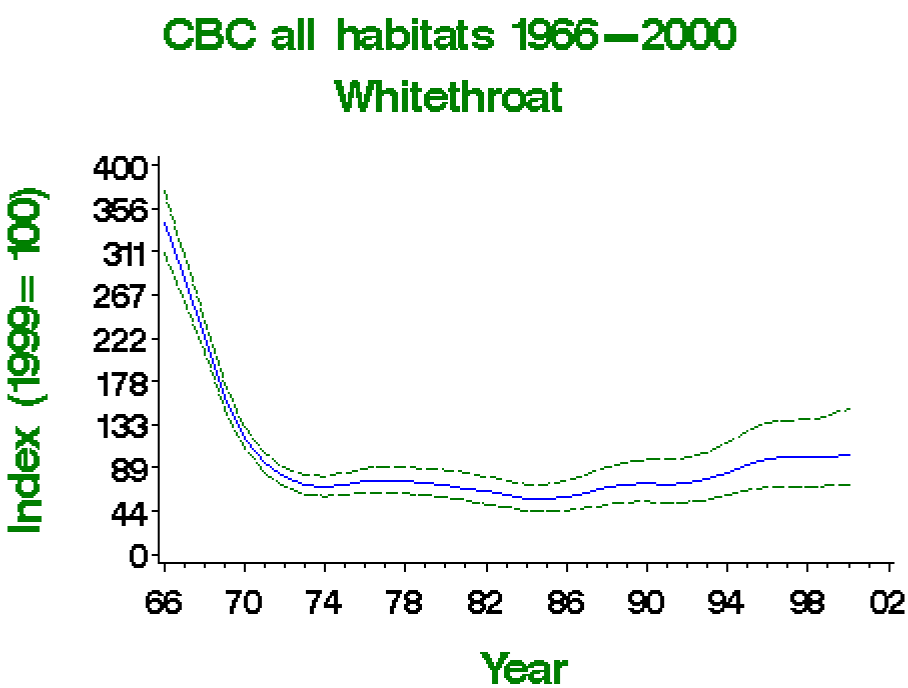
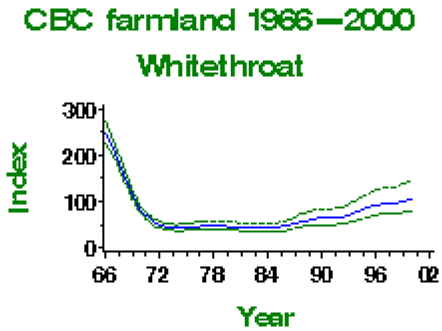


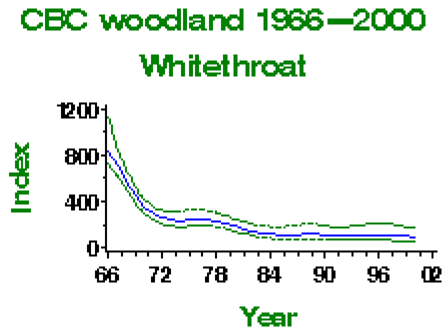
Table of population changes for Whitethroat

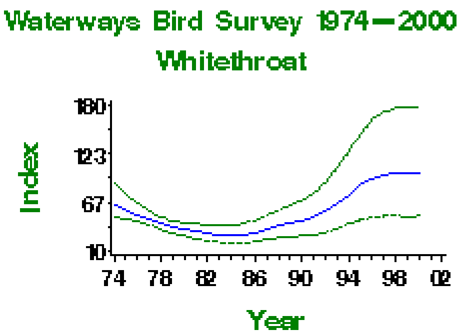
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	118	-55	-69	-36	>50	
		1974-						

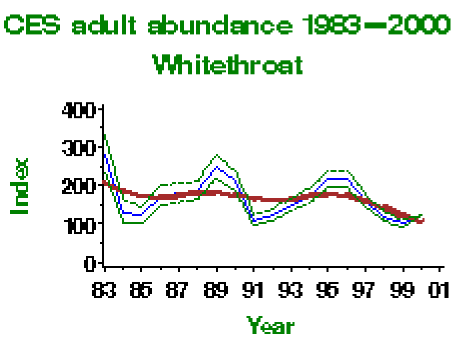
	25	1999	118	44	6	93		
	10	1989-1999	117	39	20	61		
	5	1994-1999	121	19	9	31		
CBC farmland	31	1968-1999	65	-37	-54	-16	>25	
	25	1974-1999	64	133	79	191		
	10	1989-1999	71	60	35	88		
	5	1994-1999	74	27	13	43		
CBC woodland	31	1968-1999	29	-83	-90	-67	>50	
	25	1974-1999	29	-57	-72	-31	>50	
	10	1989-1999	29	-15	-37	6		
	5	1994-1999	31	-6	-27	15		
WBS waterways	24	1975-1999	40	71	-23	225		
	10	1989-1999	55	133	72	230		
	5	1994-1999	62	32	18	51		
CES adults	15	1984-1999	57	-33	.	.	[>25]	
	10	1989-1999	70	-32	.	.	[>25*]	
	5	1994-1999	78	-28	.	.	[>25*]	
CES juveniles	15	1984-1999	62	-45	.	.	[>25]	
	10	1989-1999	74	-42	.	.	[>25*]	
	5	1994-1999	83	-40	.	.	[>25*]	
BBS UK	6	1994-2000	969	26	18	34		
BBS England	6	1994-2000	844	25	18	34		
BBS Scotland	6	1994-2000	54	33	-7	91		
BBS Wales	6	1994-2000	60	19	-7	51		

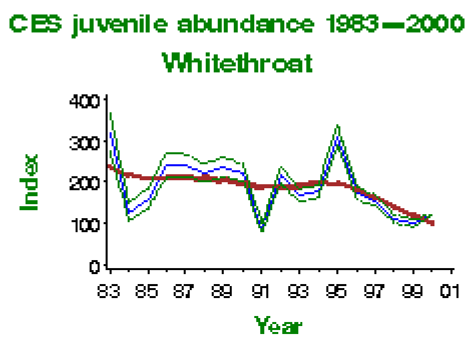
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

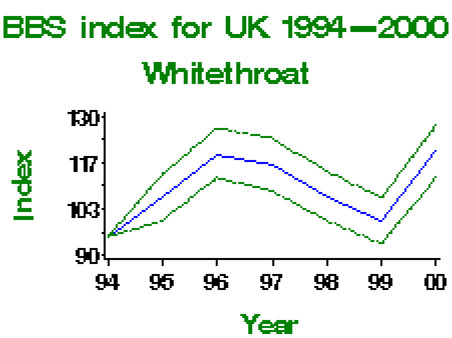


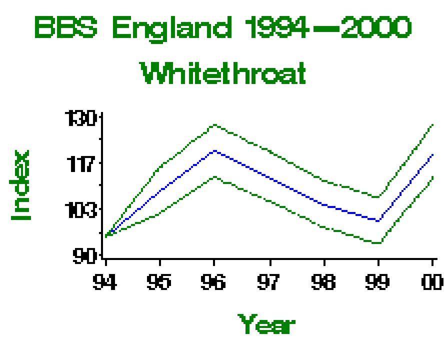


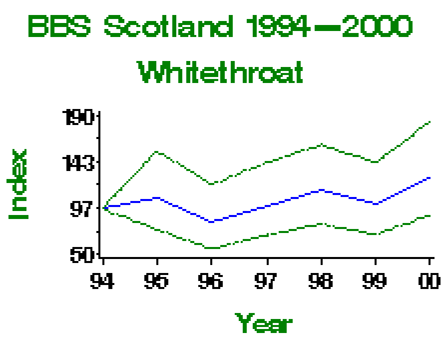












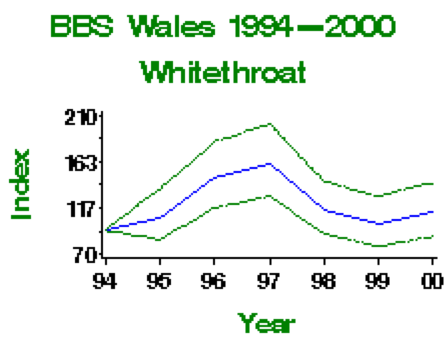
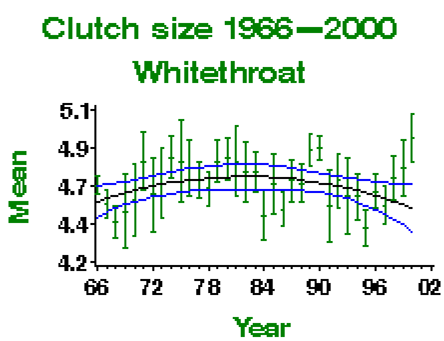
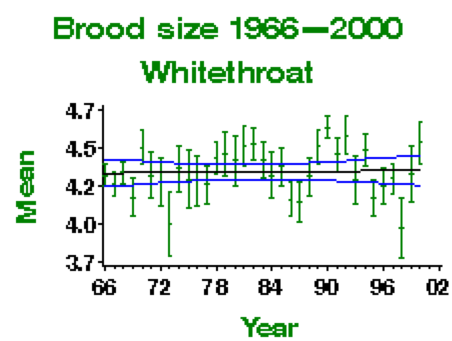
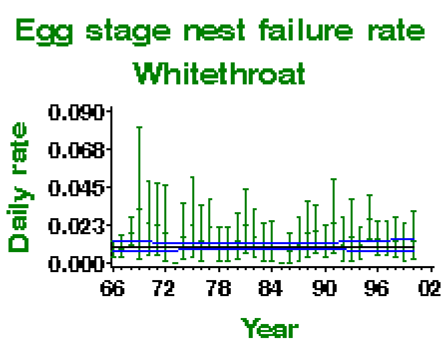


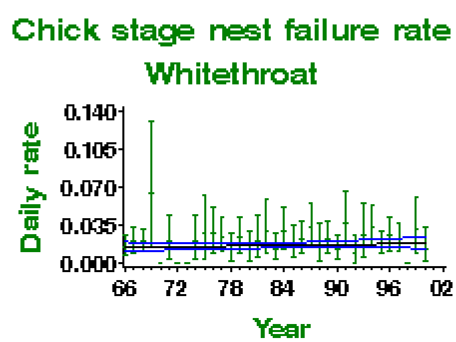
Table of productivity information for Whitethroat

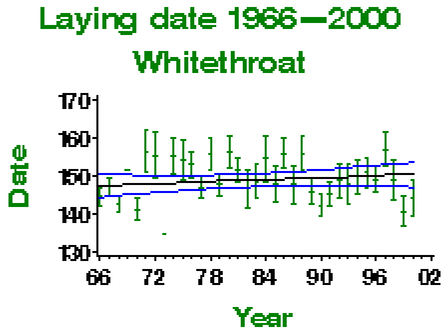
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	26	Curvilinear	4.59 eggs	4.54 eggs	-0.05 eggs	Small sample
Brood size	31	1968-1999	61	None				
Daily failure rate (eggs)	31	1968-1999	37	None				
Daily failure rate (chicks)	31	1968-1999	45	None				
Laying date	31	1968-1999	17	None				Small sample
Percentage juveniles (CES)	15	1984-1999	73	Smoothed trend	138 productivity index	100 productivity index	-28% [>25]	
Percentage juveniles (CES)	10	1989-1999	86	Smoothed trend	137 productivity index	100 productivity index	-27% [>25]	
Percentage juveniles (CES)	5	1994-1999	95	Smoothed trend	138 productivity index	100 productivity index	-27% [>25]	

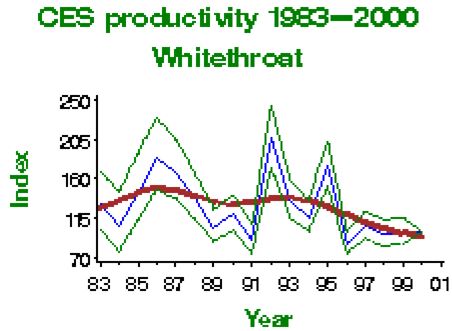









Laying date 1966–2000
Whitethroat
Date
Year
170
160
150
140
130
66
72
78
84
90
96
02


CES productivity 1983–2000
Whitethroat
Index
Year
250
205
160
115
70
83
85
87
89
91
93
95
97
99
01

WOOD WARBLER
Phylloscopus sibilatrix

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Unknown

Status summary

Wood Warblers have a westernly distribution in Britain and were not monitored well before the inception of the BBS. The species' range varied little between the two breeding atlas projects (**Gibbons *et al.* 1993**) and little change has been apparent at the few CBC plots on which the species occurs (**Crick *et al.* 1998**). In addition, no significant trends in breeding performance have been observed. The BBS shows a significant decline since 1994 that should be monitored carefully to assess the need for conservation action.

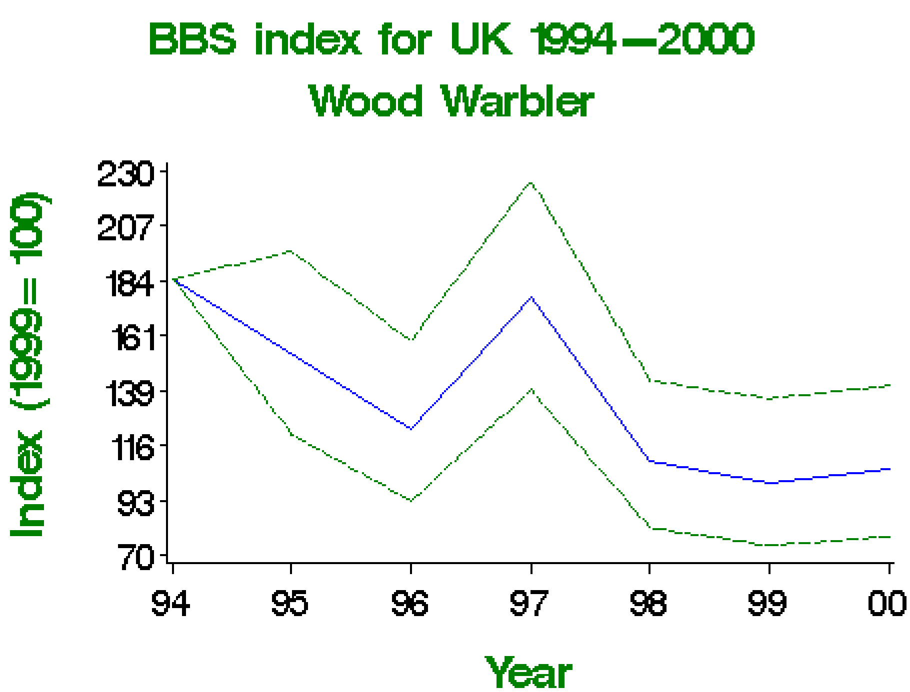
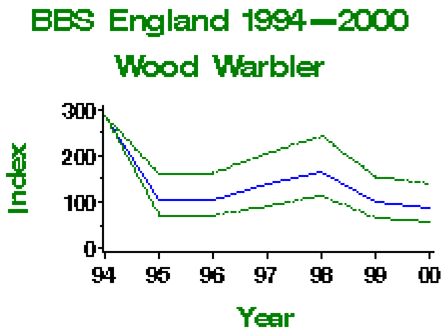


Table of population changes for Wood Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	58	-43	-58	-24	(>25)	
BBS England	6	1994-2000	27	-69	-80	-51	(>50)	Small sample
BBS Wales	6	1994-2000	23	22	-25	98		Small sample

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



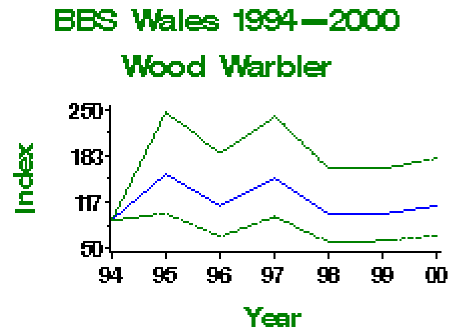
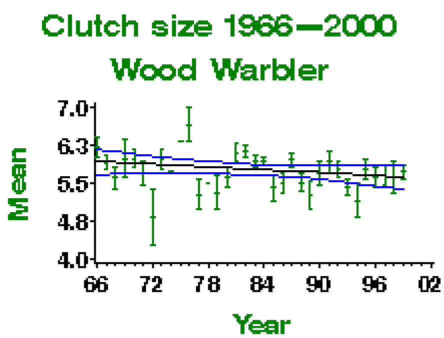
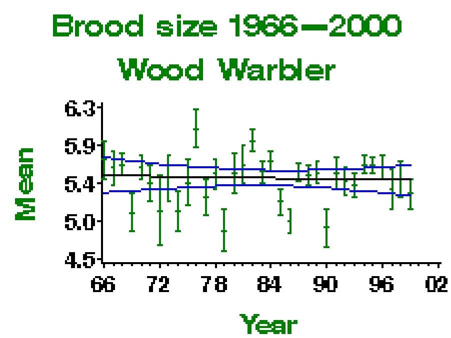
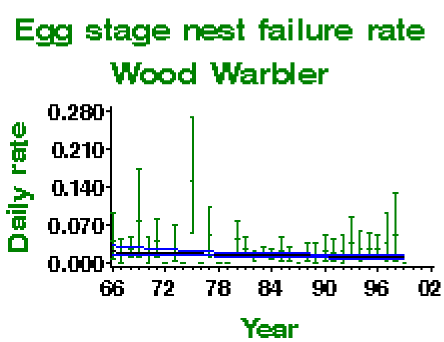


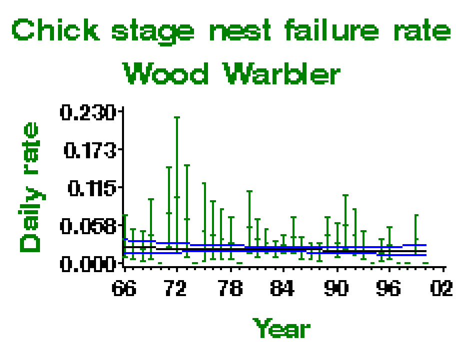
Table of productivity information

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	18	None				Small sample
Brood size	31	1968-1999	39	None				
Daily failure rate (eggs)	31	1968-1999	22	None				Small sample
Daily failure rate (chicks)	31	1968-1999	28	None				Small sample
Laying date	31	1968-1999	33	None				

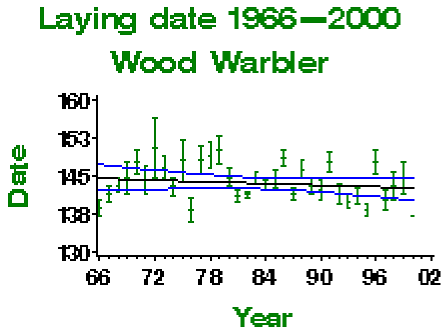








Insufficient data on CES available for this species


Laying date 1966—2000
Wood Warbler
Date
160
153
145
138
130
66
72
78
84
90
96
02
Year

CHIFFCHAFF
Phylloscopus collybita

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend

Status summary

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

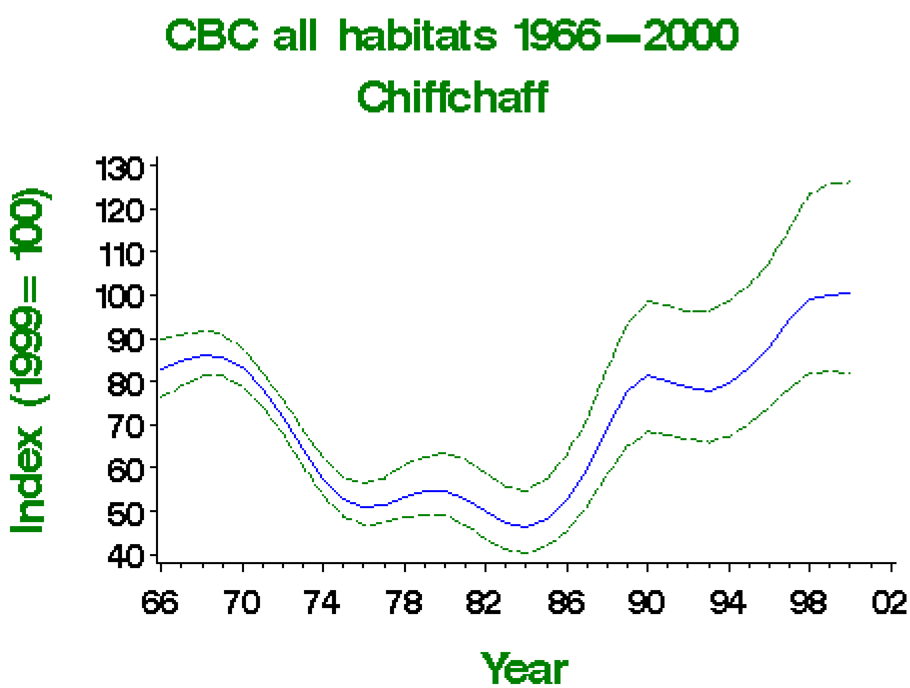
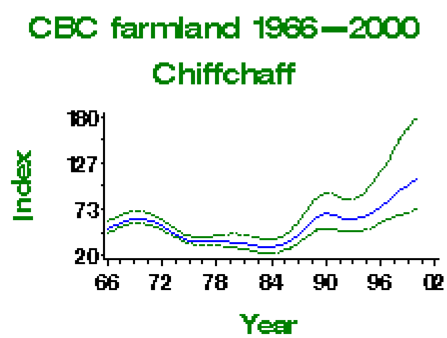


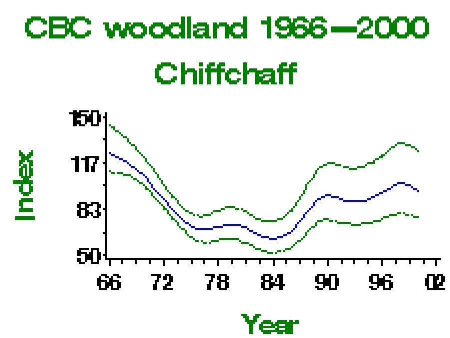
Table of population changes in Chiffchaff

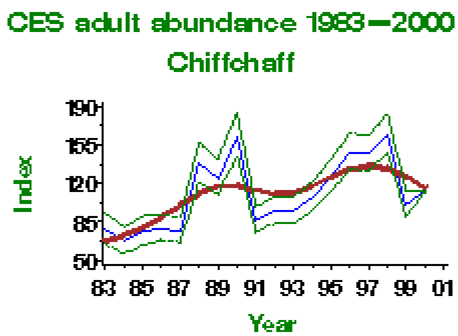
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	132	16	-4	52		
	25	1974-1999	137	74	45	114		
	10	1989-1999	155	29	16	45		
	5	1994-1999	165	25	16	35		
CBC farmland	31	1968-1999	44	67	23	170		
	25	1974-1999	43	138	74	296		
	10	1989-1999	52	54	26	114		

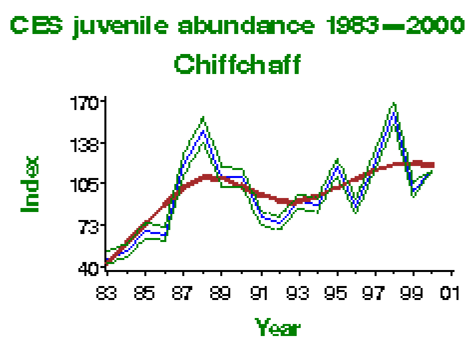
	5	1994-1999	56	58	36	101		
CBC woodland	31	1968-1999	67	-14	-34	11		
	25	1974-1999	72	31	6	61		
	10	1989-1999	86	10	-1	24		
	5	1994-1999	91	11	4	19		
CES adults	15	1984-1999	63	73	.	.		
	10	1989-1999	74	8	.	.		
	5	1994-1999	81	8	.	.		
CES juveniles	15	1984-1999	75	107	.	.		
	10	1989-1999	89	11	.	.		
	5	1994-1999	99	27	.	.		
BBS UK	6	1994-2000	918	4	-2	12		
BBS England	6	1994-2000	783	5	-1	12		
BBS Scotland	6	1994-2000	20	114	12	306		Small sample
BBS Wales	6	1994-2000	90	-10	-26	10		
BBS N.Ireland	6	1994-2000	20	-28	-61	35		Small sample

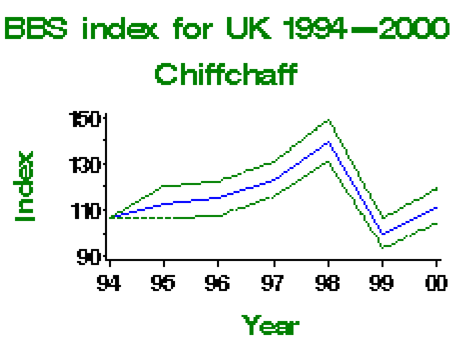
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

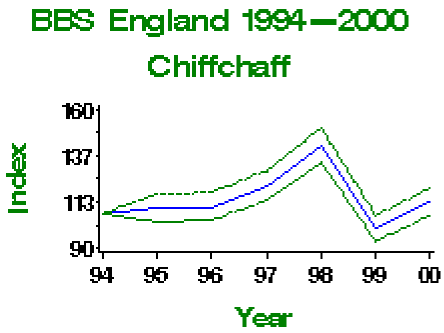


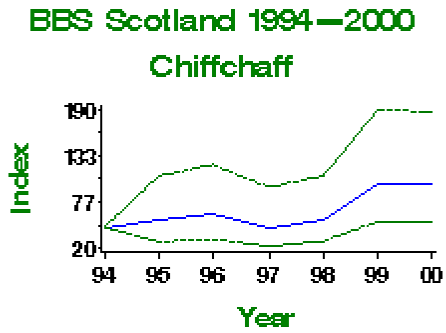


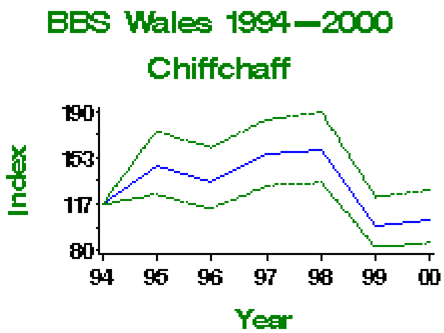












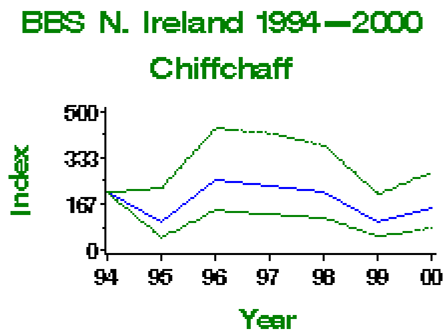
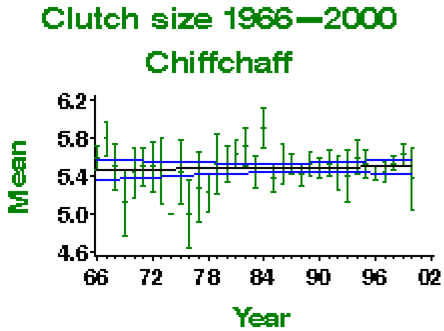
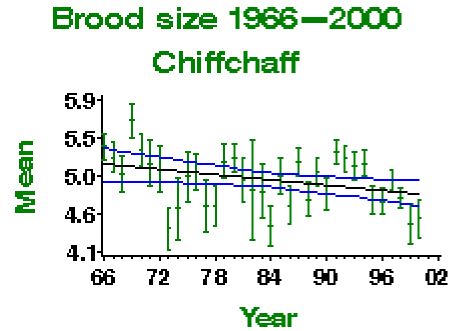
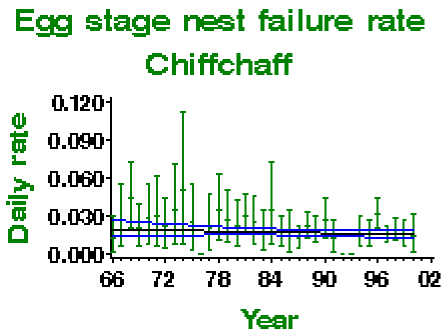


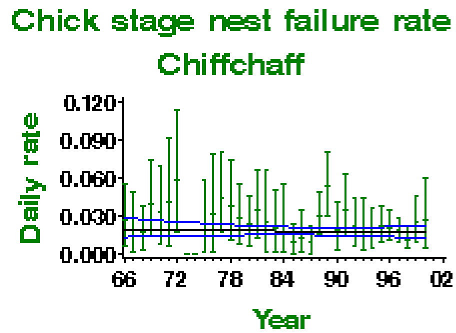
Table of productivity information for Chiffchaff

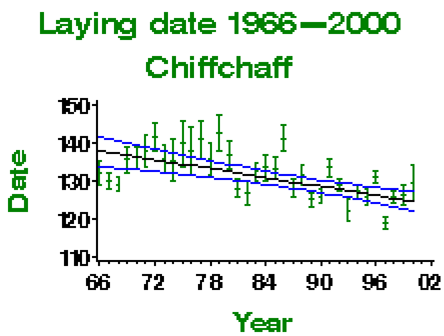
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	27	None				Small sample
Brood size	31	1968-1999	30	Linear decline	5.12 chicks	4.81 chicks	-0.31 chicks	Small sample
Daily failure rate (eggs)	31	1968-1999	34	None				
Daily failure rate (chicks)	31	1968-1999	30	None				
Laying date	31	1968-1999	40	Linear decline	day 137	day 125	-12 days	
Percentage juveniles (CES)	15	1984-1999	83	Smoothed trend	89 productivity index	100 productivity index	12%	
Percentage juveniles (CES)	10	1989-1999	98	Smoothed trend	109 productivity index	100 productivity index	-8%	
Percentage juveniles (CES)	5	1994-1999	107	Smoothed trend	90 productivity index	100 productivity index	11%	

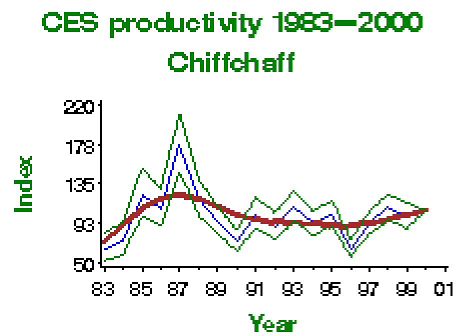

Clutch size 1966–2000
Chiffchaff
Mean
6.2
5.8
5.4
5.0
4.6
66 72 78 84 90 96 02
Year


Brood size 1966–2000
Chiffchaff
Mean
5.9
5.5
5.0
4.6
4.1
66 72 78 84 90 96 02
Year


Egg stage nest failure rate
Chiffchaff
Daily rate
0.120
0.090
0.060
0.030
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Chiffchaff
Daily rate
0.120
0.090
0.060
0.030
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–2000
Chiffchaff
Date
150
140
130
120
110
66 72 78 84 90 96 02
Year


CES productivity 1983–2000
Chiffchaff
Index
220
178
135
93
50
83 85 87 89 91 93 95 97 99 01
Year

WILLOW WARBLER
Phylloscopus trochilus

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Moderate decline

Status summary

Willow Warbler abundance has apparently shown very different trends around the UK. The national CBC trend shows a rapid decline in 1980s after 20 years of relative stability, due to a fall in survival rates. However, this decline occurred only in the south of the UK (**Peach *et al*. 1995**) and Scottish populations remained unaffected. The CBC and CES suggest that southern populations may have stabilised in the 1990s, but there is no evidence of a recovery as yet. The recent population decline is associated with a moderate decline in productivity and an increase in nest failure rates at the chick stage (14 days) from 18% to 26%. Laying dates have become earlier which may be explained by recent climate change (**Crick & Sparks 1999**).

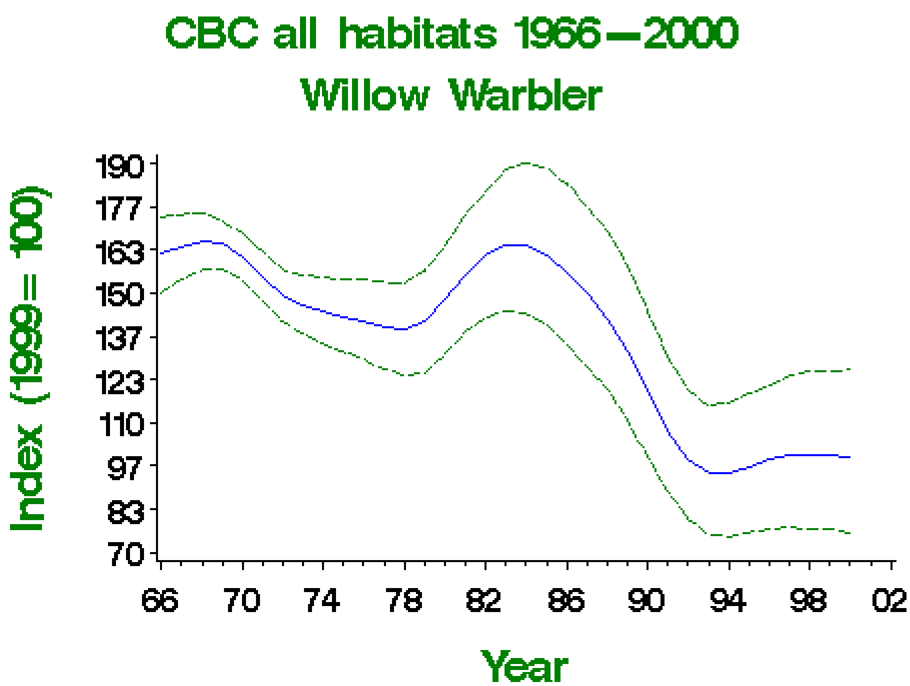
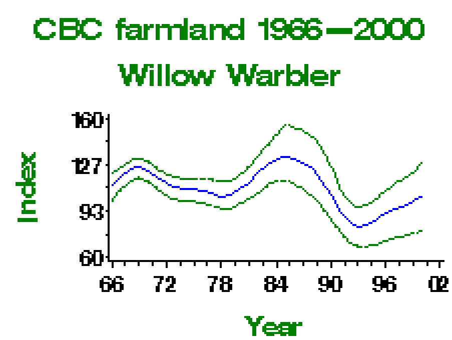


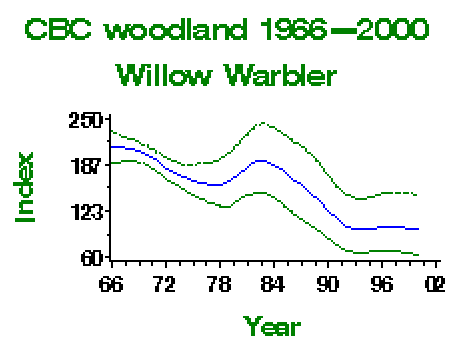
Table of population changes for Willow Warbler

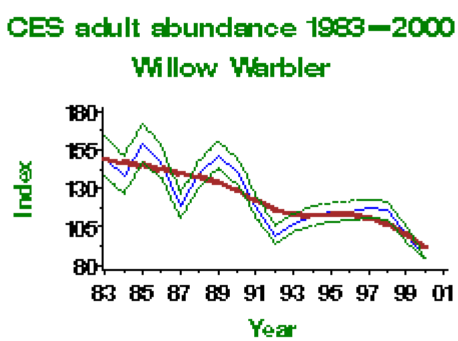
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	189	-40	-54	-23	>25	
	25	1974-1999	195	-31	-46	-15	>25	
	10	1989-1999	171	-24	-34	-14		
	5	1994-1999	169	6	-2	15		
CBC farmland	31	1968-1999	78	-19	-37	1		

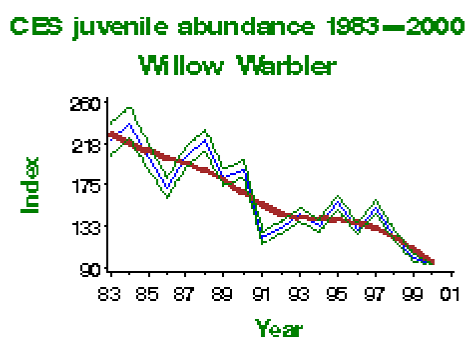
	25	1974-1999	77	-9	-27	8		
	10	1989-1999	74	-13	-26	-1		
	5	1994-1999	73	19	7	32		
CBC woodland	31	1968-1999	76	-52	-69	-29	>50	
	25	1974-1999	81	-41	-59	-18	>25	
	10	1989-1999	79	-27	-41	-14	>25	
	5	1994-1999	79	2	-8	12		
CES adults	15	1984-1999	92	-32	.	.	[>25*]	
	10	1989-1999	106	-25	.	.	[>25*]	
	5	1994-1999	111	-11	.	.		
CES juveniles	15	1984-1999	90	-50	.	.	[>50*]	
	10	1989-1999	105	-39	.	.	[>25*]	
	5	1994-1999	112	-22	.	.		
BBS UK	6	1994-2000	1224	13	8	18		
BBS England	6	1994-2000	863	-9	-13	-4		
BBS Scotland	6	1994-2000	176	40	22	60		
BBS Wales	6	1994-2000	130	-8	-19	3		
BBS N.Ireland	6	1994-2000	50	94	43	163		Small sample

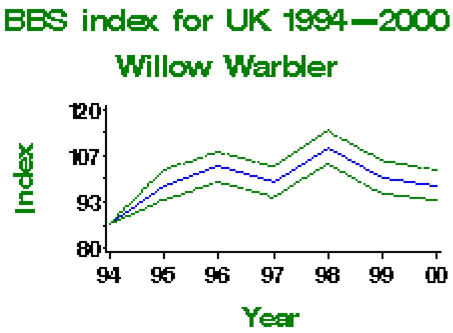
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

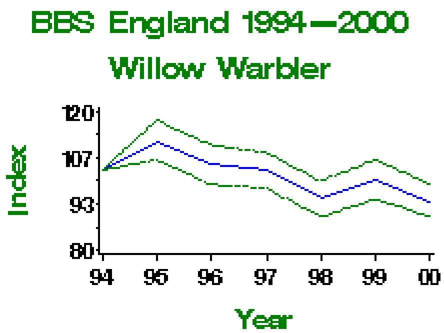


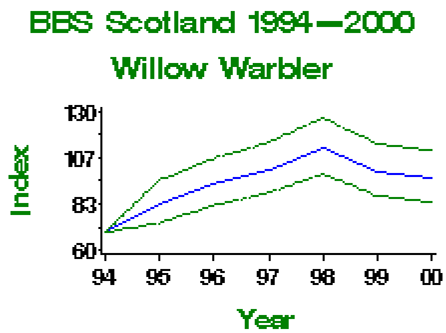


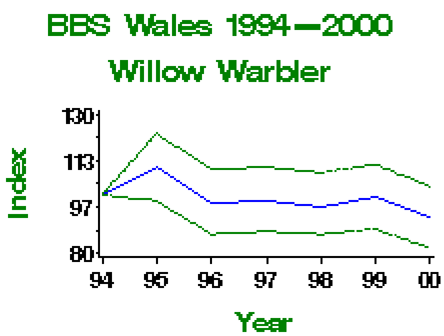












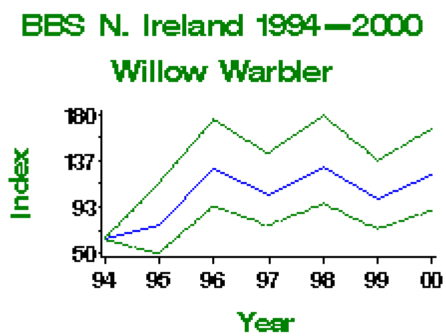
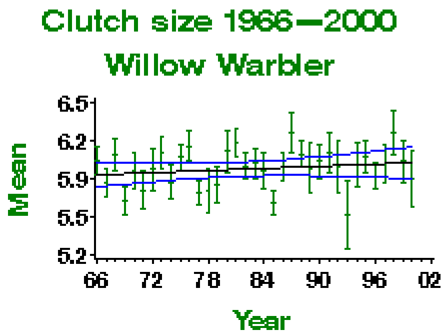
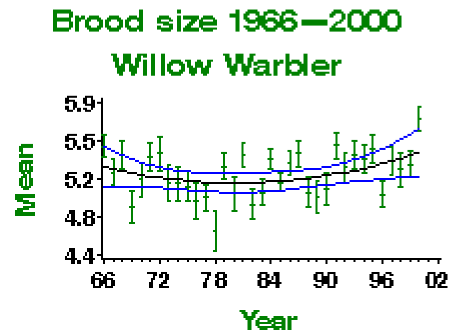


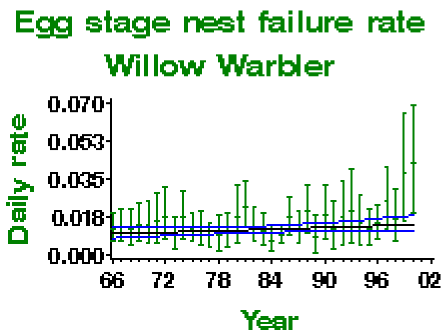
Table of productivity information for Willow Warbler

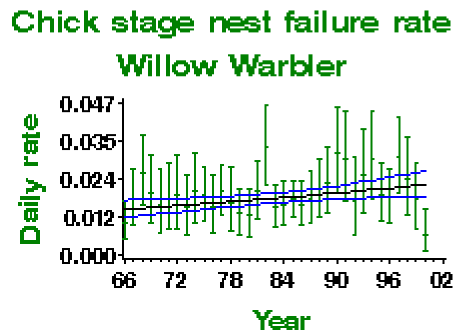
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	53	None				
Brood size	31	1968-1999	141	Curvilinear	5.23 chicks	5.39 chicks	0.16 chicks	
Daily failure rate (eggs)	31	1968-1999	73	None				
Daily failure rate (chicks)	31	1968-1999	129	Linear increase	0.0145 nests/day	0.0216 nests/day	0.0071 nests/day	
Laying date	31	1968-1999	91	Linear decline	day 139	day 136	-3 days	
Percentage juveniles (CES)	15	1984-1999	98	Smoothed trend	150 productivity index	100 productivity index	-33% [>25*]	
Percentage juveniles (CES)	10	1989-1999	113	Smoothed trend	128 productivity index	100 productivity index	-22%	
Percentage		1994-		Smoothed	120	100		

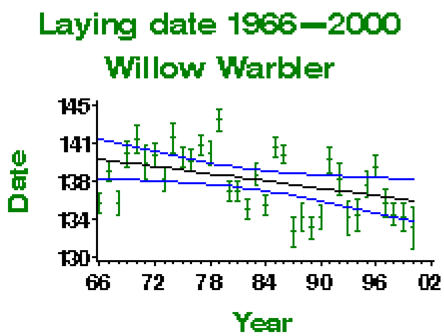
juveniles (CES)	5	1999	119	trend	productivity index	productivity index	-17%	

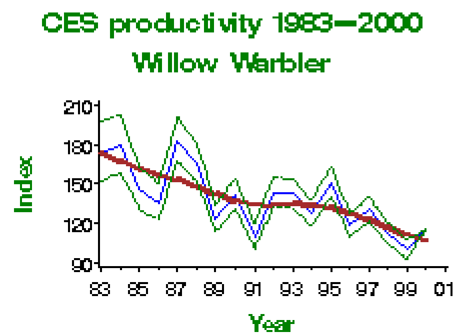












GOLDCREST
Regulus regulus

Conservation listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend

Status summary

Goldcrest abundance is affected strongly by winter weather and the strong increase in the species' CBC index up to the mid-1970s probably reflects recovery from the cold winters of the early 1960s. The subsequent decline could reflect habitat deterioration in woodland but it should be noted that the CBC does not cover the Goldcrest's preferred habitat of coniferous woodland well. In addition, the long-term trend looks very much like what would be obtained had a series of damped oscillations led to population stability after an earlier perturbation in abundance. The trend could therefore be driven entirely by the species' internal population dynamics. Recent trends show stability or a shallow increase.

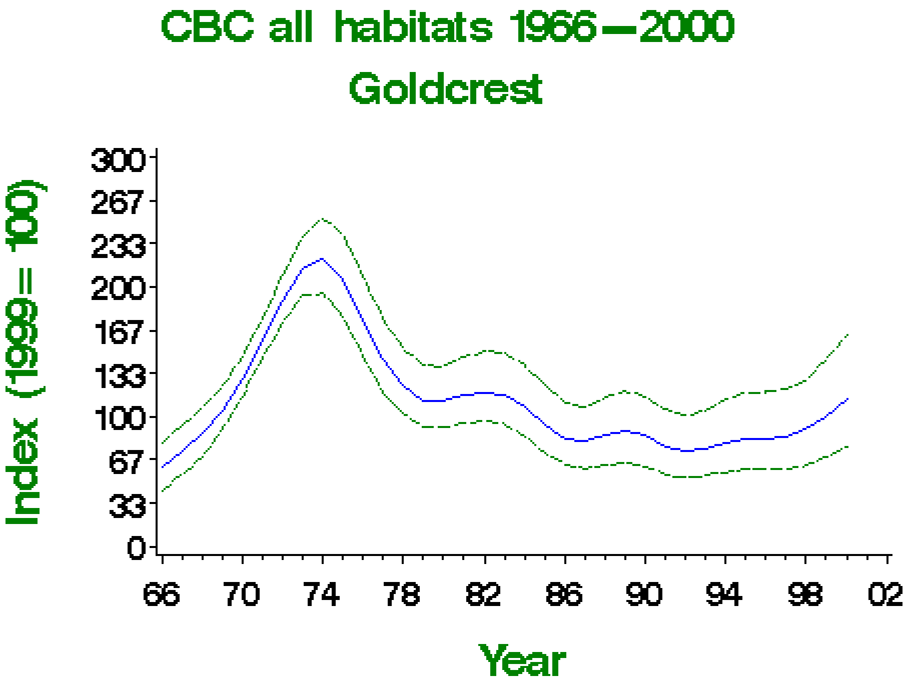
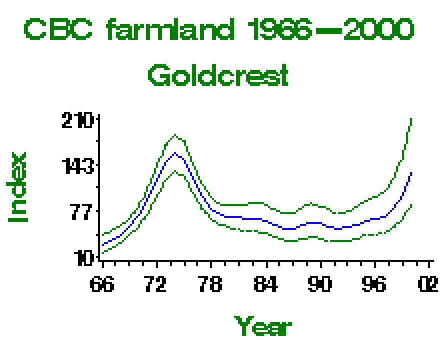


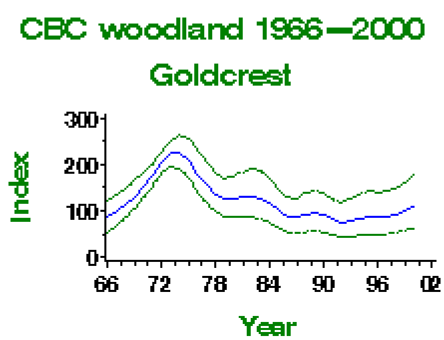
Table of population changes for Goldcrest

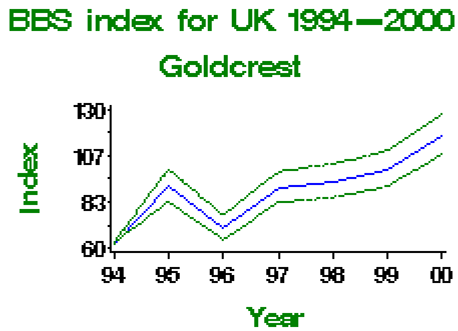
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	95	15	-33	92		
	25	1974-1999	99	-55	-67	-40	>50	

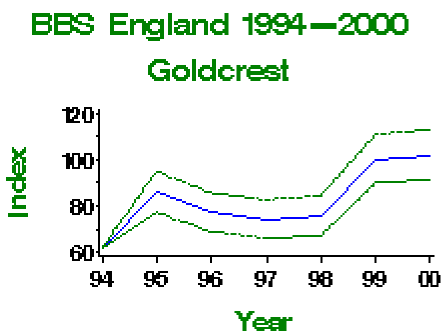
	10	1989-1999	89	12	-6	39		
	5	1994-1999	97	26	14	38		
CBC farmland	31	1968-1999	27	138	41	378		
	25	1974-1999	27	-37	-54	-6	>25	
	10	1989-1999	23	65	15	178		
	5	1994-1999	25	74	32	143		
CBC woodland	31	1968-1999	53	-13	-58	74		
	25	1974-1999	57	-56	-74	-33	>50	
	10	1989-1999	59	4	-17	31		
	5	1994-1999	65	20	7	35		
BBS UK	6	1994-2000	522	87	72	104		
BBS England	6	1994-2000	353	65	48	83		
BBS Scotland	6	1994-2000	71	154	96	230		
BBS Wales	6	1994-2000	66	29	5	59		
BBS N.Ireland	6	1994-2000	28	121	21	304		Small sample

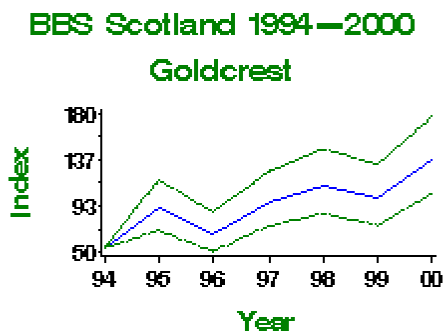
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

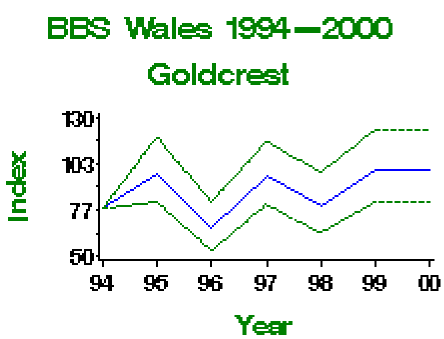


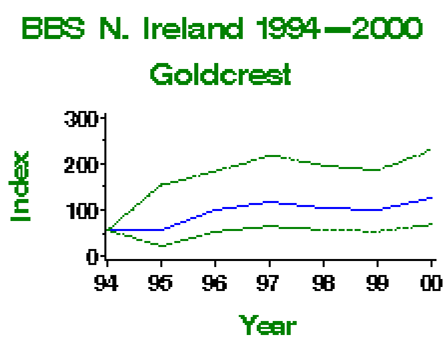












Productivity information is not currently available for this species

SPOTTED FLYCATCHER
Muscicapa striata

Conservation listings

Table 3/Red
(>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Rapid decline

Status summary

Spotted Flycatchers have declined rapidly and consistently since the 1960s and the CBC decline is also reflected in the trend revealed by the CES. Breeding performance has displayed a tendency to improve over this period and 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 in prep.). Decreasing survival rates may have been caused by deteriorating woodland habitats or by conditions on the wintering grounds or along migration routes (Vanhinsbergh *et al.* 2001).

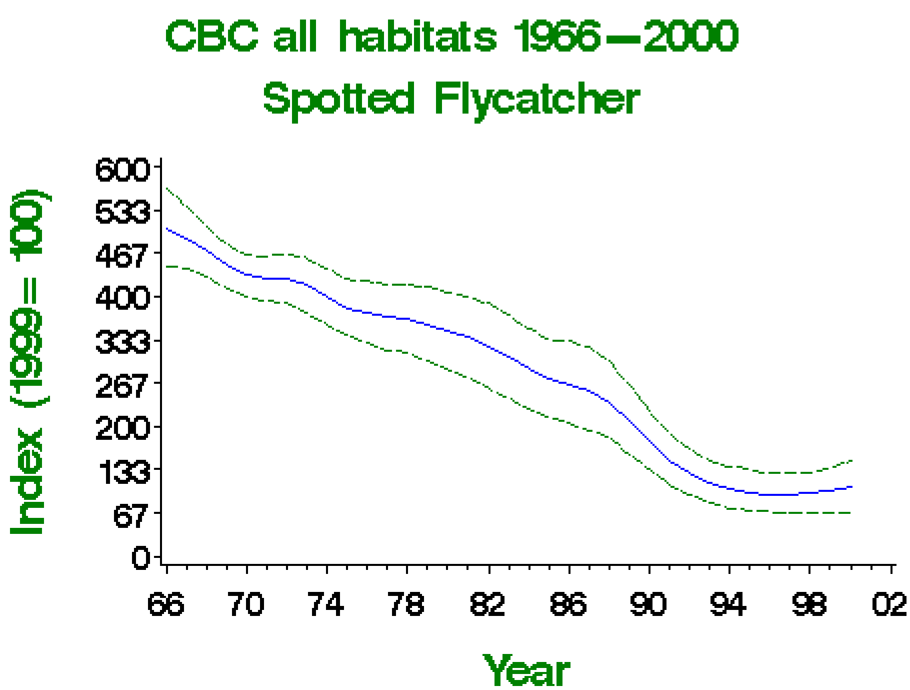
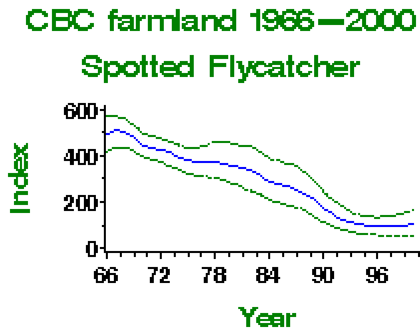


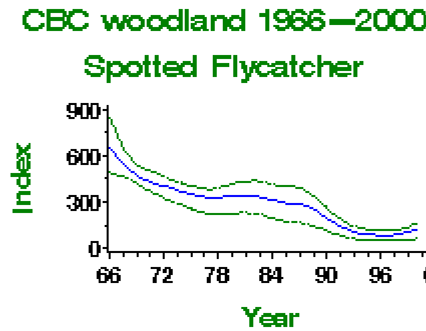
Table of population changes for Spotted Flycatcher

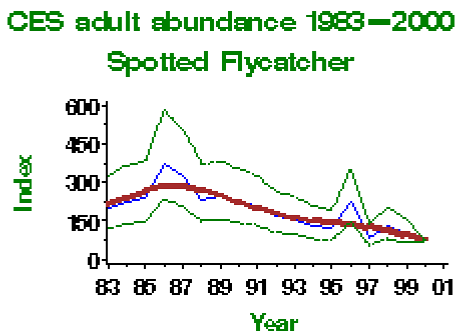
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	69	-79	-86	-71	>50	
	25	1974-1999	67	-75	-83	-67	>50	

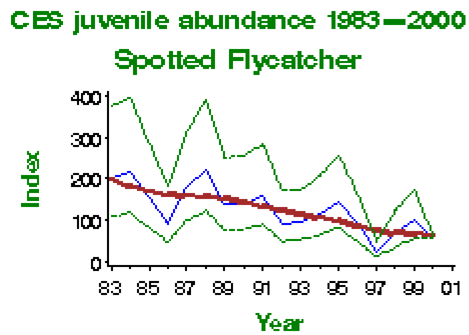
	10	1989-1999	44	-52	-63	-42	>50	
	5	1994-1999	38	-4	-23	15		
CBC farmland	31	1968-1999	33	-80	-89	-70	>50	
	25	1974-1999	31	-75	-86	-60	>50	
	10	1989-1999	22	-51	-67	-35	>50	
	5	1994-1999	19	-3	-29	28		Small sample
CBC woodland	31	1968-1999	22	-81	-91	-72	>50	
	25	1974-1999	23	-73	-84	-63	>50	
	10	1989-1999	18	-58	-70	-47	>50	Small sample
	5	1994-1999	16	5	-20	36		Small sample
CES adults	15	1984-1999	18	-60	.	.	[>50]	Small sample
	10	1989-1999	19	-61	.	.	[>50]	Small sample
	5	1994-1999	16	-35	.	.	[>25]	Small sample
CES juveniles	15	1984-1999	13	-63	.	.	[>50]	Small sample
	10	1989-1999	14	-56	.	.	[>50]	Small sample
	5	1994-1999	12	-37	.	.	[>25]	Small sample
BBS UK	6	1994-2000	199	-21	-34	-6		
BBS England	6	1994-2000	146	-24	-38	-7		
BBS Scotland	6	1994-2000	22	-26	-61	37		Small sample
BBS Wales	6	1994-2000	22	13	-30	84		Small sample

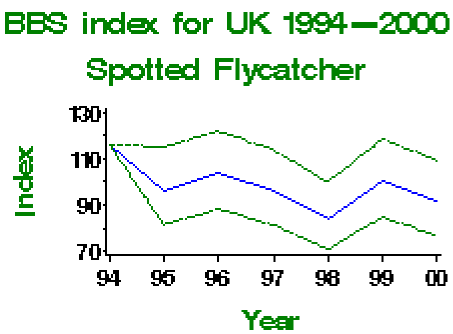
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

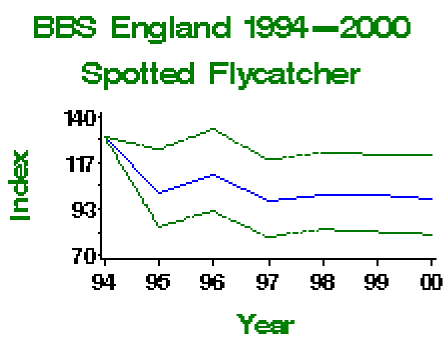












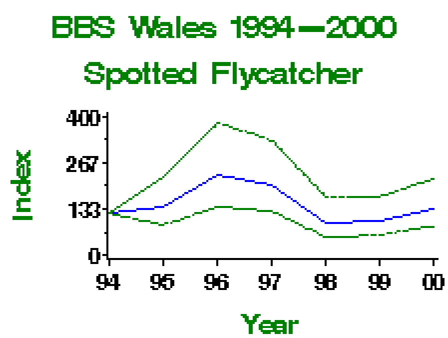
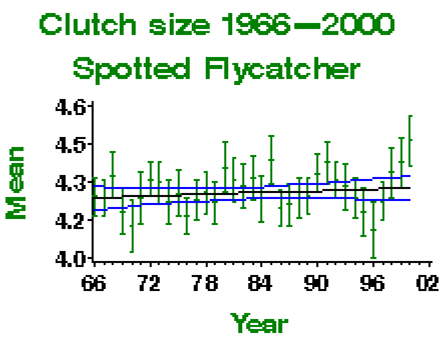
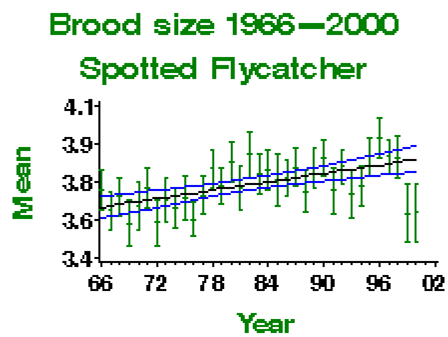


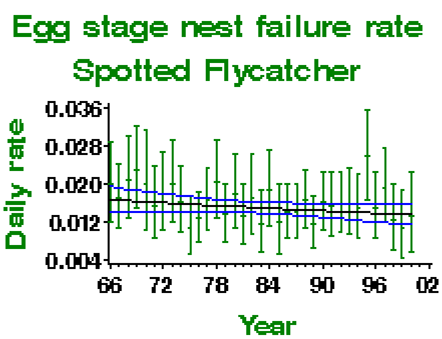
Table of productivity information for Spotted Flycatcher

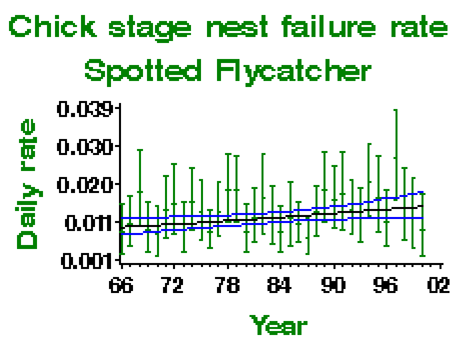
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	84	None				
Brood size	31	1968-1999	136	Linear increase	3.65 chicks	3.85 chicks	0.2 chicks	
Daily failure rate (eggs)	31	1968-1999	125	None				
Daily failure rate	31	1968-1999	111	Linear increase	0.0094 nests/day	0.0142 nests/day	0.0048 nests/day	

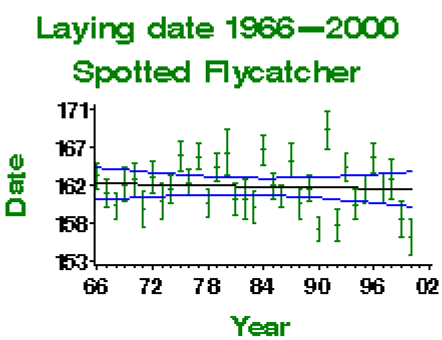
(chicks)								
Laying date	31	1968-1999	75	None				
Percentage juveniles (CES)	15	1984-1999	24	Smoothed trend	76 productivity index	100 productivity index	32%	
Percentage juveniles (CES)	10	1989-1999	26	Smoothed trend	50 productivity index	100 productivity index	99%	
Percentage juveniles (CES)	5	1994-1999	23	Smoothed trend	77 productivity index	100 productivity index	31%	

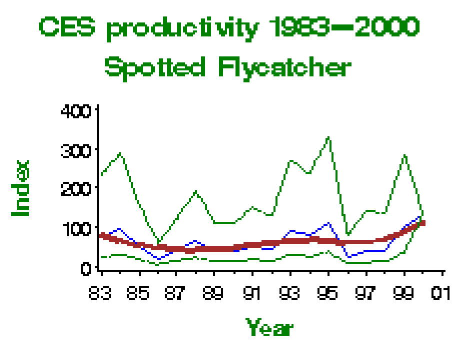












PIED FLYCATCHER
Ficedula hypoleuca

Conservation listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long-term trend

UK: Uncertain

Status summary

Pied Flycatchers are common birds of western, upland deciduous woods, a habitat that is not covered well by BTO censuses. The BBS suggests that abundance has been stable through the late 1990s and the 1998-91 breeding atlas revealed a small expansion in range (Gibbons *et al.* 1993).

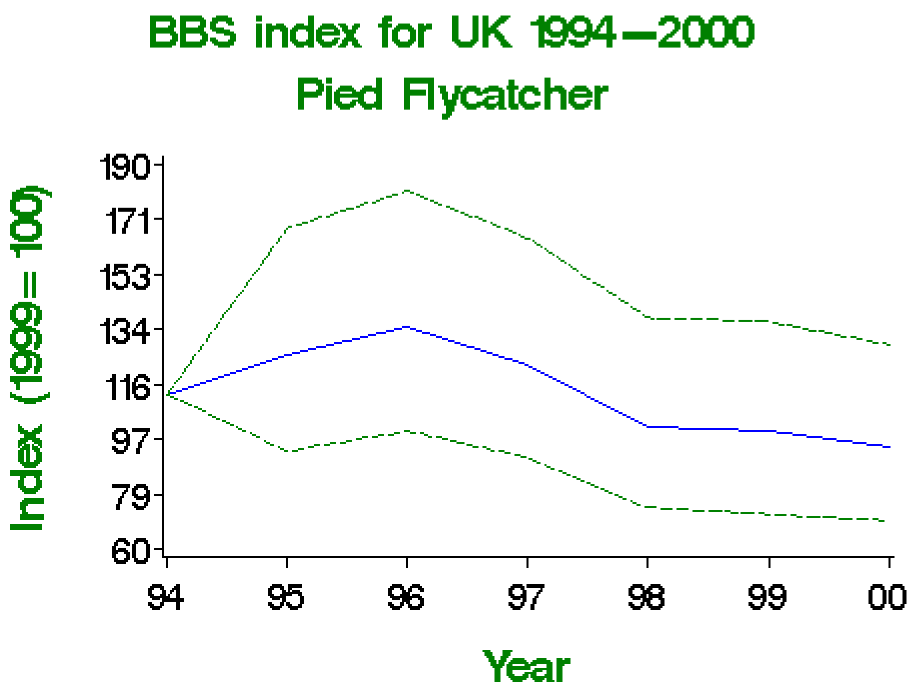


Table of population changes for Pied Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	43	-16	-38	15		Small sample
BBS Wales	6	1994-2000	24	-29	-55	13		Small sample

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

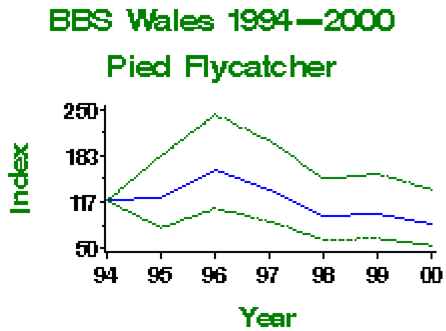
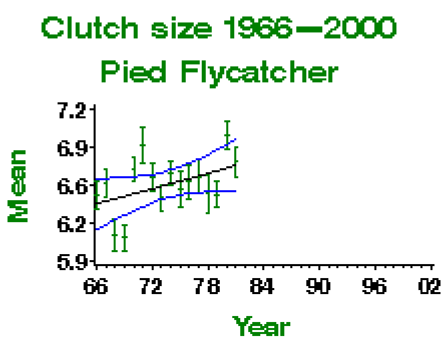
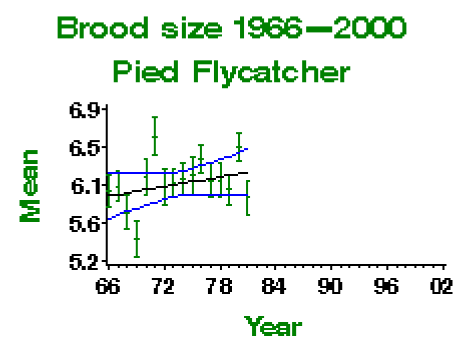
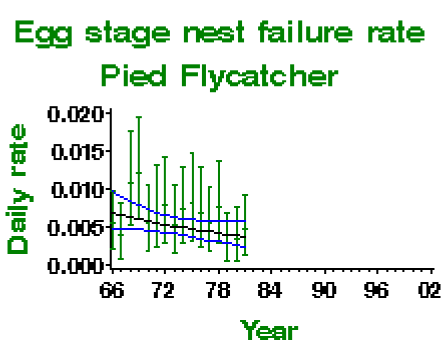


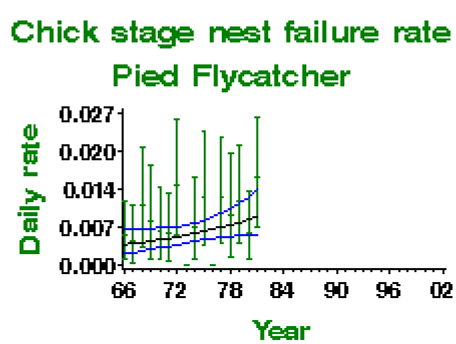
Table of productivity information for Pied Flycatcher

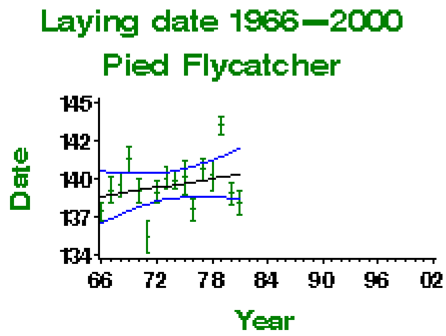
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	64	None				
Brood size	31	1968-1999	57	None				
Daily failure rate (eggs)	31	1968-1999	74	None				
Daily failure rate (chicks)	31	1968-1999	52	Linear increase	0.0039 nests/day	0.0245 nests/day	0.0206 nests/day	
Laying date	31	1968-1999	68	None				










Laying date 1966—2000
Pied Flycatcher
Date
145
142
140
137
134
66
72
78
84
90
96
02
Year

LONG-TAILED TIT
Aegithalos caudatus

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Fluctuating, long-term overall moderate increase

Status summary

Both CBC and CES index trends show increases in Long-tailed Tit abundance since the mid-1980s, but the species tends to undergo large-scale fluctuations in numbers, probably because of the effects of winter weather. Improvements in nesting success at the egg stage, (19 days, comprising 13 days incubation + 6 days laying) from 54% to 87%, have accompanied the recent increase. The trend towards earlier laying maybe explained by recent climatic changes (Crick & Sparks 1999).

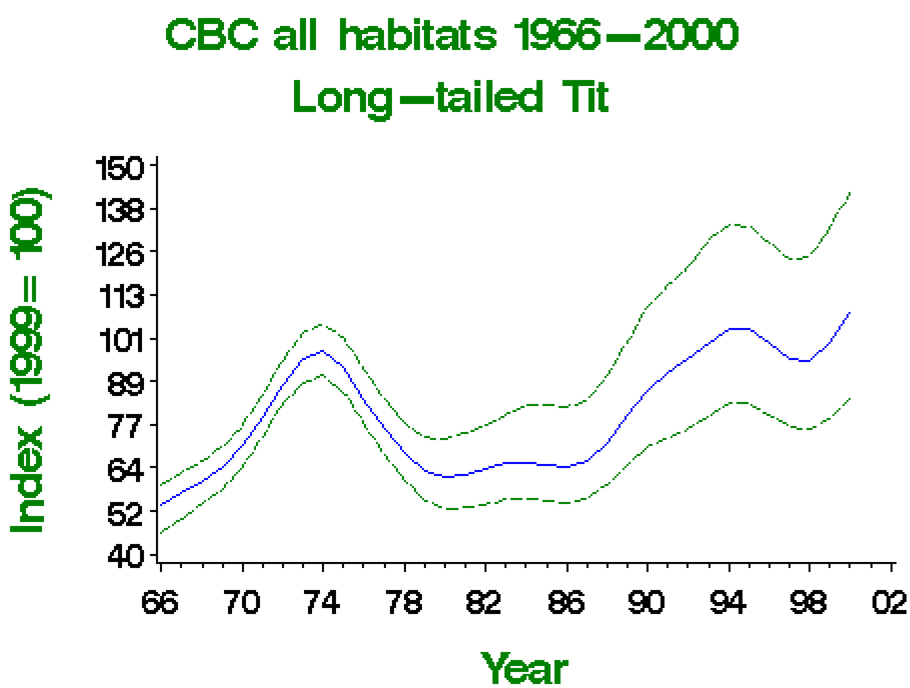
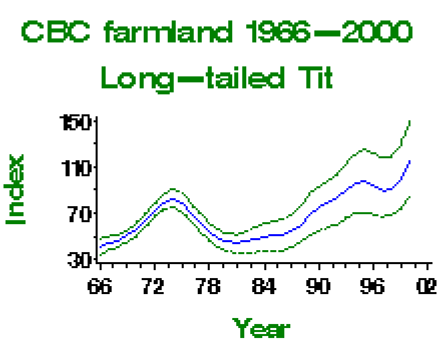


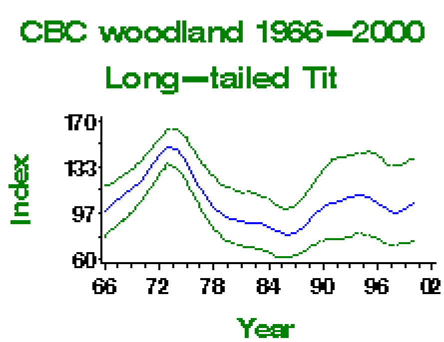
Table of population changes for Long-tailed Tit

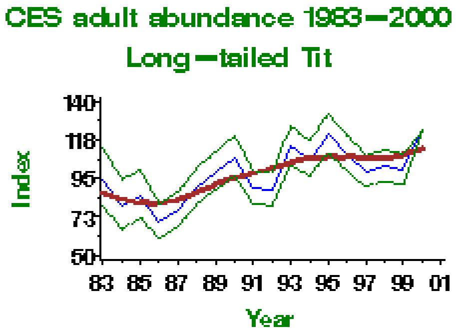
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	130	65	23	131		
	25	1974-1999	139	3	-18	34		
	10	1989-1999	151	26	15	39		
	5	1994-1999	158	-4	-9	3		
CBC		1968-						

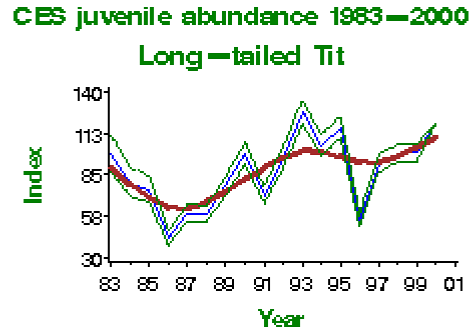
farmland	31	1999	47	114	56	183		
	25	1974-1999	48	21	-9	54		
	10	1989-1999	58	47	27	74		
	5	1994-1999	60	4	-8	15		
CBC woodland	31	1968-1999	61	-9	-38	50		
	25	1974-1999	67	-32	-49	-9	>25	
	10	1989-1999	78	6	-6	21		
	5	1994-1999	81	-10	-17	-2		
CES adults	15	1984-1999	74	31	.	.		
	10	1989-1999	90	19	.	.		
	5	1994-1999	98	2	.	.		
CES juveniles	15	1984-1999	66	31	.	.		
	10	1989-1999	82	40	.	.		
	5	1994-1999	92	2	.	.		
BBS UK	6	1994-2000	625	22	9	35		
BBS England	6	1994-2000	550	6	-5	18		
BBS Wales	6	1994-2000	46	4	-35	68		Small sample

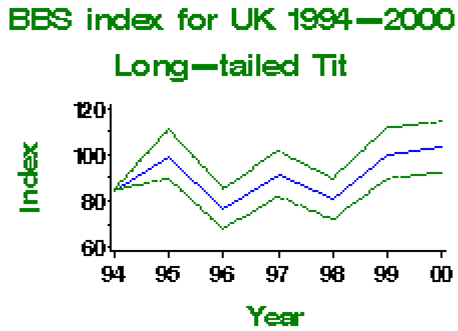
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

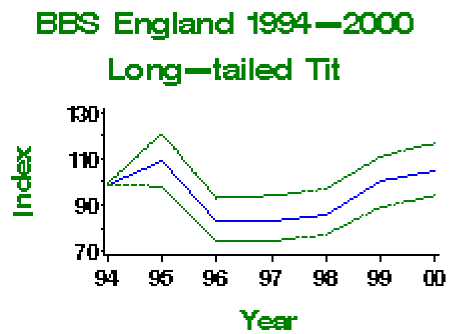












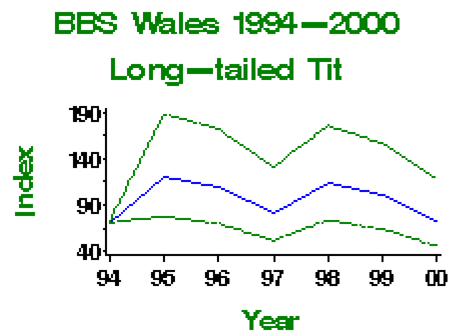
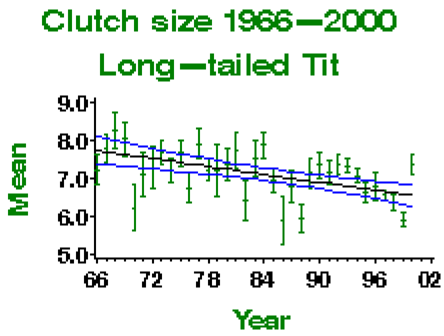
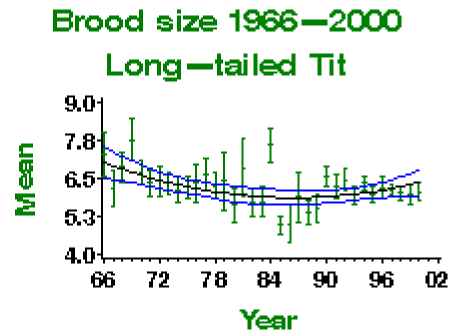


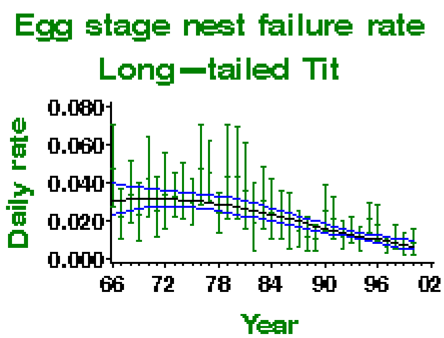
Table of productivity information for Long-tailed Tit

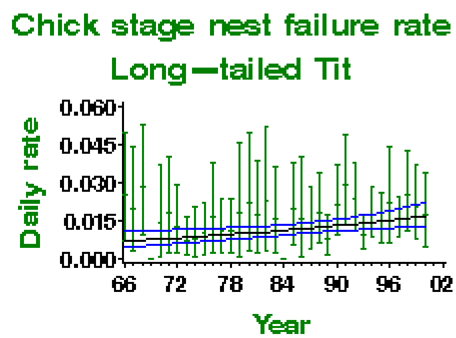
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	32	Linear decline	7.67 eggs	6.6 eggs	-1.07 eggs	
Brood size	31	1968-1999	27	Curvilinear	6.83 chicks	6.3 chicks	-0.53 chicks	Small sample
Daily failure rate (eggs)	31	1968-1999	51	Curvilinear	0.0314 nests/day	0.0074 nests/day	-0.024 nests/day	
Daily failure rate (chicks)	31	1968-1999	36	Linear increase	0.0074 nests/day	0.0164 nests/day	0.009 nests/day	
Laying date	31	1968-1999	43	Curvilinear	day 108	day 95	-13 days	
Percentage juveniles (CES)	15	1984-1999	80	Smoothed trend	91 productivity index	100 productivity index	10%	
Percentage juveniles (CES)	10	1989-1999	97	Smoothed trend	86 productivity index	100 productivity index	17%	
Percentage		1994-		Smoothed	99	100		

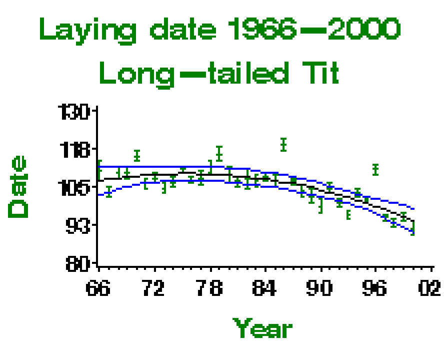
juveniles (CES)	5	1999	105	trend	productivity index	productivity index	1%	

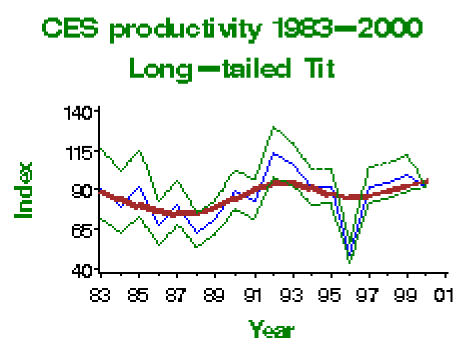












MARSH TIT
Parus palustris

Conservation listings

Table 4/Amber
(25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Rapid decline

Status summary

Marsh Tit abundance has declined rapidly, despite improvements in breeding performance (nest failure rates at the egg stage (22 days, comprising 15 days incubation + 7 days laying) have fallen from 17% to 3%). Detailed demographic work suggests that the decline may have been driven by low annual survival and that increased nest predation and inter-specific competition are not responsible (G.M. Siriwardena, unpubl.). Marsh Tits require woods of more than 0.5ha in area (Hinsley *et al.* 1995) and there is evidence from the CBC that declines are steeper on smaller plots (G.M. Siriwardena, unpubl.). Increased woodland isolation, a loss of, or reduction in, woodland understorey vegetation due to grazing and reductions in dead wood availability may all have contributed to the decline (Vanhinsbergh *et al.* 2001).

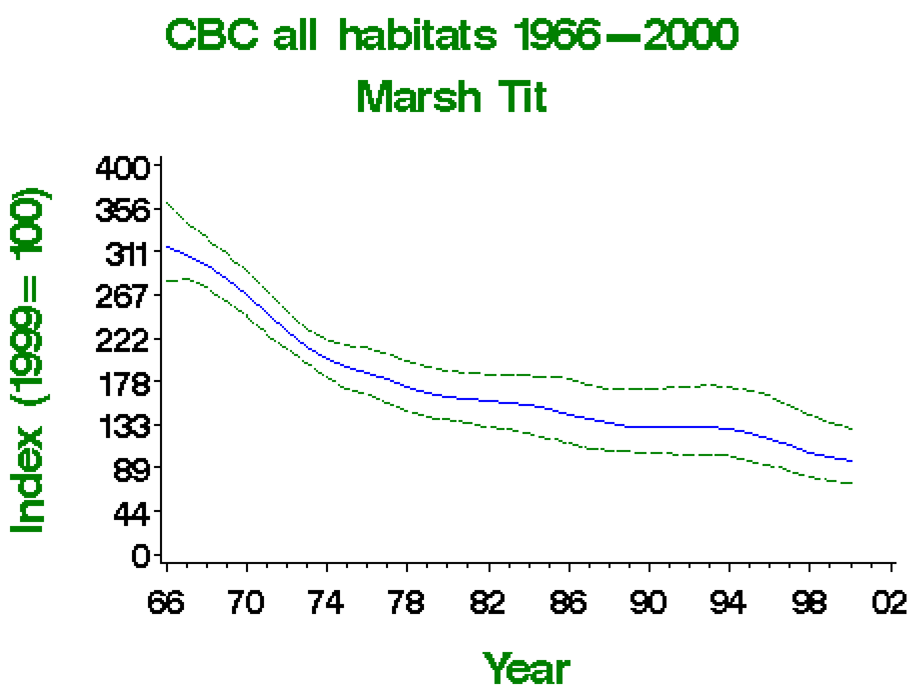
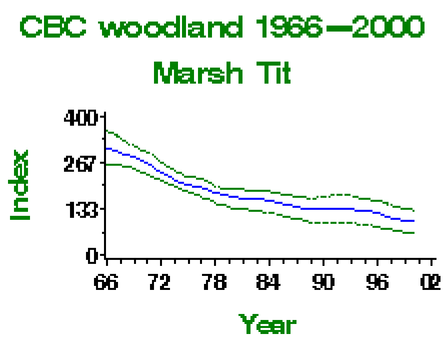


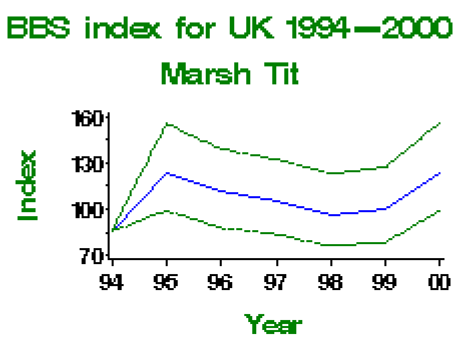
Table of population changes for Marsh Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	55	-66	-75	-56	>50	
	25	1974-1999	55	-50	-61	-35	>50	

	10	1989-1999	53	-24	-36	-5		
	5	1994-1999	51	-22	-32	-7		
CBC woodland	31	1968-1999	39	-66	-76	-55	>50	
	25	1974-1999	41	-53	-67	-39	>50	
	10	1989-1999	43	-24	-38	-11		
	5	1994-1999	43	-22	-34	-11		
BBS UK	6	1994-2000	119	45	16	83		
BBS England	6	1994-2000	106	16	-9	46		

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





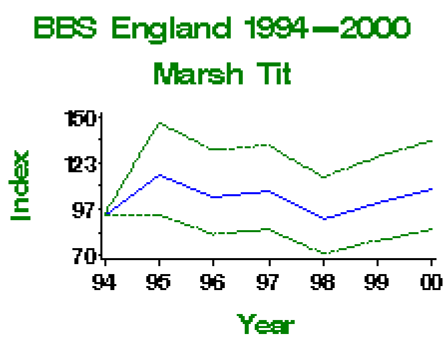
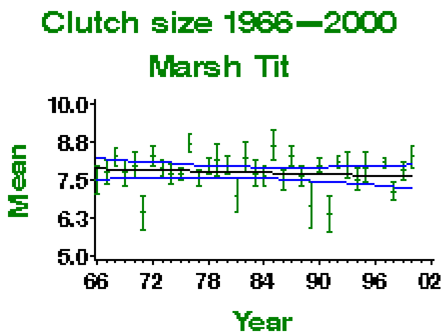
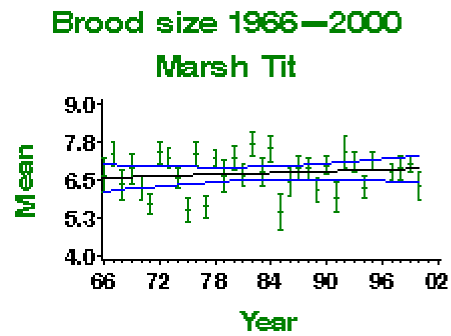


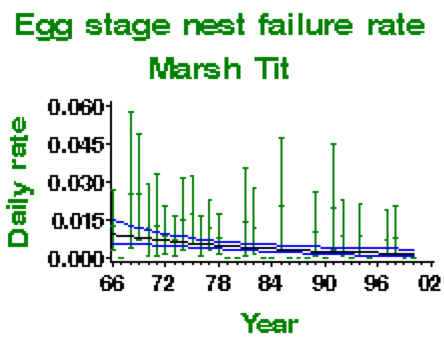
Table of productivity information for Marsh Tit

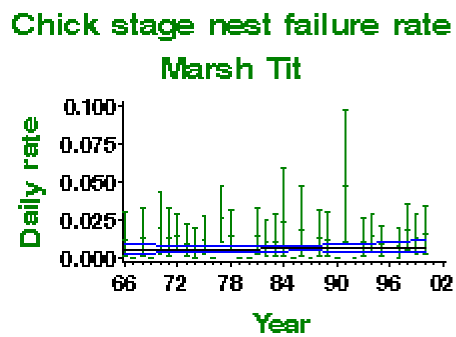
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	13	None				Small sample
Brood size	31	1968-1999	22	None				Small sample
Daily failure rate (eggs)	31	1968-1999	20	Linear decline	0.0084 nests/day	0.0015 nests/day	-0.0069 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	19	None				Small sample
Laying date	31	1968-	14	Linear	day 118	day 111	-7 days	Small

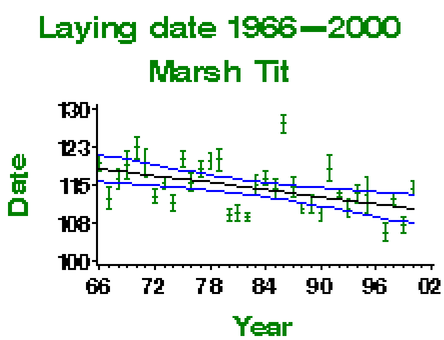
		1999		decline				sample











Insufficient data on CES available for this species

WILLOW TIT
Parus montanus

Conservation listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Rapid decline

Status summary

Willow Tits have been in decline since the mid-1970s and the continuing decline in the CBC index through the 1990s, following a brief period of stability during the late 1980s, is replicated in the trend in abundance calculated from CES data. The decline is unlikely to be due to nest predation and has only occurred in woodland and farmland, not in the wet woodland habitats preferred by the species (G.M. Siriwardena, unpubl.). Candidate causes for the decline include reductions in the availability of dead wood, woodland drainage and reductions in woodland shrub layer density (Vanhinsbergh *et al.* 2001).

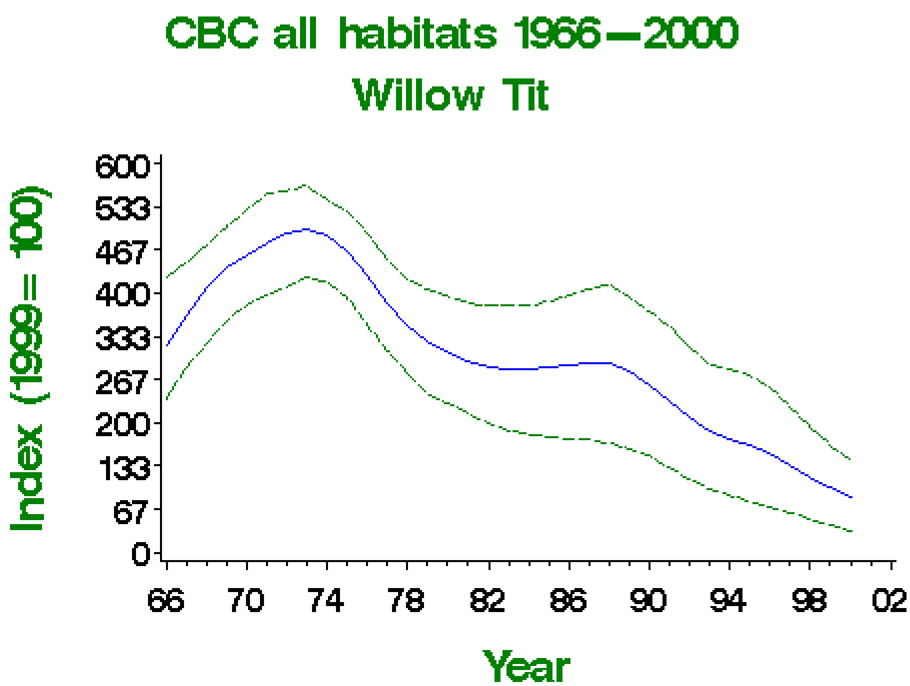
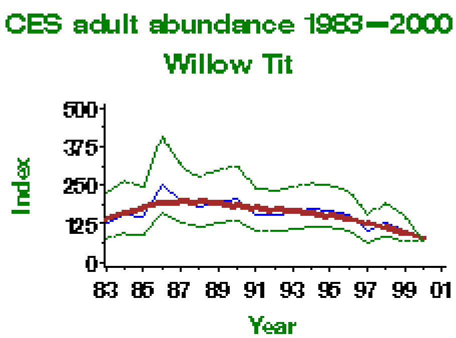


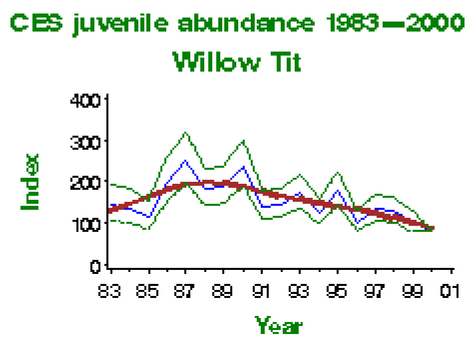
Table of population changes for Willow Tit

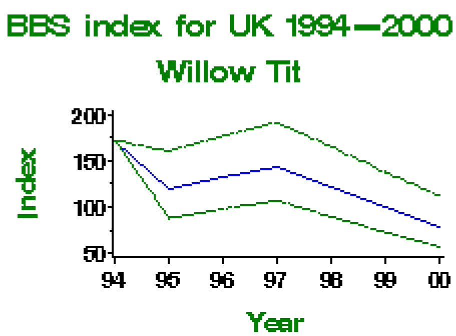
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	31	-76	-90	-61	>50	
	25	1974-1999	30	-80	-91	-66	>50	
	10	1989-1999	18	-64	-82	-46	>50	Small sample
	5	1994-1999	17	-43	-60	-29	>25	Small sample
CES adults	15	1984-1999	25	-40	.	.	[>25]	

	10	1989-1999	28	-51	.	.	[>50]	
	5	1994-1999	28	-41	.	.	[>25]	
[CES juveniles](#)	15	1984-1999	35	-31	.	.	[>25]	
	10	1989-1999	40	-49	.	.	[>25*]	
	5	1994-1999	38	-32	.	.	[>25]	
[BBS UK](#)	6	1994-2000	59	-54	-67	-35	(>50)	
[BBS England](#)	6	1994-2000	52	-49	-64	-27	(>25)	

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







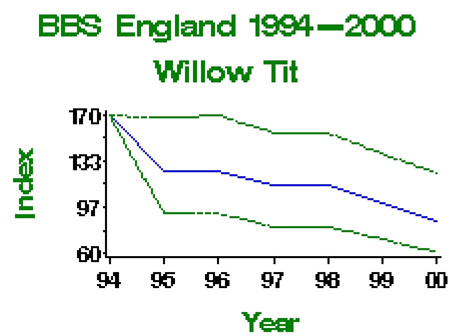


Table of productivity information for Willow Tit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[Percentage juveniles (CES)](#)	15	1984-1999	40	Smoothed trend	122 productivity index	100 productivity index	-18%	
[Percentage juveniles (CES)](#)	10	1989-1999	44	Smoothed trend	114 productivity index	100 productivity index	-12%	
[Percentage juveniles (CES)](#)	5	1994-1999	42	Smoothed trend	99 productivity index	100 productivity index	1%	

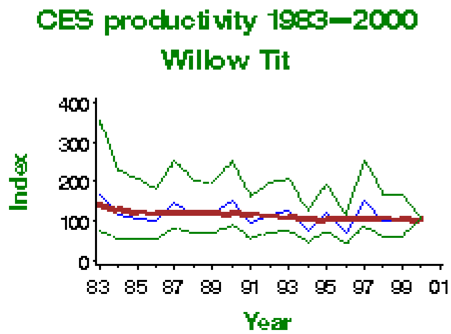
Insufficient data on clutch size available for this species

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



COAL TIT
Parus ater

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend
Farmland: Rapid increase

Status summary

Coal Tit abundance has been rather stable since the mid-1970s, following an earlier rapid increase. Confidence intervals are wide, but the trends in woodland and farmland habitats have been quite different, and the BBS shows large changes in population sizes that have varied geographically across the UK. These patterns suggest that Coal Tit abundance in the UK may be controlled by a complex range of factors.

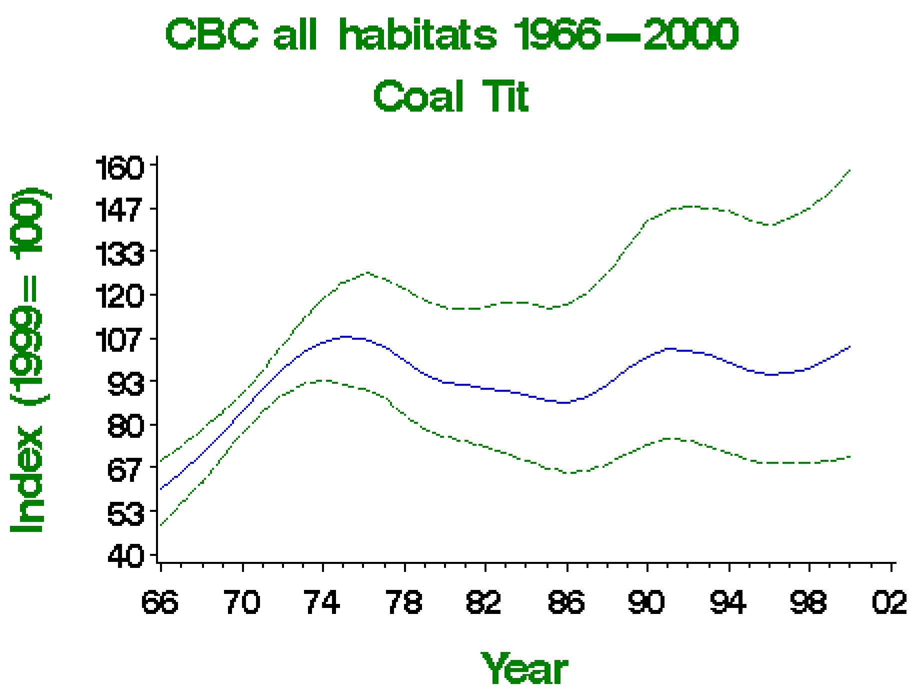
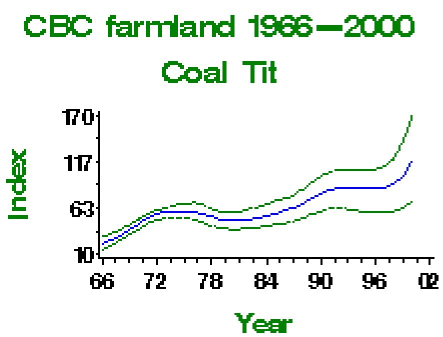


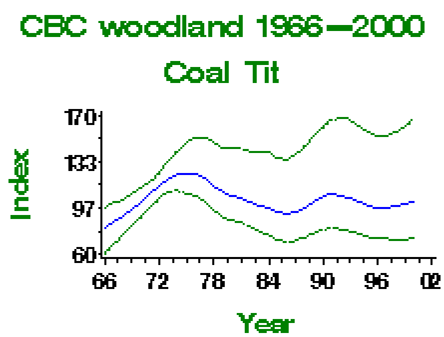
Table of population changes for Coal Tit

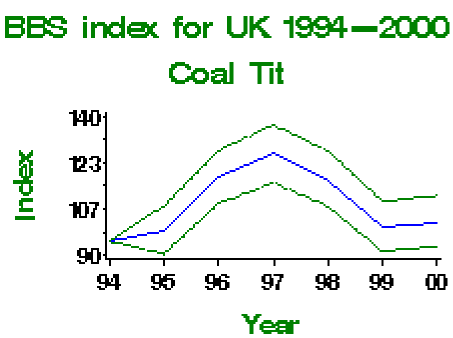
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	112	41	-10	135		
	25	1974-1999	119	-5	-33	33		

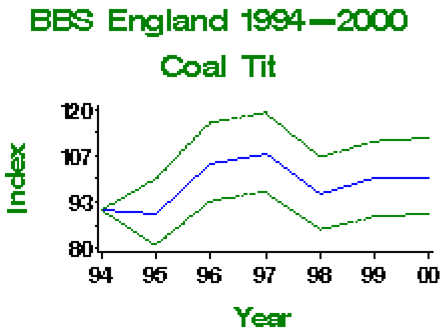
	10	1989-1999	112	3	-8	18		
	5	1994-1999	112	1	-7	11		
CBC farmland	31	1968-1999	27	213	85	380		
	25	1974-1999	26	69	1	130		
	10	1989-1999	23	34	-1	78		
	5	1994-1999	21	16	-14	48		
CBC woodland	31	1968-1999	69	10	-33	111		
	25	1974-1999	76	-19	-40	27		
	10	1989-1999	82	-2	-15	13		
	5	1994-1999	84	-2	-12	9		
BBS UK	6	1994-2000	528	7	-2	17		
BBS England	6	1994-2000	341	10	-1	23		
BBS Scotland	6	1994-2000	96	4	-16	29		
BBS Wales	6	1994-2000	53	-12	-34	18		
BBS N.Ireland	6	1994-2000	36	60	-11	188		Small sample

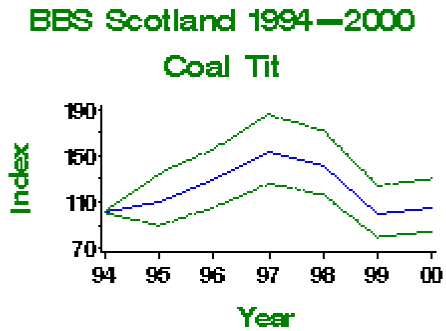
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

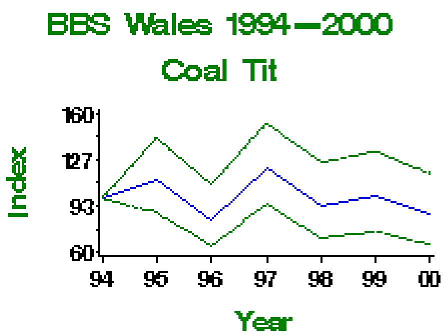


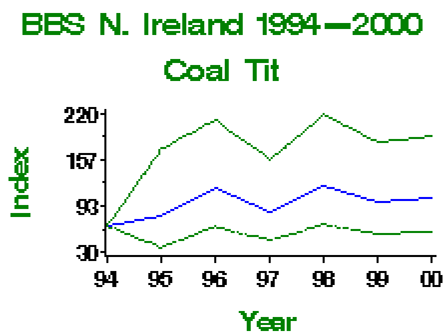












Productivity information is not currently available for this species

BLUE TIT
Parus caeruleus

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Shallow increase

Status summary

Blue Tit populations have increased in parallel with those of **Great Tits**, with two brief pauses in the long-term upward trend. The recent changes in the BBS index show fluctuations in abundance but no clear trend. Increased provisioning of food by humans during winter and access to nest boxes, which may reduce the risk of egg and nestling predation, may have contributed to the population increase. However, a decline in productivity revealed by the CES may indicate developing problems for the population. (The improvement in failure rates at the egg stage (22 days, comprising 14 days incubation + 8 days laying) is only minor, having fallen from 10% to 6%.)

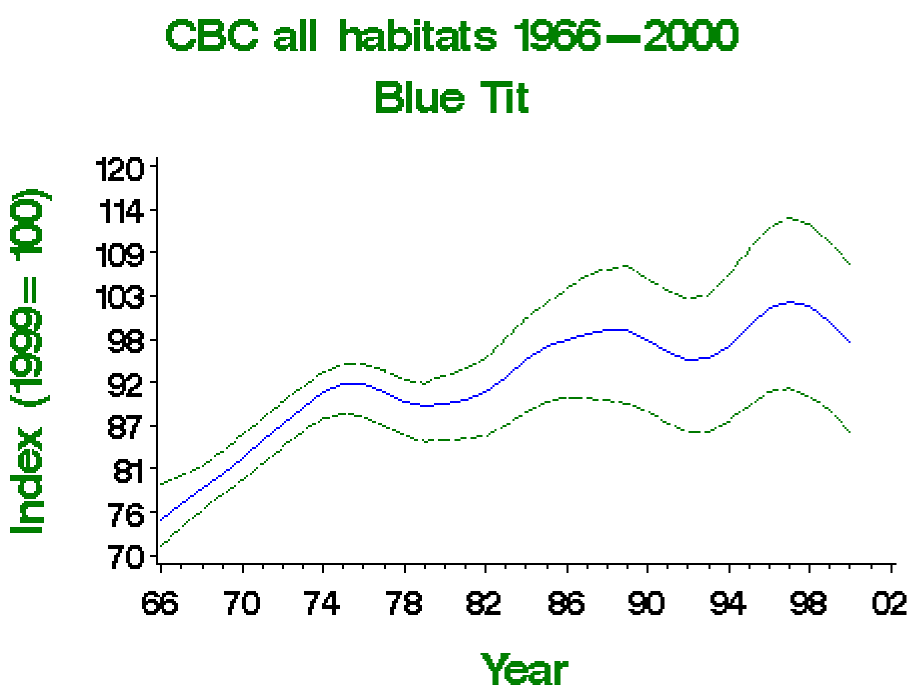
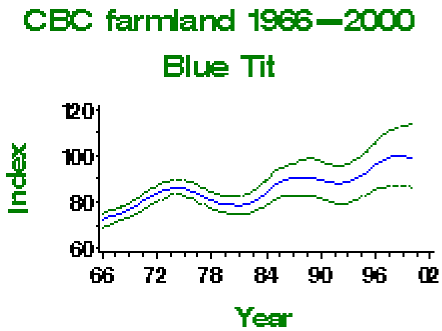


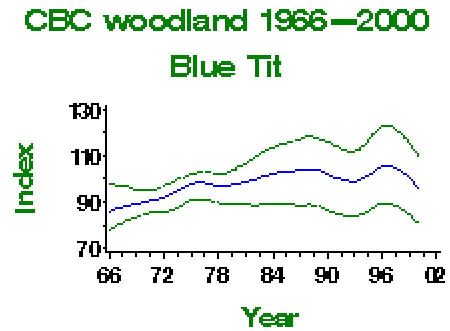
Table of population changes for Blue Tit

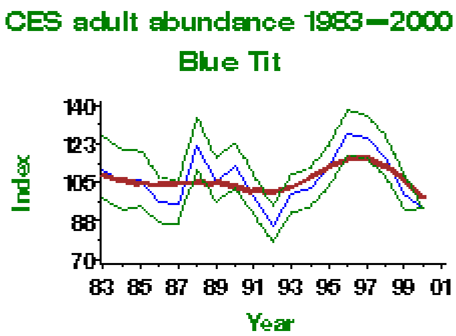
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	216	27	12	39		
	25	1974-1999	223	10	-1	21		

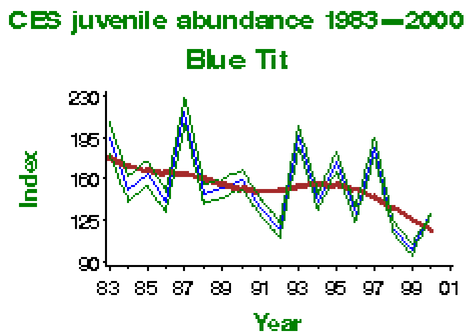
	10	1989-1999	213	1	-4	5		
	5	1994-1999	217	3	-1	6		
CBC farmland	31	1968-1999	93	33	17	49		
	25	1974-1999	93	16	1	29		
	10	1989-1999	93	10	1	19		
	5	1994-1999	93	10	3	18		
CBC woodland	31	1968-1999	84	13	-9	32		
	25	1974-1999	91	4	-9	22		
	10	1989-1999	98	-4	-9	1		
	5	1994-1999	101	-1	-5	4		
CES adults	15	1984-1999	95	0	.	.		
	10	1989-1999	110	1	.	.		
	5	1994-1999	116	-1	.	.		
CES juveniles	15	1984-1999	94	-27	.	.	[>25*]	
	10	1989-1999	109	-20	.	.		
	5	1994-1999	116	-20	.	.		
BBS UK	6	1994-2000	1666	3	-1	7		
BBS England	6	1994-2000	1366	1	-3	5		
BBS Scotland	6	1994-2000	119	3	-16	27		
BBS Wales	6	1994-2000	128	3	-10	18		
BBS N.Ireland	6	1994-2000	46	47	6	103		Small sample

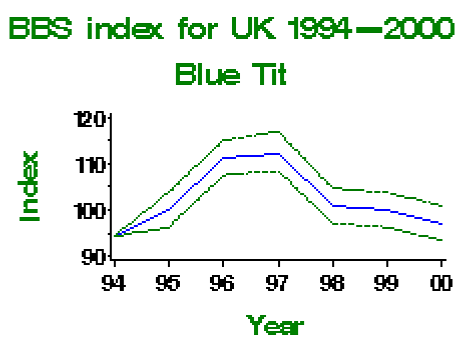
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

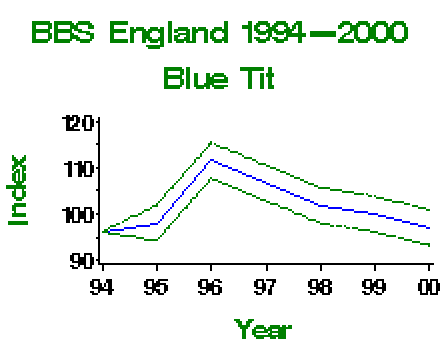


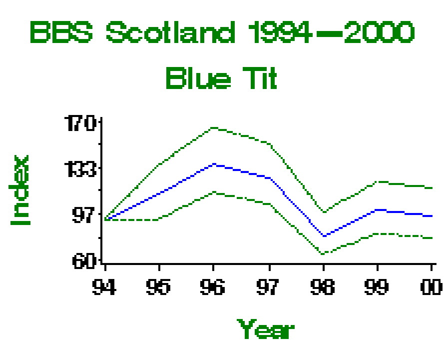


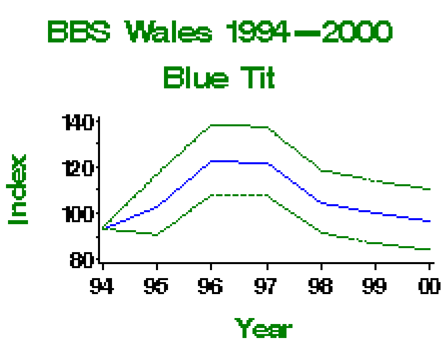












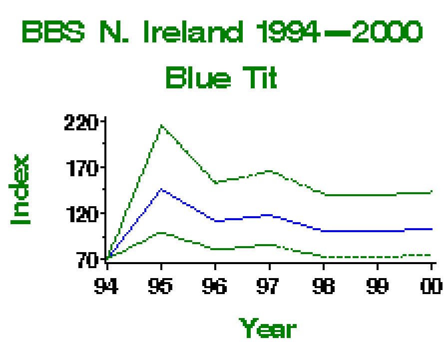
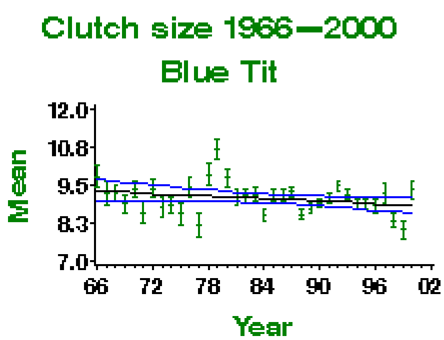
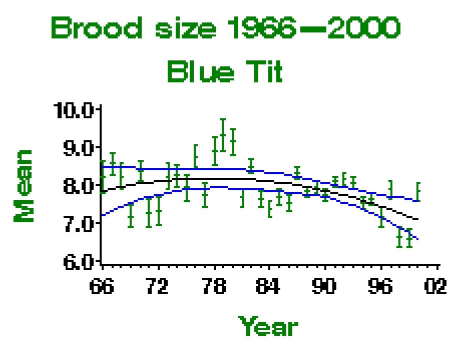


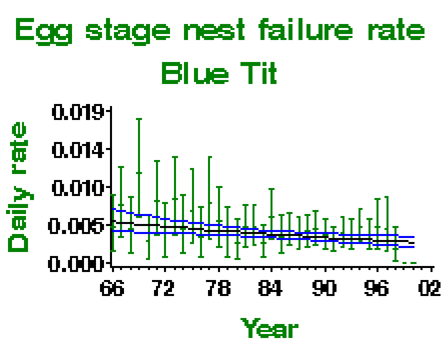
Table of productivity information for Blue Tit

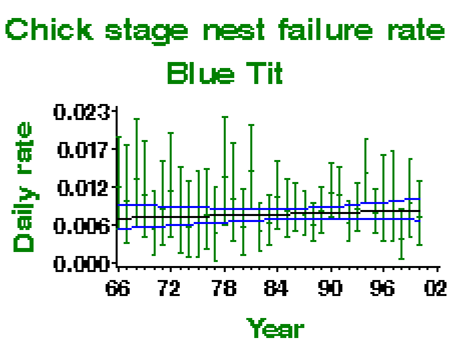
Variable	Period (yrs)	Years	Mean annual	Trend	Predicted in first year	Predicted in last year	Change	Comment

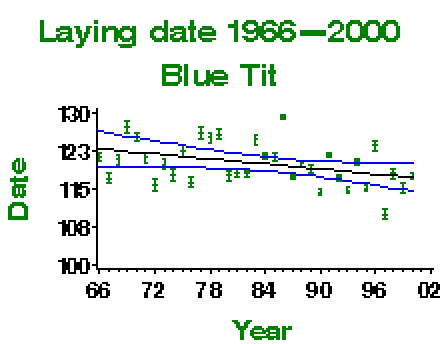
			sample					
Clutch size	31	1968-1999	85	None				
Brood size	31	1968-1999	136	Curvilinear	7.96 chicks	7.18 chicks	-0.78 chicks	
Daily failure rate (eggs)	31	1968-1999	137	Linear decline	0.0049 nests/day	0.0026 nests/day	-0.0023 nests/day	
Daily failure rate (chicks)	31	1968-1999	117	None				
Laying date	31	1968-1999	119	Linear decline	day 123	day 118	-5 days	
Percentage juveniles (CES)	15	1984-1999	99	Smoothed trend	156 productivity index	100 productivity index	-36% [>25*]	
Percentage juveniles (CES)	10	1989-1999	114	Smoothed trend	136 productivity index	100 productivity index	-26% [>25*]	
Percentage juveniles (CES)	5	1994-1999	121	Smoothed trend	125 productivity index	100 productivity index	-20%	

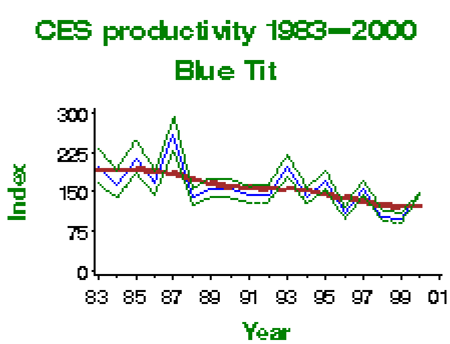












GREAT TIT
Parus major

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Moderate increase

Status summary

Great Tits have increased steadily since the 1960s with the exception of two brief periods of stability or shallow decline during the late 1970s and 1980s. The results of the BBS suggests that this increase is continuing, especially in England. A positive effect of increasing provisioning of food by humans during winter is one possible explanation for the increase. Changes in different aspects of breeding performance are contradictory but CES productivity shows a shallow decline, which may be related to high population levels (density-dependent competition).

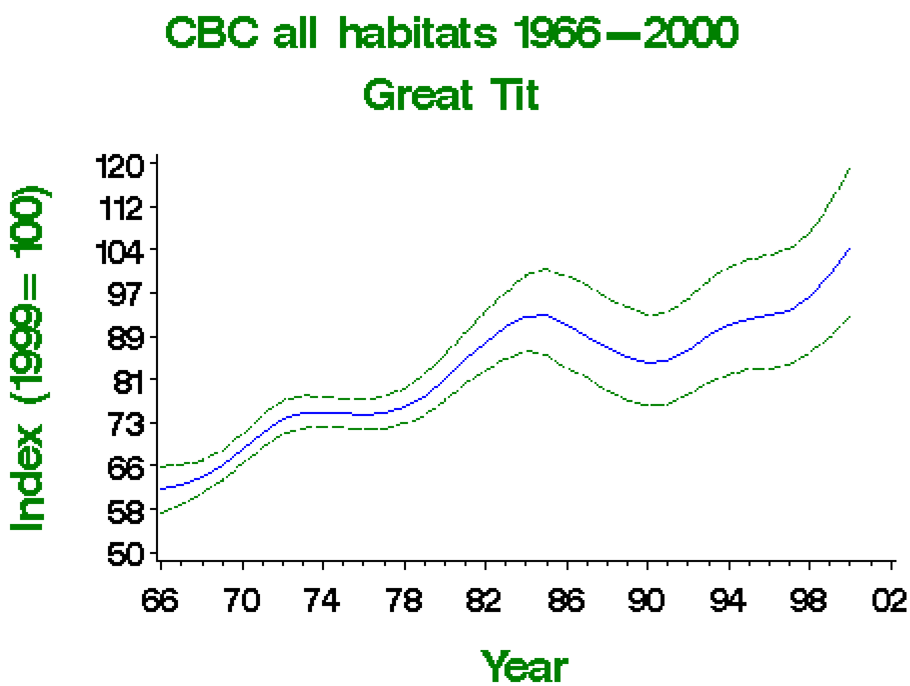
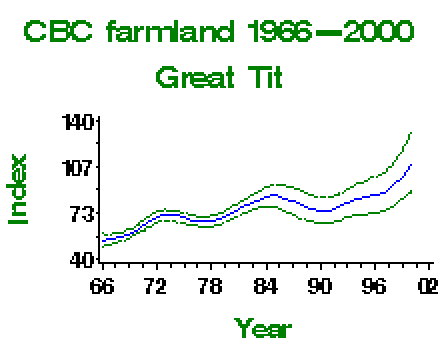


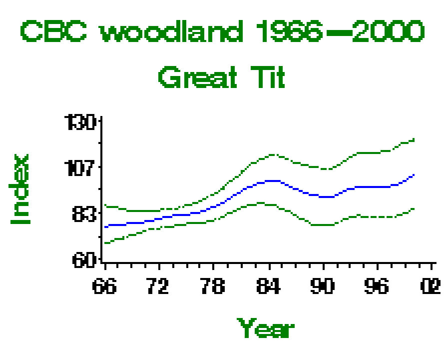
Table of population changes for Great Tit

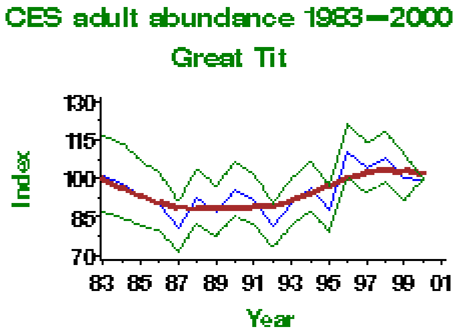
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	210	58	39	78		
	25	1974-1999	219	33	19	50		
	10	1989-1999	209	18	11	24		
	5	1994-1999	212	10	6	15		

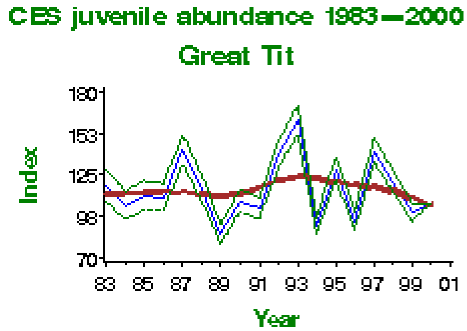
CBC farmland	31	1968-1999	89	79	50	111		
	25	1974-1999	89	40	21	63		
	10	1989-1999	90	31	18	43		
	5	1994-1999	88	21	12	30		
CBC woodland	31	1968-1999	85	29	7	55		
	25	1974-1999	92	22	4	43		
	10	1989-1999	98	8	2	16		
	5	1994-1999	101	3	-2	8		
CES adults	15	1984-1999	87	7	.	.		
	10	1989-1999	102	17	.	.		
	5	1994-1999	109	10	.	.		
CES juveniles	15	1984-1999	90	-2	.	.		
	10	1989-1999	104	-1	.	.		
	5	1994-1999	112	-10	.	.		
BBS UK	6	1994-2000	1520	18	12	23		
BBS England	6	1994-2000	1246	16	10	21		
BBS Scotland	6	1994-2000	105	18	-7	50		
BBS Wales	6	1994-2000	121	18	-1	40		
BBS N.Ireland	6	1994-2000	39	94	27	196		Small sample

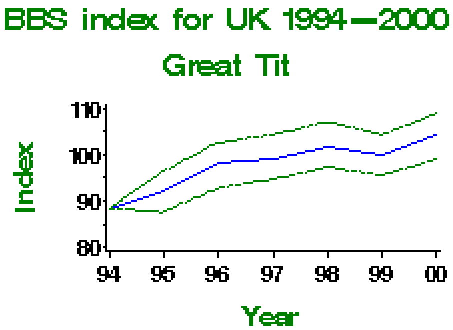
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

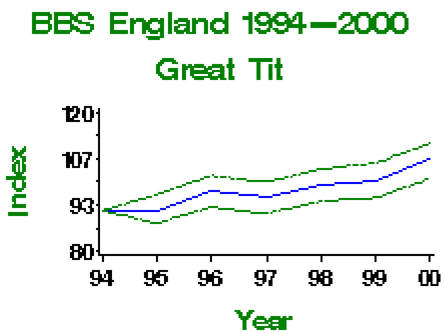


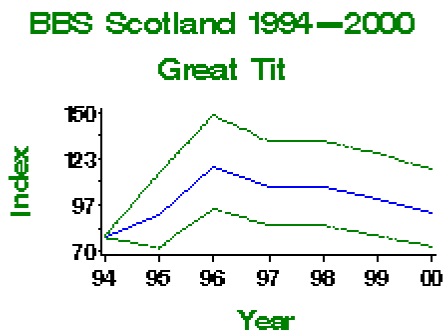


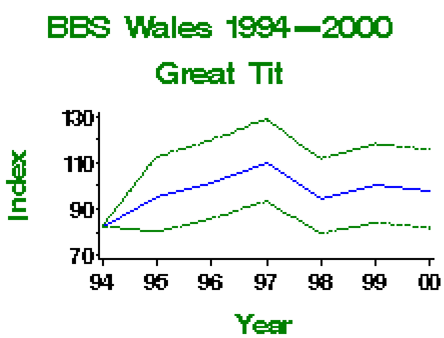












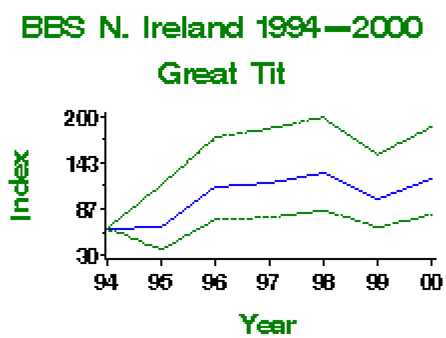
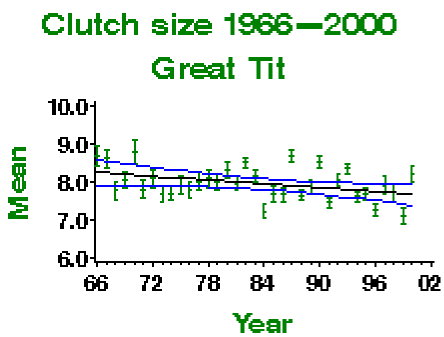
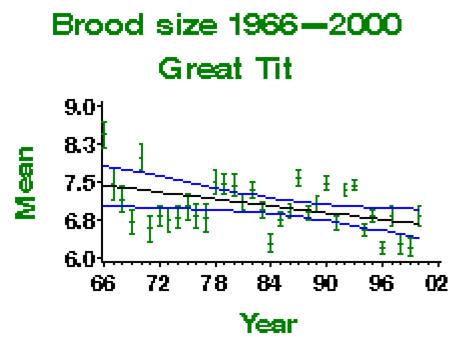


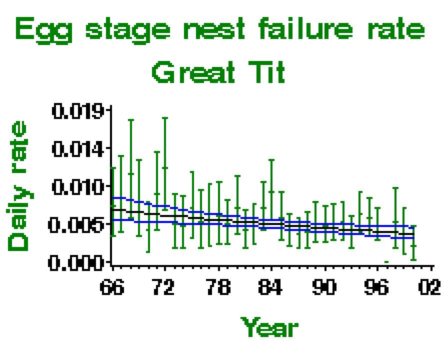
Table of productivity information for Great Tit

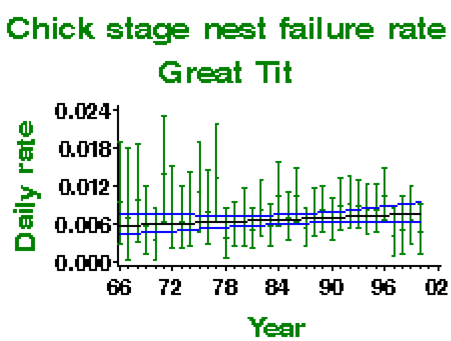
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	94	Linear decline	8.22 eggs	7.7 eggs	-0.52 eggs	
Brood size	31	1968-1999	162	Linear decline	7.39 chicks	6.7 chicks	-0.69 chicks	
Daily failure rate (eggs)	31	1968-1999	155	Linear decline	0.0063 nests/day	0.0036 nests/day	-0.0027 nests/day	
Daily failure rate	31	1968-1999	128	None				

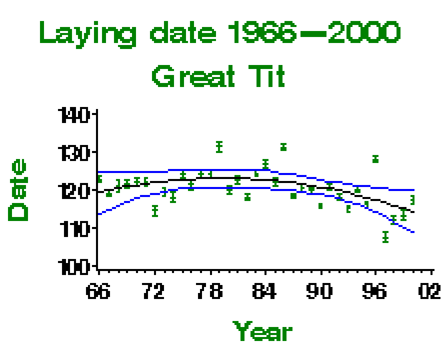
(chicks)								
Laying date	31	1968-1999	117	Curvilinear	day 120	day 115	-5 days	
Percentage juveniles (CES)	15	1984-1999	96	Smoothed trend	119 productivity index	100 productivity index	-16%	
Percentage juveniles (CES)	10	1989-1999	112	Smoothed trend	121 productivity index	100 productivity index	-18%	
Percentage juveniles (CES)	5	1994-1999	118	Smoothed trend	119 productivity index	100 productivity index	-16%	

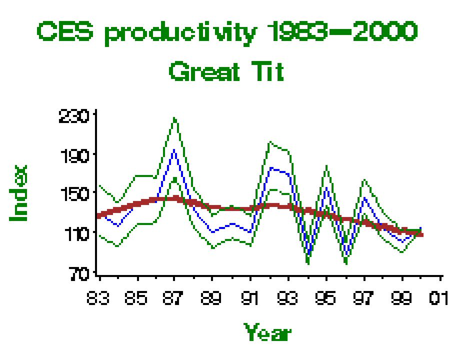












NUTHATCH
Sitta europaea

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Rapid increase

Status summary

Nuthatch abundance has increased rapidly since the mid-1970s, although BBS data suggest that the upward trend may now have ceased. This increase has been accompanied by a northward range expansion (**Gibbons *et al.* 1993**) and has been associated with a large increase in brood size. A trend towards earlier laying, perhaps as a result of climate change (**Crick *et al.* 1997**), has also been identified..

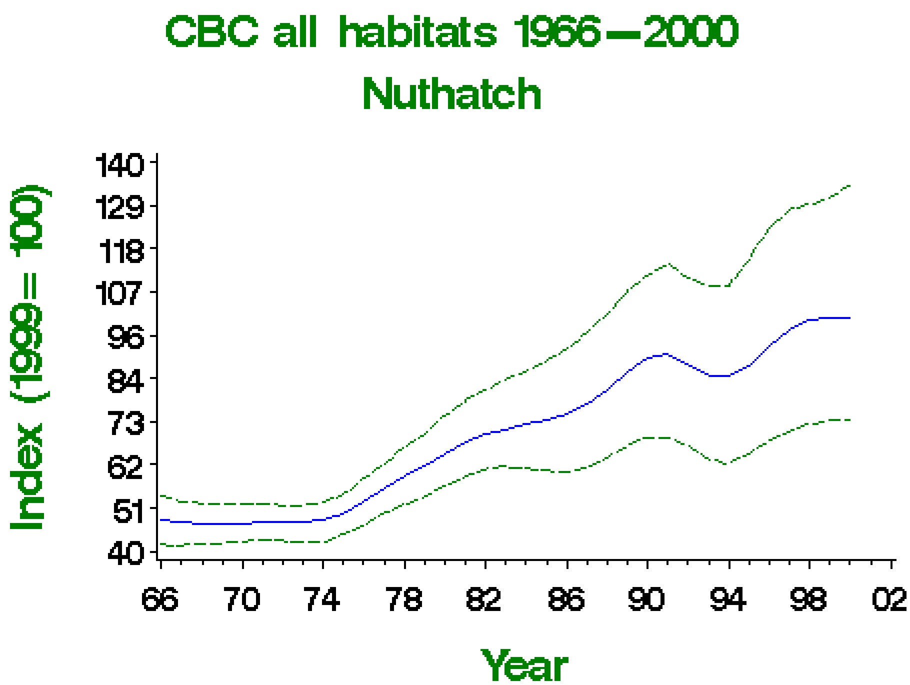
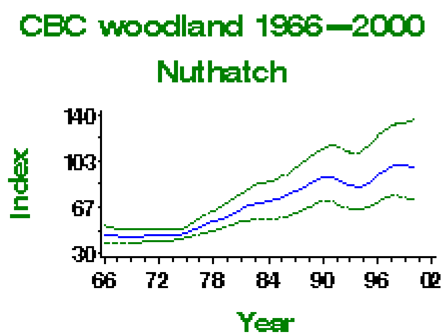


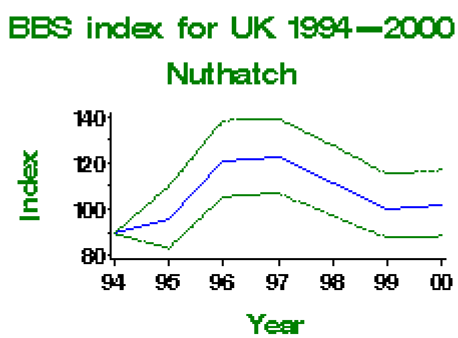
Table of population changes for Nuthatch

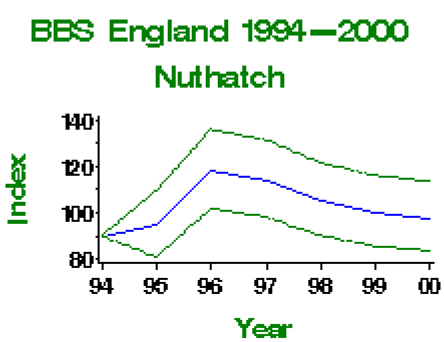
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	65	113	57	177		
	25	1974-1999	70	109	58	175		
	10	1989-1999	78	16	3	33		
	5	1994-1999	81	18	7	32		
CBC woodland	31	1968-1999	44	132	72	241		

	25	1974-1999	48	124	72	202		
	10	1989-1999	57	15	2	37		
	5	1994-1999	61	21	6	38		
BBS UK	6	1994-2000	282	14	-1	31		
BBS England	6	1994-2000	232	8	-7	26		
BBS Wales	6	1994-2000	49	24	-12	77		Small sample

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







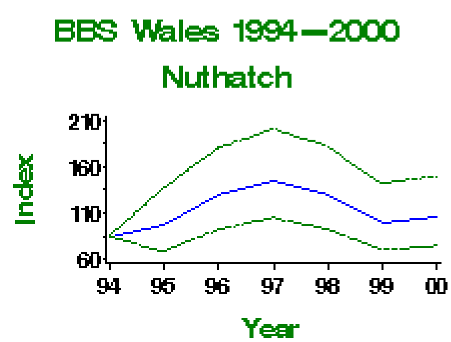
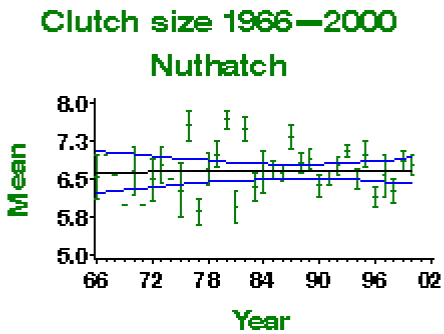
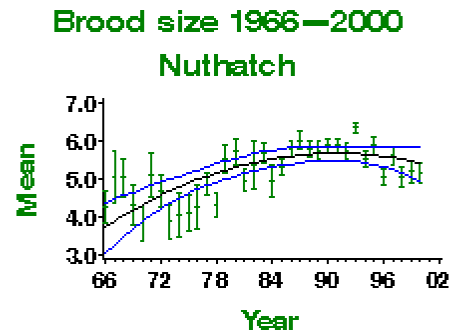


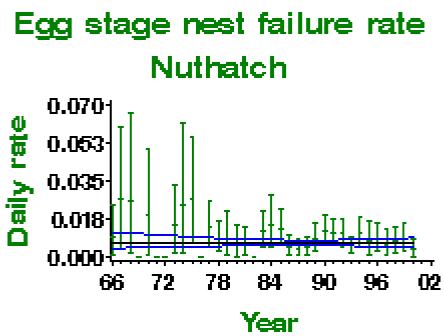
Table of productivity information for Nuthatch

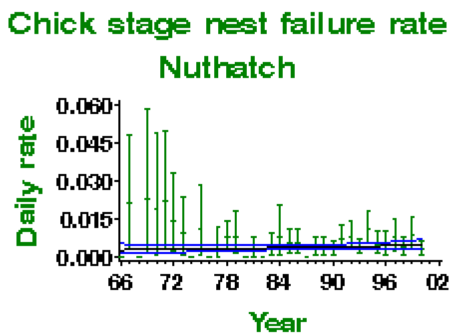
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	24	None				Small sample
Brood size	31	1968-	56	Curvilinear	4.03	5.48	1.45	

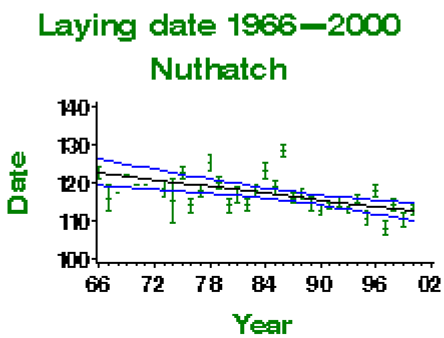
		1999			chicks	chicks	chicks	
Daily failure rate (eggs)	31	1968-1999	43	None				
Daily failure rate (chicks)	31	1968-1999	47	None				
Laying date	31	1968-1999	26	Linear decline	day 122	day 113	-9 days	Small sample











Insufficient data on CES available for this species

TREECREEPER
Certhia familiaris

Conservation listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long-term trend

UK: Fluctuating with no long-term trend

Status summary

The UK Treecreeper population has been roughly stable since the late 1970s, but this population level represents a decline from a mid-1970s peak. Detailed study has shown that Treecreeper numbers and survival rates are reduced by wet winters (Peach *et al*. 1995b). There is a suggestion of a further, recent, shallow decline but confidence intervals are wide and the CES abundance index shows the opposite pattern. Although productivity, calculated using CES data, shows no trend over time, there has been a significant fall in nest failure rates at the egg stage (18 days, comprising 14 days incubation + 4 days laying) from 31% to 12%.

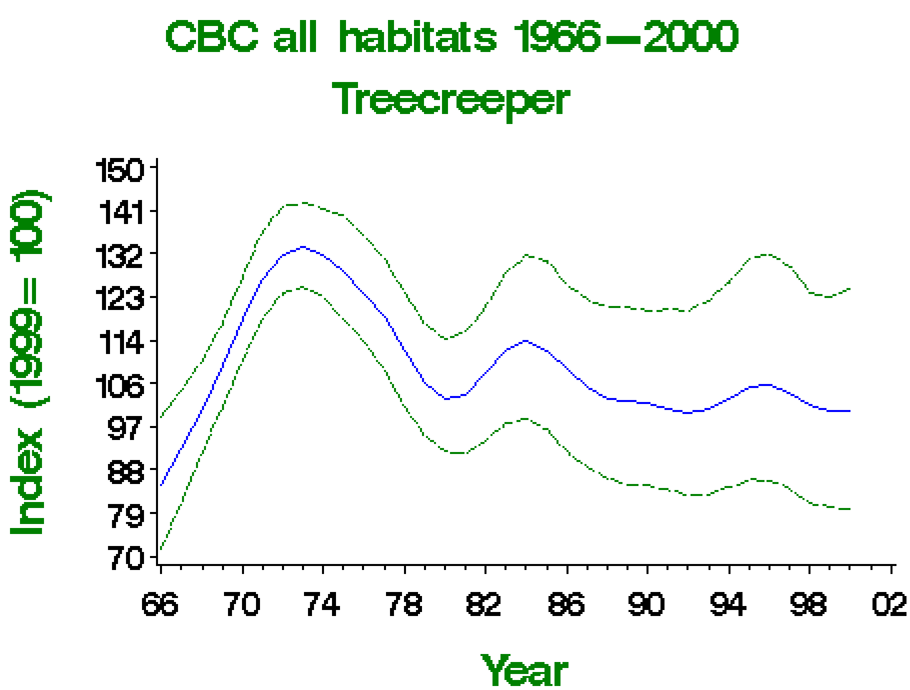
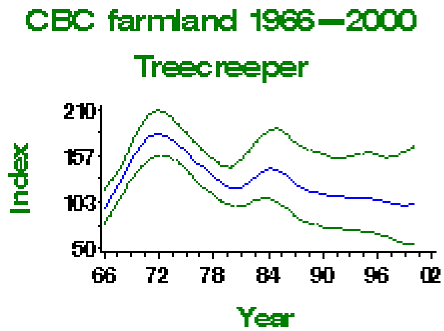


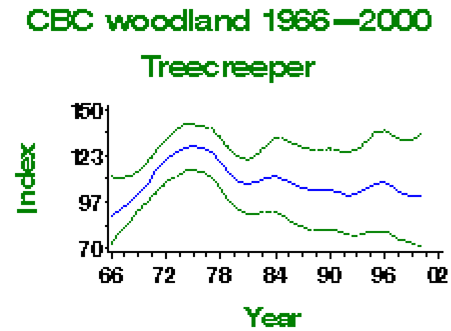
Table of population changes for Treecreeper

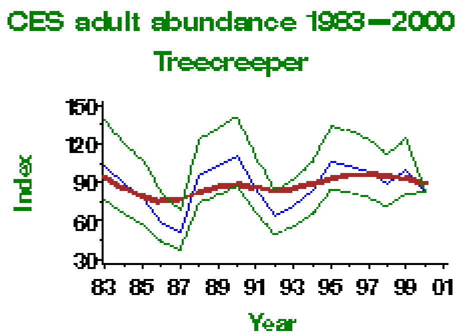
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	100	0	-20	25		
		1974-						

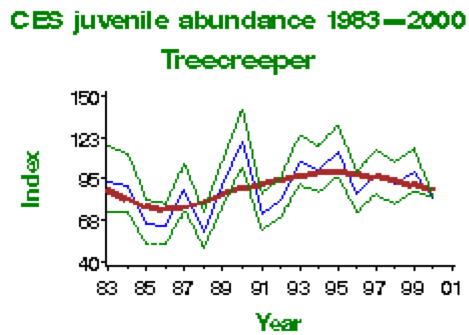
	25	1999	105	-24	-37	-6		
	10	1989-1999	103	-2	-13	11		
	5	1994-1999	103	-2	-11	6		
CBC farmland	31	1968-1999	30	-24	-55	15		
	25	1974-1999	29	-42	-68	-11	>25	
	10	1989-1999	25	-12	-43	23		
	5	1994-1999	24	-8	-35	24		
CBC woodland	31	1968-1999	57	4	-27	44		
	25	1974-1999	63	-22	-43	1		
	10	1989-1999	69	-4	-16	9		
	5	1994-1999	70	-4	-12	5		
CES adults	15	1984-1999	38	9	.	.		
	10	1989-1999	46	7	.	.		
	5	1994-1999	48	5	.	.		
CES juveniles	15	1984-1999	57	12	.	.		
	10	1989-1999	69	9	.	.		
	5	1994-1999	72	-8	.	.		
BBS UK	6	1994-2000	264	12	-5	31		
BBS England	6	1994-2000	196	-4	-20	15		
BBS Scotland	6	1994-2000	27	-26	-59	33		Small sample
BBS Wales	6	1994-2000	35	149	63	281		Small sample

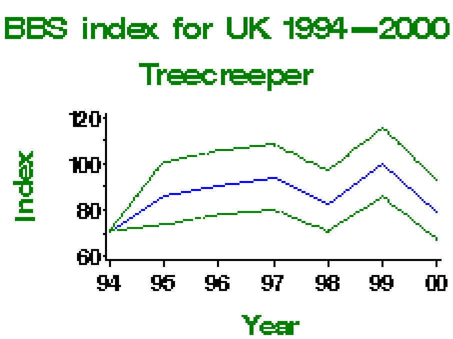
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

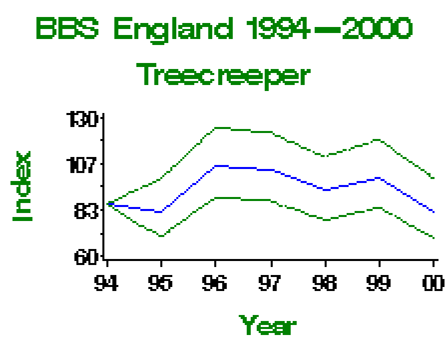


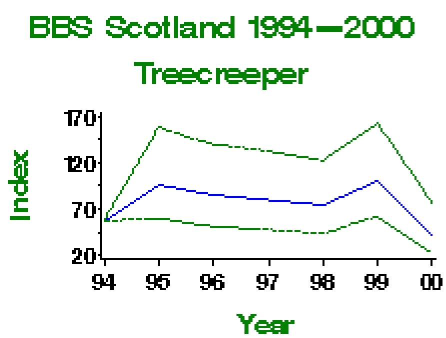












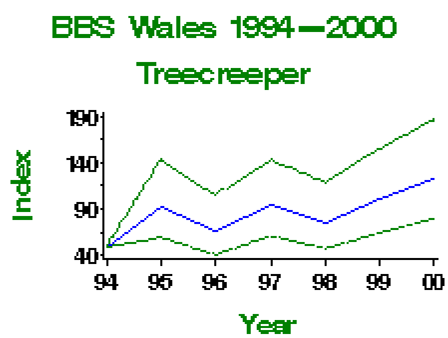
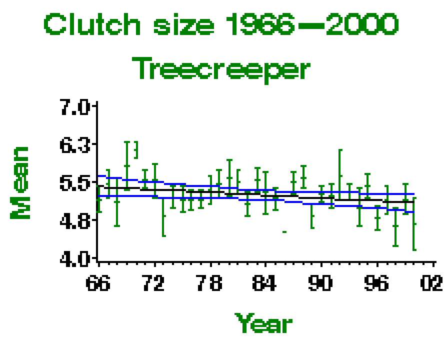
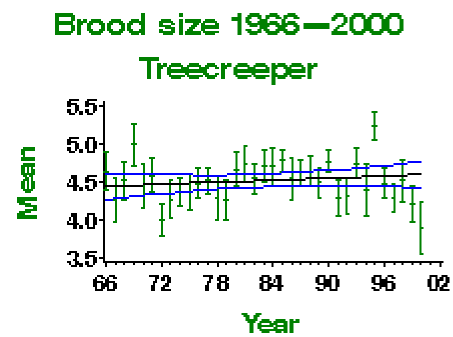


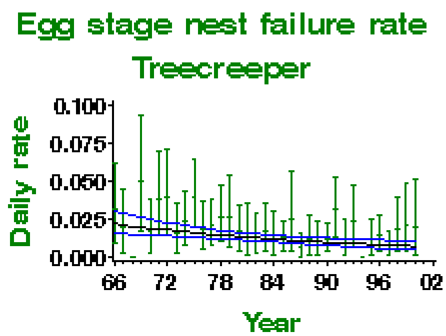
Table of productivity information for Treecreeper

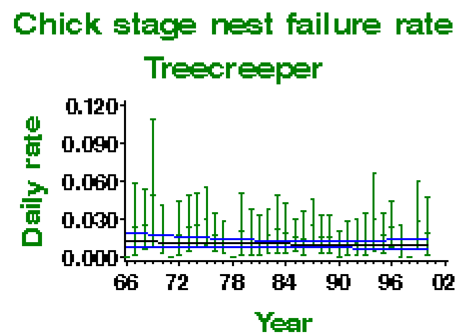
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	15	None				Small sample
Brood size	31	1968-1999	31	None				
Daily failure rate (eggs)	31	1968-1999	25	Linear decline	0.0203 nests/day	0.0071 nests/day	-0.0132 nests/day	Small sample
Daily failure rate	31	1968-1999	25	None				Small sample

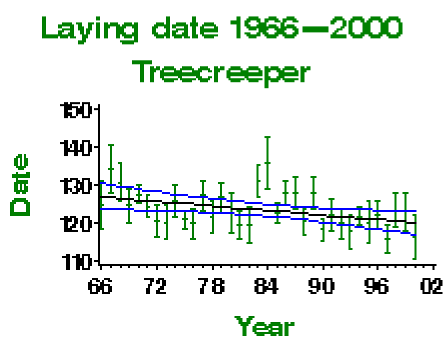
(chicks)								
Laying date	31	1968-1999	15	Linear decline	day 127	day 120	-7 days	Small sample
Percentage juveniles (CES)	15	1984-1999	65	Smoothed trend	104 productivity index	100 productivity index	-4%	
Percentage juveniles (CES)	10	1989-1999	77	Smoothed trend	120 productivity index	100 productivity index	-16%	
Percentage juveniles (CES)	5	1994-1999	81	Smoothed trend	131 productivity index	100 productivity index	-24%	

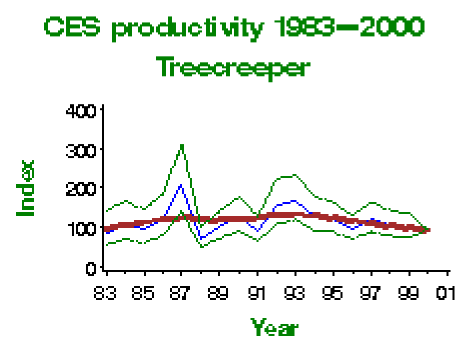












JAY
Garrulus glandarius

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Fluctuating with no long-term trend; shallow decline in woodland habitat over last 10 years

Status summary

The UK Jay population remained stable in the species' preferred woodland habitat until the late 1980s, after which the population began to decrease in size. This decrease followed an earlier decline on farmland CBC plots (Gregory & Marchant 1996). However, low statistical confidence means that these trends should currently only be monitored rather than trigger a conservation alert. Although sample sizes are small, nest failure rates at the egg stage (21 days, comprising 16 days incubation + 5 days laying) have fallen from 69% to 38% and it would be interesting to investigate the causes of this drop.

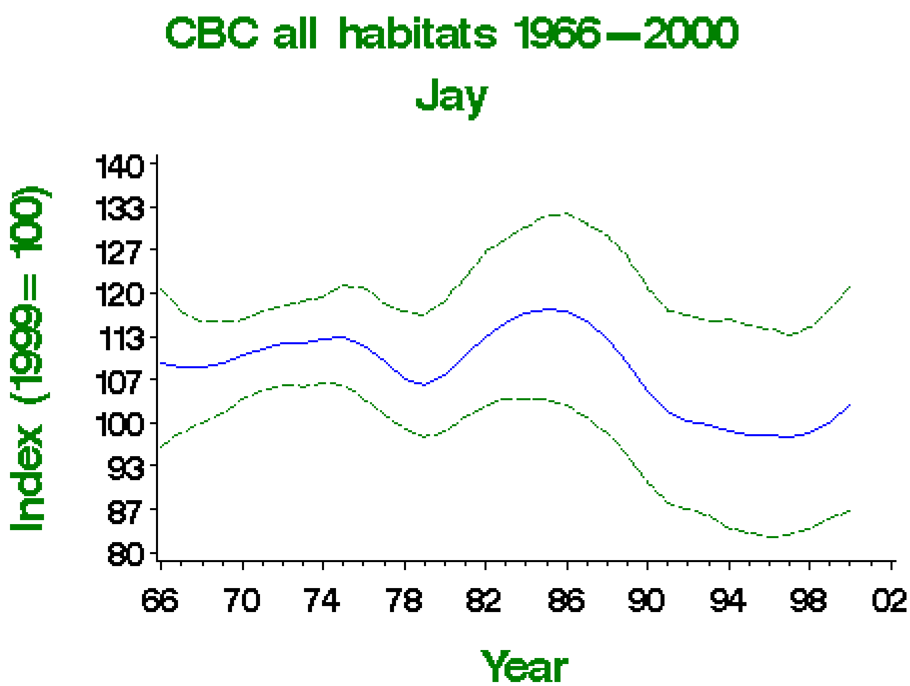
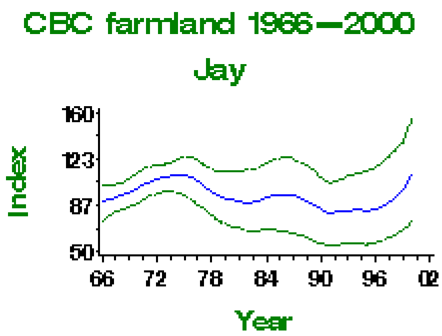


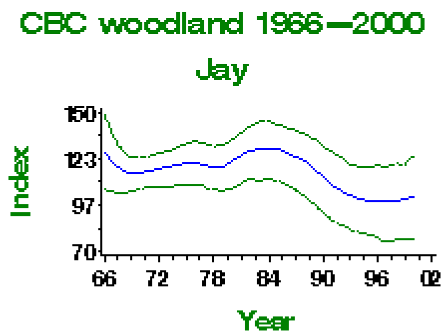
Table of population changes for Jay

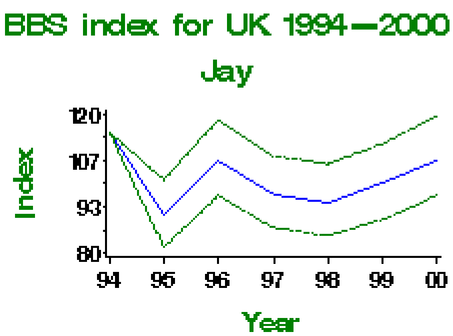
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	112	-8	-24	12		
	25	1974-1999	119	-11	-23	3		

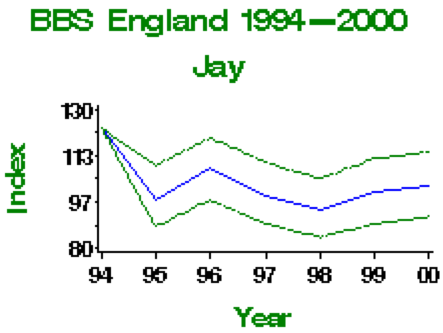
	10	1989-1999	114	-8	-17	2		
	5	1994-1999	115	1	-6	8		
CBC farmland	31	1968-1999	30	6	-30	51		
	25	1974-1999	31	-9	-36	28		
	10	1989-1999	32	14	-3	41		
	5	1994-1999	31	21	4	43		
CBC woodland	31	1968-1999	64	-14	-36	13		
	25	1974-1999	70	-16	-32	-1		
	10	1989-1999	73	-15	-26	-4		
	5	1994-1999	74	0	-9	8		
BBS UK	6	1994-2000	499	-7	-16	4		
BBS England	6	1994-2000	436	-17	-26	-7		
BBS Wales	6	1994-2000	50	17	-18	67		Small sample

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









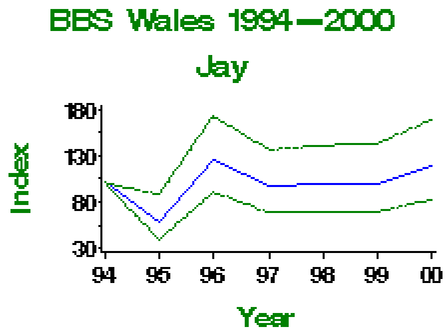
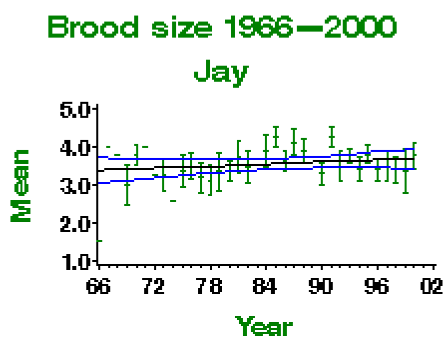
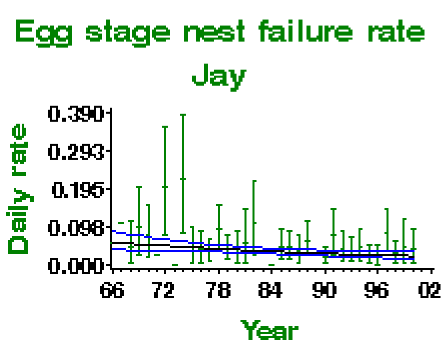


Table of productivity information for Jay

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	11	None				Small sample
Daily failure rate (eggs)	31	1968-1999	10	Linear decline	0.0544 nests/day	0.0225 nests/day	-0.0319 nests/day	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

MAGPIE
Pica pica

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Rapid increase, now stable

Status summary

Magpies increased steadily until the late 1980s, when abundance stabilised. This period of population stability is apparent in both CBC and BBS indices (Gregory & Marchant 1996). The trend has been associated with increases in breeding performance and earlier laying, as has been observed for other corvids, and probably reflects the benefits of a generalist strategy under changing environmental conditions. The decline in nest failure rates has been substantial. During the egg stage (21 days, comprising 17 days incubation + 4 days laying) failure rates have fallen from 45% to 9%, and during the chick stage (25 days) failure rates fell from 36% to 5%. Overall, from egg laying to fledging, the proportion of nests failing has fallen from 65% to 13%, a decrease which is likely to be the result of reductions in gamekeeping activity (Marchant *et al.* 1990). A trend towards earlier laying has also been identified and may be partially explained by recent climate change (Crick & Sparks 1999). The high level of aaptability displayed by magpies has allowed them to colonise both urban and suburban habitats.

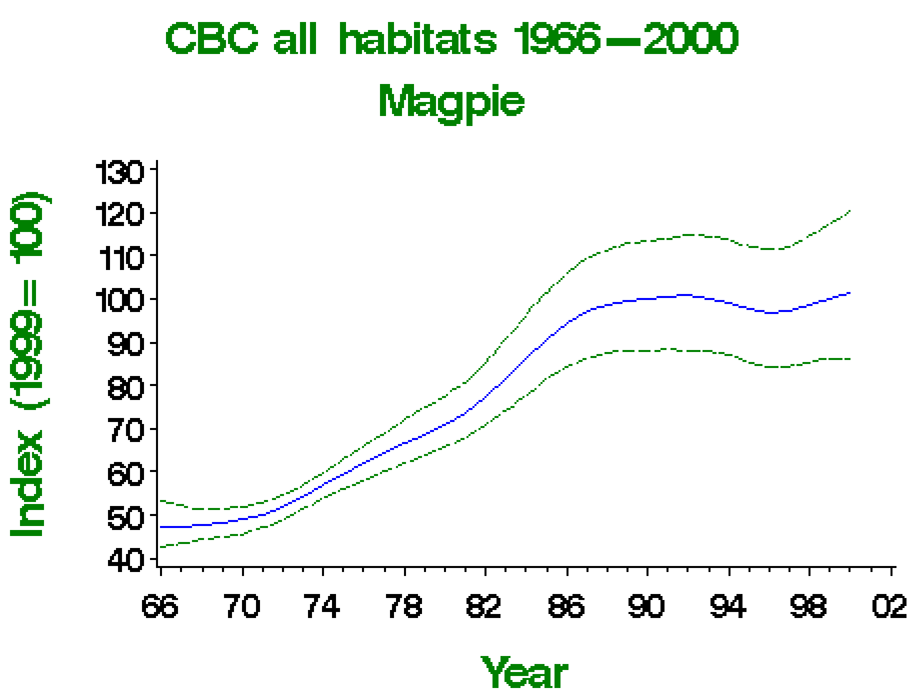
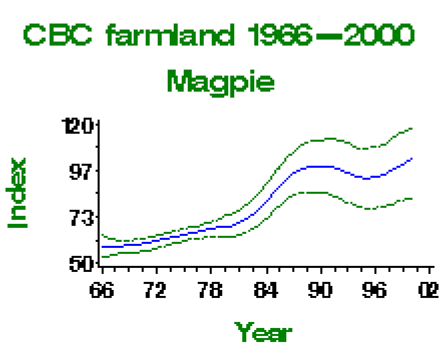
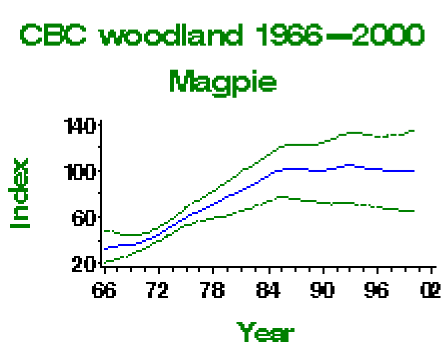


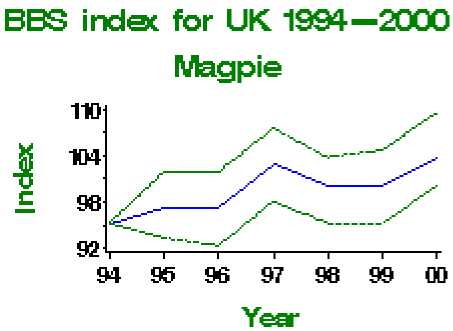
Table of population changes for Magpie

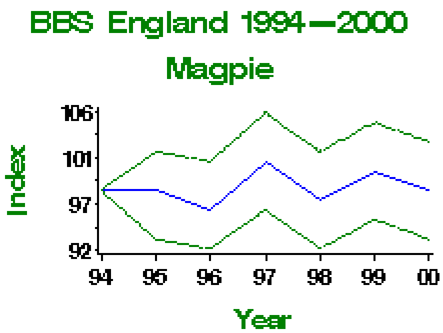
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	157	110	76	158		
	25	1974-1999	169	76	57	103		
	10	1989-1999	162	1	-7	9		
	5	1994-1999	163	1	-4	6		
CBC farmland	31	1968-1999	72	71	42	98		
	25	1974-1999	74	58	31	85		
	10	1989-1999	77	1	-10	11		
	5	1994-1999	77	7	-2	14		
CBC woodland	31	1968-1999	57	185	66	371		
	25	1974-1999	64	81	29	134		
	10	1989-1999	68	-1	-16	17		
	5	1994-1999	70	-4	-13	5		
BBS UK	6	1994-2000	1388	9	5	15		
BBS England	6	1994-2000	1169	0	-5	5		
BBS Scotland	6	1994-2000	33	41	-3	107		Small sample
BBS Wales	6	1994-2000	126	24	5	45		
BBS N.Ireland	6	1994-2000	52	57	21	104		

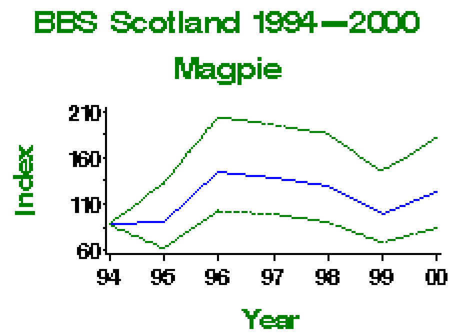
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

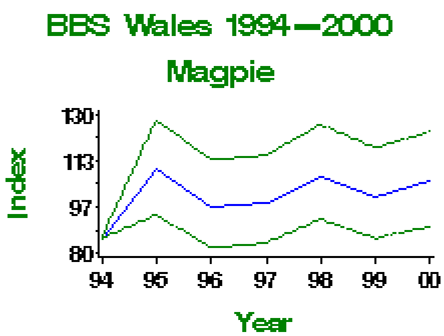












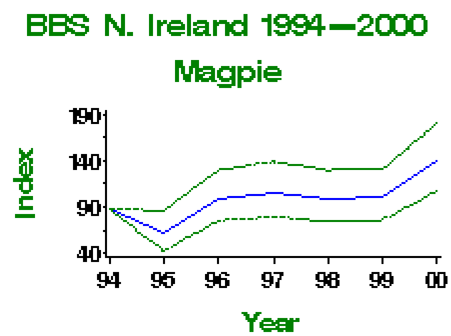
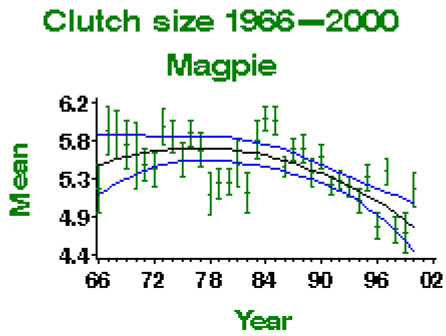
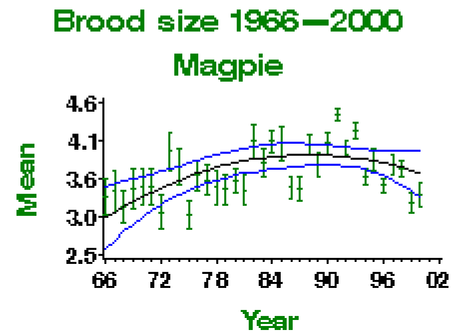
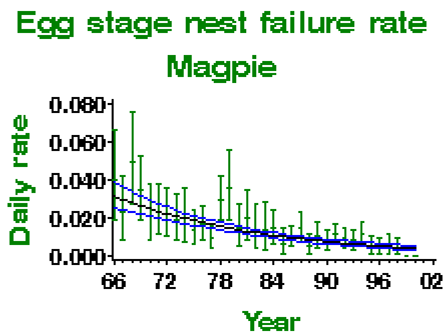


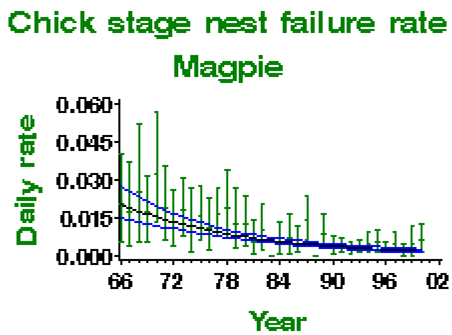
Table of productivity information for Magpie

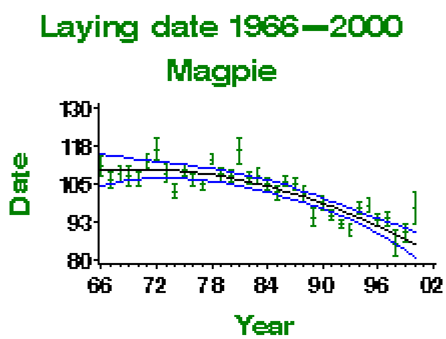
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	52	Curvilinear	5.54 eggs	4.81 eggs	-0.73 eggs	
Brood size	31	1968-1999	87	Curvilinear	3.17 chicks	3.68 chicks	0.51 chicks	
Daily failure rate (eggs)	31	1968-1999	58	Linear decline	0.0281 nests/day	0.0043 nests/day	-0.0238 nests/day	
Daily failure rate (chicks)	31	1968-1999	57	Linear decline	0.0178 nests/day	0.002 nests/day	-0.0158 nests/day	
Laying date	31	1968-1999	39	Curvilinear	day 110	day 87	-23 days	











Insufficient data on CES available for this species

JACKDAW
Corvus monedula

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Moderate increase
Woodland: Rapid increase

Status summary

Jackdaws have increased in abundance since the 1960s (Gregory & Marchant 1996), an increase that the BBS suggests is continuing. As with Magpies, Rooks and Crows, the increase has been associated with improvements in breeding performance and probably reflects the species' generalist feeding habits, allowing exploitation of diverse and ephemeral food resources. In addition to increases in average brood size, declines in nest failure rates have been large: during the egg stage (21 days, comprising 17 days incubation + 4 days laying) failure rates fell from 16% to 5%, and during the chick stage (30 days) failure rates fell from 31% to 10%. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen from 42% to 14%. Typically in this species, the younger chicks of a brood perish quickly if food becomes limited. Larger brood sizes and increases in fledging success are therefore likely to be due to improved parental provisioning success (Henderson & Hart 1993).

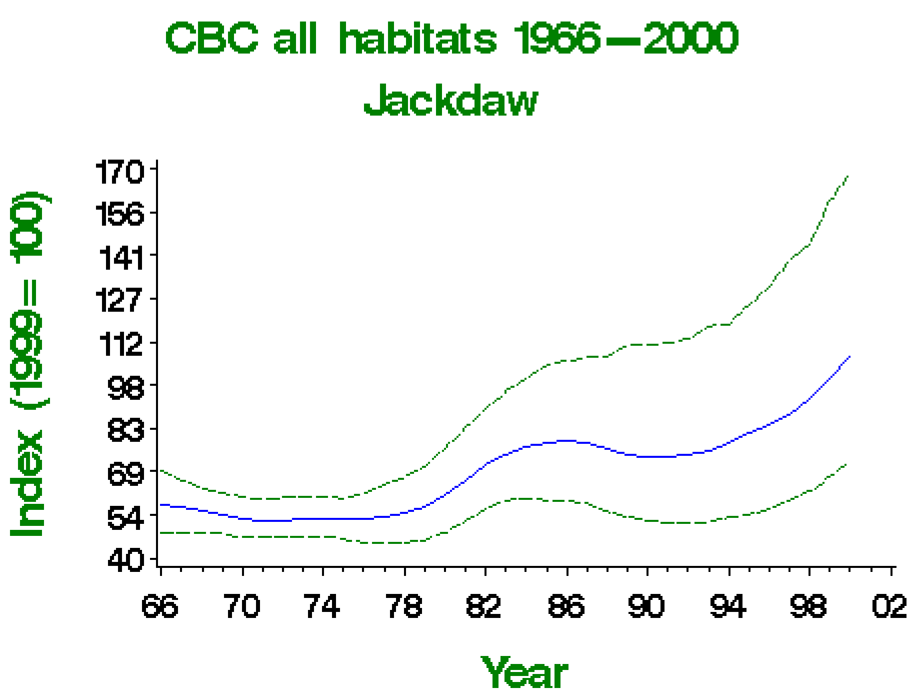
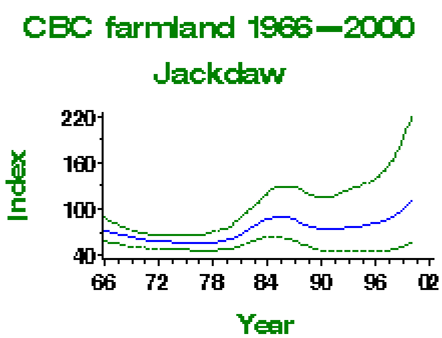


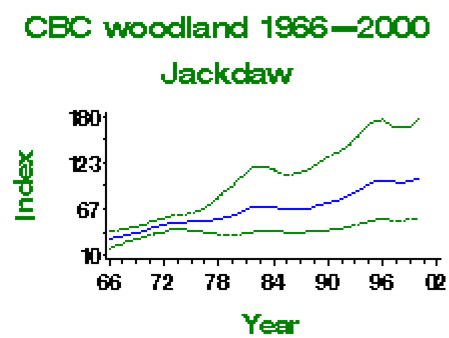
Table of population changes for Jackdaw

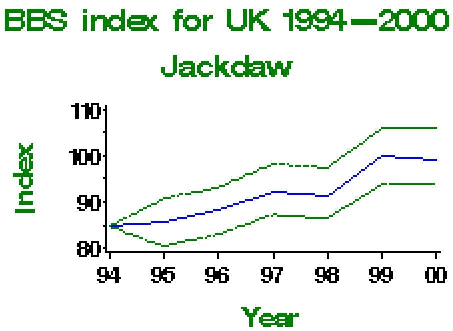
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	76	79	17	194		

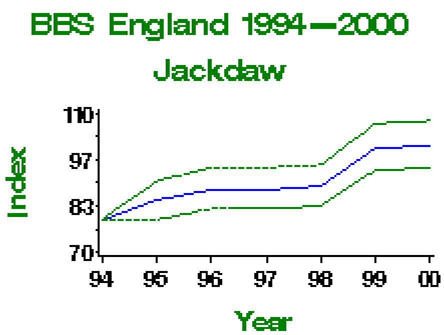
	25	1974-1999	81	89	30	186		
	10	1989-1999	84	34	13	64		
	5	1994-1999	82	27	13	47		
CBC farmland	31	1968-1999	40	52	-12	197		
	25	1974-1999	42	75	-1	239		
	10	1989-1999	45	32	-2	74		
	5	1994-1999	44	28	5	62		
CBC woodland	31	1968-1999	26	183	27	502		
	25	1974-1999	28	97	16	251		
	10	1989-1999	31	42	10	77		
	5	1994-1999	31	6	-19	31		
BBS UK	6	1994-2000	1166	17	11	25		
BBS England	6	1994-2000	924	27	19	36		
BBS Scotland	6	1994-2000	89	0	-21	26		
BBS Wales	6	1994-2000	102	6	-13	30		
BBS N.Ireland	6	1994-2000	46	-6	-32	29		Small sample

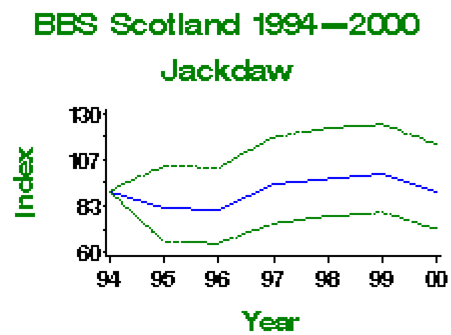
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

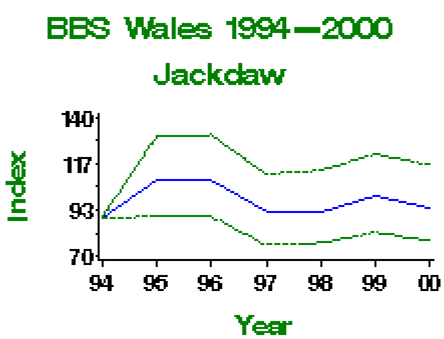












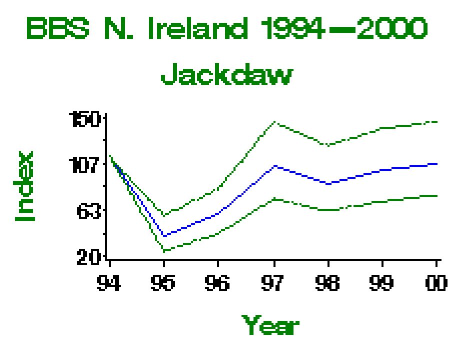
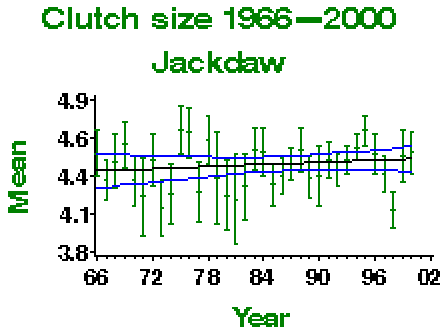
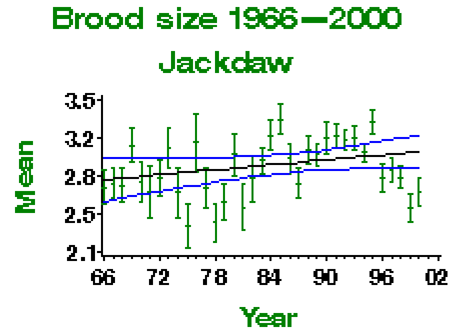
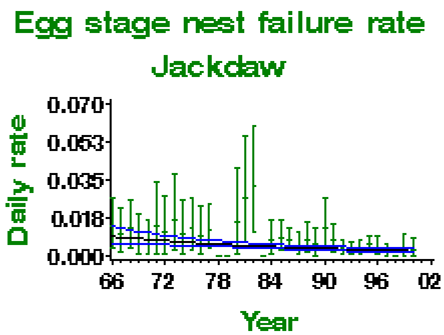


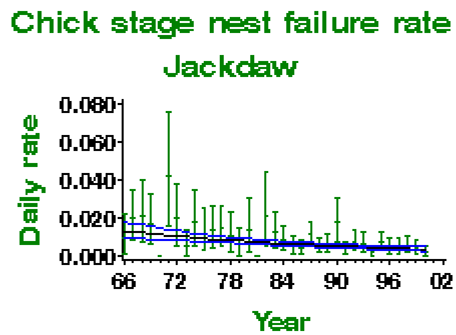
Table of productivity information for Jackdaw

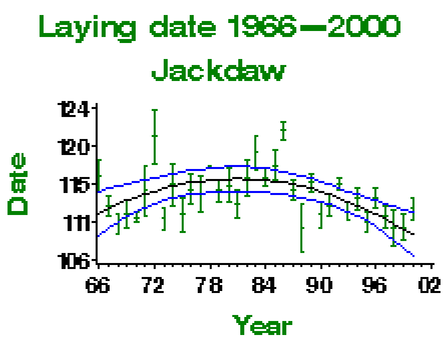
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	40	None				
Brood size	31	1968-1999	76	None				
Daily failure rate (eggs)	31	1968-1999	49	Linear decline	0.0082 nests/day	0.0022 nests/day	-0.006 nests/day	
Daily failure rate (chicks)	31	1968-1999	46	Linear decline	0.0121 nests/day	0.0035 nests/day	-0.0086 nests/day	
Laying date	31	1968-1999	20	Curvilinear	day 113	day 110	-3 days	Small sample











Insufficient data for CES
available for this species

ROOK
Corvus frugilegus

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Stable

Scotland: Moderate increase

N Ireland: Moderate increase

Status summary

As a colonial species, Rook is not monitored ideally by the CBC, but an index calculated from the available data shows a shallow, long-term increase (Wilson *et al.* 1998). This is supported by the results of the BTO Rook survey, which identified a 40% increase in abundance between 1975 and 1996 (Marchant & Gregory 1999). This increase has been associated with general improvements in nesting success and probably reflects the species' adaptability in the face of agricultural change.

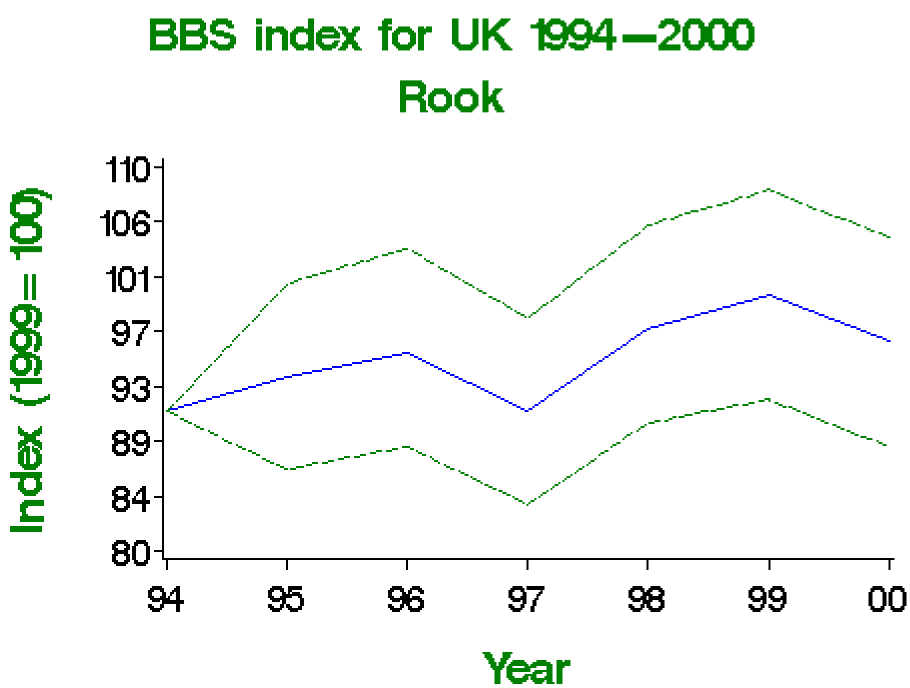
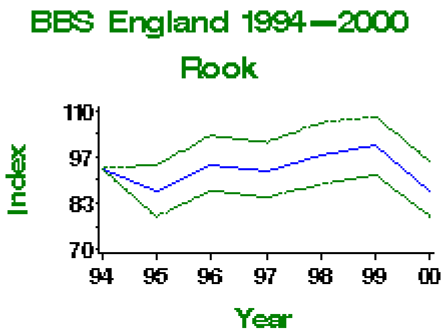


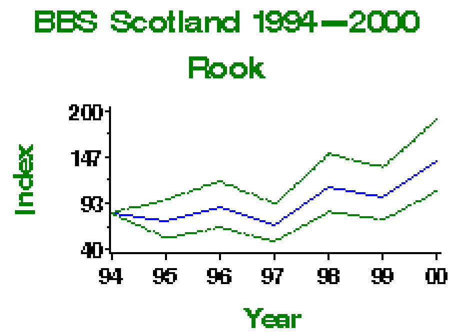
Table of population changes for Rook

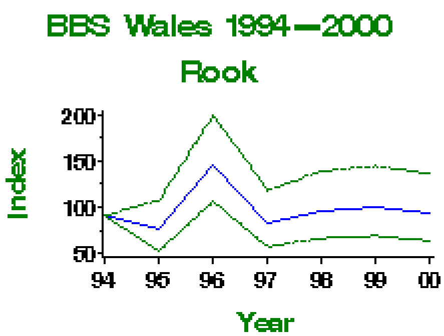
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	999	6	-3	15		
BBS England	6	1994-2000	789	-7	-15	2		
BBS	6	1994-	99	73	30	132		

Scotland		2000						
BBS Wales	6	1994-2000	63	3	-30	50		
BBS N.Ireland	6	1994-2000	46	63	13	136		Small sample

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







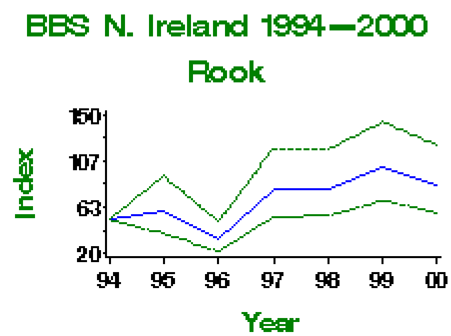
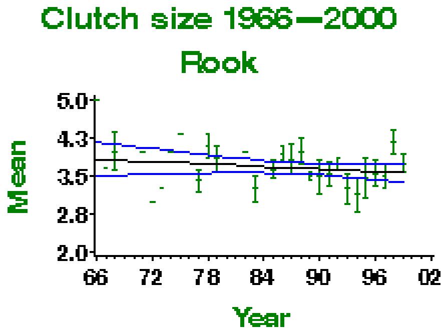
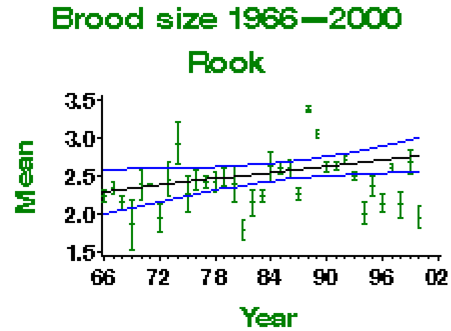
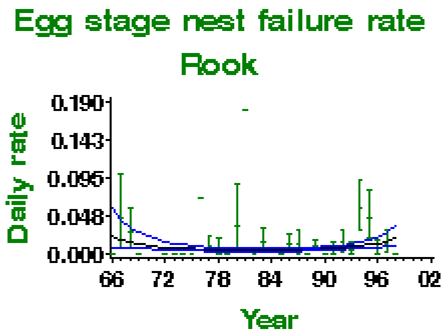


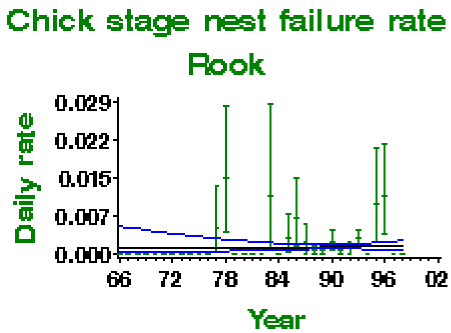
Table of productivity information for Rook

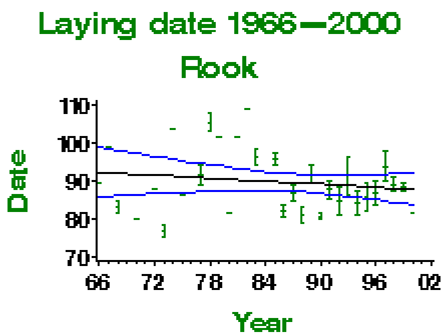
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	14	None				Small sample
Brood size	31	1968-1999	96	Linear increase	2.33 chicks	2.76 chicks	0.43 chicks	
Daily failure rate (eggs)	31	1968-1999	39	Curvilinear	0.0152 nests/day	0.0229 nests/day	0.0077 nests/day	
Daily failure rate (chicks)	31	1968-1999	61	None				
Laying date	31	1968-1999	13	None				Small sample











Insufficient data on CES
available for this species

CARRION CROW
Corvus corone

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Moderate increase

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).

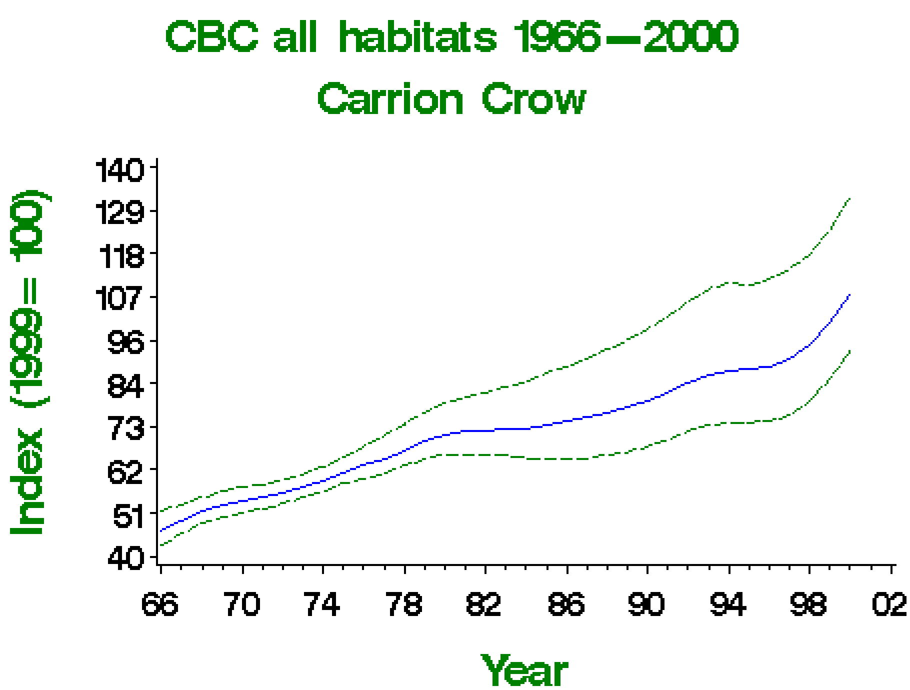
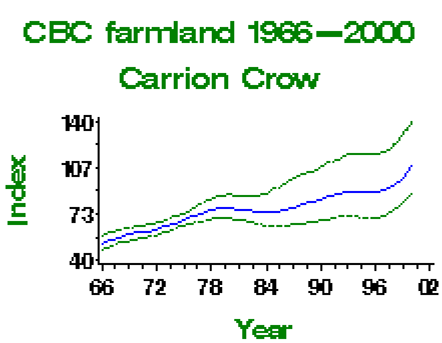


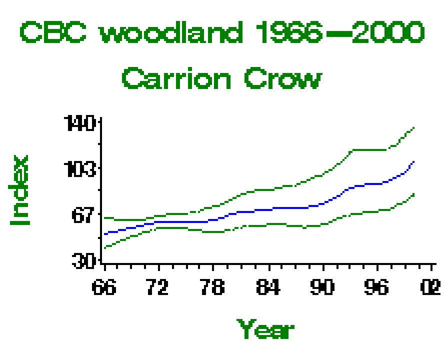
Table of population changes for Carrion Crow

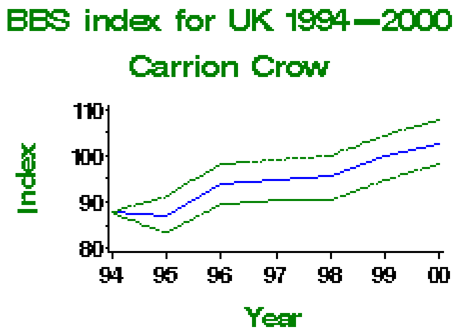
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	167	94	67	150		
	25	1974-1999	177	68	44	110		
	10	1989-1999	168	28	20	37		

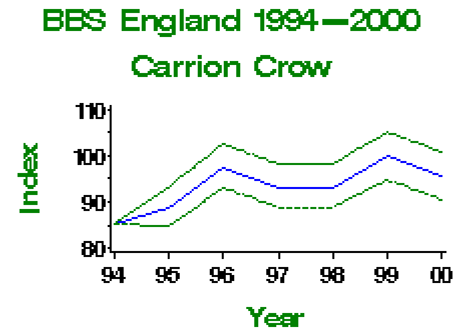
	5	1994-1999	173	14	7	21		
CBC farmland	31	1968-1999	77	77	44	119		
	25	1974-1999	77	49	25	89		
	10	1989-1999	77	22	12	33		
	5	1994-1999	78	12	4	22		
CBC woodland	31	1968-1999	60	82	28	177		
	25	1974-1999	66	63	29	104		
	10	1989-1999	73	37	20	52		
	5	1994-1999	77	12	-3	28		
BBS UK	6	1994-2000	1698	17	12	23		
	6	1994-2000	105	-14	-34	14		
BBS England	6	1994-2000	1389	12	6	18		
BBS Scotland	6	1994-2000	150	26	5	51		
	6	1994-2000	52	-37	-57	-7	(>25)	
BBS Wales	6	1994-2000	149	12	-3	30		
BBS N.Ireland	6	1994-2000	47	90	27	184		Small sample

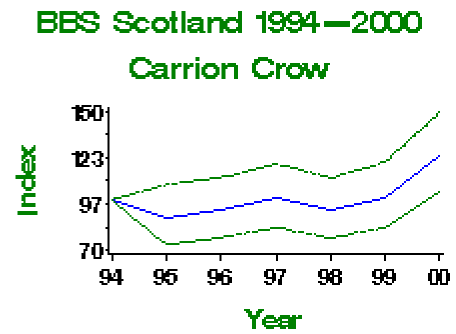
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











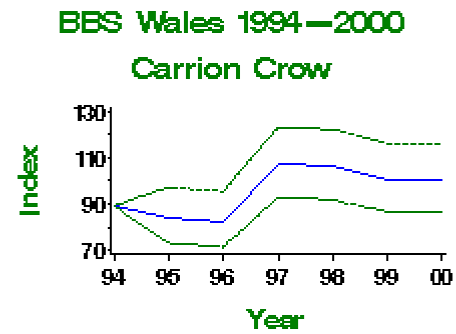
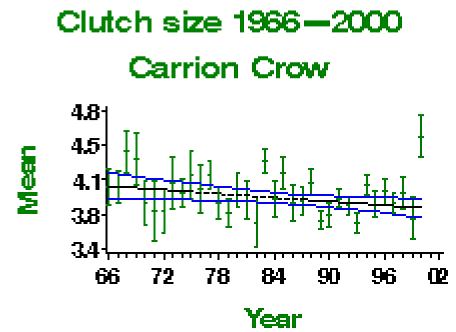
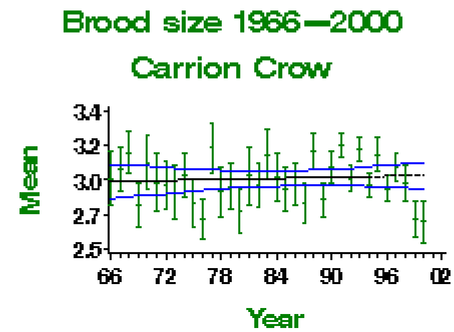
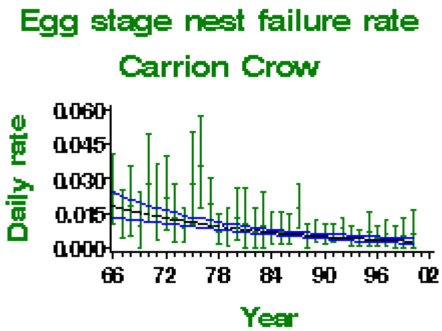


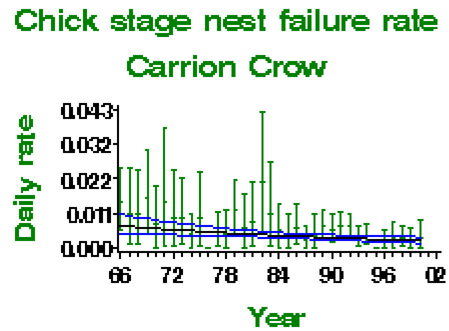
Table of productivity changes for Carrion Crow

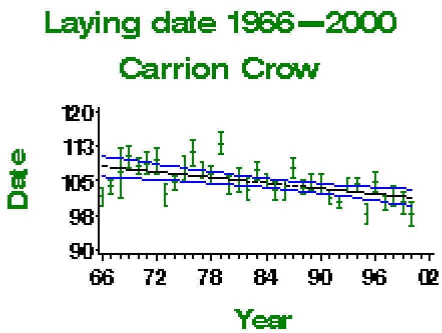
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	38	Linear decline	4.03 eggs	3.82 eggs	-0.21 eggs	
Brood size	31	1968-1999	84	None				
Daily failure rate (eggs)	31	1968-1999	56	Linear decline	0.0162 nests/day	0.0032 nests/day	-0.013 nests/day	
Daily failure rate (chicks)	31	1968-1999	46	Linear decline	0.0065 nests/day	0.0025 nests/day	-0.004 nests/day	
Laying date	31	1968-1999	36	Linear decline	day 108	day 102	-6 days	











Insufficient data on CES
available for this species

RAVEN
Corvus corax

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Unknown

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). The BBS indicates current stability in the population, although breeding performance, in terms of brood size and egg nest losses, was reduced during the 1980s.

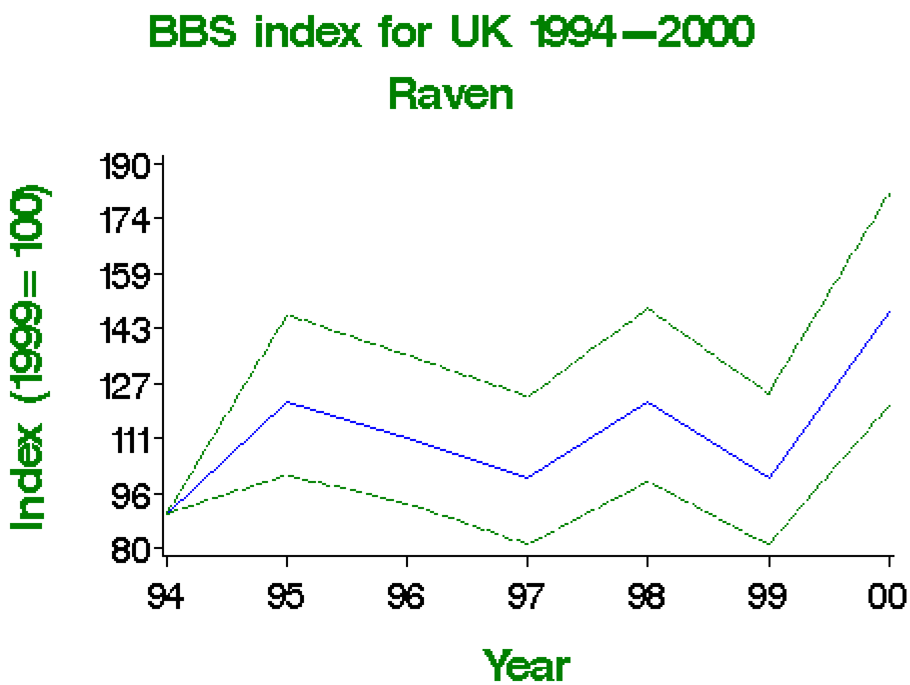
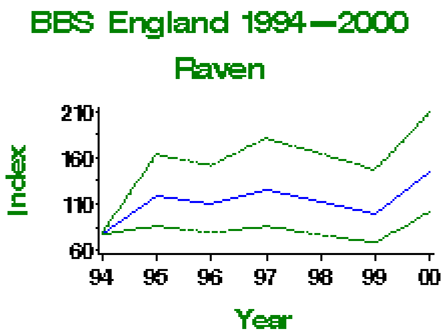
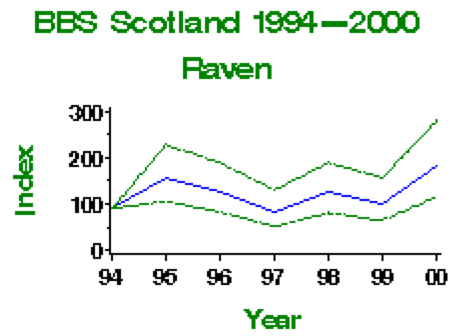


Table of population changes for Raven

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	160	64	34	101		
BBS England	6	1994-2000	44	88	31	170		Small sample
BBS Scotland	6	1994-2000	39	101	30	213		Small sample
BBS Wales	6	1994-2000	62	4	-23	41		

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





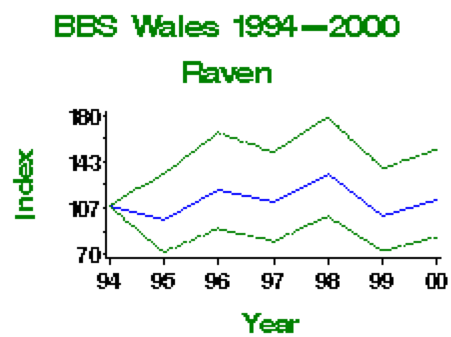
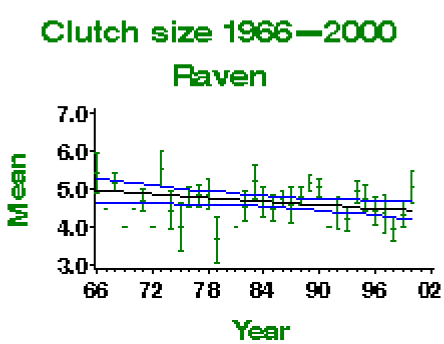
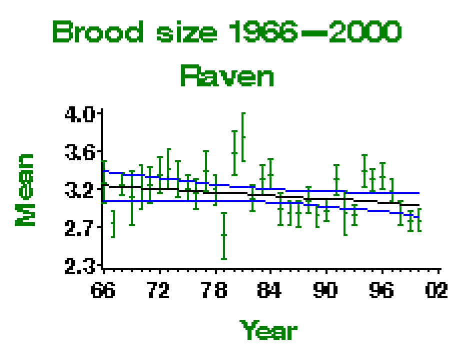
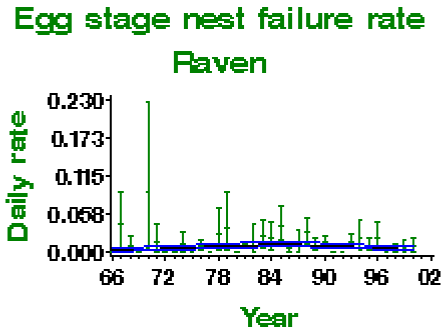


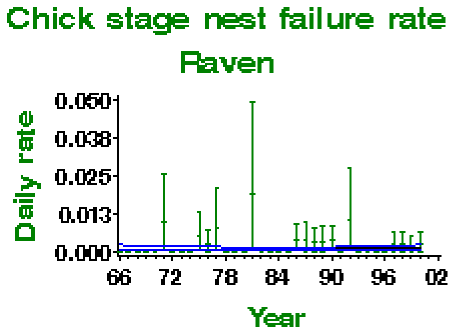
Table of productivity information for Raven

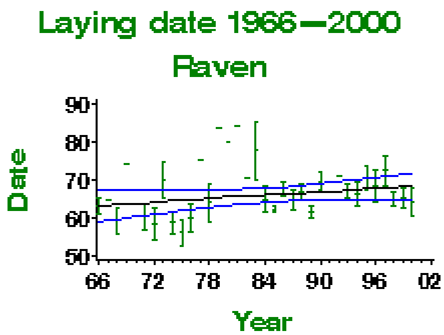
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	12	Linear decline	4.93 eggs	4.46 eggs	-0.47 eggs	Small sample
Brood size	31	1968-1999	56	None				
Daily failure rate (eggs)	31	1968-1999	19	Curvilinear	0.0023 nests/day	0.0039 nests/day	0.0016 nests/day	Small sample
Daily failure rate (chicks)	31	1968-1999	25	None				Small sample
Laying date	31	1968-1999	11	None				Small sample











Insufficient data on CES
available for this species

STARLING
Sturnus vulgaris

Conservation listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group: Unlisted

Long term trend

UK: Rapid decline

Status summary

Breeding Starling abundance has fallen rapidly, particularly since the early 1980s. The BBS suggests that this decline is continuing in England and Wales, but that populations are more stable in Scotland and may even be increasing in size in Northern Ireland. Strong improvements in breeding performance have occurred, suggesting that decreasing survival rates may be responsible for the observed decline. In addition to increases in average brood size, declines in nest failure rates have been large: during the egg stage (17 days, comprising 13 days incubation + 4 days laying) failure rate fell from 18% to 6%, and during the chick stage (21 days) they fell from 12% to 5%. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen from 28% to 11%. Loss of the species' preferred feeding habitat, permanent pasture, has been cited as a possible cause of the decline (**Gibbons *et al.* 1993**).

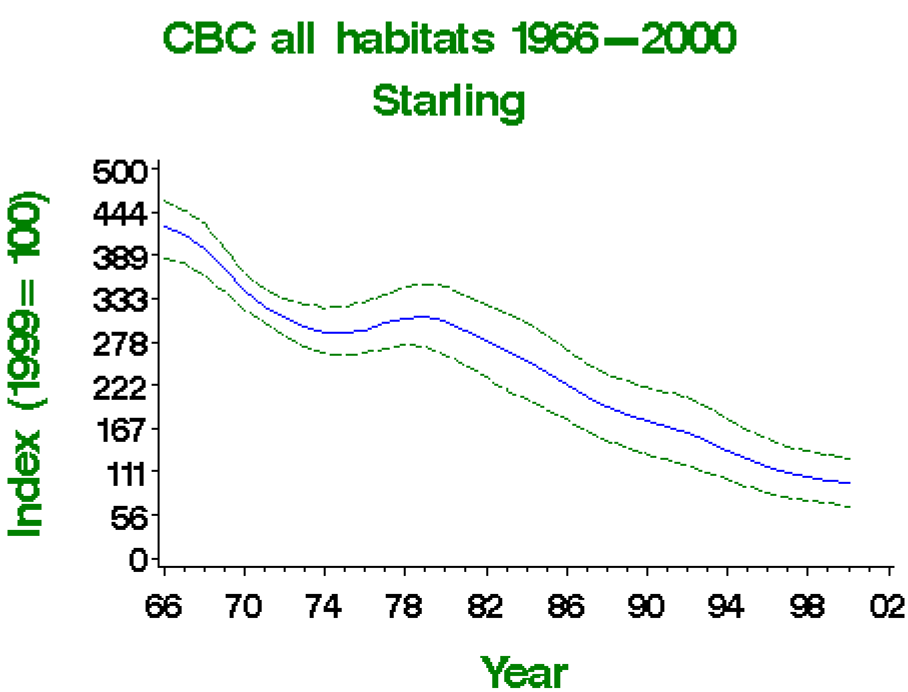
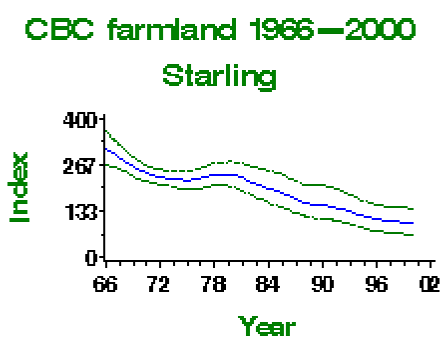


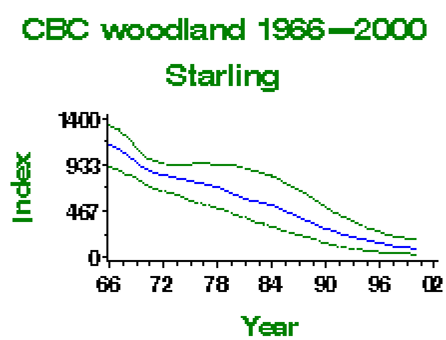
Table of population changes for Starling

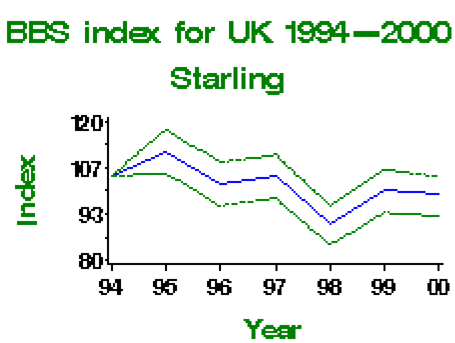
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all	31	1968-1999	125	-75	-82	-67	>50	

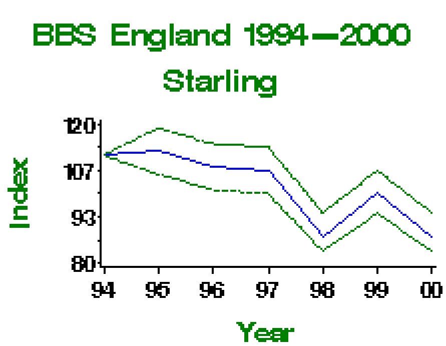
habitats								
	25	**1974-1999**	**127**	**-66**	**-75**	**-55**	**>50**	
	10	**1989-1999**	**102**	**-46**	**-55**	**-36**	**>25**	
	5	**1994-1999**	**93**	**-28**	**-37**	**-17**	**>25**	
CBC farmland	**31**	**1968-1999**	**65**	**-64**	**-76**	**-48**	**>50**	
	25	**1974-1999**	**65**	**-55**	**-68**	**-38**	**>50**	
	10	**1989-1999**	**62**	**-35**	**-47**	**-19**	**>25**	
	5	**1994-1999**	**59**	**-19**	**-30**	**-4**		
CBC woodland	**31**	**1968-1999**	**36**	**-90**	**-96**	**-79**	**>50**	
	25	**1974-1999**	**37**	**-87**	**-95**	**-76**	**>50**	
	10	**1989-1999**	**26**	**-70**	**-83**	**-56**	**>50**	
	5	**1994-1999**	**22**	**-44**	**-59**	**-22**	**>25**	
BBS UK	**6**	**1994-2000**	**1461**	**-5**	**-11**	**0**		
BBS England	**6**	**1994-2000**	**1213**	**-21**	**-25**	**-15**		
BBS Scotland	**6**	**1994-2000**	**119**	**23**	**-8**	**66**		
BBS Wales	**6**	**1994-2000**	**75**	**-38**	**-54**	**-18**	**(>25)**	
BBS N.Ireland	**6**	**1994-2000**	**47**	**182**	**89**	**321**		**Small sample**

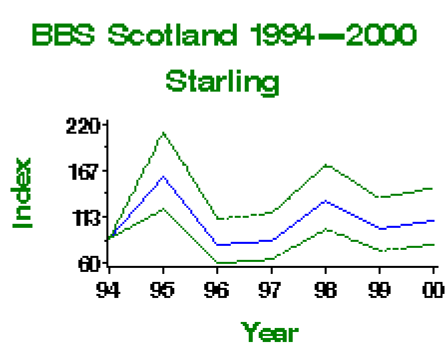
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

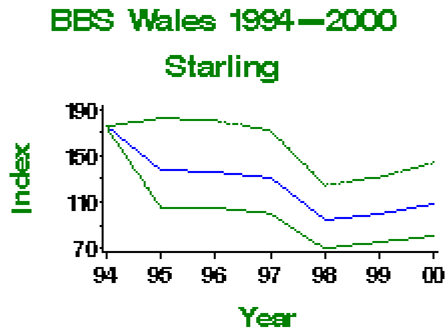












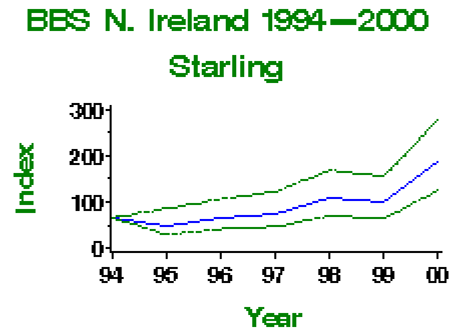
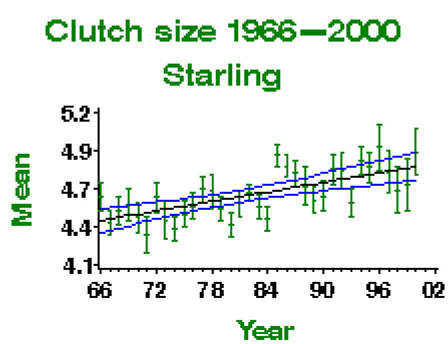
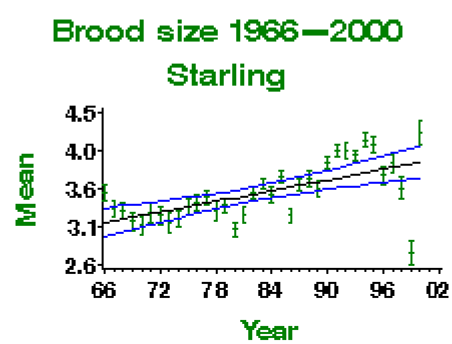
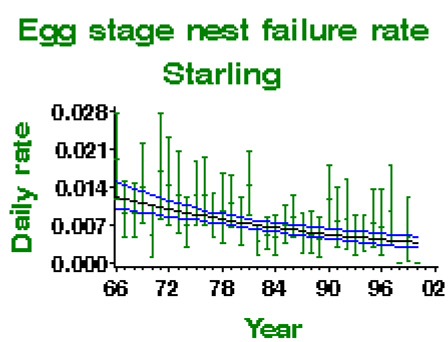


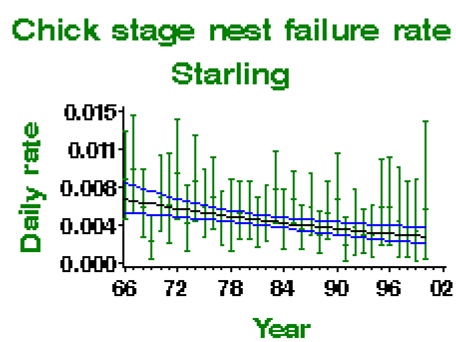
Table of productivity information for Starling

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	84	Linear increase	4.44 eggs	4.8 eggs	0.36 eggs	
Brood size	31	1968-1999	218	Linear increase	3.17 chicks	3.86 chicks	0.69 chicks	
Daily failure rate (eggs)	31	1968-1999	129	Linear decline	0.0115 nests/day	0.0038 nests/day	-0.0077 nests/day	
Daily failure rate (chicks)	31	1968-1999	153	Linear decline	0.006 nests/day	0.0027 nests/day	-0.0033 nests/day	
Laying date	31	1968-1999	93	None				

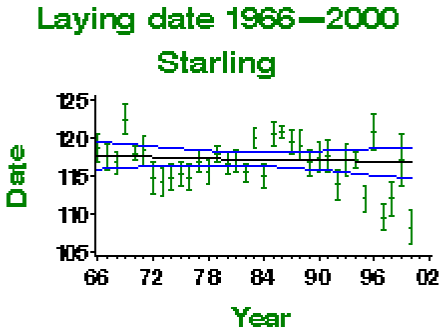








Insufficient data on CES
available for this species


Laying date 1966–2000
Starling
Date
125
120
115
110
105
66
72
78
84
90
96
02
Year

HOUSE SPARROW
Passer domesticus

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Rapid decline over last 25 years

Status summary

The UK House Sparrow population was not monitored well by the CBC before the mid-1970s, especially as urban areas and gardens were largely excluded from CBC coverage. However, data collected under the CBC indicate a rapid decline in abundance over the last 25 years, which is very similar to that shown by the BTO's Garden Bird Feeding Survey (Glue 1994) and is supported by other data and many anecdotal reports that have generated a great deal of conservation concern. The decline is likely to have been driven by reductions in over-winter survival (Siriwardena *et al.* 1999) and has been linked to a range of changes in rural and urban habitats. Possible explanations for the decrease in House Sparrow abundance include reductions in the amount of grain spilt during agricultural operations, increases in cat predation and the use of toxic additives in unleaded petrol.

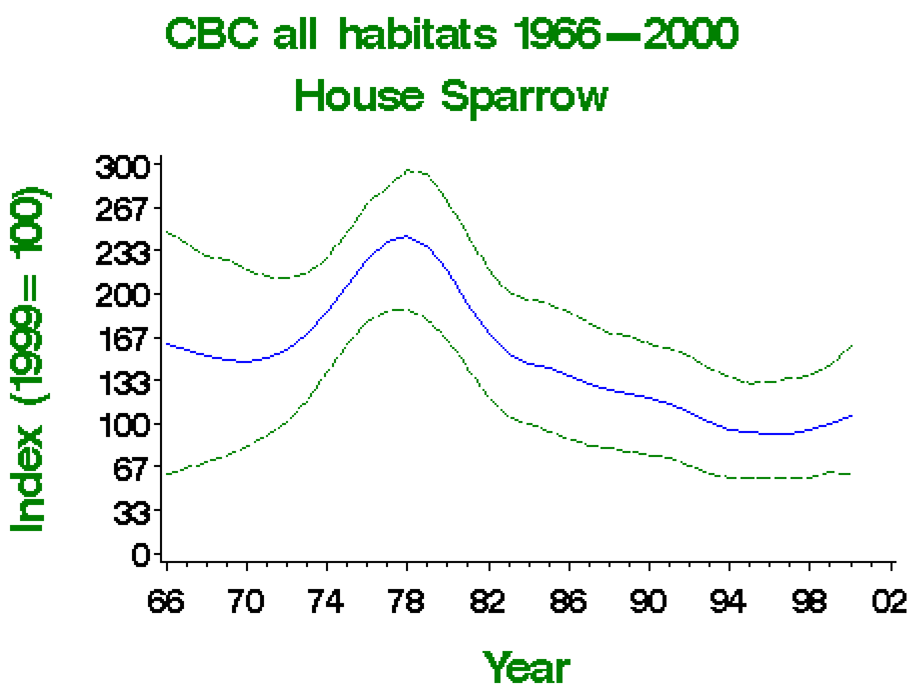
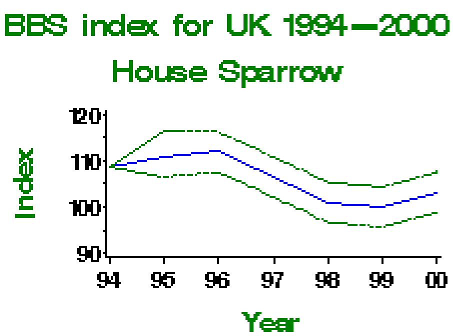


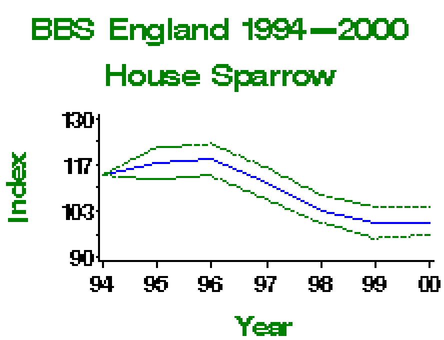
Table of population changes for House Sparrow

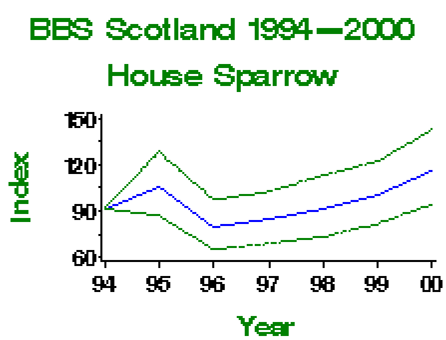
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	41	-34	-69	59		
	25	1974-1999	50	-46	-67	-20	>25	

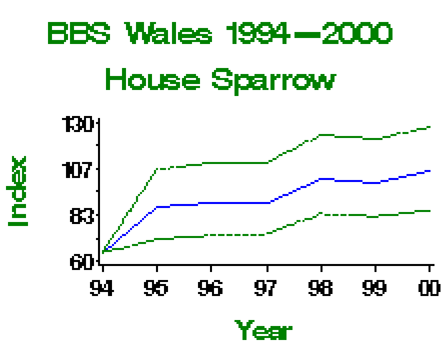
	10	1989-1999	65	-18	-34	2		
	5	1994-1999	65	5	-10	20		
[BBS UK]	6	1994-2000	1221	-5	-9	-1		
[BBS England]	6	1994-2000	1027	-12	-15	-8		
[BBS Scotland]	6	1994-2000	72	27	3	56		
[BBS Wales]	6	1994-2000	85	64	34	99		
[BBS N.Ireland]	6	1994-2000	30	-20	-48	23		Small sample

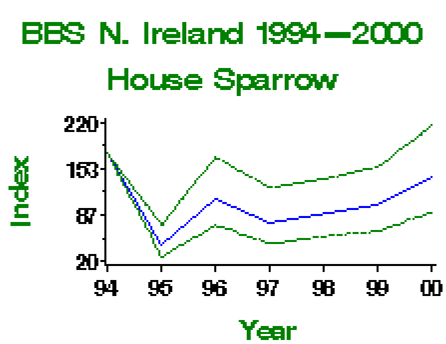
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











Productivity information is not currently available for this species

The report should be cited as: Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R. and Wernham, C.V. (2001) Breeding Birds in the Wider Countryside: their conservation status 2000. BTO Research Report No. 252. BTO, Thetford. (http://www.bto.org/birdtrends)

TREE SPARROW
Passer montanus

Conservation listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Rapid decline

Status summary

Tree Sparrow abundance crashed between the late 1970s and the mid-1980s; abundance was comparatively stable beforehand and has remained so subsequently, as BBS data confirm. Clear range contractions have also occurred (Gibbons *et al.* 1993). Breeding performance has improved as population sizes have decreased, suggesting that decreases in productivity are not responsible for the decline. Failure rates at the egg stage (16 days, comprising 12 days incubation + 4 days laying), for example, fell from 11% to 6%. It is likely that survival may have been more critical demographic rate, although ring-recovery analyses have produced equivocal results because of small sample sizes (Siriwardena *et al.* 1998b, 2000b). Features of agricultural intensification, such as reductions in winter stubble availability are likely to be implicated in the decline.

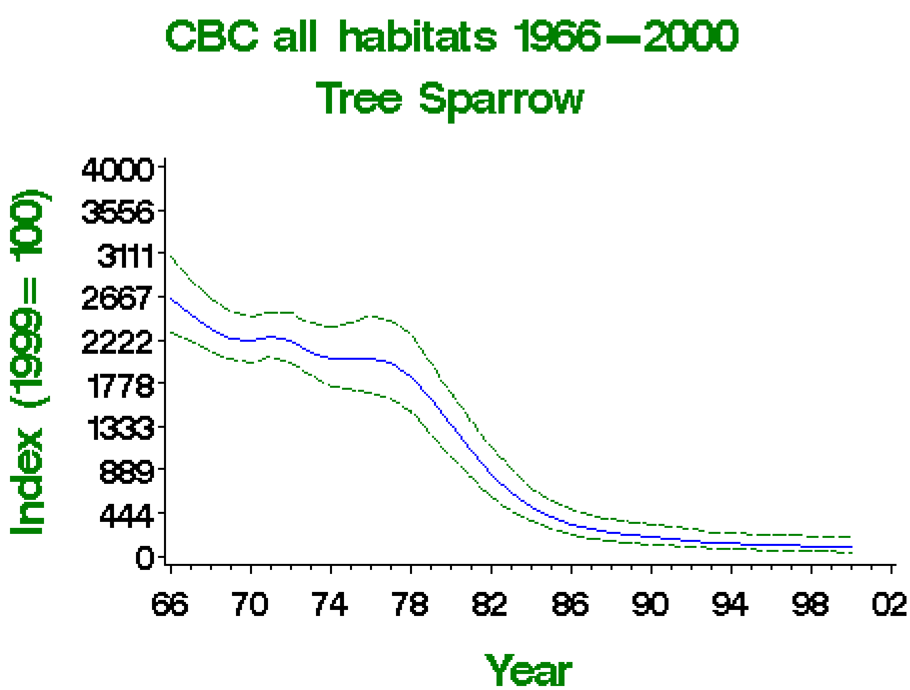
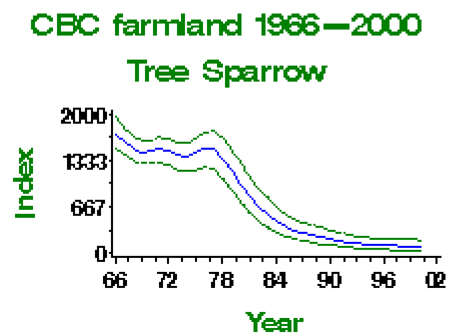


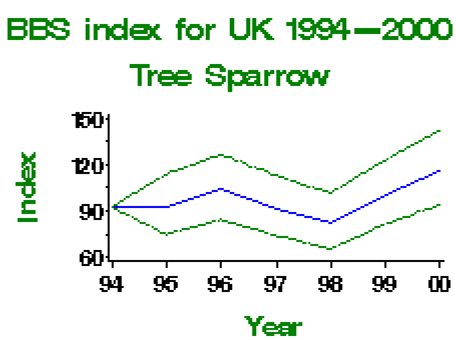
Table of population changes for Tree Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	59	-96	-98	-91	>50	
	25	1974-1999	52	-95	-98	-90	>50	
		1989-						Small

	10	1999	20	-53	-78	-21	>50	sample
	5	1994-1999	14	-21	-50	7		Small sample
[CBC farmland](#)	31	1968-1999	39	-93	-98	-86	>50	
	25	1974-1999	34	-93	-97	-86	>50	
	10	1989-1999	16	-56	-81	-23	>50	Small sample
	5	1994-1999	11	-22	-59	8		Small sample
[BBS UK](#)	6	1994-2000	134	25	2	54		
[BBS England](#)	6	1994-2000	114	3	-18	28		

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





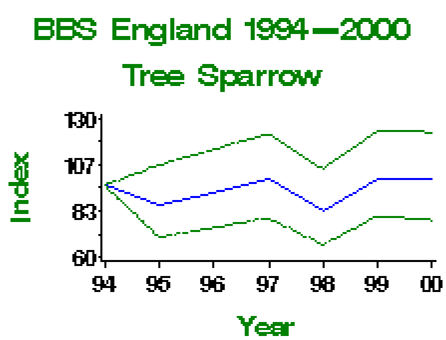
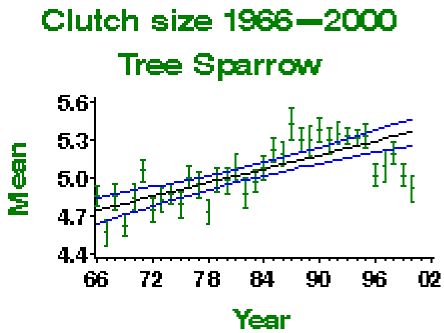
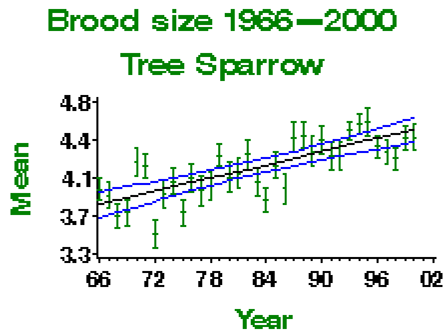
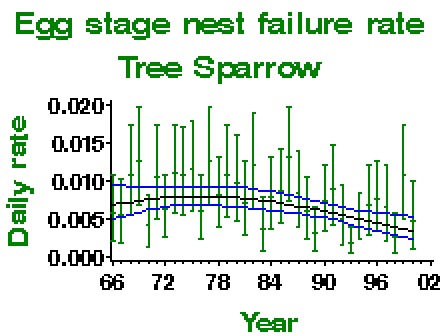


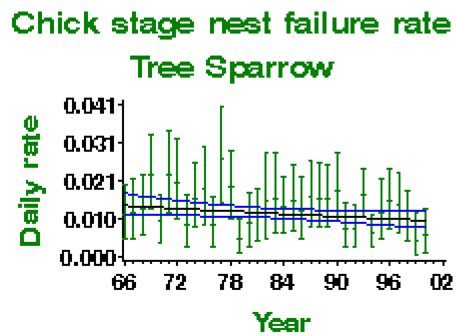
Table of productivity information for Tree Sparrow

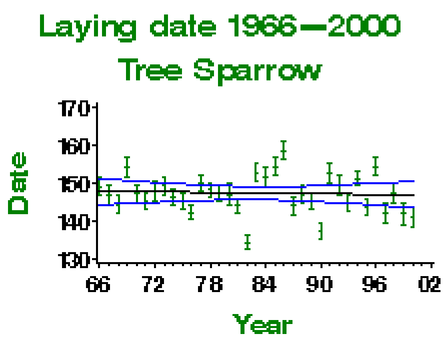
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
[Clutch size](#)	31	1968-1999	93	Linear increase	4.78 eggs	5.35 eggs	0.57 eggs	
[Brood size](#)	31	1968-1999	104	Linear increase	3.84 chicks	4.51 chicks	0.67 chicks	
[Daily failure rate (eggs)](#)	31	1968-1999	122	Curvilinear	0.0072 nests/day	0.0037 nests/day	-0.0035 nests/day	
[Daily failure rate (chicks)](#)	31	1968-1999	87	None				
[Laying date](#)	31	1968-1999	106	None				











Insufficient data on CES
available for this species

CHAFFINCH
Fringilla coelebs

Conservation listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long-term trend

UK: Shallow increase

Status summary

Chaffinch abundance increased rapidly during the 1970s and 1980s, but numbers seem to have stabilised since 1990 as indicated by the CBC, CES and BBS indices. This period of population stability has been associated with a reduction in annual survival, which could be a density-dependent effect (**Siriwardena *et al.* 1999**). There is also some evidence of improvement in breeding performance during the population increase (declines in egg-stage nest failure rates and increased brood sizes). Trends in laying date may be partially explained by recent climate change (**Crick & Sparks 1999**). Chaffinches are well adapted to suburban and garden habitats, as well as highly fragmented woodland and hedgerows, so may have benefitted from the environmental changes from which other seed-eating passerines have suffered. They are also less dependent upon the open-field, cropped habitats that have been affected most by agricultural intensification.

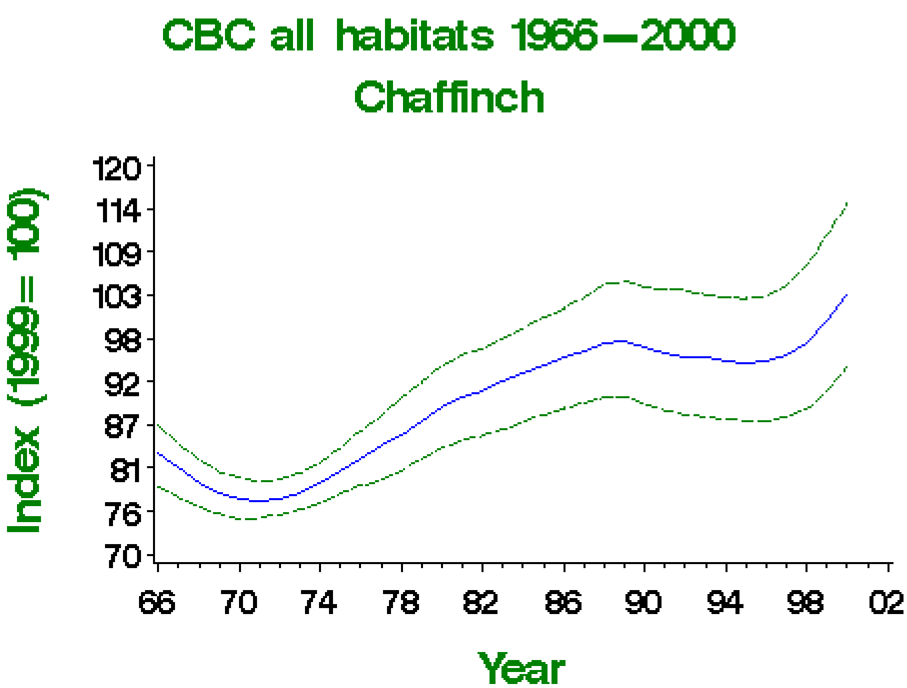
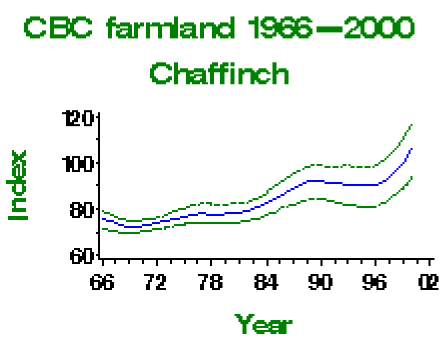


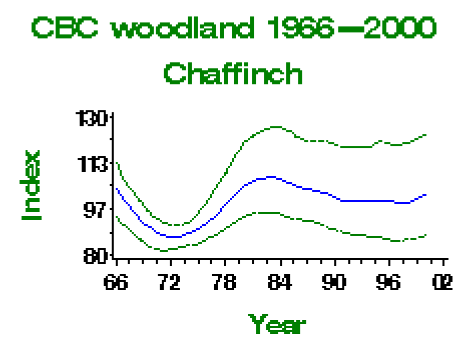
Table of population changes for Chaffinch

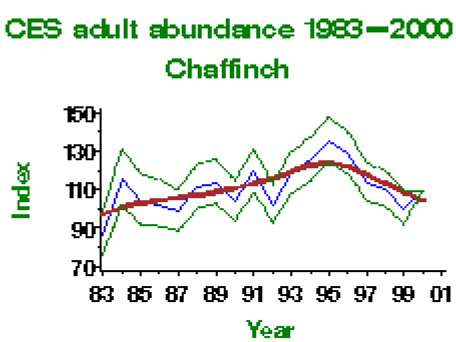
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	216	26	13	43		
	25	1974-1999	225	26	17	38		
	10	1989-1999	214	3	-2	8		
	5	1994-1999	218	5	2	10		

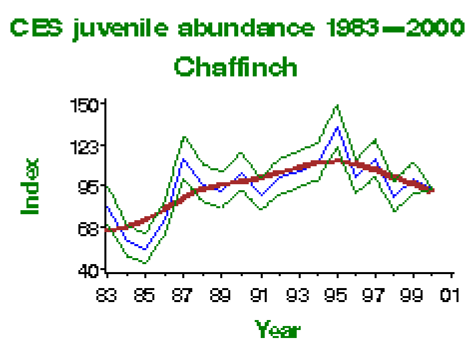
CBC farmland	31	1968-1999	94	36	21	53		
	25	1974-1999	94	32	19	43		
	10	1989-1999	94	9	2	15		
	5	1994-1999	94	11	5	16		
CBC woodland	31	1968-1999	85	5	-14	38		
	25	1974-1999	92	14	-2	36		
	10	1989-1999	98	-2	-9	5		
	5	1994-1999	101	1	-5	6		
CES adults	15	1984-1999	77	8	.	.		
	10	1989-1999	89	0	.	.		
	5	1994-1999	96	-11	.	.		
CES juveniles	15	1984-1999	56	42	.	.		
	10	1989-1999	66	1	.	.		
	5	1994-1999	72	-13	.	.		
BBS UK	6	1994-2000	1791	6	3	10		
BBS England	6	1994-2000	1388	6	3	9		
BBS Scotland	6	1994-2000	192	9	-2	20		
BBS Wales	6	1994-2000	145	-14	-22	-4		
BBS N.Ireland	6	1994-2000	57	89	43	150		

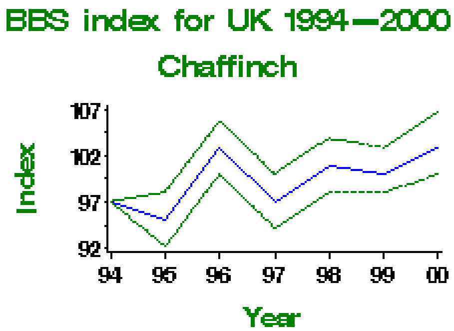
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

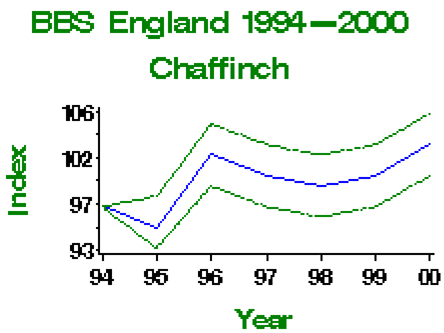


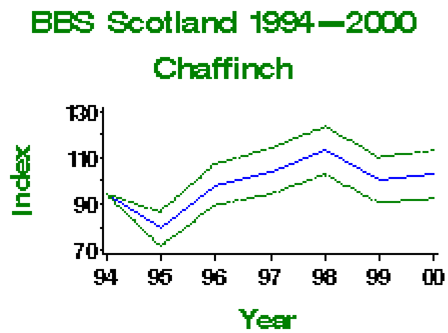


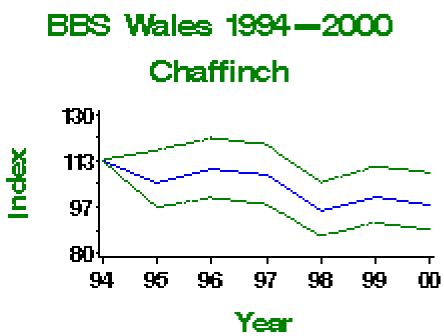












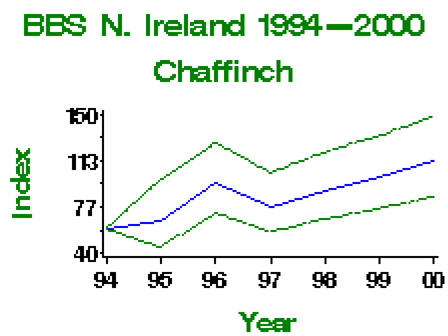
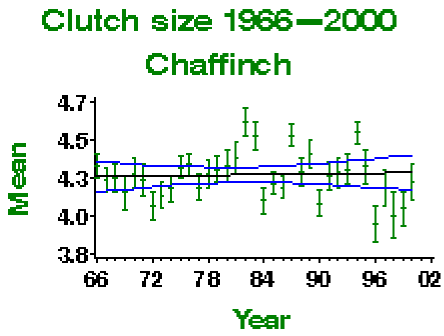
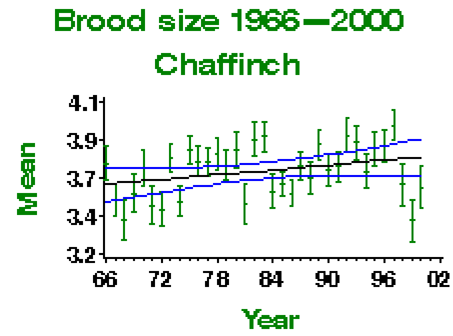
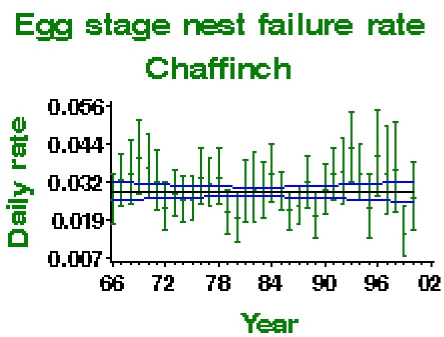


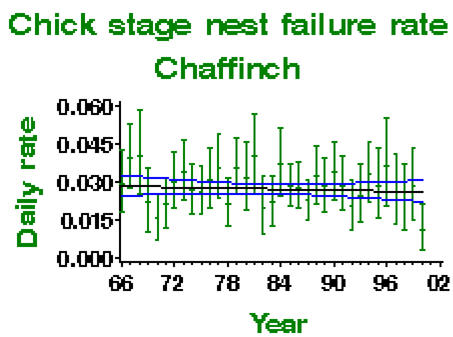
Table of productivity information for Chaffinch

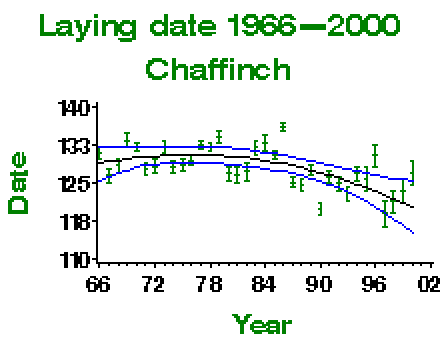
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	88	None				
Brood size	31	1968-1999	141	None				
Daily failure rate (eggs)	31	1968-1999	167	None				
Daily failure rate (chicks)	31	1968-1999	117	None				
Laying date	31	1968-1999	113	Curvilinear	day 130	day 121	-9 days	
Percentage juveniles (CES)	15	1984-1999	82	Smoothed trend	101 productivity index	100 productivity index	-1%	
Percentage juveniles (CES)	10	1989-1999	95	Smoothed trend	117 productivity index	100 productivity index	-15%	
Percentage juveniles (CES)	5	1994-1999	102	Smoothed trend	102 productivity index	100 productivity index	-2%	

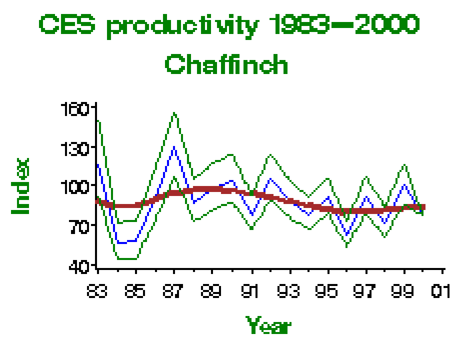

Clutch size 1966–2000
Chaffinch
Mean
4.7
4.5
4.3
4.0
3.8
66 72 78 84 90 96 02
Year


Brood size 1966–2000
Chaffinch
Mean
4.1
3.9
3.7
3.4
3.2
66 72 78 84 90 96 02
Year


Egg stage nest failure rate
Chaffinch
Daily rate
0.056
0.044
0.032
0.019
0.007
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Chaffinch
Daily rate
0.060
0.045
0.030
0.015
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–2000
Chaffinch
Date
140
133
125
118
110
66 72 78 84 90 96 02
Year


CES productivity 1983–2000
Chaffinch
Index
160
130
100
70
40
83 85 87 89 91 93 95 97 99 01
Year

GREENFINCH
Carduelis chloris

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Fluctuating, with no long-term trend.

Status summary

Greenfinch abundance has varied little since the 1960s and there has been little change in either survival or breeding performance (**Siriwardena *et al.* 1998b**, **2000b**). Both CBC and BBS indices indicate population increases across most of the UK during the 1990s, which have occurred despite recent declines in productivity (identified using CES data). Such declines in productivity should be monitored as they may presage a future population decline. The trend towards earlier laying may be explained by recent climate change (**Crick & Sparks 1999**).

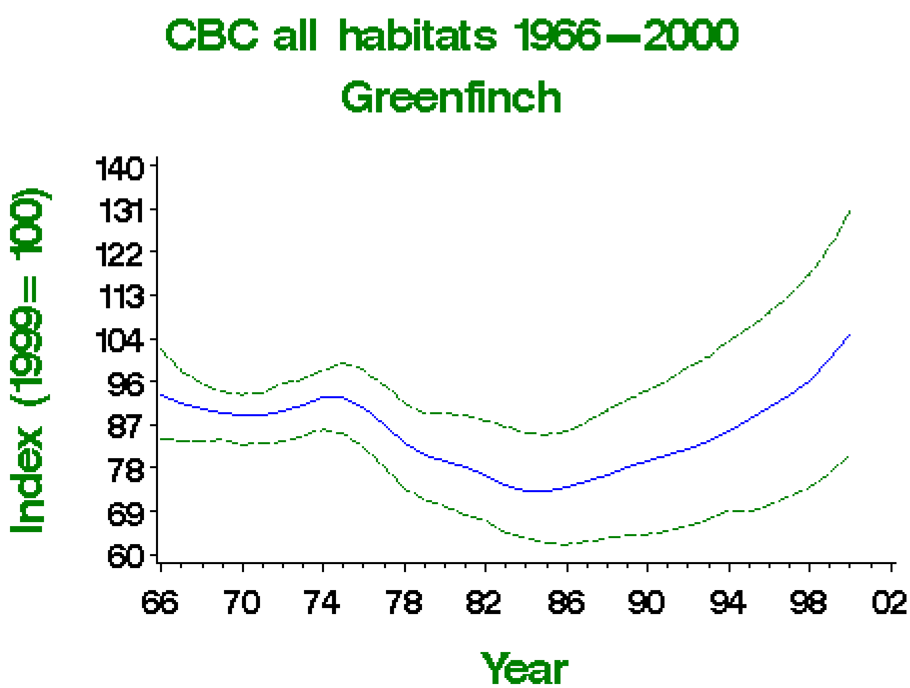
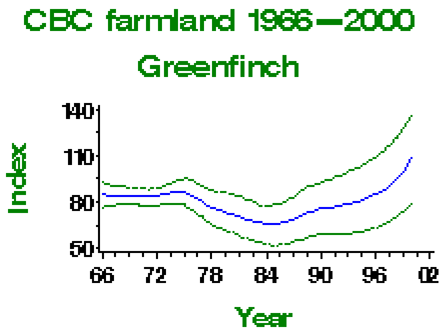


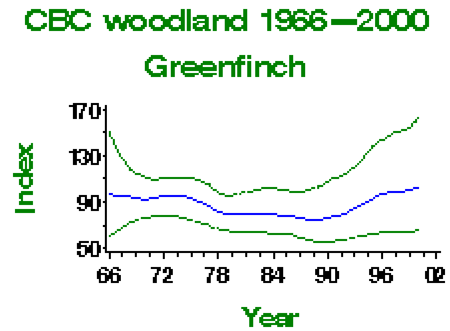
Table of population changes for Greenfinch

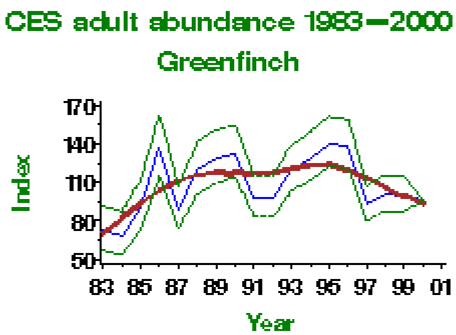
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	142	11	-15	37		
	25	1974-	145	9	-12	31		

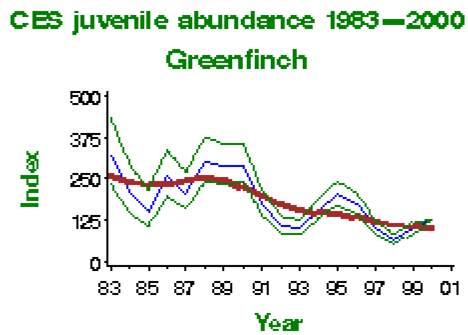
		1999						
	10	1989-1999	129	28	10	44		
	5	1994-1999	131	17	6	28		
CBC farmland	31	1968-1999	76	19	-13	53		
	25	1974-1999	75	16	-12	43		
	10	1989-1999	75	35	8	56		
	5	1994-1999	75	24	8	35		
CBC woodland	31	1968-1999	36	6	-36	79		
	25	1974-1999	39	6	-25	53		
	10	1989-1999	37	35	-2	76		
	5	1994-1999	38	12	-8	35		
CES adults	15	1984-1999	41	21	.	.		
	10	1989-1999	48	-16	.	.		
	5	1994-1999	51	-19	.	.		
CES juveniles	15	1984-1999	23	-57	.	.	[>50*]	
	10	1989-1999	28	-58	.	.	[>50*]	
	5	1994-1999	30	-30	.	.	[>25*]	
BBS UK	6	1994-2000	1280	34	27	41		
BBS England	6	1994-2000	1088	34	26	41		
BBS Scotland	6	1994-2000	80	9	-16	43		
BBS Wales	6	1994-2000	77	36	7	72		
BBS N.Ireland	6	1994-2000	28	265	94	587		Small sample

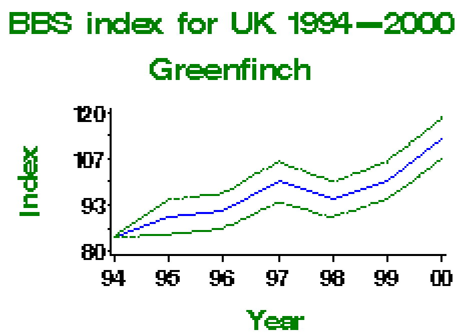
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

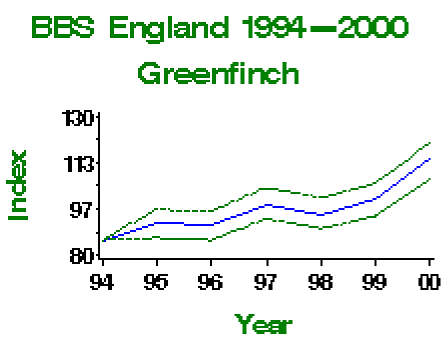


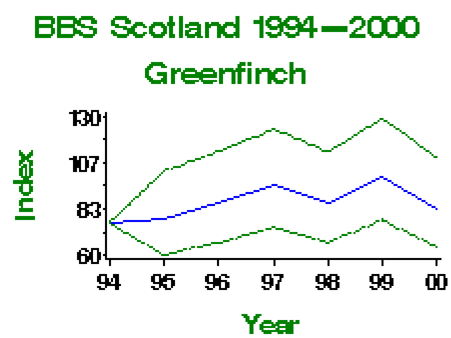


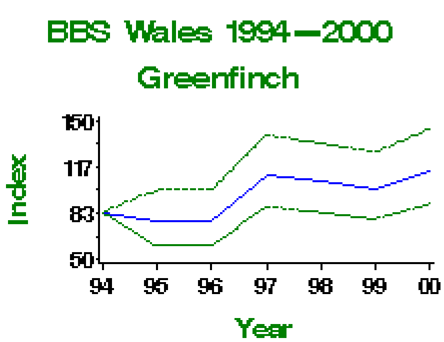












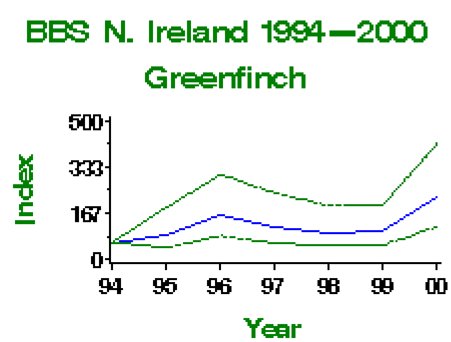
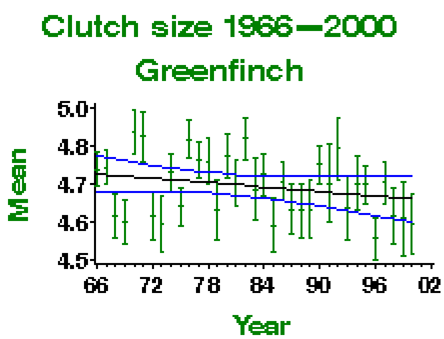
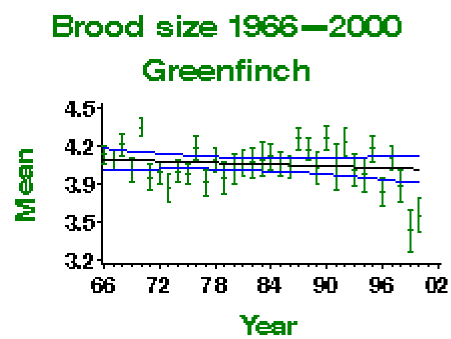


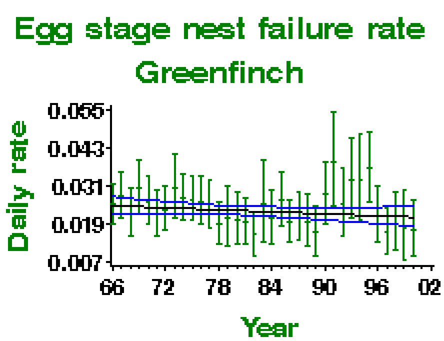
Table of productivity information for Greenfinch

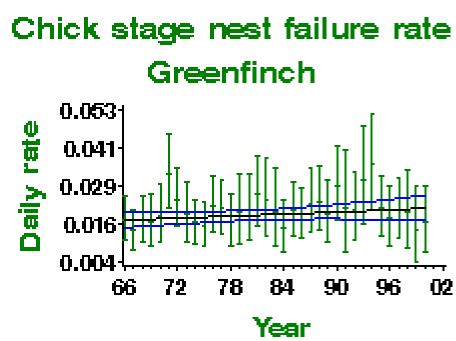
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

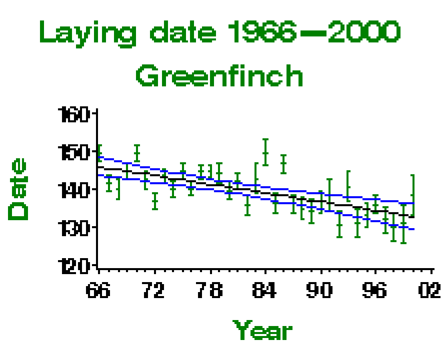
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	95	None				
Brood size	31	1968-1999	115	None				
Daily failure rate (eggs)	31	1968-1999	132	None				
Daily failure rate (chicks)	31	1968-1999	98	None				
Laying date	31	1968-1999	97	Linear decline	day 145	day 133	-12 days	
Percentage juveniles (CES)	15	1984-1999	46	Smoothed trend	266 productivity index	100 productivity index	-62% [>50]	
Percentage juveniles (CES)	10	1989-1999	53	Smoothed trend	216 productivity index	100 productivity index	-54% [>50*]	
Percentage juveniles (CES)	5	1994-1999	56	Smoothed trend	120 productivity index	100 productivity index	-16%	

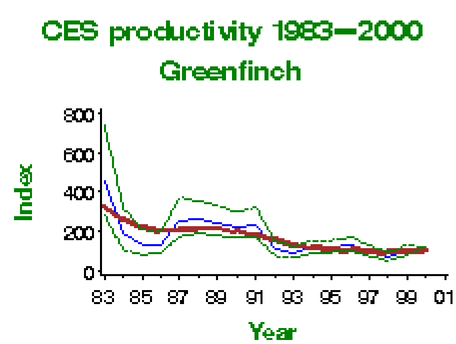












GOLDFINCH
Carduelis carduelis

Conservation listings

Table 4/Amber (25-49% Population decline)
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Fluctuating, with no long-term trend

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. 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. 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 reduced survival rates (Siriwardena *et al.* 1999). No clear trends have occurred in breeding performance over this period.

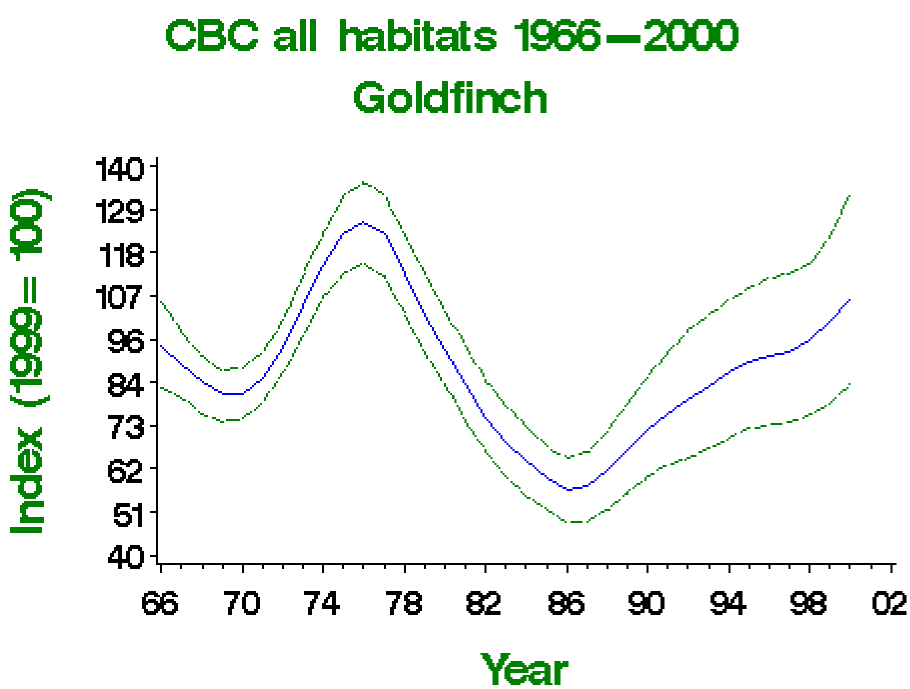
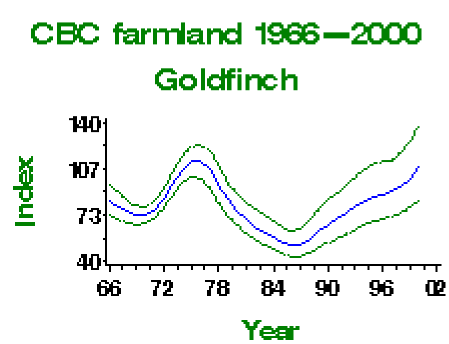


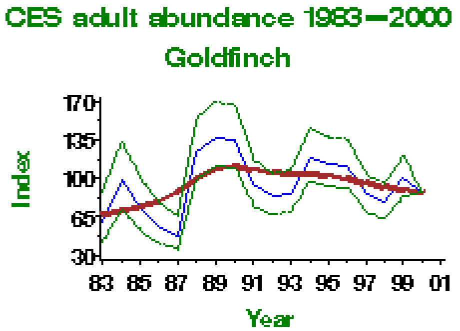
Table of population changes for Goldfinch

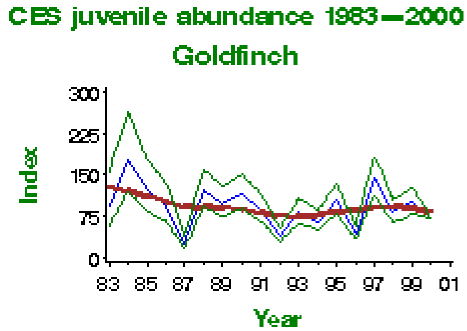
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	96	18	-8	51		
	25	1974-1999	99	-13	-30	4		

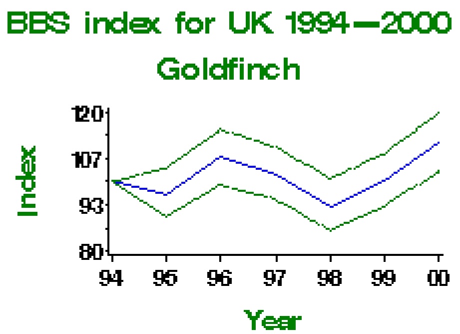
	10	1989-1999	92	49	33	69		
	5	1994-1999	96	15	5	29		
CBC farmland	31	1968-1999	60	32	2	79		
	25	1974-1999	61	-5	-21	15		
	10	1989-1999	66	62	39	85		
	5	1994-1999	69	20	3	33		
CES adults	15	1984-1999	31	25	.	.		
	10	1989-1999	38	-17	.	.		
	5	1994-1999	43	-14	.	.		
CES juveniles	15	1984-1999	19	-27	.	.	[>25]	Small sample
	10	1989-1999	22	-1	.	.		
	5	1994-1999	25	15	.	.		
BBS UK	6	1994-2000	1011	11	3	20		
BBS England	6	1994-2000	844	0	-7	8		
BBS Scotland	6	1994-2000	58	39	-3	99		
BBS Wales	6	1994-2000	85	71	32	122		

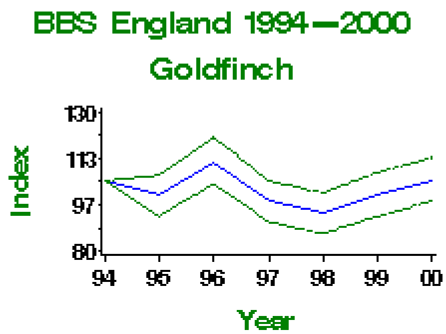
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

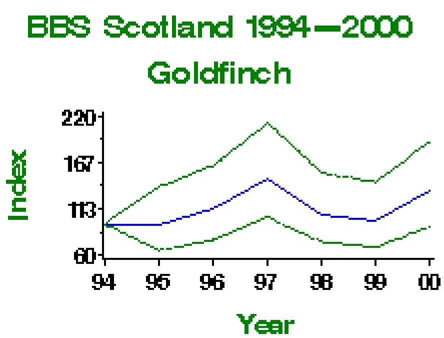












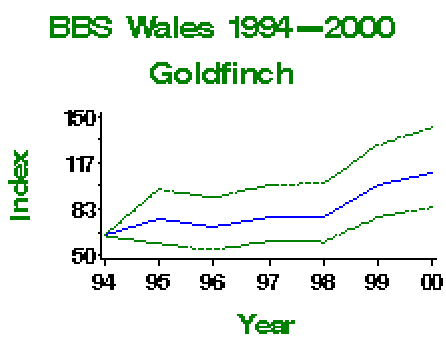
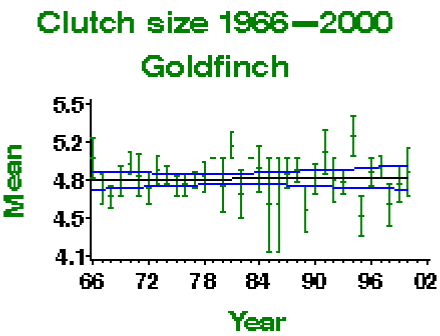
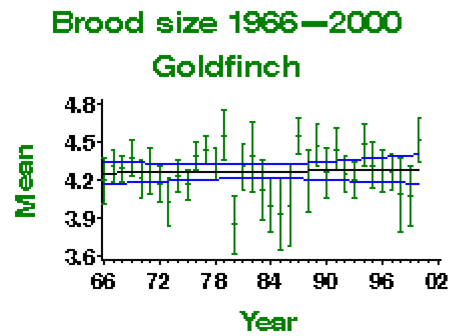


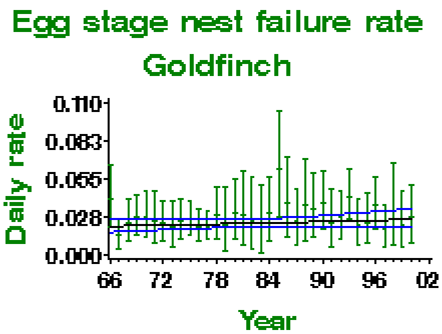
Table of productivity information for Goldfinch

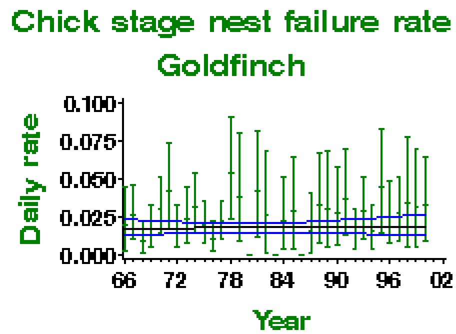
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	19	None				Small sample
Brood size	31	1968-1999	33	None				
Daily failure rate (eggs)	31	1968-1999	33	None				
Daily failure rate (chicks)	31	1968-1999	27	None				Small sample
Laying date	31	1968-1999	21	None				Small sample
Percentage juveniles (CES)	15	1984-1999	36	Smoothed trend	99 productivity index	100 productivity index	1%	
Percentage juveniles (CES)	10	1989-1999	43	Smoothed trend	75 productivity index	100 productivity index	34%	
Percentage juveniles	5	1994-1999	49	Smoothed trend	66 productivity	100 productivity	51%	

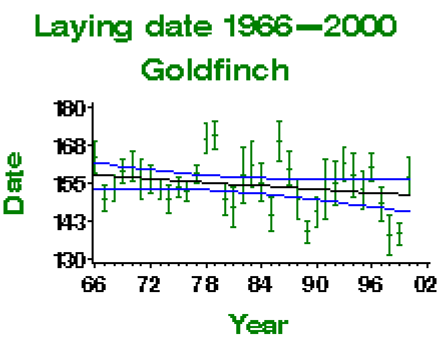
(CES)					index	index		

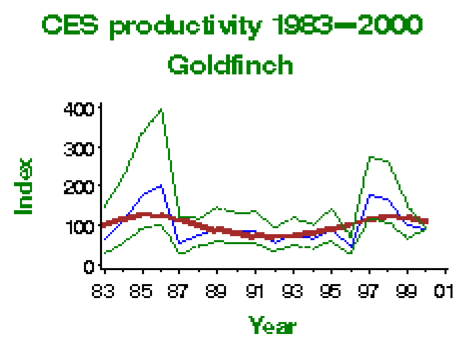












SISKIN
Carduelis spinus

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Probably increasing

Status summary

The UK Siskin population mainly breeds in Scotland, in coniferous forest habitats that were poorly monitored before the inception of the CBC. The 1988-91 Breeding Atlas identified a considerable expansion of the breeding range into southern Britain (Gibbons *et al.* 1993), but the factors responsible for this range expansion are unclear. The BBS indicates that the size of the population has fluctuated in recent years, but that there has been no significant net change in numbers.

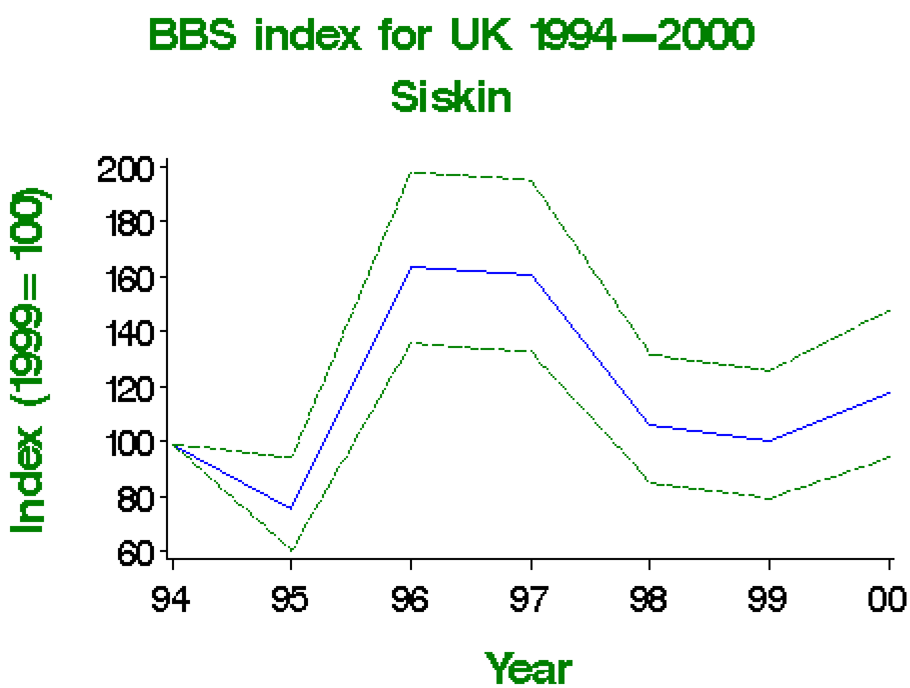
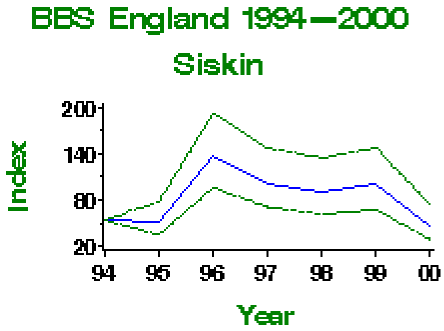
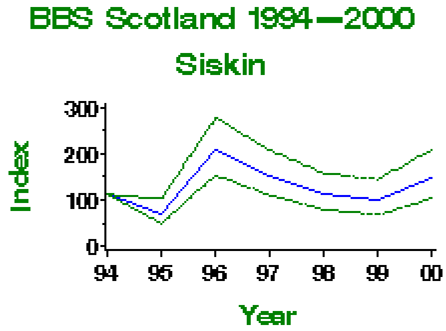


Table of population changes for Siskin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	6	1994-2000	113	19	-5	49		
BBS England	6	1994-2000	32	-14	-46	37		Small sample
BBS Scotland	6	1994-2000	58	30	-8	86		

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





Productivity information is not currently available for this species

LINNET
Carduelis cannabina

Conservation listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Rapid decline
Farmland: Moderate decline
Woodland: Rapid decline
Scrub (CES): Rapid decline

Status summary

Linnet abundance has declined rapidly in the UK, particularly between the mid-1970s and mid-1980s. Subsequently, the populations monitored by the CBC have remained stable, but showing little sign of recovery. The wider populations covered by the BBS (especially in England) and the scrub birds specifically covered by the CES have shown declines continuing through the 1990s. Breeding performance fell through increased egg-stage nest failure rates 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**). Over the last 30 years, failure rates at the egg stage (16 days, comprising 12 days incubation + 4 days laying) have risen from 25% to 35%, and at the chick stage (14 days) from 18% to 27%. Overall, from egg-laying to fledging, nest failures have increased from 39% to 53%. CES results data suggest that low productivity is still a problem for the species, possibly due to reductions in hedgerow qualities leaving nests more exposed and therefore at greater risk of predation.

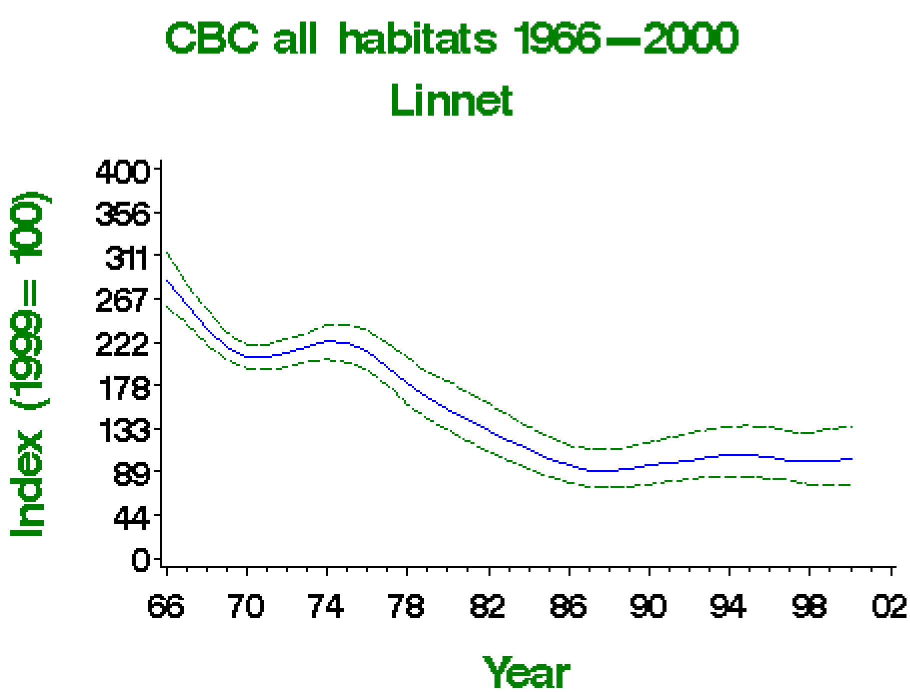
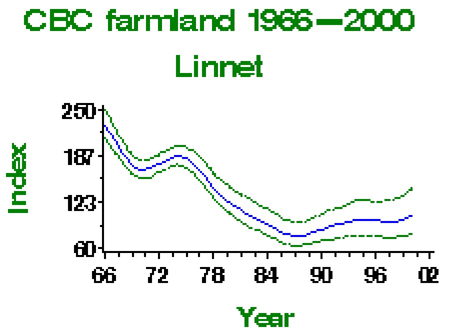


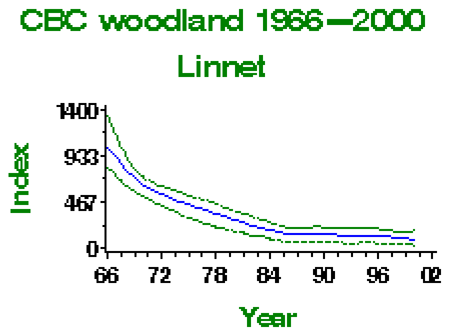
Table of population changes for Linnet

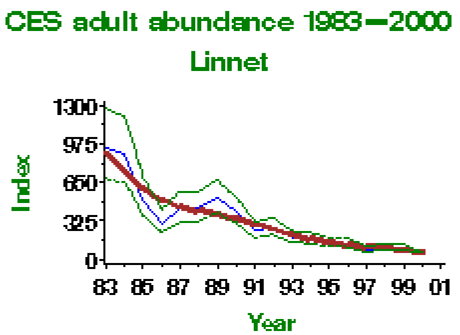
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all	31	1968-	123	-58	-68	-43	>50	

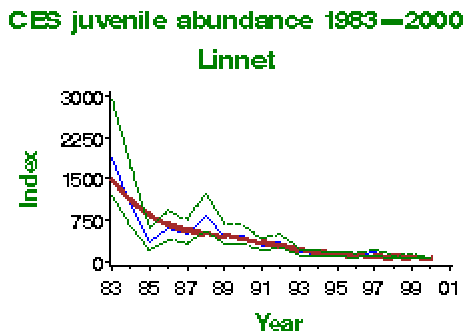
habitats		1999						
	25	1974-1999	123	-55	-65	-42	>50	
	10	1989-1999	106	9	-10	29		
	5	1994-1999	110	-5	-17	7		
CBC farmland	31	1968-1999	74	-47	-59	-32	>25	
	25	1974-1999	73	-46	-58	-30	>25	
	10	1989-1999	76	23	2	52		
	5	1994-1999	80	2	-11	15		
CBC woodland	31	1968-1999	20	-87	-96	-76	>50	Small sample
	25	1974-1999	21	-79	-91	-63	>50	
	10	1989-1999	18	-28	-55	5		Small sample
	5	1994-1999	17	-25	-52	16		Small sample
CES adults	15	1984-1999	22	-90	.	.	[>50*]	
	10	1989-1999	26	-80	.	.	[>50*]	
	5	1994-1999	26	-56	.	.	[>50*]	
CES juveniles	15	1984-1999	14	-93	.	.	[>50*]	Small sample
	10	1989-1999	17	-83	.	.	[>50*]	Small sample
	5	1994-1999	17	-55	.	.	[>50]	Small sample
BBS UK	6	1994-2000	1008	-6	-13	1		
BBS England	6	1994-2000	829	-19	-25	-12		
BBS Scotland	6	1994-2000	77	11	-16	47		
BBS Wales	6	1994-2000	73	76	33	132		
BBS N.Ireland	6	1994-2000	23	67	-6	196		Small sample

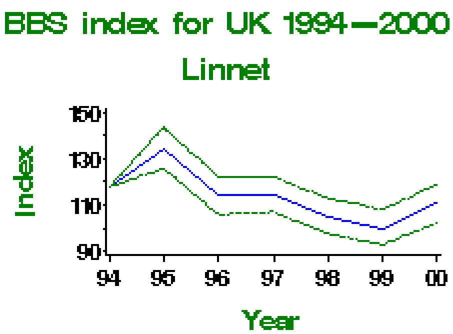
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

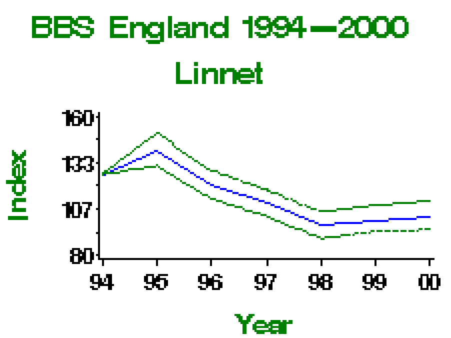


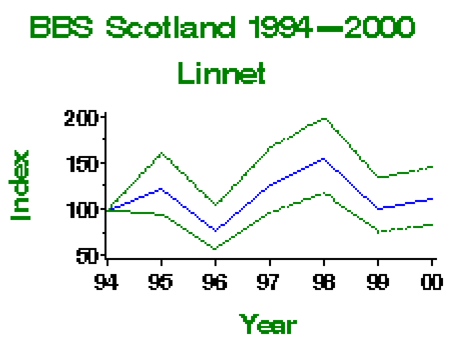


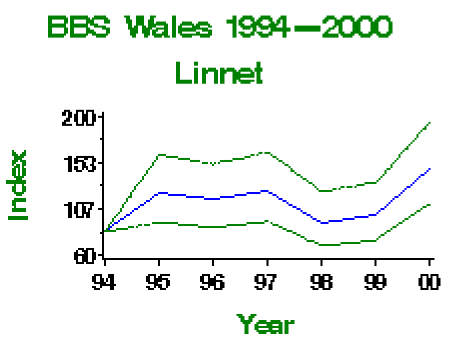












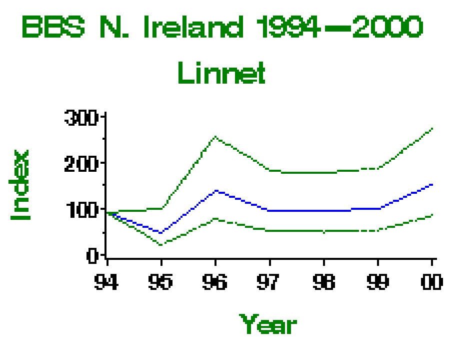
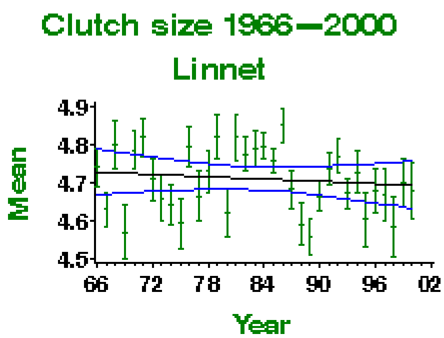
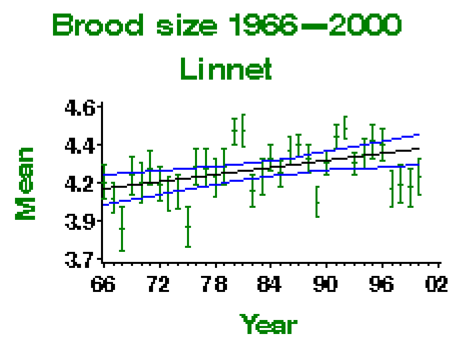


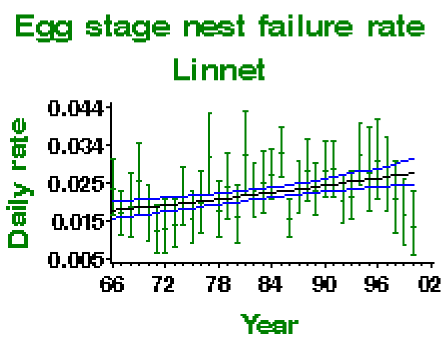
Table of productivity information for Linnet

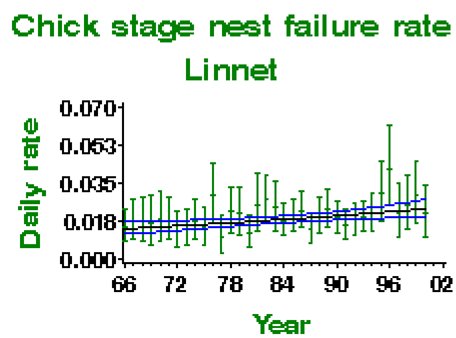
Variable	Period	Years	Mean annual	Trend	Predicted	Predicted	Change	Comment

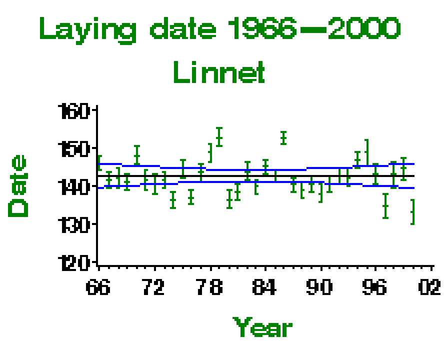
	(yrs)		sample		in first year	in last year		
Clutch size	31	1968-1999	112	None				
Brood size	31	1968-1999	126	Linear increase	4.12 chicks	4.34 chicks	0.22 chicks	
Daily failure rate (eggs)	31	1968-1999	158	Linear increase	0.0179 nests/day	0.0269 nests/day	0.009 nests/day	
Daily failure rate (chicks)	31	1968-1999	111	Linear increase	0.0144 nests/day	0.0227 nests/day	0.0083 nests/day	
Laying date	31	1968-1999	115	None				
Percentage juveniles (CES)	15	1984-1999	24	Smoothed trend	249 productivity index	100 productivity index	-60% [>50]	
Percentage juveniles (CES)	10	1989-1999	29	Smoothed trend	179 productivity index	100 productivity index	-44% [>25]	
Percentage juveniles (CES)	5	1994-1999	29	Smoothed trend	111 productivity index	100 productivity index	-10%	

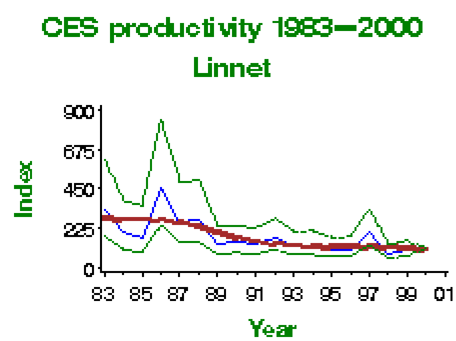












LESSER REDPOLL
Carduelis cabaret

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Uncertain
Lowland: Rapid decline

Status summary

The CBC and CES each depend on rather small numbers of relevant plots and are unlikely to be representative of Redpoll populations in the UK, which are most abundant in the north and west of Britain. However, both surveys identified a rapid population decline, which the CBC suggests began in the mid-1970s. The Redpoll's range has also contracted (Gibbons *et al.* 1993). It is unclear from the BBS whether the decline has ceased and, if not, whether it has occurred over a wider geographical area than that represented by the CBC and CES. CES data indicates a moderate decline in productivity over the past 14 years and there is evidence that survival rates fell during the population decline (Siriwardena *et al.* 1998a).

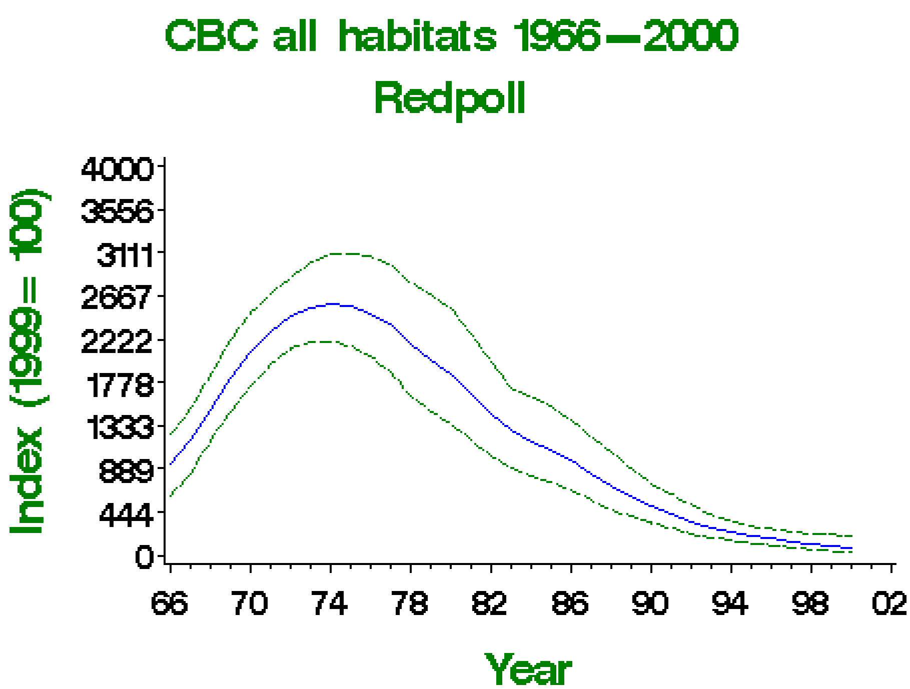
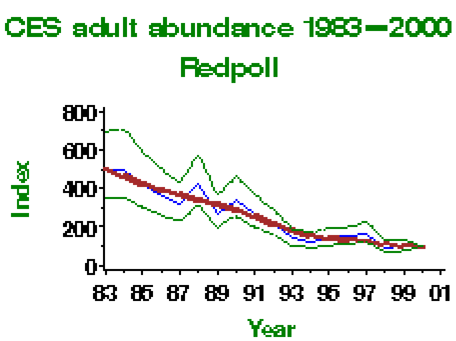


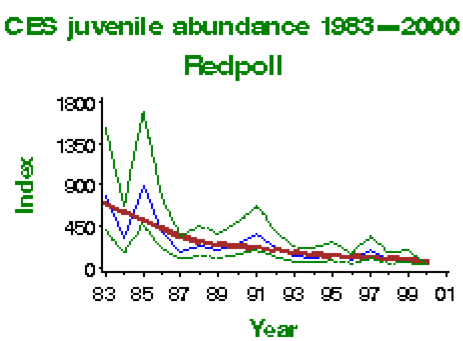
Table of population changes for Lesser Redpoll

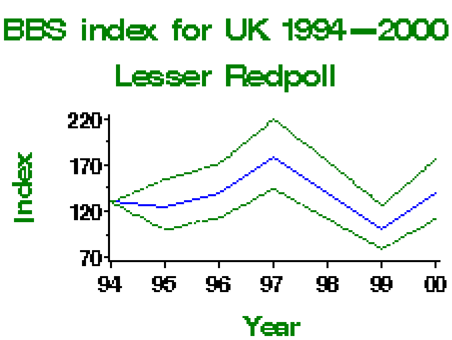
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	42	-93	-97	-83	>50	Unrepresentative?
	25	1974-1999	40	-96	-98	-92	>50	Unrepresentative?

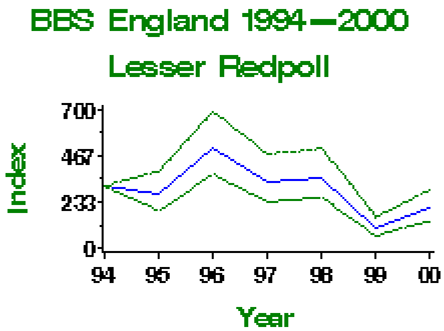
	10	1989-1999	14	-83	-93	-66	>50	Unrepresentative? small sample
	5	1994-1999	9	-58	-80	-16	>50	Unrepresentative? small sample
CES adults	15	1984-1999	20	-78	.	.	[>50*]	Small sample
	10	1989-1999	21	-67	.	.	[>50*]	
	5	1994-1999	18	-34	.	.	[>25]	Small sample
CES juveniles	15	1984-1999	11	-87	.	.	[>50]	Small sample
	10	1989-1999	12	-68	.	.	[>50]	Small sample
	5	1994-1999	11	-46	.	.	[>25]	Small sample
BBS UK	6	1994-2000	118	8	-14	36		
BBS England	6	1994-2000	46	-35	-56	-5	(>25)	Small sample
BBS Scotland	6	1994-2000	37	19	-21	80		Small sample

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









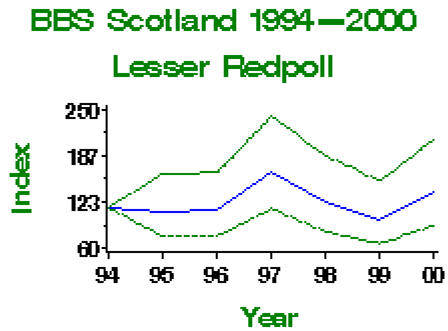
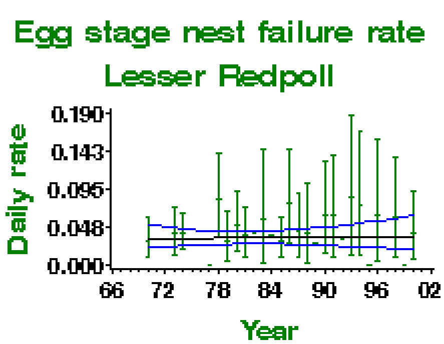


Table of productivity information for Lesser Redpoll

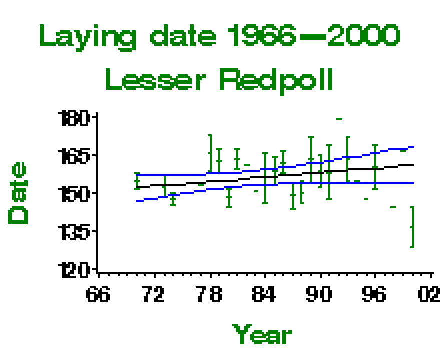
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Daily failure rate (eggs)	31	1968-1999	11	None				Small sample
Laying date	31	1968-1999	12	None				Small sample
Percentage juveniles (CES)	15	1984-1999	21	Smoothed trend	231 productivity index	100 productivity index	-57% [>50]	
Percentage juveniles (CES)	10	1989-1999	23	Smoothed trend	139 productivity index	100 productivity index	-28% [>25]	
Percentage juveniles (CES)	5	1994-1999	20	Smoothed trend	134 productivity index	100 productivity index	-26% [>25]	Small sample

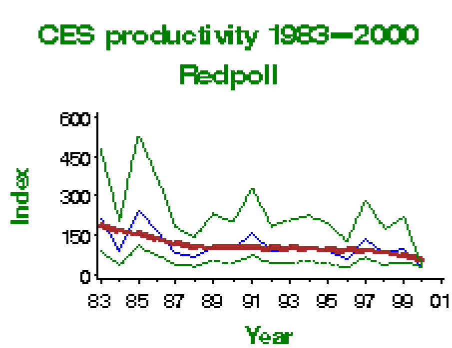
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species



Insufficient data on nestling failure available for this species





BULLFINCH
Pyrrhula pyrrhula

Conservation listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Rapid decline over past 25 years
Farmland: Rapid decline
Woodland: Moderate decline

Status summary

The UK Bullfinch population has been in decline since the mid-1970s, following a period of relative stability. The decline was initially rapid, but has been shallower since the early 1980s. Nevertheless, the CES and BBS both suggest that the decline is continuing, at least in southern Britain. The demographic mechanism remains unclear (**Siriwardena *et al.* 1999**, **2000b**), although agricultural intensification is suspected to have played a part. CES data indicate that productivity has increased over the last decade, and nest failure rates at the chick stage (15 days) have fallen from 37% to 21%.

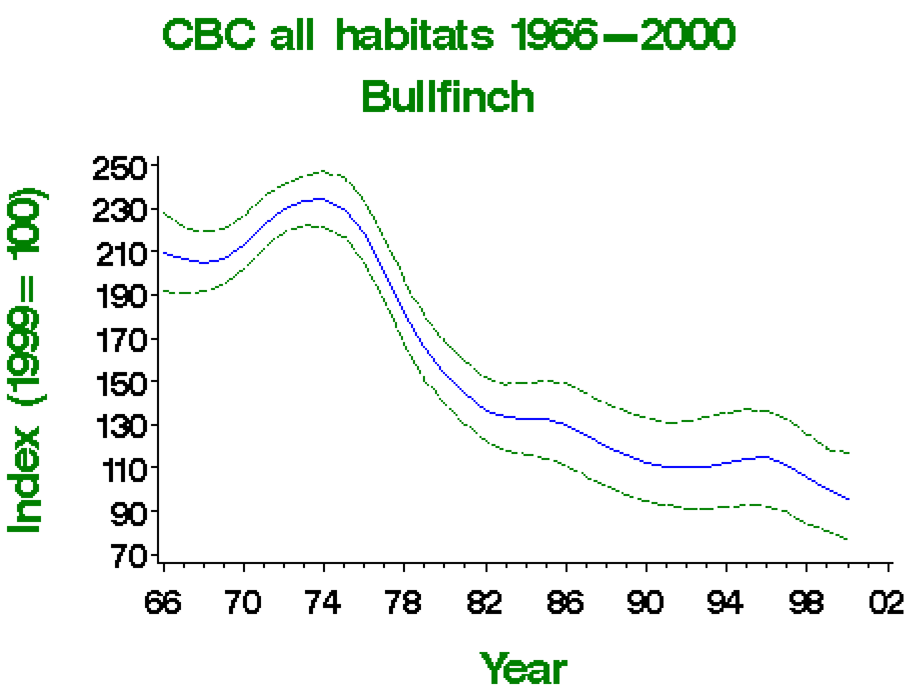
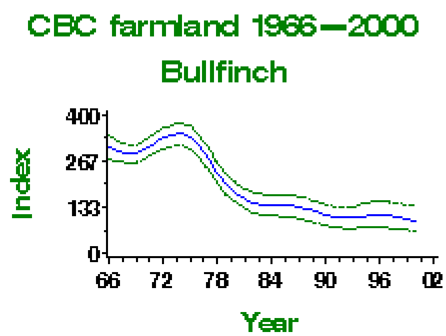


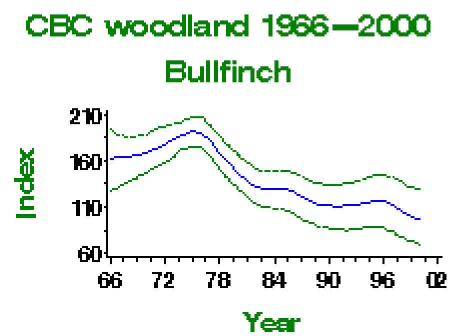
Table of population changes for Bullfinch

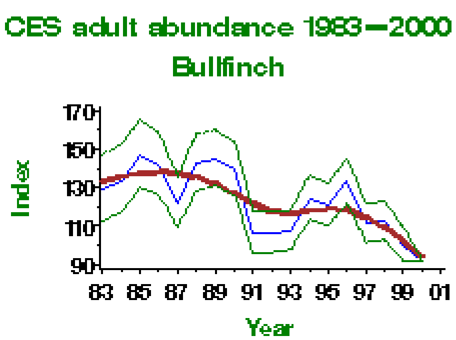
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	136	-51	-60	-40	>50	
	25	1974-1999	140	-57	-65	-59	>50	
	10	1989-1999	117	-13	-22	-5		
	5	1994-1999	120	-11	-19	-3		
CBC farmland	31	1968-1999	49	-65	-77	-52	>50	

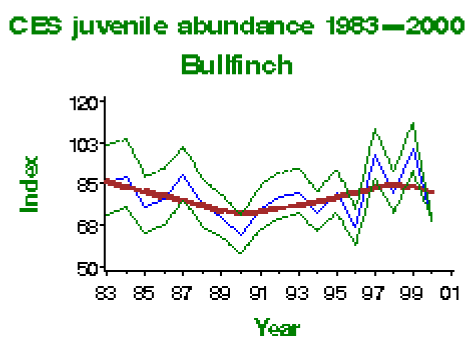
	25	1974-1999	47	-71	-79	-61	>50	
	10	1989-1999	40	-16	-33	5		
	5	1994-1999	39	-6	-18	12		
CBC woodland	31	1968-1999	59	-39	-53	-20	>25	
	25	1974-1999	64	-47	-60	-31	>25	
	10	1989-1999	62	-12	-23	4		
	5	1994-1999	64	-12	-20	-1		
CES adults	15	1984-1999	82	-25	.	.		
	10	1989-1999	94	-23	.	.		
	5	1994-1999	97	-13	.	.		
CES juveniles	15	1984-1999	64	0	.	.		
	10	1989-1999	74	14	.	.		
	5	1994-1999	76	8	.	.		
BBS UK	6	1994-2000	438	-25	-34	-15	(>25)	
BBS England	6	1994-2000	343	-24	-34	-14		
BBS Scotland	6	1994-2000	30	45	-20	162		Small sample
BBS Wales	6	1994-2000	46	-30	-51	1		Small sample

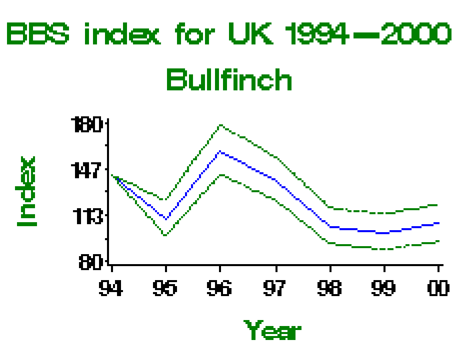
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

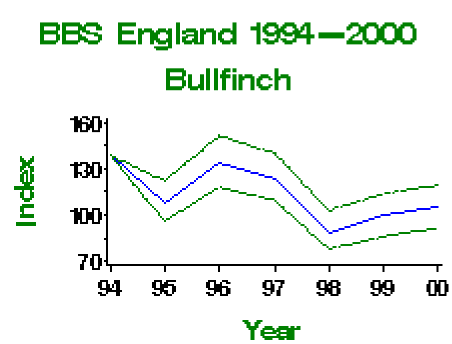


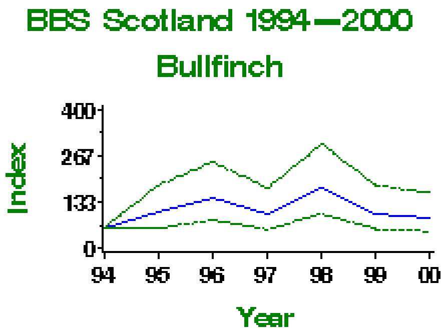












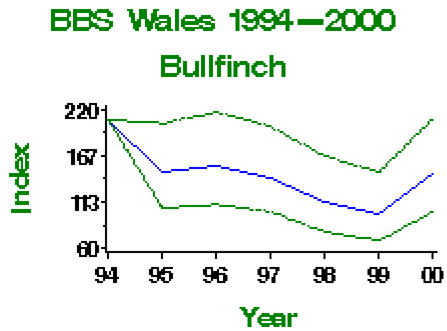
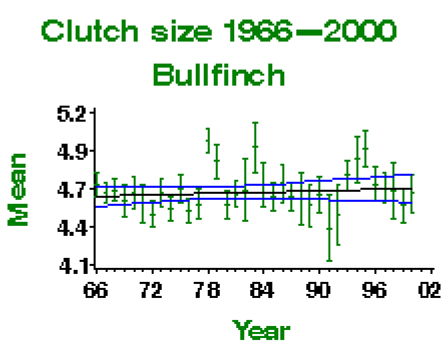
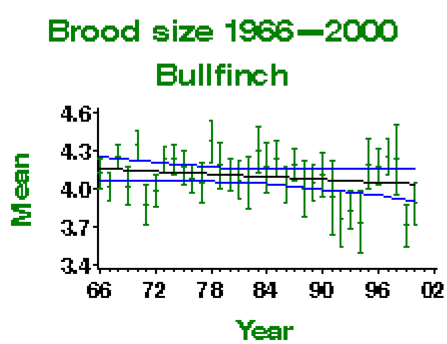
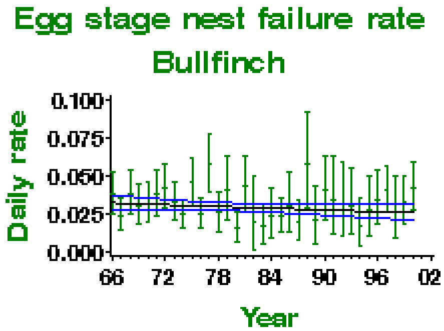


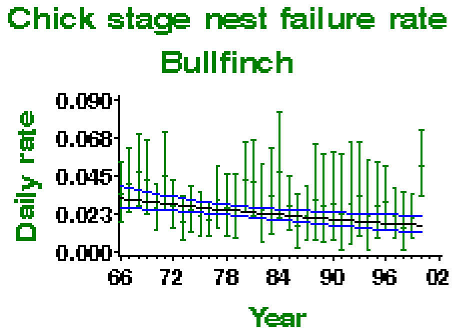
Table of productivity information for Bullfinch

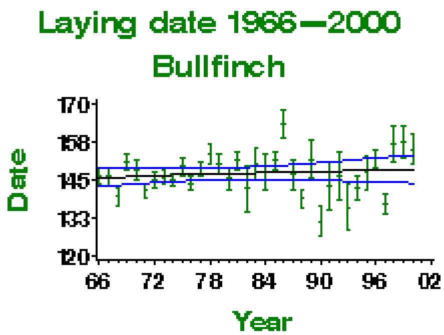
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	37	None				
Brood size	31	1968-1999	39	None				
Daily failure rate (eggs)	31	1968-1999	52	None				
Daily failure rate (chicks)	31	1968-1999	36	Linear decline	0.0307 nests/day	0.0159 nests/day	-0.0148 nests/day	
Laying date	31	1968-1999	34	None				
Percentage juveniles (CES)	15	1984-1999	86	Smoothed trend	91 productivity index	100 productivity index	10%	
Percentage juveniles (CES)	10	1989-1999	99	Smoothed trend	70 productivity index	100 productivity index	44%	
Percentage juveniles (CES)	5	1994-1999	102	Smoothed trend	82 productivity index	100 productivity index	21%	

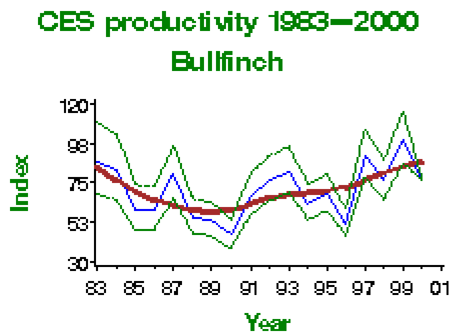





Egg stage nest failure rate
Bullfinch
Daily rate
0.100
0.075
0.050
0.025
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Bullfinch
Daily rate
0.090
0.068
0.045
0.023
0.000
66 72 78 84 90 96 02
Year


Laying date 1966-2000
Bullfinch
Date
170
158
145
133
120
66 72 78 84 90 96 02
Year


CES productivity 1983-2000
Bullfinch
Index
120
98
75
53
30
83 85 87 89 91 93 95 97 99 01
Year

YELLOWHAMMER
Emberiza citrinella

Conservation listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long-term trend

UK: Rapid decline
Farmland: Moderate decline
Woodland: Rapid decline
Scrub (CES): Rapid decline

Status summary

Yellowhammer abundance began to decline on farmland in the mid-1980s and the decline has continued ever since, the CBC trend being replicated in the CES and BBS results. The woodland CBC trend shows a longer-term decline, perhaps showing problems for the species in this secondary (possibly sink) habitat before they were apparent in the preferred farmland habitats. Whilst there is some evidence that survival rates have decreased during the period of decline, Yellowhammer breeding performance has tended to increase (Siriwardena *et al.* 1998b, 2000b). In addition to increases in clutch and brood size, nest failure rates have fallen: the proportion of nests failing at the egg stage (15 days, comprising 12 days incubation + 3 days laying) fell from 55% to 42%, and at the chick stage (12 days) from 44% to 39%. Overall the failure rates from egg laying to fledging fell from 75% to 64%; these values are relatively high, probably because later nests, which tend to be more successful (Kyrkos 1997), are under-represented in the NRS dataset. Such a factor is, however, 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.

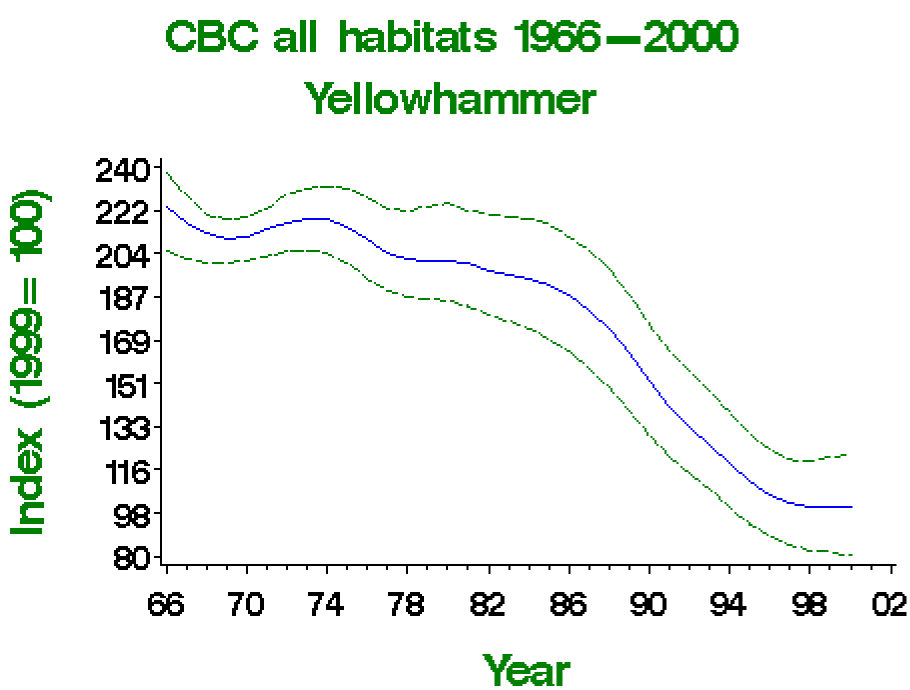
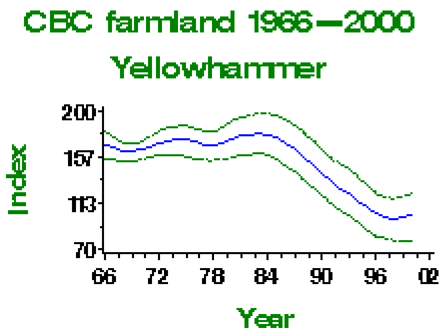
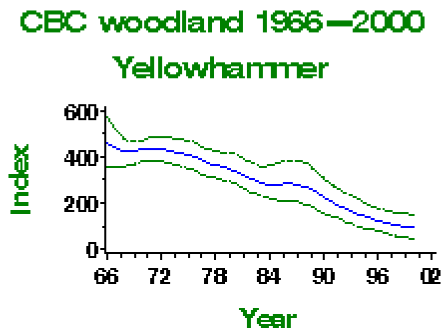


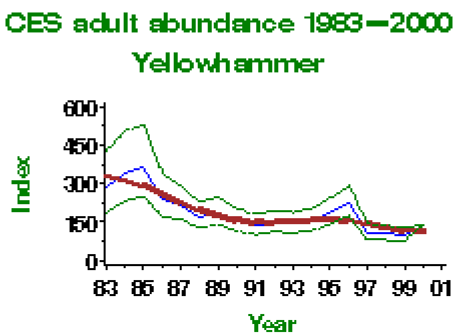
Table of population changes for Yellowhammer

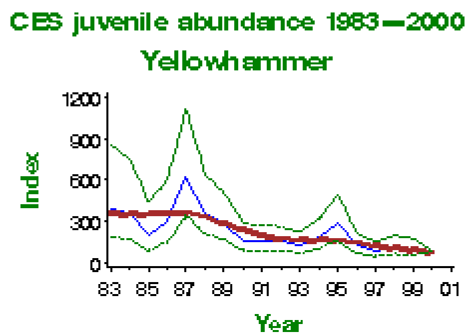
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	132	-53	-62	-41	>50	
	25	1974-1999	132	-54	-62	-47	>50	
	10	1989-1999	109	-39	-46	-33	>25	
	5	1994-1999	103	-16	-22	-8		
CBC farmland	31	1968-1999	75	-39	-52	-24	>25	
	25	1974-1999	73	-42	-53	-32	>25	
	10	1989-1999	68	-33	-42	-25	>25	
	5	1994-1999	65	-14	-21	-7		
CBC woodland	31	1968-1999	34	-76	-88	-63	>50	
	25	1974-1999	35	-76	-88	-63	>50	
	10	1989-1999	27	-60	-79	-39	>50	
	5	1994-1999	24	-33	-62	-7	>25	
CES adults	15	1984-1999	22	-62	.	.	[>50*]	
	10	1989-1999	24	-32	.	.	[>25*]	
	5	1994-1999	22	-24	.	.		
CES juveniles	15	1984-1999	12	-73	.	.	[>50]	Small sample
	10	1989-1999	12	-68	.	.	[>50]	Small sample
	5	1994-1999	11	-43	.	.	[>25]	Small sample
BBS UK	6	1994-2000	1003	-12	-16	-7		
BBS England	6	1994-2000	871	-13	-18	-9		
BBS Scotland	6	1994-2000	88	0	-17	20		
BBS Wales	6	1994-2000	37	-30	-50	-1	(>25)	Small sample

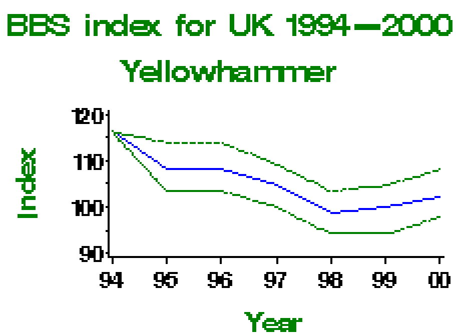
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

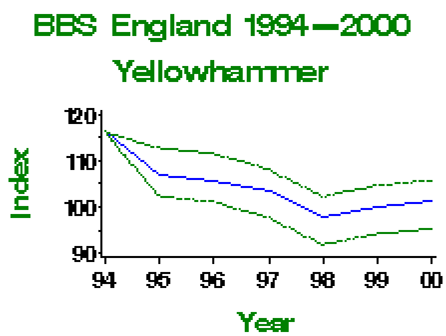


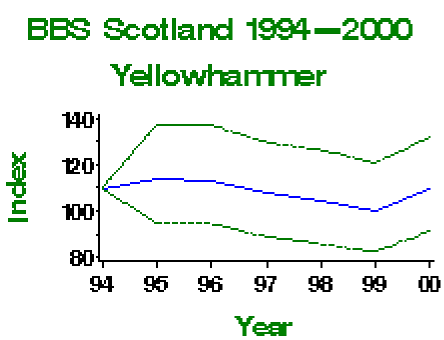












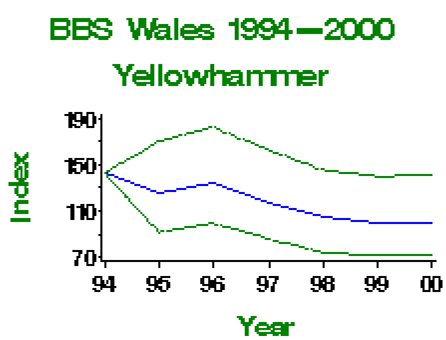
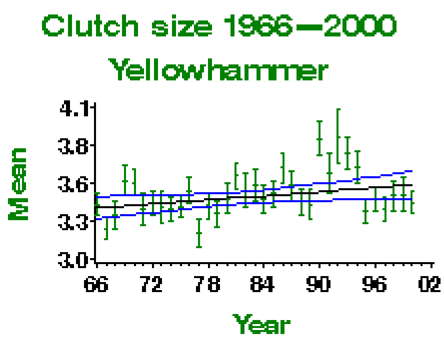
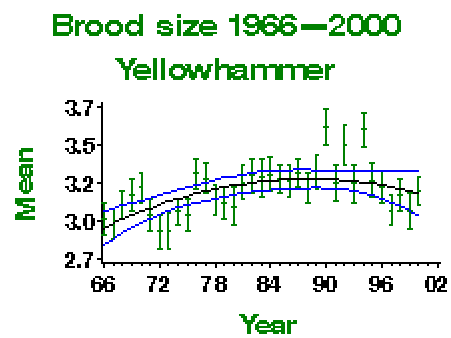


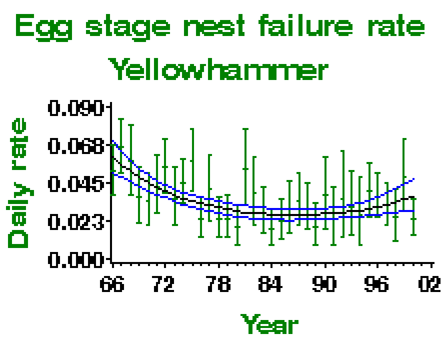
Table of productivity information for Yellowhammer

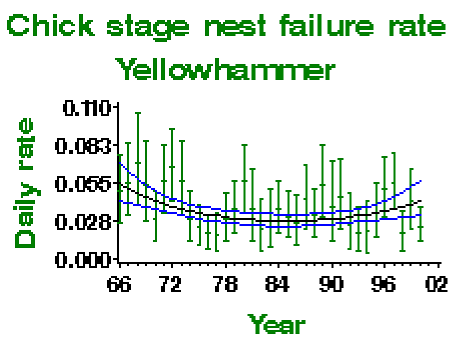
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	44	Linear increase	3.38 eggs	3.53 eggs	0.15 eggs	
Brood size	31	1968-1999	69	Curvilinear	2.96 chicks	3.15 chicks	0.19 chicks	
Daily failure rate (eggs)	31	1968-1999	66	Curvilinear	0.0519 nests/day	0.0353 nests/day	-0.0166 nests/day	

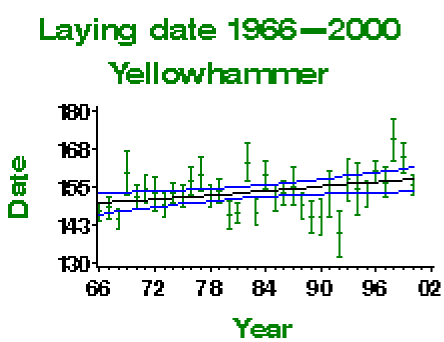
Daily failure rate (chicks)	31	1968-1999	52	Curvilinear	0.0478 nests/day	0.0399 nests/day	-0.0079 nests/day	
Laying date	31	1968-1999	27	Linear increase	day 150	day 157	7 days	Small sample
Percentage juveniles (CES)	15	1984-1999	25	Smoothed trend	108 productivity index	100 productivity index	-7%	
Percentage juveniles (CES)	10	1989-1999	27	Smoothed trend	180 productivity index	100 productivity index	-45% [>25]	
Percentage juveniles (CES)	5	1994-1999	25	Smoothed trend	91 productivity index	100 productivity index	10%	

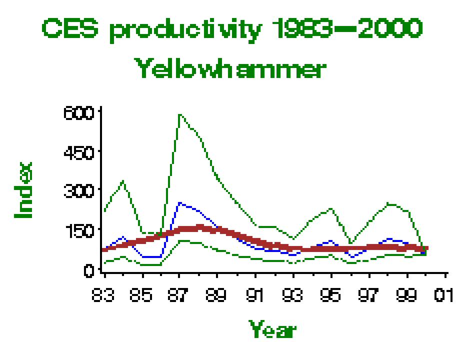












REED BUNTING
Emberiza schoeniclus

Conservation listings

Table 3/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Moderate decline
Waterways: Rapid decline since mid-1970s

Status summary

Both CBC and WBS indices declined rapidly during the 1970s, but Reed Bunting abundance has since remained remarkably stable. The previous increase in the CBC index has been associated with a gradual spread into drier habitats 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. Howver, BBS data suggest that the 1990s were a period of population stability, as do both WBS and CBC data. 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 during the egg stage (Peach *et al.* 1999). This is supported by a moderate decline in CES productivity and an increase in failure rates at the egg stage (17 days, comprising 13 days incubation + 4 days laying) from 11% to 36%.

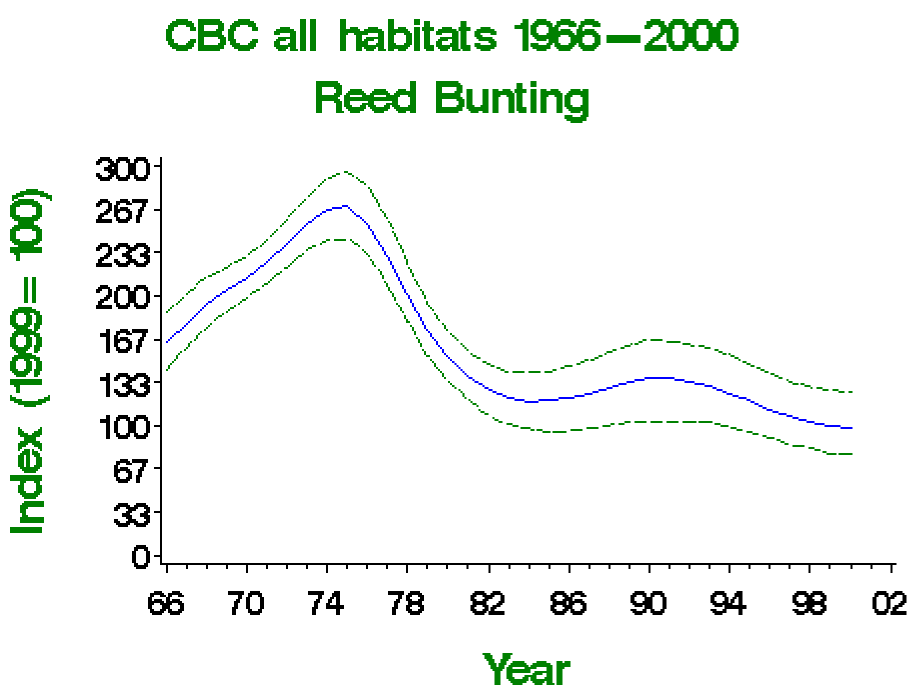
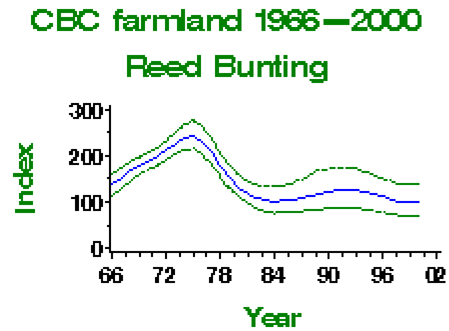


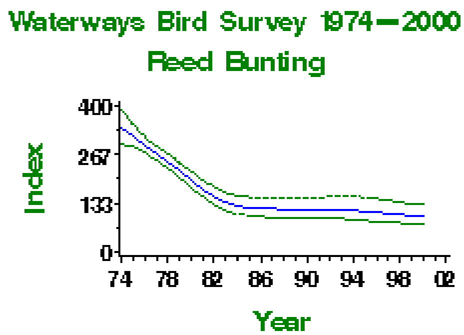
Table of population changes for Reed Bunting

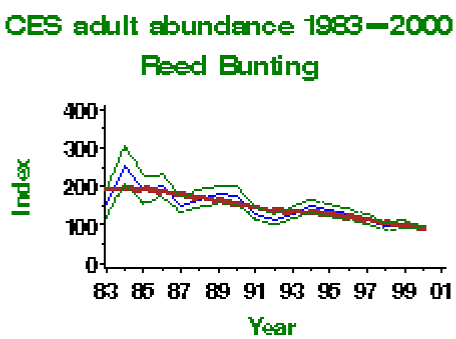
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	84	-48	-59	-33	>25	
	25	1974-	82	-63	-69	-55	>50	

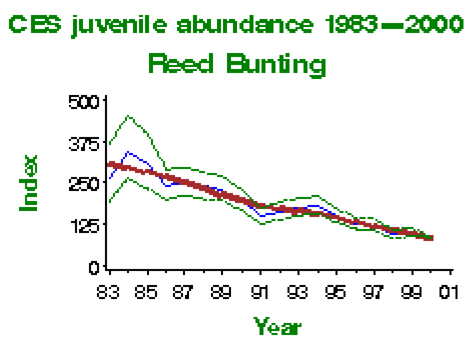
		1999						
	10	1989-1999	59	-25	-32	-13	>25	
	5	1994-1999	59	-20	-27	-13		
[CBC farmland]()	31	1968-1999	52	-41	-59	-14	>25	
	25	1974-1999	49	-58	-71	-44	>50	
	10	1989-1999	41	-16	-30	3		
	5	1994-1999	40	-18	-25	-7		
[WBS waterways]()	24	1975-1999	53	-68	-76	-55	>50	
	10	1989-1999	59	-14	-27	4		
	5	1994-1999	63	-13	-20	-3		
[CES adults]()	15	1984-1999	59	-49	.	.	[>25*]	
	10	1989-1999	69	-39	.	.	[>25*]	
	5	1994-1999	78	-25	.	.		
[CES juveniles]()	15	1984-1999	41	-68	.	.	[>50*]	
	10	1989-1999	48	-56	.	.	[>50*]	
	5	1994-1999	53	-40	.	.	[>25*]	
[BBS UK]()	6	1994-2000	329	-4	-14	8		
[BBS England]()	6	1994-2000	250	-23	-32	-12		
[BBS Scotland]()	6	1994-2000	39	37	-6	101		Small sample
[BBS Wales]()	6	1994-2000	18	23	-26	102		Small sample
[BBS N.Ireland]()	6	1994-2000	21	12	-24	64		Small sample

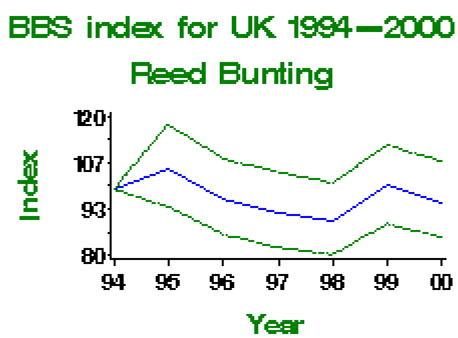
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

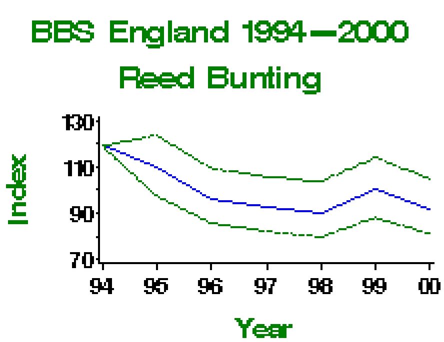

CBC farmland 1966–2000
Reed Bunting
Index
300
200
100
0
66 72 78 84 90 96 02
Year

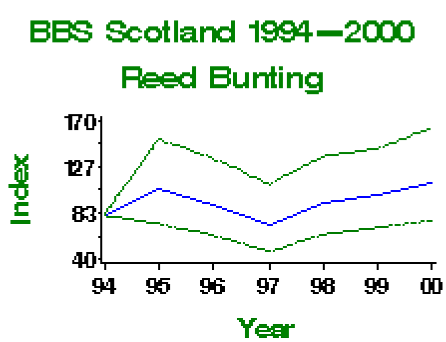

Waterways Bird Survey 1974–2000
Reed Bunting
Index
400
267
133
0
74 78 82 86 90 94 98 02
Year

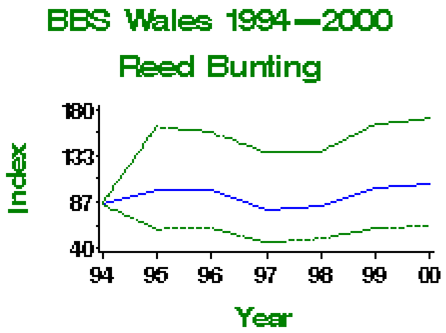

CES adult abundance 1983–2000
Reed Bunting
Index
400
300
200
100
0
83 85 87 89 91 93 95 97 99 01
Year


CES juvenile abundance 1983–2000
Reed Bunting
Index
500
375
250
125
0
83 85 87 89 91 93 95 97 99 01
Year


BBS index for UK 1994–2000
Reed Bunting
Index
120
107
93
80
94 95 96 97 98 99 00
Year


BBS England 1994–2000
Reed Bunting
Index
130
110
90
70
94 95 96 97 98 99 00
Year


BBS Scotland 1994–2000
Reed Bunting
Index
170
127
83
40
94 95 96 97 98 99 00
Year



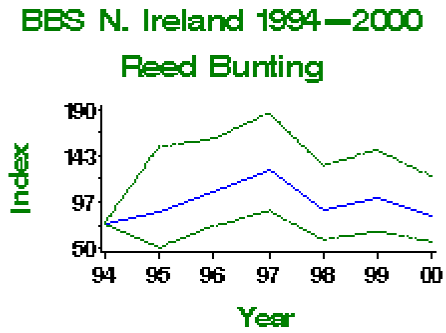
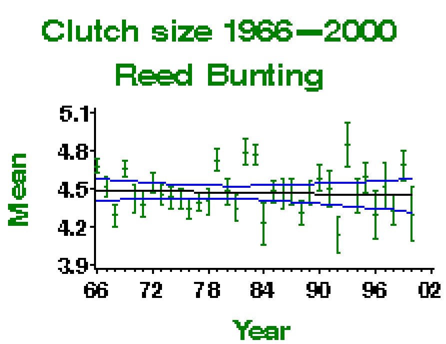
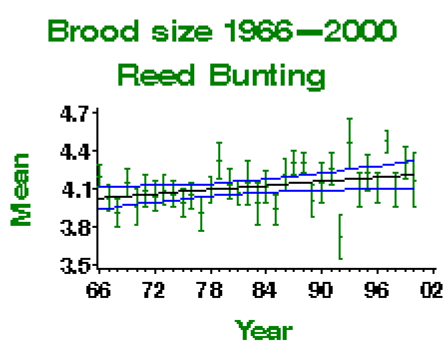
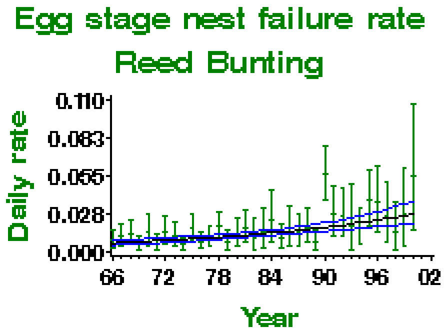


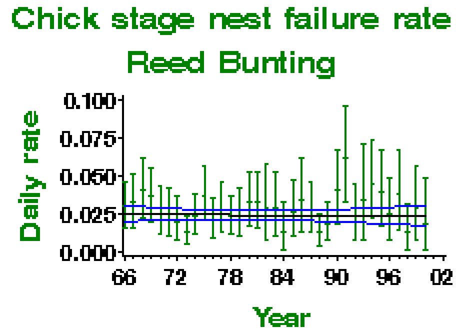
Table of productivity information for Reed Bunting

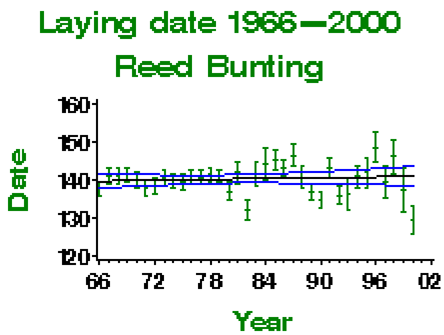
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	31	1968-1999	48	None				
Brood size	31	1968-1999	66	Linear increase	4.04 chicks	4.21 chicks	0.17 chicks	
Daily failure rate (eggs)	31	1968-1999	56	Linear increase	0.0068 nests/day	0.0261 nests/day	0.0193 nests/day	
Daily failure rate (chicks)	31	1968-1999	55	None				
Laying date	31	1968-1999	54	None				
Percentage juveniles (CES)	15	1984-1999	62	Smoothed trend	151 productivity index	100 productivity index	-34% [>25]	
Percentage juveniles (CES)	10	1989-1999	72	Smoothed trend	154 productivity index	100 productivity index	-35% [>25]	
Percentage juveniles (CES)	5	1994-1999	82	Smoothed trend	130 productivity index	100 productivity index	-23%	

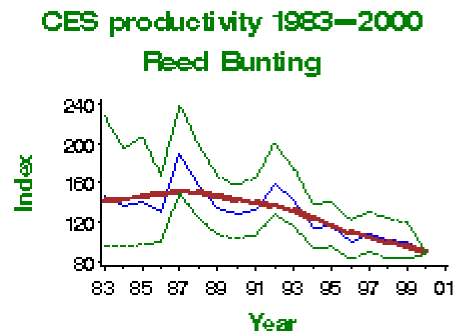





Egg stage nest failure rate
Reed Bunting
Daily rate
0.110
0.083
0.055
0.028
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Reed Bunting
Daily rate
0.100
0.075
0.050
0.025
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–2000
Reed Bunting
Date
160
150
140
130
120
66 72 78 84 90 96 02
Year


CES productivity 1983–2000
Reed Bunting
Index
240
200
160
120
80
83 85 87 89 91 93 95 97 99 01
Year

CORN BUNTING
Miliaria calandra

Conservation listings

Table 2/Red (>=50% Population decline)
Biodiversity Steering Group Priority Species List

Long-term trend

UK: Rapid decline

Status summary

Corn Buntings declined between the mid 1970s and mid 1980s, after which the decline has continued but at a much reduced rate. The BBS also shows a continuing decline. Corn Bunting breeding performance has increased considerably over this period (Crick 1997), and the best hypothesis as to the demographic mechanism behind the decline is probably that survival rates have fallen. However, ring-recovery sample sizes do not permit this to be tested (Siriwardena *et al.* 1998b, 2000b). The decrease in survival rates is probably a result of the deleterious effects of agricultural intensification on seed availability in winter (Donald 1997).

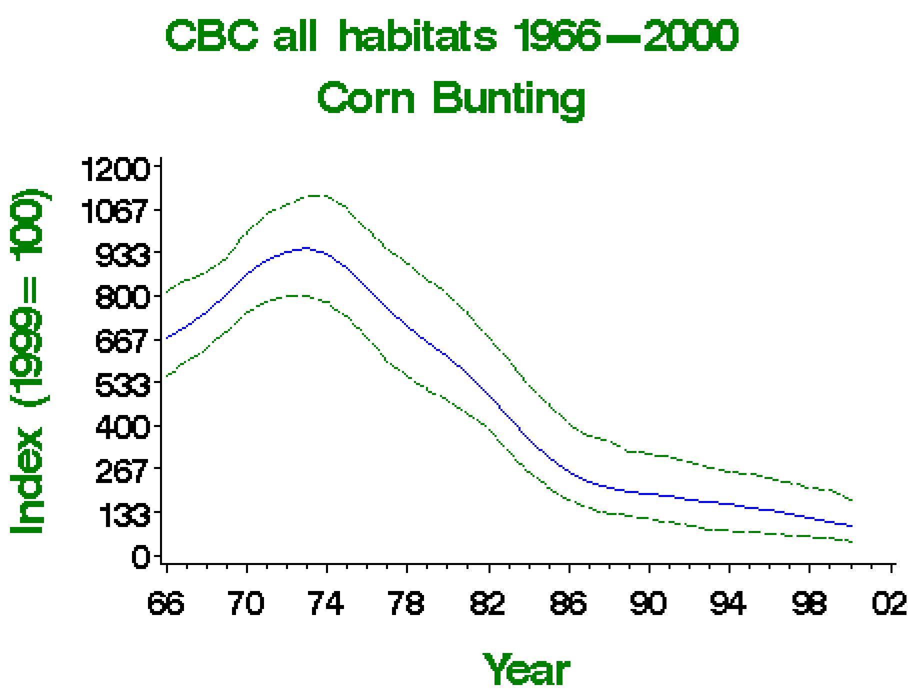
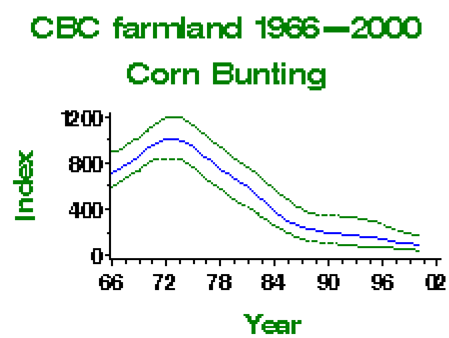


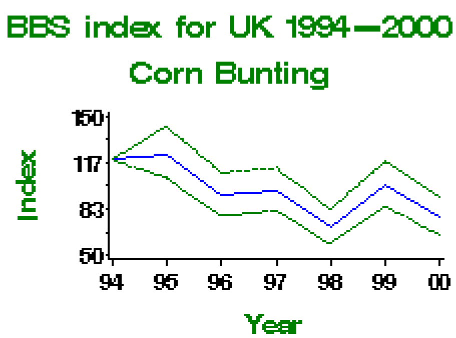
Table of population changes for Corn Bunting

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	31	1968-1999	24	-87	-93	-76	>50	
	25	1974-1999	21	-89	-94	-81	>50	
	10	1989-1999	14	-49	-69	-20	>25	Small sample
		1994-						Small

	5	1999	14	-36	-52	-3	>25	sample
CBC farmland	31	1968-1999	20	-88	-94	-75	>50	Small sample
	25	1974-1999	17	-90	-95	-80	>50	Small sample
	10	1989-1999	13	-52	-70	-16	>50	Small sample
	5	1994-1999	13	-38	-58	-2	>25	Small sample
BBS UK	6	1994-2000	146	-35	-46	-23	(>25)	
BBS England	6	1994-2000	139	-38	-48	-27	(>25)	

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





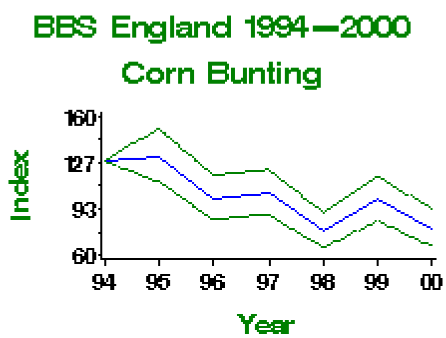
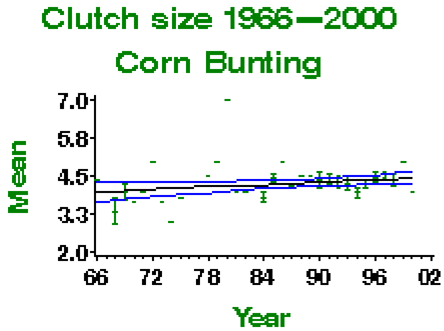
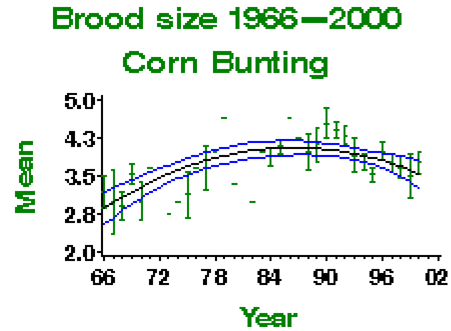
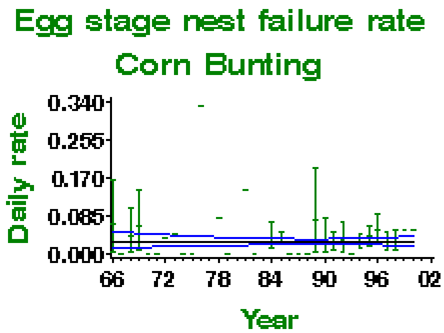


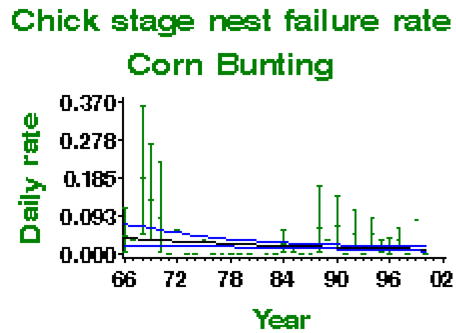
Table of productivity information for Corn Bunting

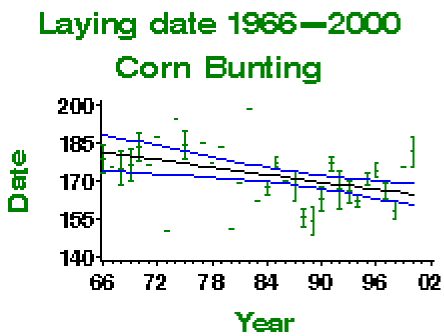
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	31	1968-1999	12	Curvilinear	3.09 chicks	3.62 chicks	0.53 chicks	Small sample
Daily failure rate (eggs)	31	1968-1999	13	None				Small sample
Daily failure rate (chicks)	31	1968-1999	11	Linear decline	0.0355 nests/day	0.0112 nests/day	-0.0243 nests/day	Small sample
Laying date	31	1968-1999	15	Linear decline	day 180	day 165	-15 days	Small sample











Insufficient data on CES available for this species

3. Help on species accounts

Depending on the availability of data (all species are not covered by each scheme), each account usually consists of the following:

1) ***Conservation Listings:*** the conservation status of the species is graded with reference to the JNCC/Country Agency Conservation Importance List (**JNCC 1996**) as follows:

Table 1:	IUCN globally threatened species. These species require monitoring of populations and the preparation of International Species Action Plans to ensure effective conservation.
Table 2:	Uncommon and, rapidly or historically, declining British breeding birds. These species require monitoring of populations and the preparation of Species Action Plans to ensure their effective conservation.
Table 3:	Rapidly declining, but common British breeding birds. For these species the JNCC and Country Agencies will, in collaboration with Non-Governmental Organisations, investigate causes of decline and consider their conservation requirements and, where appropriate, prepare Species Action Plans to ensure effective conservation.
Table 4:	Species listed as moderately declining, historically declining but common, internationally important, localised or 'threatened in Europe' British breeding birds. These species require monitoring of populations and, where appropriate, the preparation of Species Action Plans to ensure effective conservation.
Unlisted:	Other British breeding birds.

Species are also categorised with reference to the Birds of Conservation Concern listing (**Gibbons *et al.* 1996**) as follows:

Red:	generally equivalent to Tables 1, 2 & 3 of the JNCC list.
Amber:	generally equivalent to Table 4.
Green:	generally equivalent to unlisted.

The main reason for listing as Red or Amber is provided in parentheses as follows:

- >50% Population decline (generally from CBC data)
- >50% Distribution decline (generally from the *New Breeding Atlas*, **Gibbons *et al.* 1993**)
- 25-49% Population decline (generally from the *New Breeding Atlas*, **Gibbons *et al.* 1993**)
- 25-49% Distribution decline (generally from the *New Breeding Atlas*, **Gibbons *et al.* 1993**)
- Historical decline (in UK between 1800-1995, assessed by literature review)
- Important breeding and/or wintering population (>20% of European population in UK or >50% of UK population in just 1-10 sites)
- European Status (species with unfavourable conservation status in Europe

The UK Biodiversity Steering Group produced three lists of species of conservation concern (**Anon. 1995**) that have since been rationalised to two lists (**Anon. 1998**). These are indicated as follows:

Biodiversity Steering Group Priority Species List:
species which are globally threatened or rapidly declining in the UK (i.e. by at least 50% in the last 25 years); and for which costed Action Plans have been prepared (previously the "short" and "middle" lists)

Biodiversity Steering Group Conservation Concern List:
this includes species on the Priority List but also species for which UK has >25% of the world or appropriate biogeographical population; species for which numbers or range have declined between 25 and 49% over the last 25 years; species which are found in <15 10-km squares in the UK; and species listed in international or national conservation legislation.

2) ***Long term trend:*** This summarises the trend in population size over the past 31 years from CBC or shorter for WBS and CES. The terms mean the following:

- **Rapid decline:** >50% (and statistically significant) population decline from CBC, WBS or CES.
- **Moderate decline:** 25-49% (and statistically significant) population decline from CBC, WBS or CES.
- **Shallow decline:** <25% (but statistically significant) population decline from CBC, WBS or CES.
- **Decline:** derived from other data sources or when statistical significance is unknown.
- **Probable decline:** as "decline" but the information is not as certain - see the status summary for reasons.
- **Possible decline:** as "decline" but the information is less certain than "probable decline" but it is still most likely that there has been a decline - see the status summary for reasons.
- **Stable/Fluctuating, with no long-term trend:** where the confidence limits of the decline encompass 0 (or no overall change).
- **Uncertain:** where the information from two monitoring schemes indicate conflicting trends or if the schemes are unrepresentative of the species' UK population.
- **Unknown:** no information on the UK population trend is available.
- **Increase/Probable Increase/Possible Increase:** data from other sources, see "decline" above.
- **Shallow increase:** 10-49% population increase, where the lower confidence limit is >0 (but see **Alerts, Section 2.7**), measured by CBC, WBS or CES.
- **Moderate increase:** 50-99% population increase, where the lower confidence limit is >0 (but see **Alerts, Section 2.7**), measured by CBC, WBS or CES.
- **Rapid increase:** >100% population increase, where the lower confidence limit is >0 (but see **Alerts, Section 2.7**), measured by CBC, WBS or CES.

3) ***Status summary:*** this provides a brief summary of the trends detailed for the species and indicates why such changes might have occurred with reference to published information when available.

4) ***Population trends graphs:*** the first of these shows the changes in abundance for that species over the period from 1966-1999, as measured by the Common Birds Census. For some species, the Waterways Bird Survey, Constant Effort Sites scheme or Breeding Bird Survey provides the most representative trend and is shown. After the following table, graphs are presented to show trends in other habitats and regions from the other monitoring schemes. Details about how the graphs are calculated are provided in the Methods (**Section 2**) for each scheme. For CBC and WBS, the graphs show a smoothed line (blue) and its 85% confidence limits (green); for CES, Heronries Census and BBS, annual estimates are shown (blue) together with their 85% or 95% (BBS) confidence limits (green), and for the first two schemes a smoothed line (red).

5) ***Population trends table:*** this provides details of percentage changes in population size over the past 31 years (or a shorter period, depending on the availability of data), 25 years, 10 years and 5 years. It lists the period of years concerned, the average (mean) number of census plots which contained the species in each year and the upper and lower confidence intervals ("limits") for a population decline. The Alert column indicates whether a statistically significant population decline over the period is greater than (or equal to) 50% (>50) or between 25 and 49% (>25) (see **Alerts, Section 2.7** for further details). The comment column lists any caveats that must be considered when interpreting the changes. The caveats are:

- **Small sample:** for CBC, WBS and CES data, a mean sample size of less than 20 census plots was available; for BBS data, a mean sample of <50 plots was available

- **Unrepresentative?:** the CBC data may not be representative of the population as a whole either because 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 New 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

6) ***Productivity trends table:*** this provides details of changes in productivity over the past 30 years (or a shorter period, depending on the availability of data). It lists the period of years concerned, the mean annual sample, the type of trend, if the trend is significant then the predicted values (from the smoothed trend) for the first and last years and their difference is listed, and the existence of any caveats that must be considered when interpreting the data. The caveat "small sample" is given when the mean number of records per year is between 10-30 for the Nest Record Scheme, or when the mean number of CES plots was <20 per year.

7) ***Productivity graphs:*** graphs of changes recorded by the Constant Effort Sites Scheme or Nest Record Scheme illustrate significant trends in population size or productivity. For NRS data, annual means (averages) are provided with error bars to denote �1 standard error either side of the mean (in green); regression lines (in black) and the upper and lower 95% confidence intervals of these lines (in blue) are also shown. For CES data, the annual values are plotted (blue) with their 85% confidence intervals (green) and a smoothed line (red) is put through these points (see **Section 2.5** for details).

4. Discussion

Return to Contents

4.1 The alert system

This report uses a system of alerts agreed after a series of extensive discussions between the providers and users of population monitoring information in the UK.� The system provides alerts to population declines of 25-49% 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 as an aid to interpreting the trend graphs presented.�� For example, a species that triggers an alert over 25 years but not over the past 10 or 5 years, declined at some point in the past, but has not yet recovered. A species that triggers alerts over 25, 10 and 5 years, however, is still undergoing a potentially serious population decline.�For the former species, identification of actions that will aid population recovery is of greatest importance, whereas for the latter species it is urgent that means of halting declines are established before consideration is given to actions aimed at increasing the population size. 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.

These alerts are therefore important for the conservation practitioners who need to prioritise the needs for conservation action, but we also hope that they will prove of more general use to other readers of the report.�

In this discussion:

1) We first describe the key alerts that are raised for population declines over the last 31 years on all CBC plots combined.� This is the longest time period covered by reliable monitoring data, given the need to allow populations to recover following the severe winter of 1962/63.

2) We aim to:
   a) highlight those species that are potentially new candidates for conservation listing due to rapid or moderate declines in their abundance, and
   b) to discuss those species that are candidates to change their conservation status.

3) We then discuss the other main alerts covered in the report:
   a) 31-year alerts raised from CBC farmland and woodland plots separately,
   b) WBS alerts over 24 years,
   c) CES alerts over 15 years, and
   d) BBS changes over 6 years.

4) Finally we discuss:
   a) rapidly increasing species,
   b) changes in breeding performance, and
   c) summarise the overall patterns found.

Return to previous page

Go to next page - 4.2 The 31-year alerts

4.2 The 31-year alerts

The population sizes of 24 species have declined by greater than 25% over the 31-year period from 1968-99, 17 of which have declined by greater than 50% (see table 4.2.1 and 4.2.2).� The majority are these species are on the JNCC�s Conservation Importance List and on the conservation Non-Governmental Organisations� (NGO) Birds of Conservation Concern List (see section 6 for a description of the categories).

The species which have not changed status are: **Grey Partridge**, **Turtle Dove**, **Skylark, Song Thrush**, **Spotted Flycatcher**, **Tree Sparrow, Linnet**, **Bullfinch** and **Corn Bunting**, all with declines of greater than 50%; and **Dunnock** which declined by between 25% and 49%.

4.2.1 Recent 50% alerts

Here we highlight those species which are not on the current JNCC Conservation Importance List or NGO Birds of Conservation Concern List as having a >50% decline (see **section 2.7**).

- **Whitethroat**: this species underwent a severe population crash between 1968-69 due to the failure of rains in its sub-Saharan wintering grounds.� It was missed by the original conservation listing process because the time-frame did not include this period, but the population has shown little sign of real recovery.� This indicates, perhaps, that conditions have not improved on its wintering grounds or that conditions have worsened on its breeding grounds.� Such recovery as has occurred appears to be greater on farmland (-37%), which is presumably the preferred habitat, than it is on woodland CBC plots (-83%).
- **Starling, Willow and Marsh Tits**: these species were previously included on the conservation listings as having declined by 25-49%, but their declines have substantially worsened since then.� The Starling has declined more on woodland CBC plots (-90%) than on farmland plots� (-64%). The pattern and causes of the Starling decline are currently under investigation as part of a DEFRA-funded study.
- **Bullfinch**: The UK Bullfinch population has been declining rapidly in size since the mid-1970s, albeit at a progressively slower rate. Although the species is on the 50% conservation listing, the magnitude of the population decline as indicated by CBC data has only recently exceeded 50%. The scale of the decline has been more rapid in farmland areas (-65%) than it has on woodland plots (-39%). The exact cause of this decline is not clear, but **recent research** suggests that increased nest failure rates at the egg stage caused by a reduction in habitat structural complexity in agricultural areas may be partially responsible (**Siriwardena *et al.* 2001**).
- **Yellowhammer**: this is the latest farmland seed-eating species to decline, the size of the population having fallen substantially in the 1990s after maintaining a stable population throughout the 1970s and 1980s, a period during which many other seed-eating species declined.� The decline has been greater on woodland CBC plots (-76%) than on farmland (-39%), which is presumably its preferred habitat.

Three other species trigger 50% alerts, but it should be noted that the CBC does not necessarily provide monitoring coverage of a representative sample of their populations.

- **Woodcock**:� The Woodcock was previously put on the conservation listings because of a 50% range contraction between the two breeding bird atlases (**Gibbons *et al*. 1993**).� Although the CBC does not cover the distributional range of this species well, its sizeable decline in lowland England may necessitate further investigation. The BTO and the Game

Conservancy Trust will be carrying out a survey of this species in 2003.

- **Tree Pipit**: this species was not included on previous conservation listings for the same reason as the Redpoll but, again, this upland woodland bird has shown substantial population declines in lowland England, which may justify an investigation into its ecology.
- **Redpoll**: this species was not included on previous conservation listings because the CBC does not cover the centres of its distributional range, particularly in Scotland and Wales.� However, it has shown the second largest population decline of all UK bird species studied, after the Tree Sparrow, and indicates a potential problem in at least a part of its range (lowland England). Furthermore, the population exhibited a substantial range contraction between the two breeding bird atlases (**Gibbons *et al*. 1993**).� The causes of these declines are unknown and certainly warrant further investigation.

Table 4.2.1� >50% population alerts for CBC all habitats 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	31	59	-96	-98	-91	>50	
Lesser Redpoll	31	42	-93	-97	-83	>50	Unrepresentative?
Corn Bunting	31	24	-87	-93	-76	>50	
Grey Partridge	31	59	-85	-90	-78	>50	
Spotted Flycatcher	31	69	-79	-86	-71	>50	
Tree Pipit	31	33	-76	-87	-62	>50	Unrepresentative
Willow Tit	31	31	-76	-90	-61	>50	
Starling	31	125	-75	-82	-67	>50	
Woodcock	31	20	-74	-88	-49	>50	Unrepresentative? small sample
Turtle Dove	31	59	-70	-81	-54	>50	
Marsh Tit	31	55	-66	-75	-56	>50	
Linnet	31	123	-58	-68	-43	>50	
Song Thrush	31	204	-57	-64	-51	>50	
Whitethroat	31	118	-55	-69	-36	>50	
Skylark	31	120	-54	-61	-45	>50	
Yellowhammer	31	132	-53	-62	-41	>50	
Bullfinch	31	136	-51	-60	-40	>50	

See Help for information on category definitions.

Lesser Spotted Woodpecker is not included in this table as, although the CBC indicates that numbers have decreased by >50% over the last 31 years, this decline is not statistically significant.

4.2.2 Recent 25% Alerts

Here we highlight those species that are not listed as having a 25-49% decline (see **section 2.7**) on the current JNCC Conservation Importance List or NGO Birds of Conservation Concern List.

- **Lapwing**: This species was originally included on the conservation listings because the UK holds greater than 20% of Europe�s wintering population.� Although the CBC does not monitor Lapwing strongholds in the north and west of the UK, its substantial population decline in lowland England is of conservation concern, especially when information from periodic national surveys is taken into account (see **Lapwing Survey**; **Wilson *et al.* 2001**).

- **Cuckoo**: This species has declined more rapidly on woodland plots (-60%) than on farmland CBC plots (-24%).� The reasons for this decline have not been investigated but may be linked to declines in the populations of two key host species: Dunnock and Meadow Pipit.
- **Yellow Wagtail**: The CBC index indicates that Yellow Wagtail numbers have decreased steadily since the early 1980s. The trend suggested by WBS data is of even greater concern, indicating an 84% decline in the size of the population between 1975 and 1999, although this sample may not be representative of the population as a whole. Reductions in the area of pasture in the UK and drainage of farmland may have driven this decline (**Gibbons *et al.* 1993**).
- **Mistle Thrush**: this is the third *Turdus* thrush species to have declined sufficiently to rapidly trigger an alert. The declines of these widespread and closely related species are of considerable conservation concern.� Research on Song Thrushes (**Thomson *et al*. 1997**) and Blackbirds (**Siriwardena *et al.* 1998a**) suggests that decreasing survival rates have led to these declines and that this mechanism may also apply to Mistle Thrushes too.� The decline of the Mistle Thrush has been greater on farmland CBC plots (-54%) than in woodland (-15%).
- **Willow Warbler**: Detailed analysis of population data, survival rates and breeding performance indicated that the population decline during the mid-1990s was largely related to a fall in survival rates of adult Willow Warblers in the southern part of the species' range in the UK (**Peach *et al.* 1995**).� The decline is greater on woodland CBC plots�(-52%) than on farmland plots�(-19%).
- **Reed Bunting**: This species is on the 50% conservation listing, but over the 31-year period the magnitude of the population decline falls just short of the 50% mark.� The decline of Reed Buntings has been greater on WBS plots (-68%) than on farmland CBC plots (-41%)

Table 4.2.2� >25% population alerts for CBC all habitats 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	31	27	-48	-78	-11	>25	
Reed Bunting	31	84	-48	-59	-33	>25	
Dunnock	31	205	-42	-50	-32	>25	
Willow Warbler	31	189	-40	.	.	>25	
Mistle Thrush	31	142	-38	-49	-26	>25	
Lapwing	31	53	-34	-64	-6	>25	Unrepresentative
Cuckoo	31	104	-34	-49	-10	>25	

See Help for information on category definitions.

Red-legged Partridge, Curlew, Little Owl, House Martin, Meadow Pipit and House Sparrow are excluded from this table as, although CBC data indicate the population sizes of these species have all decreased by >25% during the last 31 years, in no case was the observed decline statistically significant.

4.2.3 No longer triggering alerts

Three species are candidates for removal from the current JNCC Conservation Importance List or NGO Birds of Conservation Concern List as they exhibit population declines of <25% over the past 31 years:� **Kestrel** (-4%), **Swallow** (+21%) and **Goldfinch** (+18%).�

Although the Kestrel does not trigger an Alert over the 31-year period, it does trigger a 25% alert over the 25-year period.� During the first few years of the CBC, the data indicate that the size of the population was increasing from a relatively low point, possibly reflecting a recovery from the detrimental effects of organochlorine pesticide poisoning.� This population decline over 25 years is still a concern, given the species� position at the top of one of the open-farmland food-chains.

Swallow and Goldfinch have both now recovered from their population declines, which may have been a consequence of medium-term fluctuations, perhaps driven by climatic events or other factors.� Alternatively, as previous reports used a less sophisticated method of analysis than that which is currently employed, it is possible that they may have indicated a decline mistakenly.

4.2.4 Alerts in farmland and woodland

In general, more species raise alerts on farmland plots (20 species) than on woodland plots (12 species) (see **Appendix**).� Four species have declined sufficiently rapidly to trigger alerts in farmland areas, but not over all CBC plots. **Moorhens** have declined by 32% on farmland CBC plots since 1968, possibly due to a reduction in number of farm ponds. **Snipe** have experienced a 64% drop in numbers in lowland areas over the same period, a decline that may have been driven by reductions in breeding success due to the drainage of wetland areas in order to provide agricultural land. Land drainage may also be implicated in the 77% decline exhibited by the UK **Grasshopper Warbler** population since the late 1960s. Farmland **Blackbird** populations have decreased in size by 38% during this period, possibly due to factors related to agricultural intensification.

For a number of species, sufficient samples of plots are censused to allow the comparison of trends on woodland and farmland habitats. For two species the rate of decline has been similar in both habitats: **Spotted Flycatcher** (farm -80%, wood -81%) and **Turtle Dove** (farm -80%, wood -73%).� Both species are Palaearctic-African migrants and it is likely that the declines have been driven by factors acting outside of Britain.�

For some species, the declines experienced in farmland habitats have been greater than those experienced in woodland habitats:

- Song Thrush (farm �69%; wood �46%);
- Bullfinch (farm �65%; wood �39%);
- Mistle Thrush (farm �54%; wood -15%);
- Blackbird (farm �38%, wood -9%).�

For other species, the declines have been greater in woodland than farmland:

- Starling (farm �64%; wood �90%);
- Linnet (farm �47%; wood �87%);
- Whitethroat (farm �37%; wood �83%);
- Yellowhammer (farm �39%; wood �76%);
- Dunnock (farm �38%; wood �56%);
- Willow Warbler (farm -19%; wood �52%);
- Cuckoo (farm -24%; wood �60%).�

For the most part these are likely to reflect the habitat preferences of the species, with declines being more rapid and populations recovering more slowly in the less preferred habitat.�

Return to previous page

Go to next page - 4.3 Alerts over shorter time periods

4.3 Alerts over 25, 10 and 5 years

The Common Bird Census (CBC) population trends discussed in **Section 4.2** were calculated using all CBC data collected over the 31-year period between 1968 and 1999. Population trends may also be calculated, and alerts may be raised, over shorter time periods. Alerts are calculated 25 years retrospectively in order to allow direct comparison with those used in the original conservation listing process. The additional calculation of trends during the periods 10 and 5 years prior to the current year allows rapid declines in population sizes to be identified quickly, before numbers of individuals fall to such a level that reversal of the trend becomes very difficult.

4.3.1 Common Birds Census Alerts

There are relatively few major differences between the alerts raised over 25 years and those raised over 31 years which have already been discussed. Five additional species raise alerts over 25 years. No alert is raised for a sixth species, **Red-legged Partridge**, although numbers have declined by >25%, as the size of the population is severely influenced by the release of captive individuals for shooting.

- **Kestrel** (31 years, -4%, non-signficant; 25 years, -28%, significant): Discussed in **section 4.2.3**.
- **Curlew** (31 years, -30%, non-significant; 25 years, -38%, significant): Curlew populations in lowland Britain have declined steadily since the mid-1970s, probably due to a range contraction resulting from the drainage of farmland habitats. Although the CBC does not provide good coverage of the UK's breeding population, the Breeding Birds Survey has also identified recent population declines.
- **Lesser Spotted Woodpecker** (31 years, -60%, non-significant; 25 years, -73%, significant): This species experienced a population increase in the late 1960s and early 1970s, followed by sustained decline. The increase may have been due to increases in the amount of dead wood available owing to the effects of Dutch Elm Disease, although the decline is similar to that exhibited by a variety of other woodland specialists, such as Marsh and Willow Tits.
- **Meadow Pipit** (31 years, -30%, non-significant; 25 years, -43%, significant): The decline in Meadow Pipit abundance indicated by the CBC may not be representative of the whole population, as key habitats such as moorland are poorly monitored under this scheme. However, the species has exhibited a significant range contraction in lowland England since the mid 1970s.
- **Goldcrest** (31 years, +15%, non-significant; 25 years, -55%, significant): Although this might be viewed with some scepticism because its population is subject to large annual fluctuations due to the weather, the smoothed population trend for this species demonstrates a sustained decrease, which contrasts strongly with the population recoveries displayed by two other small-bodied resident insectivores: Wren and Long-tailed Tit. However, it should be noted that the CBC monitors relatively few pure conifer woods and that most Goldcrests are recorded in relatively small numbers on plots that consist mainly of non-conifer habitats.
- **House Sparrow** (31 years, -34%, non-significant; 25 years, -46%, significant): This species has been incompletely monitored by CBC because of a strong urban component to its population and because, prior to 1973, data were not gathered systematically. However, the BTO's Garden Bird Feeding Survey also indicates large population declines in the suburban population (**Glue 1994**).

Complete tables of those species triggering alerts at 25, 10 and 5 years are given in the **Appendix 7.1**.

4.3.2 Waterways Bird Survey Alerts

The WBS provides information concerning population changes over a maximum period of 24 years. Six species trigger alerts over this time period (Table 4.3.2).

- **Yellow Wagtail**: The decline of this species by 81% over 23 years is extremely serious and probably reflects a deterioration in the suitability of any adjacent farmland for foraging, perhaps combined with a deterioration in riverine habitat quality and management. This supports evidence of a more widespread decline in this species, which has been linked to the loss of wet meadows. The BTO, in conjunction with Anglia Water, began an investigation into the ecology of this species in 2002.
- **Reed Bunting**: The 68% decline of this species along linear waterways reflects that measured by the CBC in other habitats over a similar time period. Although the declining survival rates are mainly responsible for the decrease in abundance, it is possible that declines in breeding success might be preventing recovery (**Peach *et al.* 1999**).
- **Little Grebe**: Although the WBS does not monitor Little Grebes on still water bodies and the sample sizes monitored are relatively small, the decline on linear waterways is considerable (-56%) and suggests that an investigation of the potential cause of the decline and of its ecology is required.

In addition to these rapid declines, three species show declines of 25-49%:

- **Pied Wagtail**: Although not generally considered to be a bird associated closely with linear water bodies, this species is relatively common on WBS plots where the population has declined by 48% over the past 24 years. This decline has not affected the majority of the population, which occurs in drier habitats, but it may reflect a potentially important decline in the condition of riparian habitats.
- **Grey Wagtail**: This is the third wagtail species to exhibit substantial declines along linear waterways (-41%). Grey Wagtail is the species most closely associated with rivers and streams, feeding alongside and over them, and is perhaps the strongest indicator that a serious decline in the quality of riparian habitat has occurred over the past 24 years.
- **Redshank** (>25%): Although WBS data suggest that numbers of Redshank have declined along inland waterways since the mid-1970s, data collected under the BBS, which provides a more complete coverage of the species' range, show that there has been no clear trend in abundance between 1994 and 2000. The size of the wintering population also appears to be stable (**Musgrove *et al.* 2001**), although many of these wintering birds do not belong to the British population.

The decline in waders on wet meadows is of some conservation concern. A **resurvey of sites surveyed in England & Wales** was due to be carried out in 2001, but has been postponed until 2002 because of the outbreak of foot-and-mouth disease and consequent restrictions on access to the countryside.

Table 4.3.2 Alerts for WBS waterways 1975-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	24	21	-84	-95	-74	>50	
Reed Bunting	24	53	-68	-76	-55	>50	
Little Grebe	24	17	-56	-75	-20	>50	Small sample
Pied Wagtail	24	67	-48	-62	-36	>25	
Redshank	24	19	-44	-78	-9	>25	Small sample
Grey Wagtail	24	57	-41	-55	-23	>25	

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

4.3.3 Constant Effort Sites Alerts

The majority of species that trigger alerts from the CES over the last 15 years are also the subject of alerts from the CBC. However, these alerts are useful because they cover a very different set of habitats, including wet and dry scrub and reedbeds, which are not represented by CBC. Thus >50% alerts are raised for **Linnet**, **Redpoll**, **Spotted Flycatcher** and **Yellowhammer**, and >25% alerts are raised for **Reed Bunting**, **Song Thrush**, **Willow Tit**, and **Willow Warbler**, although it should be noted that the CES does not necessarily monitor a representative sample of the populations of Spotted Flycatcher and Redpoll.

Interestingly, the CES also indicates a substantial decline (-33%) in **Whitethroat** abundance that is not shown by CBC over a similar time period, perhaps confirming that this species has not recovered from the sub-Saharan drought-induced decline of 1968.

CES data trigger an alert for one additional species: **Lesser Whitethroat**. This species has declined by 43% over the past 15 years. Lesser Whitethroat are rather enigmatic birds which winter in eastern Africa, in contrast to most of the UK's other long-distance migrants that winter in western or southern Africa. Population declines may be due to the influence of factors acting on the population on their wintering grounds.

Comparison between CES and CBC over the past 10 years indicates that some species have declined much faster on CES than on CBC plots: This is especially true for **Linnet**, which declined by 80% on CES plots but increased by 9% on CBC plots. Indeed, much of this decline on CES plots has occurred over the past 5 years, with a 56% decline over that period. **Reed Bunting** populations declined more rapidly on CES plots (-39%) than on CBC plots (-25%) or WBS plots (-14%), which is worrying as the CES reedbed and wet scrub habitats are likely to be the preferred habitat for this species. **Song Thrush** populations have declined faster on CES plots (-31%) than on CBC plots (-4%), as have **Lesser Whitethroat** populations (CES -58%; CBC -17%). A more rapid decrease on CBC plots has only been indicated for **Redpoll** (CES -67%; CBC -83%), **Yellowhammer** (CES -32%; CBC -39%), and **Willow Tit** (CES -51%, CBC -64%).

Table 4.3.3 Alerts for CES adults 1984-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Whitethroat	15	43	-50	.	.	[>25*]	
Reed Bunting	15	59	-49	.	.	[>25*]	
Song Thrush	15	81	-40	.	.	[>25*]	
Willow Tit	15	25	-40	.	.	[>25]	
Whitethroat	15	57	-33	.	.	[>25]	
Willow Warbler	15	92	-32	.	.	[>25*]	
Linnet	15	22	-90	.	.	[>50*]	
Lesser Redpoll	15	20	-78	.	.	[>50*]	Small sample
Yellowhammer	15	22	-62	.	.	[>50*]	
Spotted Flycatcher	15	18	-60	.	.	[>50]	Small sample

See Help for information on category definitions.

4.3.4 Breeding Bird Survey Population Changes

The BBS has been designed to provide a properly representative coverage of the whole of the UK. However, it has only been in operation since 1994, so population changes reported here are all calculated over a six-year period. These measures of change have been derived from simple annual indices and have not been subject to the same analytical approaches (smoothing etc) as the longer-running schemes. The results should therefore be interpreted with this limitation in mind.

Several of the species with population changes of greater than 25% on BBS sites in the UK (as well as in individual countries) have been in long-term decline, as indicated by CBC and WBS data:

- BBS - UK & England: **Corn Bunting** and **Willow Tit**.
- BBS - UK & Scotland: **Kestrel**.

Several other species that have exhibited long-term declines on CBC plots have decreased in number by greater than 25% in a particular country, e.g. England, not in the UK as a whole:

- BBS - England: **Lesser Redpoll**, **Cuckoo** and **Grey Partridge**.
- BBS - Scotland: **Lapwing**.
- BBS - Wales: **Starling** and **Yellowhammer**.

Species declines that have not been identified by the more established schemes include:

- UK for: **Wood Warbler** (and in England) and **Shelduck**.
- England for: **Great Black-backed Gull**.
- Scotland for: **Black-headed Gull**, **Carrion Crow** and **Swift**.
- Wales for: **Mallard**.

For many of these species, long-established BTO monitoring schemes may not have provided sufficient coverage of their distributional ranges. The rapid declines reported from BBS may therefore be important indicators of potentially new conservation problems, although some declines may simply reflect temporary natural fluctuations in population size caused by factors such as weather conditions.

Details of BBS population changes are given in **Appendix 7.4**.

Table 4.3.4 Population Changes for BBS UK 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Shelduck	6	114	-47	-56	-35	(>25)	
Wood Warbler	6	58	-43	-58	-24	(>25)	
Corn Bunting	6	146	-35	-46	-23	(>25)	
Kestrel	6	509	-29	-37	-21	(>25)	
Bullfinch	6	438	-25	-34	-15	(>25)	
Willow Tit	6	59	-54	-67	-35	(>50)	

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

Return to previous page

Go to next page - 4.4 Increasing species

4.4��� Increasing species

Those species that have increased by greater than 50% over the past 31 years on CBC plots and 24 years on WBS plots are shown in Tables 4.4.1 & 4.4.2 respectively. Three identifiable groups stand out: the corvids - **Jackdaw**, **Crow** and **Magpie**; the doves - **Woodpigeon**, **Stock Dove** and **Collared Dove**; and birds of prey - **Sparrowhawk** and **Buzzard**. Corvids appear to have benefited from relaxation and decrease of game keeping activities in the countryside in recent years and the increased use of brassica (particularly oilseed rape) crops has probably been beneficial to the doves. The birds of prey have been expanding with the decline of organochlorine pesticides in the environment (which affected productivity and survival) and have also benefited from declines in persecution (e.g. **Ratcliffe 1993**).

The population size of some resident insectivorous species has also increased. The majority of these are associated with woodland: **Green Woodpecker** and **Great Spotted Woodpecker**, **Nuthatch**, **Long-tailed Tit**, **Great Tit** and **Wren**. The reasons for these increases are presently unclear. **Pied Wagtail** have increased in number by 78% on CBC plots over 31 years, but declined by 48% on WBS plots over the past 24 years – although neither survey may be entirely representative of the UK population as a whole.

Two migrant insectivorous species have also exhibited large increases in abundance: **Reed Warblers** and **Blackcaps**. CBC data indicate that both species have more than doubled in number over the last 31 years. Reed Warblers have also increased by 77% on WBS plots over the last 24 years, although their numbers have fallen by 10% at CES sites over the last 15 years. Again, the reasons for these population increases are currently unclear.

Table 4.4.1 >50% population increases for CBC all habitats 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Comment
Great Tit	31	210	58	.	.	
Long-tailed Tit	31	130	65	.	.	
Wren	31	220	67	.	.	
Pied Wagtail	31	84	78	29	160	Unrepresentative
Jackdaw	31	76	79	17	194	
Coot	31	31	87	23	292	Unrepresentative?
Woodpigeon	31	98	90	14	218	
Crow	31	167	94	.	.	
Mallard	31	112	110	61	166	
Magpie	31	157	110	.	.	
Reed Warbler	31	24	113	45	277	Unrepresentative?
Nuthatch	31	65	113	57	177	
Blackcap	31	156	127	.	.	
Green Woodpecker	31	80	136	86	230	
Great Spotted Woodpecker	31	98	142	89	239	
Little Grebe	31	15	153	2	849	Unrepresentative? small sample
Stock Dove	31	75	183	108	306	
Sparrowhawk	31	37	193	67	490	
						Unrepresentative? small

Mute Swan	31	20	216	66	487	sample
Shelduck	31	18	300	94	787	Unrepresentative? small sample
Buzzard	31	22	404	236	1040	Unrepresentative?
Collared Dove	31	71	1389	631	3524	
Tufted Duck	31	16	2141	941	5175	Unrepresentative? small sample

See Help for information on category definitions.

Many species associated with freshwater habitats are also becoming more abundant.� 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 be affecting the whole population.� We can be confident that **Grey Heron** populations have increased in England and Wales over the past 70 years and that **Mallard** populations have increased on both CBC and WBS plots over the last 31 and 24 years respectively. The increases recorded for **Mute Swan** on both CBC and WBS plots are likely to be the result of banning the use of lead weights by anglers. The factors responsible for these population increases displayed by **Coot**, **Tufted Duck** and **Shelduck** are currently unclear. The increase of **Little Grebe** on CBC plots contradicts the rapid decline that this species has exhibited on WBS plots, although neither scheme is likely to provide representative monitoring for a species that prefers still water bodies. Two waders have increased in number on WBS plots over the past 14 years: **Curlew** and **Oystercatcher**. The forthcoming Survey of Breeding Waders of Lowland Wet Meadows should provide more information on the size of the lowland breeding populations of these species.

Table 4.4.2 >50% population increases for WBS waterways 1975-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Comment
Coot	24	39	62	3	214	
Curlew	24	20	63	4	364	Small sample
Mute Swan	24	44	76	12	152	
Reed Warbler	24	19	77	16	181	Small sample
Oystercatcher	24	23	110	73	164	
Mallard	24	93	192	116	294	

See Help for information on category definitions.

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, and may even be the main factor responsible for controlling the size of a population. 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 species abundance may result from range expansion into new, sub-optimal 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 sub-optimal habitats, leading to a subsequent increase in average productivity.

4.5.1 Changes in clutch and brood size

Productivity data are currently available for 72 species. Those species exhibiting statistically significant trends in clutch and brood size over the past 31 years are shown in Tables 4.5.1.1 and 4.5.1.2. Although the numbers of species showing increases and decreases in clutch size were approximately equal (14 vs. 13 species respectively) there were many more species showing increases in brood size than decreases over the same period (25 vs. 7).

Table 4.5.1.1 Significant trends in clutch size

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Long-tailed Tit	31	32	Linear decline	7.67 eggs	6.6 eggs	-1.07 eggs	
Mute Swan	31	19	Linear decline	5.87 eggs	5.09 eggs	-0.78 eggs	Small sample
Magpie	31	52	Curvilinear	5.54 eggs	4.81 eggs	-0.73 eggs	
Peregrine	31	16	Linear decline	3.7 eggs	3.1 eggs	-0.6 eggs	Small sample
Hen Harrier	31	13	Linear decline	5.05 eggs	4.45 eggs	-0.6 eggs	Small sample
Great Tit	31	94	Linear decline	8.22 eggs	7.7 eggs	-0.52 eggs	
Raven	31	12	Linear decline	4.93 eggs	4.46 eggs	-0.47 eggs	Small sample
Moorhen	31	97	Linear decline	6.51 eggs	6.07 eggs	-0.44 eggs	
Common Sandpiper	31	12	Linear decline	3.96 eggs	3.74 eggs	-0.22 eggs	Small sample
Crow	31	38	Linear decline	4.03 eggs	3.82 eggs	-0.21 eggs	
Pied Wagtail	31	61	Linear decline	5.11 eggs	4.98 eggs	-0.13 eggs	
Nightjar	27	16	Linear decline	1.99 eggs	1.91 eggs	-0.08 eggs	Small sample
Whitethroat	31	26	Curvilinear	4.59 eggs	4.54 eggs	-0.05 eggs	Small sample
Swallow	31	183	Linear increase	4.49 eggs	4.61 eggs	0.12 eggs	
Lapwing	31	130	Linear increase	3.69 eggs	3.82 eggs	0.13 eggs	
Yellowhammer	31	44	Linear increase	3.38 eggs	3.53 eggs	0.15 eggs	
Mistle Thrush	31	39	Linear increase	3.87 eggs	4.05 eggs	0.18 eggs	
Grey Wagtail	31	43	Curvilinear	4.68 eggs	4.86 eggs	0.18 eggs	
Dunnock	31	103	Linear increase	3.91 eggs	4.19 eggs	0.28 eggs	
Stonechat	31	23	Linear increase	5 eggs	5.29 eggs	0.29 eggs	Small sample
Wren	31	101	Linear increase	5.58 eggs	5.88 eggs	0.3 eggs	
Whinchat	31	13	Linear increase	5.41 eggs	5.71 eggs	0.3 eggs	Small sample
Starling	31	84	Linear increase	4.44 eggs	4.8 eggs	0.36 eggs	
Skylark	31	42	Linear increase	3.35 eggs	3.72 eggs	0.37 eggs	
Redstart	31	52	Curvilinear	5.86 eggs	6.27 eggs	0.41 eggs	
Tree Sparrow	31	93	Linear increase	4.78 eggs	5.35 eggs	0.57 eggs	
Barn Owl	31	13	Linear increase	4.5 eggs	5.07 eggs	0.57 eggs	Small sample

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

Two species (**Great Tit** and **Long-tailed Tit**) exhibited decreases in both clutch size and brood size over 31 years, whilst another 10 species (**Swallow**, **Yellowhammer**, **Dunnock**, **Stonechat**, **Skylark**, **Grey Wagtail**, **Redstart**, **Tree Sparrow**, **Starling** and **Wren**) exhibited increases in both clutch size and brood size. For two species, declines in clutch size were partially (**Magpie**) or fully (**Moorhen**) compensated for by increases in average brood size, suggesting that conditions for young had improved for these species whilst conditions for parent birds during egg formation may have deteriorated.

Table 4.5.1.2 Significant trends in brood size

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Blue Tit	31	136	Curvilinear	7.96 chicks	7.18 chicks	-0.78 chicks	
Great Tit	31	162	Linear decline	7.39 chicks	6.7 chicks	-0.69 chicks	
Long-tailed Tit	31	27	Curvilinear	6.83 chicks	6.3 chicks	-0.53 chicks	Small sample
Great Sp. Woodpecker	31	15	Curvilinear	3.12 chicks	2.6 chicks	-0.52 chicks	Small sample
Yellow Wagtail	31	13	Linear decline	4.86 chicks	4.38 chicks	-0.48 chicks	Small sample
Chiffchaff	31	30	Linear decline	5.12 chicks	4.81 chicks	-0.31 chicks	Small sample
Wheatear	31	67	Curvilinear	4.73 chicks	4.71 chicks	-0.02 chicks	
Collared Dove	31	67	Linear increase	1.76 chicks	1.83 chicks	0.07 chicks	
Swallow	31	297	Linear increase	4.12 chicks	4.27 chicks	0.15 chicks	
Willow Warbler	31	141	Curvilinear	5.23 chicks	5.39 chicks	0.16 chicks	
Reed Bunting	31	66	Linear increase	4.04 chicks	4.21 chicks	0.17 chicks	
Yellowhammer	31	69	Curvilinear	2.96 chicks	3.15 chicks	0.19 chicks	
Spotted Flycatcher	31	136	Linear increase	3.65 chicks	3.85 chicks	0.2 chicks	
Linnet	31	126	Linear increase	4.12 chicks	4.34 chicks	0.22 chicks	
Stonechat	31	54	Linear increase	4.67 chicks	4.91 chicks	0.24 chicks	
Dunnock	31	108	Linear increase	3.42 chicks	3.67 chicks	0.25 chicks	
Little Owl	31	36	Linear increase	2.51 chicks	2.8 chicks	0.29 chicks	
Skylark	31	73	Linear increase	3.13 chicks	3.47 chicks	0.34 chicks	
Kestrel	31	113	Linear increase	3.81 chicks	4.17 chicks	0.36 chicks	
Grey Wagtail	31	88	Linear increase	4.09 chicks	4.48 chicks	0.39 chicks	
Tree Pipit	31	28	Linear increase	4.34 chicks	4.75 chicks	0.41 chicks	Small sample
Rook	31	96	Linear increase	2.33 chicks	2.76 chicks	0.43 chicks	
Dipper	31	149	Linear increase	3.49 chicks	3.96 chicks	0.47 chicks	
Redstart	31	91	Curvilinear	5.08 chicks	5.59 chicks	0.51 chicks	
Magpie	31	87	Curvilinear	3.17 chicks	3.68 chicks	0.51 chicks	
Corn Bunting	31	12	Curvilinear	3.09 chicks	3.62 chicks	0.53 chicks	Small sample
Sparrowhawk	31	83	Curvilinear	3.12 chicks	3.71 chicks	0.59 chicks	
Tree Sparrow	31	104	Linear increase	3.84 chicks	4.51 chicks	0.67 chicks	
Starling	31	218	Linear increase	3.17 chicks	3.86 chicks	0.69 chicks	
Moorhen	31	79	Curvilinear	3.43 chicks	4.38 chicks	0.95 chicks	
Wren	31	129	Curvilinear	3.79 chicks	4.88 chicks	1.09 chicks	
Nuthatch	31	56	Curvilinear	4.03 chicks	5.48 chicks	1.45 chicks	

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

Variation in clutch or brood size may influence population sizes of the following species:

- Decreased clutch and population size: **Whitethroat**, although the change in clutch size is relatively small, as is the sample size.
- Decreased brood and population size: **Yellow Wagtail** � the decline in average brood size of nearly half a chick per nesting attempt may be potentially important in determining the population size.�The BTO project on Yellow Wagtails, initiated in 2002, aims to investigate the influence of decreased brood sizes on the abundance of this species.
- Increased clutch and population size: **Wren**, although an increase in brood size would also be important.
- Increased brood and population size: Two corvid species are prominent here; **Rook** and **Magpie** have both exhibited increased average brood sizes, as has **Sparrowhawk**. For the latter, the return of the species into areas of the eastern 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 nearly 1.5 extra young per nesting attempt. It would seem likely that this has helped to drive the population increase of this species. **Collared Doves** have also experienced a slight increase in average brood size over the past 31 years. The population increase of this species is more likely to be due to range expansion, however.

Density dependent changes in average clutch or brood sizes are suggested for 15 and 16 species respectively, i.e. sizes have increased as populations decreased or *vice versa*.�For a few species, long-term population data are not available and changes in clutch or brood size may be density dependent responses that are suggestive of population declines.�This situation applies to **Stonechat**, **Whinchat** and **Wheatear**, species for which atlas data support the suggestion of population declines.

4.5.2 Changes in nest failure rates

Statistically significant trends in the daily nest failure rates at the egg and chick stage over the past 31 years are shown in Tables 4.5.2.1 and 4.5.2.2 (75 and 69 species, respectively, were analysed in total). The number of species exhibiting declines in failure rates at the chick stage was double the number exhibiting increases (20 vs. 10), while the number of species exhibiting declines in failure rates at the egg stage was more than three times the number exhibiting increases (35 vs. 10).� 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

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Tree Pipit	31	11	Linear decline	0.0457 nests/day	0.0096 nests/day	-0.0361 nests/day	Small sample
Jay	31	10	Linear decline	0.0544 nests/day	0.0225 nests/day	-0.0319 nests/day	Small sample
Woodlark	31	17	Linear decline	0.0397 nests/day	0.0153 nests/day	-0.0244 nests/day	Small sample
Long-tailed Tit	31	51	Curvilinear	0.0314 nests/day	0.0074 nests/day	-0.024 nests/day	
Magpie	31	58	Linear decline	0.0281 nests/day	0.0043 nests/day	-0.0238 nests/day	
Redshank	31	32	Linear decline	0.0419 nests/day	0.0185 nests/day	-0.0234 nests/day	
Dipper	31	108	Curvilinear	0.026 nests/day	0.0034 nests/day	-0.0226 nests/day	
Yellowhammer	31	66	Curvilinear	0.0519 nests/day	0.0353 nests/day	-0.0166 nests/day	
Snipe	31	18	Linear decline	0.0328 nests/day	0.0173 nests/day	-0.0155 nests/day	Small sample
Treecreeper	31	25	Linear decline	0.0203 nests/day	0.0071 nests/day	-0.0132 nests/day	Small sample
Crow	31	56	Linear decline	0.0162 nests/day	0.0032 nests/day	-0.013 nests/day	
Robin	31	184	Curvilinear	0.0248 nests/day	0.0124 nests/day	-0.0124 nests/day	
Song Thrush	18	360	Linear decline	0.0421 nests/day	0.0317 nests/day	-0.0104 nests/day	
Redstart	31	78	Linear decline	0.0119 nests/day	0.004 nests/day	-0.0079 nests/day	
Tawny Owl	31	54	Linear decline	0.01 nests/day	0.0023 nests/day	-0.0077 nests/day	
Starling	31	129	Linear decline	0.0115 nests/day	0.0038 nests/day	-0.0077 nests/day	
Marsh Tit	31	20	Linear decline	0.0084 nests/day	0.0015 nests/day	-0.0069 nests/day	Small sample
Curlew	31	27	Curvilinear	0.0296 nests/day	0.0231 nests/day	-0.0065 nests/day	Small sample
Jackdaw	31	49	Linear decline	0.0082 nests/day	0.0022 nests/day	-0.006 nests/day	
Sedge Warbler	31	48	Linear decline	0.0132 nests/day	0.0073 nests/day	-0.0059 nests/day	
Pied Wagtail	31	84	Linear decline	0.0177 nests/day	0.012 nests/day	-0.0057 nests/day	
Kestrel	31	41	Linear decline	0.0064 nests/day	0.0009 nests/day	-0.0055 nests/day	
Barn Owl	31	12	Linear decline	0.0069 nests/day	0.0018 nests/day	-0.0051 nests/day	Small sample
Wren	31	149	Curvilinear	0.0171 nests/day	0.0125 nests/day	-0.0046 nests/day	
Stock Dove	31	63	Curvilinear	0.0113 nests/day	0.0067 nests/day	-0.0046 nests/day	
Wheatear	31	22	Curvilinear	0.0074 nests/day	0.003 nests/day	-0.0044 nests/day	Small sample
Merlin	31	29	Linear decline	0.007 nests/day	0.0028 nests/day	-0.0042 nests/day	Small sample
Buzzard	31	24	Linear decline	0.0062 nests/day	0.0021 nests/day	-0.0041 nests/day	Small sample
Reed Warbler	31	127	Curvilinear	0.015 nests/day	0.0115 nests/day	-0.0035 nests/day	
Tree Sparrow	31	122	Curvilinear	0.0072 nests/day	0.0037 nests/day	-0.0035 nests/day	
Sparrowhawk	31	40	Linear decline	0.0044 nests/day	0.0014 nests/day	-0.003 nests/day	
Great Tit	31	155	Linear decline	0.0063 nests/day	0.0036 nests/day	-0.0027 nests/day	
Blue Tit	31	137	Linear decline	0.0049 nests/day	0.0026 nests/day	-0.0023 nests/day	
Swallow	31	228	Curvilinear	0.0027 nests/day	0.0022 nests/day	-0.0005 nests/day	
Dunnock	31	144	Curvilinear	0.0269 nests/day	0.0268 nests/day	-0.0001 nests/day	
Raven	31	19	Curvilinear	0.0023 nests/day	0.0039 nests/day	0.0016 nests/day	Small sample
Lapwing	31	141	Curvilinear	0.0173 nests/day	0.0229 nests/day	0.0056 nests/day	
Moorhen	31	112	Curvilinear	0.0146 nests/day	0.0207 nests/day	0.0061 nests/day	

Oystercatcher	31	112	Linear increase	0.0131 nests/day	0.0204 nests/day	0.0073 nests/day	
Rook	31	39	Curvilinear	0.0152 nests/day	0.0229 nests/day	0.0077 nests/day	
Linnet	31	158	Linear increase	0.0179 nests/day	0.0269 nests/day	0.009 nests/day	
Whinchat	31	16	Linear increase	0.0058 nests/day	0.0197 nests/day	0.0139 nests/day	Small sample
Ringed Plover	31	129	Curvilinear	0.0292 nests/day	0.0449 nests/day	0.0157 nests/day	
Reed Bunting	31	56	Linear increase	0.0068 nests/day	0.0261 nests/day	0.0193 nests/day	
Mute Swan	31	26	Curvilinear	0.0081 nests/day	0.0437 nests/day	0.0356 nests/day	Small sample

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

The changes in egg-stage and chick-stage failure rates were both positive for the **Linnet**. For a further 12 species (**Barn Owl**, **Pied Wagtail**, **Starling**, **Carrion Crow**, **Robin**, **Redstart**, **Merlin**, **Reed Warbler**, **Yellowhammer**, **Jackdaw**, **Magpie**, **Song Thrush**), egg-stage and chick-stage failure rates both decreased. For a further four species, declines in egg-stage failure rates were partially (**Dipper** and **Long-tailed Tit**) or fully (**Swallow** and **Wren**) cancelled out by increases in chick-stage failure rates, suggesting that different factors may influence productivity at different nesting stages.

Table 4.5.2.2 Significant trends in chick-stage daily failure rate of nests

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Cirl Bunting	31	15	Linear decline	0.1305 nests/day	0.0298 nests/day	-0.1007 nests/day	Small sample
Grey Heron	31	29	Linear decline	0.0584 nests/day	0.0009 nests/day	-0.0575 nests/day	Small sample
Corn Bunting	31	11	Linear decline	0.0355 nests/day	0.0112 nests/day	-0.0243 nests/day	Small sample
Meadow Pipit	31	70	Linear decline	0.0287 nests/day	0.0112 nests/day	-0.0175 nests/day	
Ring Ouzel	31	16	Linear decline	0.0229 nests/day	0.0062 nests/day	-0.0167 nests/day	Small sample
Magpie	31	57	Linear decline	0.0178 nests/day	0.002 nests/day	-0.0158 nests/day	
Bullfinch	31	36	Linear decline	0.0307 nests/day	0.0159 nests/day	-0.0148 nests/day	
Jackdaw	31	46	Linear decline	0.0121 nests/day	0.0035 nests/day	-0.0086 nests/day	
Yellowhammer	31	52	Curvilinear	0.0478 nests/day	0.0399 nests/day	-0.0079 nests/day	
Reed Warbler	31	90	Linear decline	0.0182 nests/day	0.0107 nests/day	-0.0075 nests/day	
Grey Wagtail	31	63	Curvilinear	0.015 nests/day	0.008 nests/day	-0.007 nests/day	
Collared Dove	31	51	Linear decline	0.0184 nests/day	0.0116 nests/day	-0.0068 nests/day	
Blackbird	31	115	Linear decline	0.0289 nests/day	0.0223 nests/day	-0.0066 nests/day	
Merlin	31	30	Linear decline	0.0095 nests/day	0.0031 nests/day	-0.0064 nests/day	Small sample
Song Thrush	18	267	Linear decline	0.0247 nests/day	0.0189 nests/day	-0.0058 nests/day	
Redstart	31	55	Linear decline	0.0112 nests/day	0.0056 nests/day	-0.0056 nests/day	
Robin	31	154	Curvilinear	0.0244 nests/day	0.0199 nests/day	-0.0045 nests/day	
Crow	31	46	Linear decline	0.0065 nests/day	0.0025 nests/day	-0.004 nests/day	
Starling	31	153	Linear decline	0.006 nests/day	0.0027 nests/day	-0.0033 nests/day	
Pied Wagtail	31	91	Curvilinear	0.0149 nests/day	0.0127 nests/day	-0.0022 nests/day	
Barn Owl	31	40	Linear decline	0.0023 nests/day	0.0003 nests/day	-0.002 nests/day	
Dipper	31	85	Curvilinear	0.005 nests/day	0.006 nests/day	0.001 nests/day	
Swallow	31	201	Linear increase	0.0025 nests/day	0.0052 nests/day	0.0027 nests/day	
Spotted Flycatcher	31	111	Linear increase	0.0094 nests/day	0.0142 nests/day	0.0048 nests/day	
Wren	31	103	Curvilinear	0.0092 nests/day	0.0144 nests/day	0.0052 nests/day	
Willow Warbler	31	129	Linear increase	0.0145 nests/day	0.0216 nests/day	0.0071 nests/day	
Linnet	31	111	Linear increase	0.0144 nests/day	0.0227 nests/day	0.0083 nests/day	
Long-tailed Tit	31	36	Linear increase	0.0074 nests/day	0.0164 nests/day	0.009 nests/day	
Garden Warbler	31	20	Linear increase	0.0096 nests/day	0.0236 nests/day	0.014 nests/day	Small sample
Nightjar	27	20	Linear increase	0.0019 nests/day	0.0167 nests/day	0.0148 nests/day	Small sample
Pied Flycatcher	31	52	Linear increase	0.0039 nests/day	0.0245 nests/day	0.0206 nests/day	

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

Density dependent changes in egg- or chick-stage failure rates are suggested for 13 and 11 species respectively, i.e. failure rates have increased as populations have increased or *vice versa*.�

Variation in nest failure rates may be an important factor governing the population size of the following species:

- Increased egg-stage failure rates and decreased population size: **Lapwing**, **Linnet**, and **Reed Bunting**.�Reductions in breeding performance at the egg stage have been implicated in the population declines of both Lapwing and Linnet (**Peach *et al.* 1994**; **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). **Moorhen** is also a species of potential concern because of increases in egg-stage failure rates that are concurrent with farmland population declines measured by the CBC.

- Decreased egg-stage failure rates and increased population size: 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. **Woodlark** populations have increased in recent years and it may be that sympathetic habitat management has helped to improve nesting success for this species.�**Long-tailed Tit** populations have been expanding considerably in recent years and, improvements in breeding performance may have helped this species� population to expand.�This species is a relatively early nester that has taken advantage of recent climate warming (Crick *et al.* 1997, Crick & Sparks 1999). Five other insectivores, **Great Tits**, **Blue Tits**, **Robins**, **Redstarts**, **Reed Warblers** and **Pied Wagtails**, have exhibited population increases as breeding success has improved. The improvements in the nesting success of **Stock Dove** could have a major impact on the size of the population given the number of breeding attempts made by this species each year.
- Decreased chick-stage failure rates and increased population size: Several corvid (**Jackdaw**, **Carrion Crow**, **Magpie**) and insectivorous (**Pied Wagtail**, **Robin**) species have also exhbited decreases in chick-stage failure rates as the size of their populations have increased. **Grey Heron** populations have increased steadily 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. **Reed Warbler** is a species that has expanded its range in the UK over the years, and the small improvement in nest success at the chick stage may have contributed to this expansion. Decreased chick-stage failure rates of **Collared Doves** may have aided the rapid growth of the UK population over the last 31 years, particularly as this species makes a relatively large number of breeding attempts per year.

Three species exhibit both increased chick-stage failure rates and population declines: **Spotted Flycatcher**, **Linnet** and **Willow Warbler**. However, the results of BTO studies suggest that increased failure rates at the chick stage are not responsible for the decreasing abundance of these species.

For a few species, long-term population data are not available. In this situation, changes in nest failure rates could be used as indicators of potential population declines, either because they represent at direct threat to the conservation status of the species (**Red-throated Diver** and **Ringed Plover**), or because they signify the action of density-dependent processes on productivity, and by doing so provide information concerning species numbers (**Wheatear**, **Tawny Owl**, **Ring Ouzel**).

4.5.3 Changes in productivity from CES

The CES has been in operation since 1983, so the changes in productivity shown in table 4.5.3 cover roughly half the time period of the Nest Record Scheme results.� Statistical significance is not available for these trends at present, although a good indication can be obtained by inspecting the confidence intervals for the annual indices that are presented on the individual species graphs.� Overall, 19 species exhibit declines in productivity while 9 species exhibit improvements.�

Six of the declines in productivity are greater than 25% over 15 years and a further 4 are greater than 50%.� Two of these species, **Redpoll** and **Willow Warbler**, have declined substantially in number.� Decreased nesting success is unlikely to have been a major factor driving the population decline of Willow Warblers, but the changes in productivity may represent declines in post-fledging survival, which could be a factor of some importance.� Very little is known about Redpoll populations, as it is a species not well covered by BTO population monitoring schemes. However, the large decline (-57%) in CES productivity should be of concern.� Decreased productivity may be a factor preventing the recovery of **Linnet**, **Reed Bunting** and **Whitethroat** populations, which all declined before the CES was initiated. In addition, the large decline in **Nightingale** productivity, is of concern given the complex changes in its distribution shown by the 1999 survey, which identified decreases in abundance over large parts of the species' range.�The importance of the substantial declines in productivity of **Greenfinch**, **Blue Tit**, **Sedge Warbler** and **Garden Warbler** is currently unclear, but these decreases warrant close attention.

Only **Spotted Flycatcher** exhibits a productivity increase of greater than 25%, which agrees with the trend towards larger brood sizes identified for this species using Nest Records Scheme data. These trends may be the result of a density-dependent response to the decline of the population.

Table 4.5.3 Changes in productivity indices (Percentage juveniles) for CES 1984-1999 (15 years)

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Greenfinch	15	46	Smoothed trend	266 productivity index	100 productivity index	-62%[>50]	
Nightingale	15	13	Smoothed trend	265 productivity index	100 productivity index	-62%[>50]	Small sample
Linnet	15	24	Smoothed trend	249 productivity index	100 productivity index	-60%[>50]	
Lesser Redpoll	15	21	Smoothed trend	231 productivity index	100 productivity index	-57%[>50]	
Nightingale	5	17	Smoothed trend	229 productivity index	100 productivity index	-56%[>50]	Small sample
Greenfinch	10	53	Smoothed trend	216 productivity index	100 productivity index	-54%[>50*]	
Yellowhammer	10	27	Smoothed trend	180 productivity index	100 productivity index	-45%[>25]	
Linnet	10	29	Smoothed trend	179 productivity index	100 productivity index	-44%[>25]	
Garden Warbler	15	79	Smoothed trend	167 productivity index	100 productivity index	-40%[>25*]	
Sedge Warbler	15	68	Smoothed trend	157 productivity index	100 productivity index	-36%[>25]	
Blue Tit	15	99	Smoothed trend	156 productivity index	100 productivity index	-36%[>25*]	
Reed Bunting	10	72	Smoothed trend	154 productivity index	100 productivity index	-35%[>25]	
Reed Bunting	15	62	Smoothed trend	151 productivity index	100 productivity index	-34%[>25]	
Willow Warbler	15	98	Smoothed trend	150 productivity index	100 productivity index	-33%[>25*]	
Garden Warbler	5	96	Smoothed trend	146 productivity index	100 productivity index	-32%[>25*]	
Sedge Warbler	10	81	Smoothed trend	144 productivity index	100 productivity index	-31%[>25*]	
Lesser Redpoll	10	23	Smoothed trend	139 productivity index	100 productivity index	-28%[>25]	
Whitethroat	15	73	Smoothed trend	138 productivity index	100 productivity index	-28%[>25]	
Whitethroat	5	95	Smoothed trend	138 productivity index	100 productivity index	-27%[>25]	
Whitethroat	10	86	Smoothed trend	137 productivity index	100 productivity index	-27%[>25]	
Blue Tit	10	114	Smoothed trend	136 productivity index	100 productivity index	-26%[>25*]	
Lesser Redpoll	5	20	Smoothed trend	134 productivity index	100 productivity index	-26%[>25]	Small sample
Treecreeper	5	81	Smoothed trend	131 productivity index	100 productivity index	-24%	
Reed Bunting	5	82	Smoothed trend	130 productivity index	100 productivity index	-23%	
Sedge Warbler	5	90	Smoothed trend	129 productivity index	100 productivity index	-22%	
Lesser Whitethroat	5	64	Smoothed trend	128 productivity index	100 productivity index	-22%	
Willow Warbler	10	113	Smoothed trend	128 productivity index	100 productivity index	-22%	
Song Thrush	15	87	Smoothed trend	127 productivity index	100 productivity index	-21%	
Nightingale	10	13	Smoothed trend	125 productivity index	100 productivity index	-20%	Small sample
Garden Warbler	10	92	Smoothed trend	125 productivity index	100 productivity index	-20%	
Blue Tit	5	121	Smoothed trend	125 productivity index	100 productivity index	-20%	
Willow Tit	15	40	Smoothed trend	122 productivity index	100 productivity index	-18%	
Great Tit	10	112	Smoothed trend	121 productivity index	100 productivity index	-18%	
Willow Warbler	5	119	Smoothed trend	120 productivity index	100 productivity index	-17%	
Treecreeper	10	77	Smoothed trend	120 productivity index	100 productivity index	-16%	
Greenfinch	5	56	Smoothed trend	120 productivity index	100 productivity index	-16%	
Great Tit	15	96	Smoothed trend	119 productivity index	100 productivity index	-16%	
Great Tit	5	118	Smoothed trend	119 productivity index	100 productivity index	-16%	
Chaffinch	10	95	Smoothed trend	117 productivity index	100 productivity index	-15%	
Robin	15	97	Smoothed trend	117 productivity index	100 productivity index	-14%	
Willow Tit	10	44	Smoothed trend	114 productivity index	100 productivity index	-12%	
Robin	10	113	Smoothed trend	111 productivity index	100 productivity index	-10%	
Linnet	5	29	Smoothed trend	111 productivity index	100 productivity index	-10%	
Blackcap	5	115	Smoothed trend	110 productivity index	100 productivity index	-9%	
Chiffchaff	10	98	Smoothed trend	109 productivity index	100 productivity index	-8%	
Blackcap	15	93	Smoothed trend	108 productivity index	100 productivity index	-8%	
Yellowhammer	15	25	Smoothed trend	108 productivity index	100 productivity index	-7%	
Wren	10	114	Smoothed trend	106 productivity index	100 productivity index	-6%	
Lesser Whitethroat	10	66	Smoothed trend	105 productivity index	100 productivity index	-4%	
Blackbird	15	97	Smoothed trend	104 productivity index	100 productivity index	-4%	
Treecreeper	15	65	Smoothed trend	104 productivity index	100 productivity index	-4%	
Chaffinch	5	102	Smoothed trend	102 productivity index	100 productivity index	-2%	
Robin	5	120	Smoothed trend	102 productivity index	100 productivity index	-2%	
Dunnock	5	119	Smoothed trend	102 productivity index	100 productivity index	-2%	
Chaffinch	15	82	Smoothed trend	101 productivity index	100 productivity index	-1%	

Wren	5	120	Smoothed trend	101 productivity index	100 productivity index	-1%	
Blackcap	10	108	Smoothed trend	100 productivity index	100 productivity index	0%	
Dunnock	10	113	Smoothed trend	99 productivity index	100 productivity index	1%	
Long-tailed Tit	5	105	Smoothed trend	99 productivity index	100 productivity index	1%	
Willow Tit	5	42	Smoothed trend	99 productivity index	100 productivity index	1%	
Goldfinch	15	36	Smoothed trend	99 productivity index	100 productivity index	1%	
Dunnock	15	97	Smoothed trend	97 productivity index	100 productivity index	3%	
Blackbird	5	119	Smoothed trend	96 productivity index	100 productivity index	4%	
Reed Warbler	5	77	Smoothed trend	95 productivity index	100 productivity index	5%	
Reed Warbler	10	70	Smoothed trend	92 productivity index	100 productivity index	8%	
Lesser Whitethroat	15	57	Smoothed trend	92 productivity index	100 productivity index	9%	
Yellowhammer	5	25	Smoothed trend	91 productivity index	100 productivity index	10%	
Song Thrush	5	106	Smoothed trend	91 productivity index	100 productivity index	10%	
Bullfinch	15	86	Smoothed trend	91 productivity index	100 productivity index	10%	
Long-tailed Tit	15	80	Smoothed trend	91 productivity index	100 productivity index	10%	
Chiffchaff	5	107	Smoothed trend	90 productivity index	100 productivity index	11%	
Wren	15	98	Smoothed trend	90 productivity index	100 productivity index	11%	
Chiffchaff	15	83	Smoothed trend	89 productivity index	100 productivity index	12%	
Reed Warbler	15	59	Smoothed trend	87 productivity index	100 productivity index	15%	
Long-tailed Tit	10	97	Smoothed trend	86 productivity index	100 productivity index	17%	
Bullfinch	5	102	Smoothed trend	82 productivity index	100 productivity index	21%	
Song Thrush	10	101	Smoothed trend	81 productivity index	100 productivity index	23%	
Blackbird	10	113	Smoothed trend	81 productivity index	100 productivity index	24%	
Spotted Flycatcher	5	23	Smoothed trend	77 productivity index	100 productivity index	31%	
Spotted Flycatcher	15	24	Smoothed trend	76 productivity index	100 productivity index	32%	
Goldfinch	10	43	Smoothed trend	75 productivity index	100 productivity index	34%	
Bullfinch	10	99	Smoothed trend	70 productivity index	100 productivity index	44%	
Goldfinch	5	49	Smoothed trend	66 productivity index	100 productivity index	51%	
Spotted Flycatcher	10	26	Smoothed trend	50 productivity index	100 productivity index	99%	

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 31 years the majority of species exhibiting significant trends show an advancement of laying dates rather than a delay (data for 65 species were analysed in total).� Thus 28 species are laying between 24 days and 3 days earlier, on average, than they were 31 years ago.� 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 and appear to be driven by a small number of outlying late years toward the end of the time series.� It is likely that the laying dates of the majority of those 33 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) over 31 years (1968-1999)

Species	Period (yrs)	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Grey Heron	31	32	Linear decline	day 98	day 74	-24 days	
Magpie	31	39	Curvilinear	day 110	day 87	-23 days	
Corn Bunting	31	15	Linear decline	day 180	day 165	-15 days	Small sample
Long-tailed Tit	31	43	Curvilinear	day 108	day 95	-13 days	
Tree Pipit	31	17	Linear decline	day 147	day 135	-12 days	Small sample
Chiffchaff	31	40	Linear decline	day 137	day 125	-12 days	

Greenfinch	31	97	Linear decline	day 145	day 133	-12 days	
Ringed Plover	31	42	Curvilinear	day 143	day 133	-10 days	
Nuthatch	31	26	Linear decline	day 122	day 113	-9 days	Small sample
Chaffinch	31	113	Curvilinear	day 130	day 121	-9 days	
Swallow	31	92	Curvilinear	day 170	day 162	-8 days	
Wren	31	91	Curvilinear	day 133	day 125	-8 days	
Oystercatcher	31	47	Linear decline	day 137	day 130	-7 days	
Meadow Pipit	31	43	Linear decline	day 138	day 131	-7 days	
Dipper	31	65	Linear decline	day 108	day 101	-7 days	
Redstart	31	66	Curvilinear	day 140	day 133	-7 days	
Ring Ouzel	31	27	Linear decline	day 135	day 128	-7 days	Small sample
Blackcap	31	37	Curvilinear	day 139	day 132	-7 days	
Marsh Tit	31	14	Linear decline	day 118	day 111	-7 days	Small sample
Treecreeper	31	15	Linear decline	day 127	day 120	-7 days	Small sample
Crow	31	36	Linear decline	day 108	day 102	-6 days	
Blue Tit	31	119	Linear decline	day 123	day 118	-5 days	
Great Tit	31	117	Curvilinear	day 120	day 115	-5 days	
Moorhen	31	73	Linear decline	day 130	day 126	-4 days	
Whinchat	31	31	Curvilinear	day 148	day 145	-3 days	
Reed Warbler	31	145	Curvilinear	day 166	day 163	-3 days	
Willow Warbler	31	91	Linear decline	day 139	day 136	-3 days	
Jackdaw	31	20	Curvilinear	day 113	day 110	-3 days	Small sample
Skylark	31	22	Curvilinear	day 146	day 149	3 days	Small sample
Yellowhammer	31	27	Linear increase	day 150	day 157	7 days	Small sample
Cirl Bunting	31	15	Curvilinear	day 172	day 225	53 days	Small sample

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

Return to previous page

Go to next page - 4.6 Discussion of trends

4.6���� Discussion of trends

4.6.1 Candidates for conservation listing

The new analyses presented in this report suggest that several species should be considered as potential candidates for addition to the revised conservation lists currently being developed by the conservation agencies and conservation Non-Governmental Organisations (NGOs). Yellowhammer and Lesser Spotted Woodpecker have both exhibited rapid population declines of greater than 50% over the last 25 years, and Mistle Thrush, Cuckoo, Willow Warbler and House Sparrow have all exhibited population declines of greater than 25% over this period.

While the above species are obvious candidates for addition to the conservation lists, the status of other species is less clear. The Waterways Birds Survey (WBS) has identified rapid (>50%) declines for Little Grebe, Grey Wagtail and Yellow Wagtail populations, but as only 24 years of data are presently available from this scheme, the current acceptance criteria, which specify a 25 year trend, exclude them from the conservation lists. Other BTO monitoring schemes have identified population decreases of greater than 50% for Lesser Redpoll, Goldcrest and Tree Pipit, and of between 25% and 49% for Meadow Pipit and Lapwing. However, as the populations of these species may only be partially sampled by the respective schemes, the reported trends may not be representative of the conservation status of these species at a national level.

4.6.2 Candidates for changed conservation listing

Three species - Starlings, Willow Tits and Marsh Tits - previously listed as exhibiting moderate declines (>25%) now appear to be declining rapidly, decreasing in number by greater than 50% over the last 25 years. Conversely, the population trajectories of two species - Swallow and Goldfinch - have changed sufficiently to justify their removal from the conservation listings. Both species exhibit relatively large-scale medium-term population fluctuations that resulted in their previous listings, but populations have since recovered to the extent that no long-term trend is detectable over the last 25 years.

4.6.3 Accelerating declines

A source of considerable concern is that several species that appear on conservation lists have actually accelerated their decline since the lists were drawn up in 1996 (**JNCC 1996**, **Gibbons *et al.* 1996**), despite the presence of costed government Biodiversity Action Plans for some of them.� Thus the Red-listed **Grey Partridge**, **Bullfinch** and **Corn Bunting** all show population declines of greater than 25% on CBC or BBS plots over the last 5 and 6 years respectively.� **Starling** and **Willow Tit** also show declines of greater than 25% over the past 5 or 6 years respectively on CBC or BBS plots.�

In addition, two species that have been in decline for several years, but were not considered sufficiently well-monitored throughout the UK to be listed previously, have exhibited declines of >25% over the last 5 years on CBC plots (Redpoll) and WBS plots (Yellow Wagtail).

4.6.4 The role of breeding performance

In general, breeding performance appears to show a density dependent response to population changes.� As populations decline, breeding performance tends to improve, but as populations increase, breeding performance tends to decline.

However, 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** and **Whitethroat**).� The importance of decreases in breeding performance for declining **Redpoll** and **Yellow Wagtail** populations and for farmland **Moorhen** populations is, as yet, undetermined.�

Increasing breeding performance may be helping to drive population expansion of a number of species:� the predatory **Grey Heron**, **Sparrowhawk** and **Buzzard**; the corvids **Jackdaw**, **Magpie**,

Crow and **Rook**; the seed-eaters **Collared Dove**, **Stock Dove** and **Woodlark**; and the insectivores **Robin**, **Redstart**, **Nuthatch**, **Great Tit**, **Blue Tit** and **Long-tailed Tit**.

For a few species, long-term population data are not available and changes in breeding performance from the Nest Record Scheme may provide a potential warning of population declines, either because they have the potential to drive population declines (**Red-throated Diver** and **Ringed Plover**) or because they are the result of density dependent changes (**Stonechat**, **Whinchat, Wheatear**, **Tawny Owl** and **Ring Ouzel**).� The importance of the substantial declines in productivity of **Greenfinch**, **Blue Tit**, **Sedge Warbler** and **Garden Warbler** is unclear at the moment, but warrants close attention.

Return to previous page

Go to next page - 4.7 Conclusion

BBWC Home > Contents > Discussion > Conclusion

4.7������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 data iceberg 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 by declines in population sizes or breeding performance for a considerable number of species.� These alerts will help conservation organisations to prioritise future conservation action, especially as the current lists, such as the *Conservation Importance List*, quickly become dated.

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; 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.

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 if they will help us to produce a better and more useful product in the next edition.

Email your comments

Return to previous page

Return to Discussion index

5. Acknowledgements

Volunteer fieldwork

Our biggest thank you 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 efforts 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 contribution.

Report production and analysis

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

Mr and Mrs J A Pye's Charitable Settlement provided additional support towards the development of the website.

This report includes results from the Breeding Bird Survey which is funded jointly by BTO, JNCC and RSPB. The BBS partnership is very grateful to the Environment and Heritage Service in Northern Ireland and to the Royal Society for the Protection of Birds in Scotland for supporting professional surveys in areas that would otherwise be difficult to cover.

Susan Waghorn put in a huge amount of skill and effort in designing and building the website. Helen Carrier also prepared many of the pages included in the site.

Helen Baker and Ian McLean of JNCC provided helpful discussions, comments and support during the production of the website. David Stroud, Rowena Langston, David Gibbons, Jacquie Clark, Nigel Clark, Jeremy Greenwood and Malcolm Vincent provided helpful comments on earlier editions of this publication.

The analyses presented on this website would not have been possible without the hard work of many BTO staff who organise schemes and collate data sets: Sue Adams, Jeremy Blackburn, Jacquie Clark, Mark Grantham, Bridget Griffin, Linda Milne, Angie Raven, Angela Rickard, Brenda Read and Anne Trewhitt. The work is also heavily dependent on the BTO's computer and database systems operated by Peter Lack and Karen Wright.

We are very grateful to all of the above organisations and individuals for their contributions to this report.

BBWC Home > Contents > Appendix

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

7.1 Tables of alerts and population increases from CBC

1. CBC - all habitats - 31 years
2. CBC - all habitats - 25 years
3. CBC - all habitats - 10 years
4. CBC - all habitats - 5 years
5. CBC - farmland - 31 years
6. CBC - farmland - 25 years
7. CBC - farmland - 10 years
8. CBC - farmland - 5 years
9. CBC - woodland - 31 years
10. CBC - woodland - 25 years
11. CBC - woodland - 10 years
12. CBC - woodland - 5 years
13. CBC - all habitats - population increases of >50% - 31 years
14. CBC - farmland - population increases of >50% - 31 years
15. CBC - woodland - population increases of >50% - 31 years

7.2 Tables of alerts and population increases from WBS

1. WBS - 24 years
2. WBS - 10 years
3. WBS - 5 years
4. WBS - population increases of >50% - 24 years

7.3 Tables of alerts and population increases from CES

1. CES - Adults - 15 years
2. CES - Adults - 10 years
3. CES - Adults - 5 years
4. CES - Adults - population increases of >50% - 15 years

7.4 Tables of population declines or increases from BBS

1. BBS - UK
2. BBS - England
3. BBS - Scotland
4. BBS - Wales
5. BBS - UK - population increases of >50%
6. BBS - England - population increases of >50%
7. BBS - Scotland - population increases of >50%
8. BBS - Wales - population increases of >50%
9. BBS - Northern Ireland - population increases of >50%

Back to top

Return to Contents

7.1 Tables of alerts and population increases from CBC

1. Table of alerts for CBC all habitats 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	31	27	-48	-78	-11	>25	
Reed Bunting	31	84	-48	-59	-33	>25	
Dunnock	31	205	-42	-50	-32	>25	
Willow Warbler	31	189	-40	.	.	>25	
Mistle Thrush	31	142	-38	-49	-26	>25	
Lapwing	31	53	-34	-64	-6	>25	Unrepresentative
Cuckoo	31	104	-34	-49	-10	>25	
Tree Sparrow	31	59	-96	-98	-91	>50	
Lesser Redpoll	31	42	-93	-97	-83	>50	Unrepresentative?
Corn Bunting	31	24	-87	-93	-76	>50	
Grey Partridge	31	59	-85	-90	-78	>50	
Spotted Flycatcher	31	69	-79	-86	-71	>50	
Tree Pipit	31	33	-76	-87	-62	>50	Unrepresentative
Willow Tit	31	31	-76	-90	-61	>50	
Starling	31	125	-75	-82	-67	>50	
Woodcock	31	20	-74	-88	-49	>50	Unrepresentative? small sample
Turtle Dove	31	59	-70	-81	-54	>50	
Marsh Tit	31	55	-66	-75	-56	>50	
Linnet	31	123	-58	-68	-43	>50	
Song Thrush	31	204	-57	-64	-51	>50	
Whitethroat	31	118	-55	-69	-36	>50	
Skylark	31	120	-54	-61	-45	>50	
Yellowhammer	31	132	-53	-62	-41	>50	
Bullfinch	31	136	-51	-60	-40	>50	

2. Table of alerts for CBC all habitats 1974-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
House Sparrow	25	50	-46	-67	-20	>25	
Meadow Pipit	25	45	-43	-66	-21	>25	Unrepresentative
Dunnock	25	210	-43	-51	-34	>25	

Lapwing	25	52	-41	-61	-24	>25	Unrepresentative
Curlew	25	24	-38	-71	-1	>25	Unrepresentative?
Mistle Thrush	25	147	-38	-48	-29	>25	
Red-legged Partridge	25	36	-35	-58	-4	>25	
Cuckoo	25	108	-31	-44	-13	>25	
Willow Warbler	25	195	-31	.	.	>25	
Kestrel	25	85	-28	-45	-6	>25	
Lesser Redpoll	25	40	-96	-98	-92	>50	Unrepresentative?
Tree Sparrow	25	52	-95	-98	-90	>50	
Corn Bunting	25	21	-89	-94	-81	>50	
Grey Partridge	25	55	-84	-89	-78	>50	
Willow Tit	25	30	-80	-91	-66	>50	
Woodcock	25	20	-76	-88	-51	>50	Unrepresentative? small sample
Tree Pipit	25	31	-75	-86	-61	>50	Unrepresentative
Spotted Flycatcher	25	67	-75	-83	-67	>50	
Lesser Spotted Woodpecker	25	18	-73	-86	-31	>50	Small sample
Turtle Dove	25	58	-69	-81	-53	>50	
Starling	25	127	-66	-75	-55	>50	
Reed Bunting	25	82	-63	-69	-55	>50	
Bullfinch	25	140	-57	-65	-49	>50	
Skylark	25	120	-55	-61	-48	>50	
Goldcrest	25	99	-55	-67	-40	>50	
Linnet	25	123	-55	-65	-42	>50	
Yellowhammer	25	132	-54	-62	-47	>50	
Song Thrush	25	208	-53	-59	-46	>50	
Marsh Tit	25	55	-50	-61	-35	>50	

3. Table of alerts for CBC all habitats 1989-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Corn Bunting	10	14	-49	-69	-20	>25	Small sample
Starling	10	102	-46	-55	-36	>25	
Woodcock	10	13	-40	-62	-11	>25	Unrepresentative? small sample
Yellowhammer	10	109	-39	-46	-33	>25	
Turtle Dove	10	39	-37	-55	-20	>25	
Red-legged Partridge	10	33	-26	-42	-5	>25	
Reed Bunting	10	59	-25	-32	-13	>25	
Lesser Redpoll	10	14	-83	-93	-66	>50	Unrepresentative? small sample

Willow Tit	10	18	-64	-82	-46	>50	Small sample
Tree Pipit	10	20	-61	-76	-47	>50	Unrepresentative, small sample
Grey Partridge	10	39	-54	-63	-42	>50	
Tree Sparrow	10	20	-53	-78	-21	>50	Small sample
Spotted Flycatcher	10	44	-52	-63	-42	>50	
Lesser Spotted Woodpecker	10	11	-51	-75	-22	>50	Small sample

4. Table of alerts for CBC all habitats 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	5	17	-43	-60	-29	>25	Small sample
Corn Bunting	5	14	-36	-52	-3	>25	Small sample
Grey Partridge	5	37	-33	-43	-21	>25	
Starling	5	93	-28	-37	-17	>25	
Lesser Redpoll	5	9	-58	-80	-16	>50	Unrepresentative? small sample

Back to Top

7.1 Tables of alerts and population increases from CBC

5. Table of alerts for CBC farmland 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	31	74	-47	-59	-32	>25	
Reed Bunting	31	52	-41	-59	-14	>25	
Lapwing	31	41	-40	-68	-7	>25	Unrepresentative
Yellowhammer	31	75	-39	-52	-24	>25	
Dunnock	31	93	-38	-49	-27	>25	
Blackbird	31	97	-38	-46	-30	>25	
Whitethroat	31	65	-37	-54	-16	>25	
Moorhen	31	57	-32	-48	-10	>25	
Tree Sparrow	31	39	-93	-98	-86	>50	
Corn Bunting	31	20	-88	-94	-75	>50	Small sample
Grey Partridge	31	44	-84	-89	-79	>50	
Turtle Dove	31	27	-80	-91	-66	>50	
Spotted Flycatcher	31	33	-80	-89	-70	>50	
Grasshopper Warbler	31	5	-77	-98	-33	>50	Small sample
Song Thrush	31	85	-69	-76	-60	>50	
Bullfinch	31	49	-65	-77	-52	>50	
Snipe	31	9	-64	-96	-39	>50	Small sample
Starling	31	65	-64	-76	-48	>50	
Mistle Thrush	31	60	-54	-64	-44	>50	
Skylark	31	85	-52	-59	-40	>50	

6. Table of alerts for CBC farmland 1974-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	25	73	-46	-58	-30	>25	
Lapwing	25	38	-45	-69	-31	>25	Unrepresentative
Moorhen	25	55	-43	-52	-29	>25	
Treecreeper	25	29	-42	-68	-11	>25	
Yellowhammer	25	73	-42	-53	-32	>25	
Dunnock	25	93	-40	-51	-27	>25	
Goldcrest	25	27	-37	-54	-6	>25	

Blackbird	25	96	-34	-41	-27	>25	
Cuckoo	25	50	-26	-45	-2	>25	
Tree Sparrow	25	34	-93	-97	-86	>50	
Corn Bunting	25	17	-90	-95	-80	>50	Small sample
Grey Partridge	25	40	-83	-88	-77	>50	
Turtle Dove	25	25	-81	-90	-67	>50	
Spotted Flycatcher	25	31	-75	-86	-60	>50	
Bullfinch	25	47	-71	-79	-61	>50	
Snipe	25	7	-70	-96	-53	>50	Small sample
Song Thrush	25	82	-66	-73	-57	>50	
Redshank	25	9	-60	-82	-19	>50	Small sample
Reed Bunting	25	49	-58	-71	-44	>50	
Starling	25	65	-55	-68	-38	>50	
Skylark	25	83	-54	-60	-44	>50	
Mistle Thrush	25	59	-51	-61	-43	>50	

7. Table of alerts for CBC farmland 1989-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Turtle Dove	10	19	-44	-61	-25	>25	Small sample
Starling	10	62	-35	-47	-19	>25	
Yellowhammer	10	68	-33	-42	-25	>25	
Red-legged Partridge	10	29	-25	-45	-6	>25	
Grey Partridge	10	32	-56	-66	-45	>50	
Tree Sparrow	10	16	-56	-81	-23	>50	Small sample
Corn Bunting	10	13	-52	-70	-16	>50	Small sample
Spotted Flycatcher	10	22	-51	-67	-35	>50	

8. Table of alerts for CBC farmland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Grey Partridge	5	31	-38	-50	-28	>25	
Corn Bunting	5	13	-38	-58	-2	>25	Small sample

Back to top

7.1 Tables of alerts and population increases from CBC

9. Table of alerts for CBC woodland 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Song Thrush	31	81	-46	-58	-30	>25	
Bullfinch	31	59	-39	-53	-20	>25	
Starling	31	36	-90	-96	-79	>50	
Linnet	31	20	-87	-96	-76	>50	Small sample
Whitethroat	31	29	-83	-90	-67	>50	
Spotted Flycatcher	31	22	-81	-91	-72	>50	
Yellowhammer	31	34	-76	-88	-63	>50	
Turtle Dove	31	20	-73	-92	-34	>50	Small sample
Marsh Tit	31	39	-66	-76	-55	>50	
Cuckoo	31	35	-60	-75	-37	>50	
Dunnock	31	71	-56	-65	-44	>50	
Willow Warbler	31	76	-52	-69	-29	>50	

10. Table of alerts for CBC woodland 1974-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Bullfinch	25	64	-47	-60	-31	>25	
Willow Warbler	25	81	-41	-59	-18	>25	
Song Thrush	25	87	-40	-52	-20	>25	
Long-tailed Tit	25	67	-32	-49	-9	>25	
Starling	25	37	-87	-95	-76	>50	
Linnet	25	21	-79	-91	-63	>50	
Yellowhammer	25	35	-76	-88	-63	>50	
Spotted Flycatcher	25	23	-73	-84	-63	>50	
Turtle Dove	25	20	-71	-91	-27	>50	Small sample
Cuckoo	25	37	-57	-73	-33	>50	
Whitethroat	25	29	-57	-72	-31	>50	
Goldcrest	25	57	-56	-74	-33	>50	
Dunnock	25	76	-54	-62	-42	>50	
Marsh Tit	25	41	-53	-67	-39	>50	

11. Table of alerts for CBC woodland 1989-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Warbler	10	79	-27	-41	-14	>25	
Cuckoo	10	32	-26	-46	-6	>25	
Starling	10	26	-70	-83	-56	>50	
Yellowhammer	10	27	-60	-79	-39	>50	
Spotted Flycatcher	10	18	-58	-70	-47	>50	Small sample

12. Table of alerts for CBC woodland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Starling	5	22	-44	-59	-22	>25	
Yellowhammer	5	24	-33	-62	-7	>25	

Back to top

7.1 Tables of alerts and population increases from CBC

Table of population increases for CBC all habitats 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Chaffinch	31	216	26	.	.		
Pheasant	31	126	27	.	.		
Blue Tit	31	216	27	.	.		
Robin	31	217	35	.	.		
Great Tit	31	210	58	.	.		
Long-tailed Tit	31	130	65	.	.		
Wren	31	220	67	.	.		
Pied Wagtail	31	84	78	29	160		Unrepresentative
Jackdaw	31	76	79	17	194		
Coot	31	31	87	23	292		Unrepresentative?
Woodpigeon	31	98	90	14	218		
Crow	31	167	94	.	.		
Mallard	31	112	110	61	166		
Magpie	31	157	110	.	.		
Reed Warbler	31	24	113	45	277		Unrepresentative?
Nuthatch	31	65	113	57	177		
Blackcap	31	156	127	.	.		
Green Woodpecker	31	80	136	86	230		
Great Sp. Woodpecker	31	98	142	89	239		
Little Grebe	31	15	153	2	849		Unrepresentative? small sample
Stock Dove	31	75	183	108	306		
Sparrowhawk	31	37	193	67	490		
Mute Swan	31	20	216	66	487		Unrepresentative? small sample
Shelduck	31	18	300	94	787		Unrepresentative? small sample
Buzzard	31	22	404	236	1040		Unrepresentative?
Collared Dove	31	71	1389	631	3524		
Tufted Duck	31	16	2141	941	5175		Unrepresentative? small sample

Table of population increases for CBC farmland 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Goldfinch	31	60	32	2	79		
Blue Tit	31	93	33	17	49		
Swallow	31	62	34	4	76		
Pheasant	31	64	36	2	95		
Chaffinch	31	94	36	21	53		
Woodpigeon	31	40	66	9	159		
Chiffchaff	31	44	67	23	170		
Magpie	31	72	71	42	98		
Pied Wagtail	31	58	77	25	175		Unrepresentative
Crow	31	77	77	44	119		
Mallard	31	62	78	45	136		
Great Tit	31	89	79	50	111		
Wren	31	93	82	62	102		
Long-tailed Tit	31	47	114	56	183		
Goldcrest	31	27	138	41	378		
Blackcap	31	57	192	124	284		
Stock Dove	31	37	199	117	372		
Coal Tit	31	27	213	85	380		
Green Woodpecker	31	23	304	126	1034		
Great Spotted Woodpecker	31	28	464	162	1068		
Collared Dove	31	40	1581	620	7894		

Table of population increases for CBC woodland 1968-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Great Tit	31	85	29	7	55		
Wren	31	86	33	5	60		
Robin	31	86	39	20	54		
Great Spotted Woodpecker	31	58	57	14	118		
Blackcap	31	72	68	31	121		
Green Woodpecker	31	44	69	26	117		
Crow	31	60	82	28	177		
Nuthatch	31	44	132	72	241		
Jackdaw	31	26	183	27	502		
Magpie	31	57	185	66	371		
Stock Dove	31	27	221	51	865		
Woodpigeon	31	42	228	117	385		
Collared Dove	31	16	761	267	4014		Small sample

Back to top

BBWC Home > Contents > Appendix > Tables of alerts and population increases from WBS

7.1 Tables of alerts and population increases from WBS

Table of alerts for WBS waterways 1975-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	24	21	-84	-95	-74	>50	
Reed Bunting	24	53	-68	-76	-55	>50	
Little Grebe	24	17	-56	-75	-20	>50	Small sample
Pied Wagtail	24	67	-48	-62	-36	>25	
Redshank	24	19	-44	-78	-9	>25	Small sample
Grey Wagtail	24	57	-41	-55	-23	>25	

Table of alerts for WBS waterways 1989-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Redshank	10	19	-43	-54	-31	>25	Small sample
Little Grebe	10	16	-28	-51	-4	>25	Small sample
Yellow Wagtail	10	17	-71	-83	-58	>50	Small sample

Table of alerts for WBS waterways 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Redshank	5	18	-32	-44	-20	>25	Small sample
Little Grebe	5	15	-30	-45	-15	>25	Small sample
Yellow Wagtail	5	15	-53	-69	-36	>50	Small sample

Table of population increases for WBS waterways 1975-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Coot	24	39	62	3	214		
Curlew	24	20	63	4	364		Small sample
Mute Swan	24	44	76	12	152		
Reed Warbler	24	19	77	16	181		Small sample
Oystercatcher	24	23	110	73	164		
Mallard	24	93	192	116	294		

Back to top

BBWC Home > Contents > Appendix > Tables of alerts and population increases from CES

7.1 Tables of alerts and population increases from CES

Table of alerts for CES adults 1984-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Whitethroat	15	43	-50	.	.	[>25*]	
Reed Bunting	15	59	-49	.	.	[>25*]	
Song Thrush	15	81	-40	.	.	[>25*]	
Willow Tit	15	25	-40	.	.	[>25]	
Whitethroat	15	57	-33	.	.	[>25]	
Willow Warbler	15	92	-32	.	.	[>25*]	
Linnet	15	22	-90	.	.	[>50*]	
Lesser Redpoll	15	20	-78	.	.	[>50*]	Small sample
Yellowhammer	15	22	-62	.	.	[>50*]	
Spotted Flycatcher	15	18	-60	.	.	[>50]	Small sample

Table of alerts for CES adults 1989-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Reed Bunting	10	69	-39	.	.	[>25*]	
Whitethroat	10	70	-32	.	.	[>25*]	
Yellowhammer	10	24	-32	.	.	[>25*]	
Song Thrush	10	93	-31	.	.	[>25*]	
Willow Warbler	10	106	-25	.	.	[>25*]	
Linnet	10	26	-80	.	.	[>50*]	
Lesser Redpoll	10	21	-67	.	.	[>50*]	
Spotted Flycatcher	10	19	-61	.	.	[>50]	Small sample
Lesser Whitethroat	10	49	-58	.	.	[>50*]	
Willow Tit	10	28	-51	.	.	[>50]	

Table of alerts for CES adults 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Whitethroat	5	48	-47	.	.	[>25*]	
Willow Tit	5	28	-41	.	.	[>25]	
Spotted Flycatcher	5	16	-35	.	.	[>25]	Small sample

Lesser Redpoll	5	18	-34	.	.	[>25]	Small sample
Whitethroat	5	78	-28	.	.	[>25*]	
Linnet	5	26	-56	.	.	[>50*]	

Table of population increases for CES adults 1984-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Long-tailed Tit	15	74	31	.	.		
Wren	15	94	33	.	.		
Robin	15	88	34	.	.		
Blackcap	15	85	40	.	.		
Chiffchaff	15	63	73	.	.		

Back to top

7.1 Tables of population declines or increases from BBS

Table of declines >25% for BBS UK 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Shelduck	6	114	-47	-56	-35	(>25)	
Wood Warbler	6	58	-43	-58	-24	(>25)	
Corn Bunting	6	146	-35	-46	-23	(>25)	
Kestrel	6	509	-29	-37	-21	(>25)	
Bullfinch	6	438	-25	-34	-15	(>25)	
Willow Tit	6	59	-54	-67	-35	(>50)	

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.

Table of declines >25% for BBS England 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Willow Tit	6	52	-49	-64	-27	(>25)	
Corn Bunting	6	139	-38	-48	-27	(>25)	
Lesser Redpoll	6	46	-35	-56	-5	(>25)	Small sample
Cuckoo	6	611	-31	-37	-24	(>25)	
Grey Partridge	6	193	-26	-38	-12	(>25)	
Wood Warbler	6	27	-69	-80	-51	(>50)	Small sample
Great Black-backed Gull	6	36	-63	-74	-47	(>50)	Small sample

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.

Table of declines >25% for BBS Scotland 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Black-headed Gull	6	74	-47	-60	-30	(>25)	
Crow	6	52	-37	-57	-7	(>25)	
Lapwing	6	85	-29	-43	-13	(>25)	
Kestrel	6	40	-59	-73	-36	(>50)	Small sample
Swift	6	39	-50	-66	-26	(>50)	Small sample

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.

Table of declines >25% for BBS Wales 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Mallard	6	49	-40	-57	-15	(>25)	Small sample
Starling	6	75	-38	-54	-18	(>25)	
Yellowhammer	6	37	-30	-50	-1	(>25)	Small sample

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

Back to top

7.4 Tables of population declines or increases from BBS

Table of population increases for BBS UK 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Whitethroat	6	969	26	18	34		
Red-legged Partridge	6	371	27	13	42		
Cormorant	6	140	31	9	57		
Lesser Black-backed Gull	6	414	34	18	52		
House Martin	6	721	34	23	46		
Greenfinch	6	1280	34	27	41		
Snipe	6	116	35	9	65		
Sand Martin	6	96	39	9	77		
Buzzard	6	448	41	27	57		
Pheasant	6	1223	41	33	49		
Grey Wagtail	6	148	41	15	74		
Redstart	6	132	45	21	73		
Marsh Tit	6	119	45	16	83		
Blackcap	6	1026	49	41	59		
Canada Goose	6	289	51	31	74		
Coot	6	188	55	34	80		
Great Spotted Woodpecker	6	576	55	40	71		
Sedge Warbler	6	241	55	37	76		
Raven	6	160	64	34	101		
Greylag Goose	6	82	69	25	129		
Tufted Duck	6	122	83	50	123		
Goldcrest	6	522	87	72	104		
Stonechat	6	74	115	58	192		

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.

Table of population increases for BBS England 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Mallard	6	762	26	17	35		
Jackdaw	6	924	27	19	36		

Pied Wagtail	6	721	28	18	39		
Sedge Warbler	6	152	30	11	52		
Green Woodpecker	6	495	31	19	46		
Greenfinch	6	1088	34	26	41		
Canada Goose	6	274	35	18	56		
Grey Wagtail	6	93	36	6	75		
Redshank	6	43	37	1	86		Small sample
Greylag Goose	6	64	40	9	81		
Blackcap	6	902	44	36	53		
Buzzard	6	244	46	28	68		
Tufted Duck	6	106	47	19	82		
Great Spotted Woodpecker	6	515	48	33	64		
Coot	6	170	60	37	87		
Goldcrest	6	353	65	48	83		
Redstart	6	70	71	33	121		
Stonechat	6	28	85	16	195		Small sample
Raven	6	44	88	31	170		Small sample
Sand Martin	6	65	113	64	177		
Fieldfare	6	23	1584	473	4850		Small sample

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.

Table of population increases for BBS Scotland 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Crow	6	150	26	5	51		
House Sparrow	6	72	27	3	56		
Cuckoo	6	67	38	1	88		
Willow Warbler	6	176	40	22	60		
Mallard	6	85	41	10	79		
Snipe	6	53	43	2	99		
Mistle Thrush	6	59	43	1	101		
Buzzard	6	93	51	15	98		
Blackcap	6	27	61	1	156		Small sample
Rook	6	99	73	30	132		
Great Black-backed Gull	6	34	75	16	165		Small sample
Sedge Warbler	6	48	86	37	153		Small sample
Wren	6	178	87	62	116		
Grey Wagtail	6	25	91	9	234		Small sample
Grey Heron	6	41	93	26	197		Small sample
Lesser Black-backed Gull	6	59	100	48	170		
Raven	6	39	101	30	213		Small sample
Chiffchaff	6	20	114	12	306		Small sample

Goldcrest	6	71	154	96	230		
House Martin	6	43	310	154	561		Small sample

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.

Table of population increases for BBS Wales 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Goldcrest	6	66	29	5	59		
Song Thrush	6	119	34	15	57		
Greenfinch	6	77	36	7	72		
Swallow	6	125	41	17	69		
Great Spotted Woodpecker	6	42	49	1	120		Small sample
House Sparrow	6	85	64	34	99		
Blackcap	6	83	66	32	109		
Goldfinch	6	85	71	32	122		
Linnet	6	73	76	33	132		
Lesser Black-backed Gull	6	42	84	8	215		Small sample
House Martin	6	72	100	50	168		
Herring Gull	6	52	104	50	177		
Treecreeper	6	35	149	63	281		Small sample
Feral Pigeon/Rock Dove	6	23	217	96	413		Small sample
Pheasant	6	61	627	418	921		

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.

Table of population increases for BBS N.Ireland 1994-2000

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blue Tit	6	46	47	6	103		Small sample
Woodpigeon	6	51	49	11	99		
Robin	6	56	50	19	89		
Magpie	6	52	57	21	104		
Rook	6	46	63	13	136		Small sample
Swallow	6	53	67	23	126		
Chaffinch	6	57	89	43	150		
Crow	6	47	90	27	184		Small sample
Willow Warbler	6	50	94	43	163		Small sample
Great Tit	6	39	94	27	196		Small sample
Wren	6	57	96	52	151		
Goldcrest	6	28	121	21	304		Small sample
Blackbird	6	55	125	76	188		
Meadow Pipit	6	44	126	76	191		Small sample
House Martin	6	24	129	28	313		Small sample

Skylark	6	29	143	75	239		Small sample
Dunnock	6	40	160	57	332		Small sample
Starling	6	47	182	89	321		Small sample
Curlew	6	21	226	67	536		Small sample
Greenfinch	6	28	265	94	587		Small sample

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

Back to top

8. Select your own table of population changes

This page allows you to display a table of population changes according to a range of different criteria. The population change data that will be displayed are the same as those that are contained in the individual species accounts. You can choose which schemes and time periods will be included in your table. You can also select all species or a particular species. Just complete the form below and then click on the compile table button to display your chosen table

Select periods to be included (at least one)

- [ ] 5 years
- [ ] 10 years
- [ ] 25 years
- [x] Maximum

Select scheme categories to be included (at least one)

- [x] CBC all habitats
- [ ] CBC Farmland
- [ ] CBC Woodland
- [ ] Waterways
- [ ] Heronries
- [ ] CES adults
- [ ] CES juveniles
- [ ] BBS UK
- [ ] BBS England
- [ ] BBS Wales
- [ ] BBS Scotland
- [ ] BBS Northern Ireland

Select species to be included. You may select either one individual species or all species.

All species
Red-throated Diver
Little Grebe
Great Crested Grebe
Cormorant
Grey Heron
Mute Swan
Greylag Goose
Canada Goose
Shelduck

Sort table by:

- (•) Species; scheme; period (descending)
- ( ) Scheme; species; period (descending)
- ( ) Change (ascending)
- ( ) Scheme; change (ascending)

Compile table

Reset to default values

Return to Contents

Images: Starling, by Sarah Kelman / BTO; Lapwing, by Sarah Kelman / BTO

Breeding Birds in the Wider Countryside: their conservation status 2001

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 1966–1999.

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., Crick, H.Q.P., Balmer, D.E., Beaven, L.P., Downie, I.S., Freeman, S.N., Leech, D.I., Marchant, J.H., Noble, D.G., Raven, M.J., Simpkin, A.P., Thewlis, R. & Wernham, C.V. 2002. Breeding Birds in the Wider Countryside: their conservation status 2001. *BTO Research Report*, BTO, Thetford, UK.

BTO
Birds
Science
People