BTO RESEARCH REPORT 252

Breeding Birds in the Wider Countryside: their conservation status 2000

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 & Wernham, C.V.

BTO Birds Science People

Welcome to

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- 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.
- The report covers over a 100 breeding bird species but excludes colonial seabirds and relatively rare species, which are already well covered by other schemes.
- For each species, we provide:
  - General information on a species' conservation listings (to show the level of concern about the species);
  - A brief summary of its population changes and information about the possible causes of population changes;
  - A series of graphs and tables to show the trends and changes in population size and breeding performance over the past 30 years.
- New for this report are:
  - Trends from the BTO/JNCC/RSPB Breeding Bird Survey (BBS), not only for the UK but also for each of its constituent countries (England, Scotland, Wales and Northern Ireland);
  - A new system of Alerts that highlight where population declines of greater than 25% or greater than 50% have occurred over the past 5 years, 10 years, 25 years and 30 years.

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.

The BTO is grateful to Mr and Mrs J A Pye's Charitable Settlement, which provided additional support towards the development of the website. We are also very grateful to Susan Waghorn who has put in a huge amount of skill and effort in designing and putting together the website for this report.

We are particularly grateful to Malcolm Vincent (JNCC) for his helpful discussions, comments and support during the production of the report. We would also like to thank the following for helpful discussions on previous editions of this report: David Stroud, Rowena Langston, David Gibbons, Jacquie Clark, Nigel Clark and Jeremy Greenwood. Analyses of ringing data would not have been possible without the hard work of members of the Ringing Unit at the BTO HQ in Thetford: Jacquie Clark, Sue Adams, David Anning, Jez Blackburn, Bridget Griffin, Jackie King, Linda Milne, Brenda Read, Anne Trewhitt, Angie Whybrow.

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Breeding Birds in the Wider Countryside: their conservation status 2000

A report prepared within a 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.

The Breeding Bird Survey is funded jointly by BTO, JNCC and RSPB. The BBS partnership is very grateful for the generous support of the Environment and Heritage Service in Northern Ireland to pay for a professional fieldworker to survey squares in difficult to cover areas of Northern Ireland, and to the Royal Society for the Protection of Birds in Scotland for support for professional surveys in more difficult to cover areas of Scotland, between 1994 and 1999.

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)

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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 on declining farmland species, are highlighted as showing how broadly based surveillance 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 the 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 changes are taking place.

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

(d) To distinguish changes in populations induced by human activities from those that are natural population fluctuations.

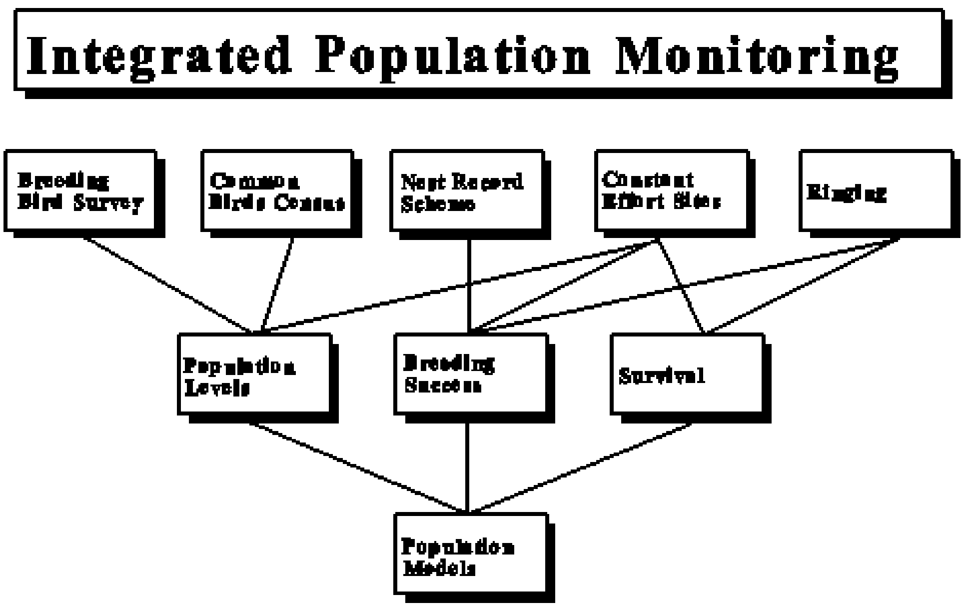
The programme brings together data from several long-running BTO schemes.

- Changes in numbers of breeding birds are measured by:
  - The Common Birds Census (CBC) - which ran from 1962-2000, this scheme maps the territories of common birds on 2-300 farmland and woodland plots of about 60 and 20 ha area, on average, 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, covering an average length of 4.5 km each.
  - The Constant Effort Sites Scheme (CES) - which began in 1983 and is based on bird ringing at over 100 sites where the catching effort is kept constant each year, so that changes in numbers of birds caught reflect population changes.
  - 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 based on the recapture of ringed birds at CES sites.

An overview of how the schemes fit together is shown in the diagram below, which also shows how the BTO aims to combine all this information to understand what makes the populations change (in so-called "population models").



1.2 The value of combining results from different monitoring schemes

Increasingly it is being realised that monitoring changes in the numbers of animals 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 of breeding performance and survival, remedial conservation action has to be taken without a sound basis or has to wait until some detailed investigative research has been 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 where declines in breeding performance have preceded declines 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

The BTO identified that rapid declines of farmland birds was a key conservation problem in the mid-1980s (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 study was undertaken jointly with Oxford University, was funded by the UK Government, and looked at changes in population size, breeding performance and survival 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 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. However, for Linnet the main factor appears to have been a decline in nesting success at the egg stage. As a result, the study was 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 have 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 population change of Sedge Warblers (Peach *et al.* 1991).

Biodiversity Action Plans

The ability to distinguish quickly, the stage of the life-cycle most affected during population declines is particularly important for the conservation agencies considering the plight of species listed on the Conservation Importance Lists (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 species of birds 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, because, once conservation actions have been initiated, their successes will be monitored and be 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.

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 cover the majority of breeding species, excluding colonial seabirds, which are well covered by the JNCC's Seabird Monitoring Programme (Upton *et al.* 2000), and excluding 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 cover 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 about 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 to 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 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 third 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. It is the result of the sustained long-term fieldwork efforts of many thousands of the BTO's volunteer supports. Without their enthusiasm for collecting these hard-won facts, the cause of conservation in the UK would be very much the poorer.

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: Nest Record Scheme and Constant Effort Sites. 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.

2. Methodology

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 representative of lowland England, with relatively few in Wales, Scotland and Northern Ireland. Fieldwork is carried out by a team of dedicated volunteers, currently 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 by 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" was 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 was achieved by setting the degrees of freedom to one-third the number of years in the series. Confidence limits on the indices were 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 green 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 blue 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 suffers from a "Small sample" if the mean number of plots was <20; and 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 *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.

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 what is 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. The constraints imposed by the relatively small sample size mean that it was felt necessary to concentrate on farmland and woodland habitats, with the results that bird population trends in built-up areas and the uplands are 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. From 2001 onwards, a reduced set of CBC plots will be operated, with the aim of providing information on the relationships between bird locations and features of their habitats, and to provide monitoring information for a small number of specific habitat types.

2.1 Common Birds Census
2.2 Waterways Bird Survey
2.3 Breeding Bird Survey
2.4 Heronries Census
2.5 Constant Effort Sites Scheme
2.6 Nest Record Scheme

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

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)

2. Methodology

2.2 Waterways Bird Survey

The Waterways Bird Survey (WBS) has monitored up to 20 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 19 riparian species, five of which are not covered by the CBC, 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.

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

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)

2. Methodology

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, 2310 in 1998 to 2379 in 1999, close to the original target of 2500. 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 in the results because the analysis takes into account annual differences in the coverage of each region.

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 <50 plots per year.

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

2. Methodology

2.4 Heronries Census

As a predator 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 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, are a clear measure of the population's trend. In recent seasons, observers have counted also the nests of Little Egrets *Egretta garzetta*, which are now appearing in a number of southern English 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 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 prep.). This differs from the chain estimate method previously published annually in *BTO News*.

The trend is presented graphically in which annual estimates are shown 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.

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)

2. Methodology

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 in Peach *et al.* 1996.

The CES Scheme began in 1983 with 46 sites and by 1999 had expanded to encompass 138 sites spread throughout the UK. The distribution of CES sites tends to reflect the distribution of ringers within the UK and Ireland. In 1999, 110 sites were operated in England, 15 in Scotland, 5 in Wales, 4 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 were separately assessed through application of loglinear Poisson regression models, from which fitted year effects were taken as annual relative abundances, compared to an arbitrary value of unity in 1999. 85% confidence limits are based on the corresponding asymptotic standard errors. At sites where catching effort in a year fell below the required 12 visits, but a minimum of 8 were completed, annual catch sizes were 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 1999. As above, catch sizes were 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 in which annual estimates are shown in blue and their 85% confidence limits in green. Methods and software for the optimal fitting of smoothed trends in 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.

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

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)

2. Methodology

2.6 Nest Record Scheme

The BTO's Nest Record Scheme is the largest, longest running and most highly computerised such scheme in the world and possesses the most advanced and efficient techniques of data gathering, data capture and analyses. There are currently more than 1,000,000 records held by the Trust, of which 35% are computerised.

The primary aim of the Nest Record Scheme is to monitor annually the breeding performance of a wide range of UK birds 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) and others. 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 receives a total of more than 30,000 records each year for around 180 species. Typically, the BTO receives 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 since 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 day 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, 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).

2.1 Common Birds Census
2.2 Waterways Bird Survey
2.3 Breeding Bird Survey
2.4 Heronries Census
2.5 Constant Effort Sites Scheme
2.6 Nest Record Scheme
2.7 The Alert System

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

2. Methodology

2.7 The Alerts System - under construction

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Last updated: 21 October, 2003

EXECUTIVE SUMMARY

1. This report provides a species-by-species overview of the trends in breeding population size and reproductive success of birds in the UK, covered by BTO monitoring schemes over the period 1968-1999.

2. The report covers the majority of breeding bird species, excluding colonial seabirds, which are well covered by the JNCC's Seabird Monitoring Programme (Thompson *et al.* 1998), and excluding the majority of species 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 (e.g. Cranswick *et al.* 1997).

3. Population trends are described for the last 30, 25, 10 and 5 year periods in order to illuminate the patterns and scale of the changes.

4. The following species show rapid declines (of over 50%) or moderate declines (between 25 and 49%) over the 30-year period 1968-98 as measured by the Common Birds Census (CBC):

   Rapid declines:
   16 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.

   Moderate declines:
   9 species: Lapwing, Cuckoo, Meadow Pipit, Dunnock, Blackbird, Mistle Thrush, Willow Warbler, Bullfinch and Reed Bunting..

   (It should be noted that trends for Woodcock, Lapwing, Meadow Pipit, Tree Pipit and Lesser Redpoll are derived from CBC plots that do not cover a major part of the species' distribution, but are biased towards areas of lowland England, and may therefore be unrepresentative of the major part of the population in the UK).

5. The following species show rapid declines (of over 50%) or moderate declines (between 25 and 49%) over the 23-year period 1975-98 as measured by the Waterways Bird Survey:

   Rapid declines:
   3 species: Little Grebe, Yellow Wagtail and Reed Bunting.

   Moderate declines:
   2 species: Grey Wagtail, Pied Wagtail.

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

   CBC:
   Mute Swan, 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 information for the CBC may be unrepresentative of the major part of the population for: Mute Swan, Tufted Duck, Buzzard and Reed Warbler, see Paragraph 4 above).

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)

4. Discussion

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4. DISCUSSION

4.1 The new alert system

This report is the first to use the new 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 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, but another that triggers alerts over 25, 10 and 5 years is still undergoing a potentially serious population decline.� For the former species, conservation agencies must try to identify factors that will help the species recover, whereas for the latter species, it is initially urgent that the conservation agencies identify how to halt the current decline before considering how to increase the population.� For species that trigger short-term alerts only, these are early warnings to the conservation agencies that there might be a problem developing, although there is still a chance that the declines might be due to chance fluctuations.� However, if an identifiable suite of species all showed rapid short-term declines, then this might be a stronger early warning signal that the conservation agencies should perhaps consider sooner.�

Thus these alerts are important for the conservation practitioners who need to prioritise the needs for conservation action.� But we also hope that these alerts will prove useful to readers of the report, more generally.�

In this discussion:

1) We first describe the key alerts that are raised for population declines over the last 30 years on all CBC plots combined.� This is the time period most relevant to the UK conservation because it is comparable to the time period being used in the revision, currently underway, of the Red and Amber listings of birds of conservation concern.�

2) The aim is to:
   a) highlight those species that are potentially new candidates for conservation listing because of rapid or moderate declines in 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) 30-year alerts raised from CBC farm and woodland plots separately,
   b) WBS alerts over 23 years,
   c) CES alerts over 14 years, and
   d) BBS changes over 5 years,

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

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Go to next page - 4.2 The 30-year alerts

4. DISCUSSION

4.2 The 30-year alerts

There are 25 species that have declined by greater than 25% over the 30-year period from 1968-98, 16 of which have declined by greater than 50% (see table 4.2.1 and 4.2.2).� The majority are these 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), although there have been some changes.

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

4.2.1 New 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).

- **Yellowhammer**: this is the latest farmland seed-eating species to decline, its population having fallen substantially in the 1990s after having maintained its population through the 1970s and 1980s when other seed-eaters declined.� The decline has been greater on woodland CBC plots (74% decline) than on farmland (42% decline), presumably its preferred habitat.
- **Whitethroat**: this species underwent a massive 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 these years, but its 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 (43% decline), which is presumably the preferred habitat, compared with on woodland CBC plots (82% decline).
- **Starling, Willow and Marsh Tits**: these 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 (83% decline) than on farmland plots� (60% decline), but the pattern and causes of the Starling decline are currently under investigation as part of a DETR-funded study.

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

- **Redpoll**: 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, after the Tree Sparrow, and indicates a potential problem in at least a part of its range (lowland England): this is why it has been given an alert here.�� Furthermore, it showed substantial range contraction between the two breeding bird atlases (Gibbons *et al.* 1993).� The causes of these declines are unknown and certainly warrant conservation attention.

- **Tree Pipit**: this was not included on previous conservation listings for the same reason as the Redpoll but, again, this upland woodland species has shown substantial population declines in lowland England and may justify an investigation into its ecology.
- **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 its distributional range well, its sizeable decline in lowland England may necessitate further investigation.

Table 4.2.1� >50% population alerts for CBC all habitats 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	30	60	-95	-98	-88	>50	
Lesser Redpoll	30	43	-90	-95	-84	>50	Unrepresentative?
Grey Partridge	30	60	-83	-88	-77	>50	
Corn Bunting	30	24	-83	-91	-68	>50	
Spotted Flycatcher	30	70	-79	-86	-72	>50	
Tree Pipit	30	33	-77	-88	-65	>50	Unrepresentative
Woodcock	30	20	-70	-85	-48	>50	Unrepresentative? small sample
Starling	30	127	-70	-78	-61	>50	
Turtle Dove	30	60	-69	-81	-57	>50	
Willow Tit	30	32	-69	-82	-46	>50	
Marsh Tit	30	55	-66	-76	-53	>50	
Song Thrush	30	204	-60	-65	-50	>50	
Linnet	30	123	-59	-69	-45	>50	
Whitethroat	30	118	-57	-68	-39	>50	
Yellowhammer	30	133	-54	-63	-45	>50	
Skylark	30	121	-53	-62	-45	>50	

See Help (link to http://www.bto.org/birdtrends/help.htm) for information on what the categories mean

4.2.2 New 25% Alerts

Here we highlight those species that are not on the current JNCC Conservation Importance List or NGO Birds of Conservation Concern List as having a 25-49%

decline (see section 2.7).

- **Mistle Thrush**: this is the third *Turdus* thrush species to have declined sufficiently rapidly to be given an alert. The declines of these widespread and closely related species are of considerable conservation concern.� Research on Song Thrush (Thomson *et al.* 1997) and Blackbird (Siriwardena *et al.* 1998a) suggests that declines in survival have driven their declines and this may apply to Mistle Thrush too.� The decline of Mistle Thrush has been greater on farmland CBC plots (-59%) than in woodland (-22%), which is presumably its preferred habitat.�
- **Willow Warbler**: Detailed analysis of population data, survival rates and breeding performance showed that the decline in the mid-1990s was largely related to a fall in survival rates of adult Willow Warblers in the southern part of its range in the UK (Peach *et al.* 1995).� Interestingly, its decline is greater on woodland CBC plots�(-50%) than on the presumably less preferred habitat found on farmland plots�(-21%).
- **Cuckoo**: This species has declined more rapidly on woodland plots (-60%) than on farmland CBC plots (-20%).� The reasons for its decline have not been investigated but may be linked to declines in the populations of two key host species: Dunnock and Meadow Pipit.
- **Bullfinch** and **Reed Bunting**: were both on the 50% conservation listing, but over the 30-year period, their declines are just under the 50% mark.� The decline of Bullfinch has been greater on farmland CBC plots (-64%) than on woodland plots (-38%), which presumably reflects its habitat preference.

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

- **Meadow Pipit**: this is another essentially upland species, which is not covered adequately by the CBC.� However, unlike Redpoll and Tree Pipit, it is a species of open moor and heathland and its decline in lowland England is worrying, given its key position as the prey of many open country raptors.
- **Lapwing**: 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 on lowland England is of conservation concern, especially when combined with information from periodic national surveys (see Lapwing Survey; Wilson *et al.* 2001).

Table 4.2.2� >25% population alerts for CBC all habitats 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Bullfinch	30	137	-50	-59	-40	>25	
Reed Bunting	30	85	-49	-60	-35	>25	
Dunnock	30	205	-46	-54	-37	>25	
Mistle Thrush	30	143	-43	-51	-33	>25	

Willow Warbler	30	190	-39	-52	-21	>25	
Lapwing	30	53	-34	-62	-3	>25	Unrepresentative
Meadow Pipit	30	44	-34	-65	-3	>25	Unrepresentative
Cuckoo	30	105	-32	-48	-14	>25	
Blackbird	30	225	-26	-34	-19	>25	

See Help (link to http://www.bto.org/birdtrends/help.htm) for information on what the categories mean

4.2.3 No longer triggering alerts

Three species would no longer need to appear on the current JNCC Conservation Importance List or NGO Birds of Conservation Concern List because they don�t show population declines of >25% over the past 30 years:� **Kestrel**, **Swallow** and **Goldfinch.�**

Although the Kestrel doesn�t trigger an Alert over the 30-year period, it still warrants a 25% alert over the 25-year period.� During the first few years of the CBC, the species was increasing from a relatively low point, possibly indicating a recovery from the likely detrimental effects of organochlorine pesticide poisoning.� Its 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 driven perhaps by climatic events or other factors.� In addition, the previous reports used a less sophisticated method of analysis than is employed now, and may have indicated a decline mistakenly.

4.2.4 Alerts in farmland and woodland

In general, more species raise alerts on farmland plots (17 species) than on woodland plots (12 species) (see Appendix).� Two species have declined sufficiently rapidly to trigger alerts in farmland alone, although not over all CBC plots.� **Sedge Warbler** declined by 48% on CBC farmland plots over the past 30 years.� Although this is a secondary habitat for Sedge Warblers (and the index is probably unrepresentative of the population as a whole), they nest in crops alongside damp ditches and in oilseed rape fields.� **Moorhens** have also declined on farmland plots (by 32%), which might be a reflection of the loss of farm ponds.� The trends of both species might reflect the impact of increased drainage on farmland that has impacted on other birds of wet meadows.

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**, **Turtle Dove**.� Both are Palaearctic-African migrants and it is likely that the declines have been driven by factors acting outside of Britain.�

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

Song Thrush (farm �71%; wood �50%);
- Bullfinch (farm �64%; wood �38%);
- Mistle Thrush (farm �59%; wood -22%);
- Blackbird (farm �42%, wood -12%).�

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

- Starling (farm �60%; wood �83%);
- Linnet (farm �50%; wood �87%);
- Whitethroat (farm �43%; wood �82%);
- Yellowhammer (farm �42%; wood �74%);
- Dunnock (farm �44%; wood �58%);
- Willow Warbler (farm -21%; wood �50%);
- Cuckoo (farm -20%; wood �60%).�

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

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Go to next page - 4.3 Alerts over shorter time periods

4. DISCUSSION

4.3 Alerts over shorter time periods

With the introduction of the new system, alerts are raised over shorter time periods of 25 years (for direct comparison with the original conservation listing process), 10 years and 5 years, to allow a ready assessment of the pattern and timing of the rates of declines among species.

4.3.1 Common Birds Census Alerts

There are relatively few major differences between the alerts raised at 25 years and those at 30 years already discussed. Four additional species raise alerts at 25 years:

- House Sparrow (>50%): has been incompletely monitored by CBC because of its strong urban component to its population and because data were not gathered systematically before 1973. However, the BTO's Garden Bird Feeding Survey also shows large population declines in the suburban population (Glue 1994).
- Lesser Spotted Woodpecker (>50%): shows a population increase in the late 1960s and early 1970s, followed by sustained decline. The increase may have been due to the increase in dead wood due to the effect of Dutch Elm Disease, but the decline is similar to that shown by a variety of other woodland specialists, such as Marsh and Willow Tits.
- Kestrel (>25%): this is discussed above in section 4.2.3.

In addition,

- Goldcrest (>50%): Although this might be viewed with some scepticism because its population is subject to large annual fluctuations due to the weather, its smoothed population trend shows a sustained decrease which contrasts it strongly with the population recoveries shown 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.

Complete tables of those species triggering alerts at 25, 10 and 5 years are given in Appendix 1.

4.3.2 Waterways Bird Survey Alerts

The WBS has only been in operation for 23 years and 5 species trigger alerts over that time period (Table 4.3.2).

- Yellow Wagtail: the decline of this species by 81% over 23 years is extremely serious and may reflect a deterioration of the riverine habitat quality and management, or of the suitability of any adjacent farmland for foraging. This supports the more widespread impression of a decline in this species, which has been linked to the loss of wet meadows. Among other initiatives, the BTO, in conjunction with Anglia Water, are to begin an investigation into the ecology of this species in 2001.

- Reed Bunting: the decline of this species along linear waterways (63%) is similar to that measured by the CBC in other habitats over a similar time period. Although the main decline is linked to declines in survival rates, it is possible that declines in breeding success might be holding back recovery (Peach *et al.* 1999).
- Little Grebe: although the WBS does not monitor Little Grebes on still waterbodies and the sample sizes monitored are relatively small, the decline on linear waterways of 51% is considerable and suggests that an investigation of the potential cause of the decline and of its ecology is required.

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

- Pied Wagtail: although not generally considered to be a bird associated closely with linear waterbodies, this species is relatively common on WBS plots and has declined substantially (by 49%) over the past 23 years. Such a decline has not affected the main part of the population, which occurs in drier habitats, but it may reflect a potentially important decline in riparian conditions.
- Grey Wagtail: this is the third wagtail species to show substantial declines along linear waterways (-48%). Grey Wagtail is the species most closely associated with rivers and streams, feeding alongside and over them, and is perhaps the strongest indicator that some serious decline in habitat quality has occurred over the past 23 years.

Of these species, only Yellow Wagtail triggers alerts at 10 years and 5 years, suggesting a continuing and rapid decline. In addition, Redshank triggers an alert at 10 years because of a 32% decline. The decline in waders on wet meadows is of some conservation concern and 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 1975-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	23	22	-81	-94	-70	>50	
Reed Bunting	23	53	-68	-76	-56	>50	
Little Grebe	23	18	-51	-79	-4	>50	Small sample
Pied Wagtail	23	67	-49	-62	-35	>25	
Grey Wagtail	23	57	-48	-61	-30	>25	

See Help for information on what the categories mean.

4.3.3 Constant Effort Sites Alerts

The majority of species that trigger alerts from the CES over the last 14 years are also the subject of alerts from the CBC. However, these alerts are useful because they cover a very different set of habitats, wet and dry scrub and reedbeds, not covered by CBC. Thus there are >50% alerts for **Linnet**, **Redpoll** and **Yellowhammer**, and >25% alerts for **Spotted Flycatcher**, **Reed Bunting**, **Song Thrush**, **Willow Tit**, and **Willow Warbler**. (But it should be noted that the CES does not necessarily monitor a representative portion of the populations of Spotted Flycatcher and Redpoll).

Interestingly, the CES finds a substantial decline (31%) for **Whitethroat** that is not shown by CBC over the same sort of time period, perhaps confirming that this species is not recovering, as it perhaps should have done after the sub-Saharan drought-induced decline of 1968.

Only one additional species triggers an alert on the CES: **Lesser Whitethroat**. It has declined by 44% over the past 14 years. This is rather an enigmatic species that winters in eastern Africa, in contrast to most of the UK's other long-distance migrants that winter in western or southern Africa. The population decline coincides with an alert raised by the CBC over the past 10 years (31% decline) and perhaps indicates a more general decline than in habitats additional to those covered by the CES.

Comparison between CES and CBC over the past 10 years shows that some species have declined much faster on CES than on CBC plots: This is especially so for **Linnet**, which declined by 76% on CES but increased by 9% on CBC plots. Indeed, much of this decline on CES has occurred over the past 5 years, with a 53% decline over that period. **Reed Bunting** has also declined more rapidly on CES (by 41%) than on CBC plots (-23%) or WBS plots (-12%), which is worrying because the CES reebed and wet scrub habitats are likely to be the preferred habitat for this species. **Song Thrush** has also declined faster on CES (-30%) than on CBC plots (-10%), as has **Lesser Whitethroat** (CES -53%; CBC -31%). The opposite has only occurred for **Redpoll** (CES -67%; CBC -80%); **Yellowhammer** (CES -35%; CBC -44%); and **Willow Tit** (CES -49%, CBC -69%).

Table 4.3.3 Alerts for CES adults 1984-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	14	21	-87	.	.	[>50*]	
Lesser Redpoll	14	20	-75	.	.	[>50*]	Small sample
Yellowhammer	14	23	-58	.	.	[>50*]	
Spotted Flycatcher	14	18	-49	.	.	[>25]	Small sample
Reed Bunting	14	58	-47	.	.	[>25*]	
Lesser Whitethroat	14	44	-44	.	.	[>25*]	
Song Thrush	14	79	-39	.	.	[>25*]	
Willow Tit	14	25	-36	.	.	[>25]	
Whitethroat	14	56	-31	.	.	[>25]	
Willow Warbler	14	90	-31	.	.	[>25*]	

See Help for information on what the categories mean

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 only 5-year population changes are reported here. 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 in the UK (as well as in individual countries) have been in long-term decline, as measured by the CBC and WBS:

- BBS - UK & England: **Grey Partridge**, **Willow Tit** and **Yellow Wagtail**.
- BBS - UK & Scotland: **Kestrel**.
- BBS - UK & Wales: **Bullfinch** and **Cuckoo**
- BBS - UK: **Corn Bunting**.

Several others that have been declining in the long-term on CBC plots show declines greater than 25% in particular countries of the UK but not in the UK as a whole:

- BBS - England: **Redpoll** and **Tree Pipit**.
- BBS - Scotland: **Lapwing**.
- BBS - Wales: **Starling** and **Yellowhammer** (Wales).
- BBS - Northern Ireland: **Mistle Thrush** and **House Sparrow**.

The alert raised for Lesser Whitethroat over 14 years on CES is also reflected by a decline of greater than 25% on BBS in UK and England over the past 5 years. Similarly the alert raised for Redshank on WBS plots (over the past 10 years) is reflected by a decline of greater than 25% also raised on BBS plots in UK and Scotland over the past 5 years.

New species declines that aren't apparent in the more established schemes are found in:

- UK for: **Wood Warbler** (and in England), **Shelduck**, **Common Sandpiper**.
- England for: **Snipe**.
- Scotland for: **Golden Plover**.
- Wales for: **Mallard**.

For many of these species, long-established BTO monitoring schemes have not provided sufficient coverage of their distributional ranges and so the rapid declines reported from BBS may be important indicators of potentially new conservation problems, although some will turn out to be part of the natural range of fluctuation.

Table 4.3.4 Population Changes for BBS UK 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wood Warbler	5	58	-45	-60	-24	(>25)	
Grey Partridge	5	222	-43	-53	-32	(>25)	
Willow Tit	5	60	-42	-58	-18	(>25)	
Shelduck	5	110	-40	-51	-27	(>25)	
Redshank	5	63	-36	-51	-16	(>25)	

Black-headed Gull	5	425	-36	-43	-28	(>25)	
Lesser Whitethroat	5	195	-31	-42	-17	(>25)	
Kestrel	5	502	-30	-38	-21	(>25)	
Common Sandpiper	5	63	-29	-46	-7	(>25)	
Yellow Wagtail	5	155	-29	-41	-14	(>25)	
Bullfinch	5	432	-28	-37	-19	(>25)	
Cuckoo	5	744	-27	-33	-20	(>25)	
Corn Bunting	5	148	-26	-37	<-13	(>25)	

See Help for information on what the categories mean.

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4. DISCUSSION

4.4��� Increasing species

Those species that have increased by more than 25% over the past 30 years on CBC plots and 23 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 doves have probably benefited from the increased use of brassica (particularly oilseed rape) crops. The birds of prey have been expanding with the decline of organochlorine pesticides in the environment (which affected productivity and survival) and have benefited from declines in persecution (e.g. Ratcliffe 1993).

There is a group of resident insectivores that has increased in population size. The majority are associated with woodland: **Green Woodpecker** and **Great Spotted Woodpecker**, **Nuthatch**, **Blue Tit**, **Long-tailed Tit** and, on farmland CBC plots, **Great Tit** and **Coal Tit** and **Wren**.The reasons for these changes are unclear.**Pied Wagtail** has increased on CBC plots over 30 years, but declined by 49% on WBS plots over the past 23 years – although neither surveys may be entirely representative of the UK's population of this species.

In addition to the resident insectivores, there is a small group of migrant insectivores that have increased by greater than 50% in abundance: **Blackcap** and **Reed Warbler** on CBC over the past 30 years, and **Reed Warbler** on WBS over the past 23 years. Again the reasons for these changes are unclear.

Table 4.4.1 >25% population increases for CBC all habitats 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blue Tit	30	216	35	21	48		
Pheasant	30	126	36	9	87		
Long-tailed Tit	30	129	53	13	111		
Pied Wagtail	30	84	70	24	139		Unrepresentative
Jackdaw	30	<76	72	15	153		
Crow	30	167	82	53	129		
Woodpigeon	30	97	86	13	184		
Coot	30	31	94	40	300		Unrepresentative?
Mallard	30	112	<101	68	150		
Reed Warbler	30	24	103	43	253		Unrepresentative?
Blackcap	30	155	106	71	153		
Magpie	30	157	107	74	154		
Nuthatch	30	64	116	53	191		
Green Woodpecker	30	79	118	74	202		
Great Spotted Woodpecker	30	97	118	74	214		
Little Grebe	30	15	149	10	899		Unrepresentative? small sample
Stock Dove	30	75	157	63	293		
Mute Swan	30	20	174	34	403		Unrepresentative?

							small sample
Sparrowhawk	30	37	212	64	487		
Buzzard	30	22	332	204	954		Unrepresentative?
Shelduck	30	18	349	128	743		Unrepresentative? small sample
Collared Dove	30	71	1284	629	<2934		
Tufted Duck	30	16	<2327	918	4838		Unrepresentative? small sample

See Help for information on what the categories mean.

Finally there is a large group of birds associated with freshwater habitats.� For most of these the CBC and WBS cannot be said to provide monitoring of a representative portion of the population, but these results are interesting indicators of changes that may be affecting the whole populations.� We can be confident that **Grey Heron** populations have increased in England and Wales over the past 69 years and **Mallard** populations have increased on CBC and WBS plots. The increases recorded for **Mute Swan** on CBC and WBS are likely to be the result of the eradication of lead weights used by anglers. The reasons for increases of **Coot**, **Tufted Duck** and **Shelduck** are unclear, and the increase of **Little Grebe** on CBC plots contradicts the rapid decline shown on WBS plots, although neither scheme is likely to provide representative monitoring for a species that prefers still water bodies. Two waders have increased on WBS plots over the past 3 years: **Curlew** and **Oystercatcher**. The forthcoming Survey of Breeding Waders of Lowland Wet Meadows should provide more information on the lowland breeding populations of these species.

Table 4.4.2 >25% population increases for WBS waterways 1975-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Coot	23	39	63	4	200		
Mute Swan	23	43	67	21	156		
Reed Warbler	23	19	71	19	246		Small sample
Curlew	23	20	77	16	436		Small sample
Oystercatcher	23	23	109	74	164		
Mallard	23	93	190	116	286		

See Help for information on what the categories mean.

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4. DISCUSSION

4.5������� Changes in breeding performance

Changes in a range of aspects of breeding performance can be measured by the Nest Record Scheme and the Constant Effort Sites scheme.� The former provides information on components of breeding performance *per nesting attempt*, while 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 and before they are caught as juveniles � a period when losses of young can be high.

Breeding performance can change for a wide variety of reasons, such as changes in food supply for parents and young, changes in predation pressure, changes in weather.� In some cases, declines or improvements in breeding performance may help to drive or be the prime factor in driving population changes.� Conversely, breeding performance may change in an apparently contradictory direction to the changes in population size: breeding performance may improve as populations decline or breeding performance may decline as populations increase in size.� These changes may be the result of so-called �density dependent� changes, in which increased crowding causes increased competition for resources and hence declines in breeding performance, and *vice versa*.� Alternatively, such changes may result from the loss of birds from poorer areas as populations decline, or the colonisation of poorer areas as populations increase, such that overall breeding performance changes.

4.5.1 Changes in clutch and brood size

The species showing statistically significant trends in clutch and brood size over the past 30 years (out of the 72 tested) 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. 11 species respectively) there were many more species showing increases in brood size than decreases over the same period (28 vs. 5).

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	30	32	Linear decline	7.62 eggs	6.72 eggs	-0.9 eggs	
Mute Swan	30	19	Linear decline	5.88 eggs	5.09 eggs	-0.79 eggs	Small sample
Rook	30	12	Linear decline	4.05 eggs	3.32 eggs	-0.73 eggs	Small sample
Hen Harrier	30	13	Linear decline	5.09 eggs	4.44 eggs	-0.65 eggs	Small sample
Magpie	30	52	Curvilinear	5.55 eggs	4.91 eggs	-0.64 eggs	
Peregrine	30	16	Linear decline	3.69 eggs	3.11 eggs	-0.58 eggs	Small sample
Moorhen	30	98	Linear decline	6.52 eggs	6.08 eggs	-0.44 eggs	
Common Sandpiper	30	13	Linear decline	3.96 eggs	3.75 eggs	-0.21 eggs	Small sample
Crow	30	1968-1998	Linear decline	4.02 eggs	3.84 eggs	-0.18 eggs	
Pied Wagtail	30	61	Linear decline	5.12 eggs	4.98 eggs	-0.14 eggs	
Nightjar	27	16	Linear decline	1.99 eggs	1.91 eggs	-0.08 eggs	Small sample
Whitethroat	30	26	Curvilinear	4.59 eggs	4.53 eggs	-0.06 eggs	Small sample
Sparrowhawk	30	44	Curvilinear	4.37 eggs	4.35 eggs	-0.02 eggs	
Lapwing	30	131	Linear increase	3.69 eggs	3.81 eggs	0.12 eggs	
Yellowhammer	30	44	Linear increase	3.38 eggs	3.53 eggs	0.15 eggs	

Mistle Thrush	30	40	Linear increase	3.87 eggs	4.05 eggs	0.18 eggs	
Grey Wagtail	30	43	Linear increase	4.8 eggs	5.01 eggs	0.21 eggs	
Dunnock	30	104	Linear increase	3.91 eggs	4.18 eggs	0.27 eggs	
Whinchat	30	12	Linear increase	5.4 eggs	5.72 eggs	0.32 eggs	Small sample
Skylark	30	43	Linear increase	3.34 eggs	3.69 eggs	0.35 eggs	
Starling	30	86	Linear increase	4.44 eggs	4.8 eggs	0.36 eggs	
Wren	30	102	Curvilinear	5.64 eggs	6 eggs	0.36 eggs	
Stonechat	30	20	Linear increase	4.97 eggs	5.36 eggs	0.39 eggs	Small sample
Redstart	30	52	Linear increase	5.99 eggs	6.46 eggs	0.47 eggs	
Tree Sparrow	30	93	Linear increase	4.77 eggs	5.36 eggs	0.59 eggs	
Barn Owl	30	13	Linear increase	4.48 eggs	5.09 eggs	0.61 eggs	Small sample

See Help for information on what the categories mean.

For 10 species, significant changes in brood and clutch size were in the same direction (**Mute Swan** and **Long-tailed Tit**, negative; **Yellowhammer**, **Dunnock**, **Stonechat**, **Skylark**, **Grey Wagtail**, **Redstart**, **Tree Sparrow**, and **Wren**, all positive).� For three species, declines in clutch size were partially (**Rook** and **Magpie**) or fully (**Moorhen**) cancelled out by increases in average brood size, suggesting that conditions for young had improved for these species, although maybe conditions for the parents during egg-formation had declined.

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
Mute Swan	30	34	Curvilinear	4.47 chicks	3.74 chicks	-0.73 chicks	
Great Tit	30	163	Linear decline	7.36 chicks	6.75 chicks	-0.61 chicks	
Long-tailed Tit	30	27	Curvilinear	6.84 chicks	6.27 chicks	-0.57 chicks	Small sample
Yellow Wagtail	30	13	Linear decline	4.85 chicks	4.4 chicks	-0.45 chicks	Small sample
Great Spotted Woodpecker	30	14	Curvilinear	3.14 chicks	2.73 chicks	-0.41 chicks	Small sample
Wheatear	30	66	Curvilinear	4.72 chicks	4.75 chicks	0.03 chicks	
Collared Dove	30	67	Linear increase	1.76 chicks	1.83 chicks	0.07 chicks	
Swallow	30	303	Linear increase	4.13 chicks	4.25 chicks	0.12 chicks	
Willow Warbler	30	142	Curvilinear	5.24 chicks	5.38 chicks	0.14 chicks	
Red-throated Diver	18	42	Linear increase	1.25 chicks	1.44 chicks	0.19 chicks	
Chaffinch	30	143	Linear increase	3.61 chicks	3.8 chicks	0.19 chicks	
Spotted Flycatcher	30	137	Linear increase	3.64 chicks	3.86 chicks	0.22 chicks	
Yellowhammer	30	69	Curvilinear	2.96 chicks	3.19 chicks	0.23 chicks	
Linnet	30	127	Linear increase	4.12 chicks	4.36 chicks	0.24 chicks	
Dunnock	30	110	Linear increase	3.42 chicks	3.67 chicks	0.25 chicks	
Stonechat	30	52	Linear increase	4.65 chicks	4.94 chicks	0.29 chicks	
Skylark	30	75	Linear increase	3.13 chicks	3.45 chicks	0.32 chicks	
Jackdaw	30	75	Linear increase	2.75 chicks	3.08 chicks	0.33 chicks	
Kestrel	30	113	Linear increase	3.82 chicks	4.16 chicks	0.34 chicks	

Merlin	30	56	Linear increase	3.44 chicks	3.79 chicks	0.35 chicks	
Tree Pipit	30	29	Linear increase	4.33 chicks	4.74 chicks	0.41 chicks	Small sample
Grey Wagtail	30	88	Linear increase	4.06 chicks	4.5 chicks	0.44 chicks	
Dipper	30	151	Linear increase	3.49 chicks	3.95 chicks	0.46 chicks	
Rook	30	98	Linear increase	2.28 chicks	2.82 chicks	0.54 chicks	
Redstart	30	91	Curvilinear	5.09 chicks	5.63 chicks	0.54 chicks	
Sparrowhawk	30	85	Linear increase	3.37 chicks	3.93 chicks	0.56 chicks	
Magpie	30	88	Curvilinear	3.19 chicks	3.77 chicks	0.58 chicks	
Corn Bunting	30	12	Curvilinear	3.09 chicks	3.7 chicks	0.61 chicks	Small sample
Tree Sparrow	30	104	Linear increase	3.83 chicks	4.49 chicks	0.66 chicks	
Starling	30	222	Curvilinear	3.24 chicks	4.13 chicks	0.89 chicks	
Moorhen	30	80	Curvilinear	3.51 chicks	4.43 chicks	0.92 chicks	
Wren	30	130	Curvilinear	3.82 chicks	4.92 chicks	1.1 chicks	
Nuthatch	30	56	Curvilinear	4.06 chicks	5.61 chicks	1.55 chicks	

See Help for information on what the categories mean.

Changes that might be helping to drive the population changes are:

- Decreased clutch and population size: **Pied Wagtail**, although the change is relatively small.
- Decreased brood and population size: **Yellow Wagtail** � the decline in average brood size of nearly half a chick per nesting attempt is potentially important.� This is an aspect that the upcoming BTO project on Yellow Wagtails will need to investigate.
- Increased clutch and population size: **Redstart**.
- Increased brood and population size: Three corvids are prominent here; **Jackdaw**, **Rook** and **Magpie** have all enjoyed 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 change.� The Chaffinch has shown an increase in average brood size that may be link to its shallow population increase.� Finally the **Nuthatch**, which has been spreading its distribution northwards and has increased its abundance considerably, has enjoyed the largest increase in average clutch size of all species, over 1.5 extra young per nesting attempt. It would seem quite likely that this has helped to drive the population increase.

Density dependent changes in average clutch or brood sizes are suggested for 16 and 17 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 and therefore might be potential warnings of population declines.� For **Stonechat**, **Whinchat** and **Wheatear**, 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 30 years are shown in Tables 4.5.2.1 and 4.5.2.2 (75 and 69 species, respectively, were analysed in total). Although there was only a small preponderance of species showing declines in failure rates at the chick stage (16 vs. 9 species with increasing failure rates), there were three times as many species showing declines in failure rates at the egg stage than increases over the same period (35 vs. 11).�� Thus the general picture is of improving nesting success.

Table 4.5.2.1 Significant trends in egg-stage daily failure rate of nests

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

		sample					
Tree Pipit	30	12	Linear decline	0.0453 nests/day	0.0104 nests/day	-0.0349 nests/day	Small sample
Woodlark	30	16	Linear decline	0.047 nests/day	0.0127 nests/day	-0.0343 nests/day	Small sample
Jay	30	11	Linear decline	0.0542 nests/day	0.0234 nests/day	-0.0308 nests/day	Small sample
Redshank	30	32	Linear decline	0.0425 nests/day	0.0182 nests/day	-0.0243 nests/day	
Long-tailed Tit	30	51	Curvilinear	0.0316 nests/day	0.0085 nests/day	-0.0231 nests/day	
Magpie	30	59	Linear decline	0.0278 nests/day	0.0047 nests/day	-0.0231 nests/day	
Dipper	30	109	Linear decline	0.0225 nests/day	0.0023 nests/day	-0.0202 nests/day	
Yellowhammer	30	66	Curvilinear	0.0517 nests/day	0.0317 nests/day	-0.02 nests/day	
Wheatear	30	22	Linear decline	0.0219 nests/day	0.0077 nests/day	-0.0142 nests/day	Small sample
Treecreeper	30	25	Linear decline	0.0206 nests/day	0.0071 nests/day	-0.0135 nests/day	Small sample
Snipe	30	18	Linear decline	0.032 nests/day	0.0189 nests/day	-0.0131 nests/day	Small sample
Crow	30	56	Linear decline	0.0161 nests/day	0.0034 nests/day	-0.0127 nests/day	
Robin	30	187	Curvilinear	0.0248 nests/day	0.0131 nests/day	-0.0117 nests/day	
Song Thrush	17	375	Linear decline	0.0417 nests/day	0.033 nests/day	-0.0087 nests/day	
Tawny Owl	30	54	Linear decline	0.0101 nests/day	0.0023 nests/day	-0.0078 nests/day	
Starling	30	131	Linear decline	0.0114 nests/day	0.0041 nests/day	-0.0073 nests/day	
Redstart	30	78	Linear decline	0.0115 nests/day	0.0044 nests/day	-0.0071 nests/day	
Marsh Tit	30	19	Linear decline	0.0082 nests/day	0.0018 nests/day	-0.0064 nests/day	Small sample
Curlew	30	28	Curvilinear	0.03 nests/day	0.0237 nests/day	-0.0063 nests/day	Small sample
Jackdaw	30	48	Linear decline	0.0081 nests/day	0.0024 nests/day	-0.0057 nests/day	
Kestrel	30	41	Linear decline	0.0064 nests/day	0.001 nests/day	-0.0054 nests/day	
Pied Wagtail	30	84	Linear decline	0.0176 nests/day	0.0123 nests/day	-0.0053 nests/day	
Barn Owl	30	11	Linear decline	0.0066 nests/day	0.0021 nests/day	-0.0045 nests/day	Small sample
Wren	30	151	Curvilinear	0.0171 nests/day	0.0129 nests/day	-0.0042 nests/day	
Buzzard	30	23	Linear decline	0.0062 nests/day	0.0022 nests/day	-0.004 nests/day	Small sample
Tree Sparrow	30	122	Curvilinear	0.0069 nests/day	0.003 nests/day	-0.0039 nests/day	
Stock Dove	30	62	Curvilinear	0.0116 nests/day	0.0079 nests/day	-0.0037 nests/day	
Collared Dove	30	57	Curvilinear	0.0313 nests/day	0.0282 nests/day	-0.0031 nests/day	
Sedge Warbler	30	49	Curvilinear	0.0147 nests/day	0.0117 nests/day	-0.003 nests/day	
Sparrowhawk	30	40	Linear decline	0.0043 nests/day	0.0015 nests/day	-0.0028 nests/day	
Great Tit	30	156	Linear decline	0.0062 nests/day	0.0037 nests/day	-0.0025 nests/day	
Blue Tit	30	138	Linear decline	0.0048 nests/day	0.0029 nests/day	-0.0019 nests/day	
Spotted Flycatcher	30	127	Curvilinear	0.0181 nests/day	0.0169 nests/day	-0.0012 nests/day	
Dunnock	30	146	Curvilinear	0.0269 nests/day	0.026 nests/day	-0.0009 nests/day	
Swallow	30	232	Curvilinear	0.0028 nests/day	0.0026 nests/day	-0.0002 nests/day	
Raven	30	19	Curvilinear	0.0024 nests/day	0.0049 nests/day	0.0025 nests/day	Small sample
Moorhen	30	113	Curvilinear	0.0146 nests/day	0.0199 nests/day	0.0053 nests/day	
Chaffinch	30	170	Curvilinear	0.0307 nests/day	0.0362 nests/day	0.0055 nests/day	

Lapwing	30	143	Curvilinear	0.0175 nests/day	0.0232 nests/day	0.0057 nests/day	
Oystercatcher	30	112	Linear increase	0.0129 nests/day	0.0205 nests/day	0.0076 nests/day	
Linnet	30	160	Linear increase	0.0175 nests/day	0.0275 nests/day	0.01 nests/day	
Ringed Plover	30	131	Curvilinear	0.0295 nests/day	0.0439 nests/day	0.0144 nests/day	
Red-throated Diver	18	17	Linear increase	0.005 nests/day	0.0199 nests/day	0.0149 nests/day	Small sample
Reed Bunting	30	57	Linear increase	0.0067 nests/day	0.0257 nests/day	0.019 nests/day	
Mute Swan	30	26	Curvilinear	0.0086 nests/day	0.0556 nests/day	0.047 nests/day	Small sample
Rook	30	39	Curvilinear	0.0175 nests/day	0.0683 nests/day	0.0508 nests/day	

See Help for information on what the categories mean.

For 10species, significant changes in egg and chick failure rates were in the same direction (**Linnet**, positive; **Woodlark**, **Magpie**, **Yellowhammer**, **Crow, Jackdaw**, **Starling**, **Pied Wagtail**, **Barn Owl** and **Wheatear**, all negative).� For four species, declines in egg-stage failure rates were partially (**Dipper** and **Long-tailed Tit**) or fully (**Wren** and **Spotted Flycatcher**) cancelled out by increases in chick-stage failure rates, suggesting that opposing factors may affect nest success at the different stages for these species.

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
Grey Heron	30	26	Linear decline	0.0688 nests/day	0.0008 nests/day	-0.068 nests/day	Small sample
Corn Bunting	30	12	Linear decline	0.0367 nests/day	0.0109 nests/day	-0.0258 nests/day	Small sample
Meadow Pipit	30	70	Linear decline	0.0297 nests/day	0.0106 nests/day	-0.0191 nests/day	
Ring Ouzel	30	16	Linear decline	0.0229 nests/day	0.0064 nests/day	-0.0165 nests/day	Small sample
Woodlark	30	22	Curvilinear	0.0537 nests/day	0.0374 nests/day	-0.0163 nests/day	Small sample
Magpie	30	57	Linear decline	0.0177 nests/day	0.0021 nests/day	-0.0156 nests/day	
Bullfinch	30	35	Linear decline	0.0309 nests/day	0.016 nests/day	-0.0149 nests/day	
Yellowhammer	30	51	Curvilinear	0.0479 nests/day	0.0385 nests/day	-0.0094 nests/day	
Jackdaw	30	45	Linear decline	0.0121 nests/day	0.0037 nests/day	-0.0084 nests/day	
Grey Wagtail	30	63	Curvilinear	0.0146 nests/day	0.0081 nests/day	-0.0065 nests/day	
Reed Warbler	30	91	Linear decline	0.0177 nests/day	0.0117 nests/day	-0.006 nests/day	
Crow	30	45	Linear decline	0.0064 nests/day	0.0027 nests/day	-0.0037 nests/day	
Starling	30	156	Linear decline	0.0059 nests/day	0.0028 nests/day	-0.0031 nests/day	
Pied Wagtail	30	91	Curvilinear	0.015 nests/day	0.0125 nests/day	-0.0025 nests/day	
Barn Owl	30	38	Linear decline	0.0024 nests/day	0.0003 nests/day	-0.0021 nests/day	
Wheatear	30	45	Curvilinear	0.0138 nests/day	0.013 nests/day	-0.0008 nests/day	
Dipper	30	86	Curvilinear	0.0052 nests/day	0.0068 nests/day	0.0016 nests/day	
Swallow	30	205	Linear increase	0.0025 nests/day	0.0052 nests/day	0.0027 nests/day	
Spotted Flycatcher	30	113	Linear increase	0.0093 nests/day	0.0145 nests/day	0.0052 nests/day	
Wren	30	104	Curvilinear	0.0094 nests/day	0.0154 nests/day	0.006 nests/day	
Blackcap	30	35	Curvilinear	0.0248 nests/day	0.0309 nests/day	0.0061 nests/day	
Linnet	30	113	Linear increase	0.0146 nests/day	0.022 nests/day	0.0074 nests/day	

Willow Warbler	30	131	Linear increase	0.0143 nests/day	0.022 nests/day	0.0077 nests/day	
Long-tailed Tit	30	35	Linear increase	0.0074 nests/day	0.0159 nests/day	0.0085 nests/day	
Nightjar	27	20	Linear increase	0.0019 nests/day	0.0167 nests/day	0.0148 nests/day	Small sample

See Help for information on what the categories mean.

Density dependent changes in egg- or chick-stage failure rates are suggested for 19 and 11 species respectively, i.e. failure rates have increased as populations have increased or *vice versa*.�

Changes that might be helping to drive the population changes are:

- Increased egg-stage failure rates and decreased population size: **Lapwing**, **Linnet**, and **Reed Bunting**.� For the first two species, studies have suggested that this is an important factor in their population declines (Peach *et al.* 1994; Siriwardena *et al.* 2000b) and for the last species, it has been suggested that breeding performance may be holding back population recovery (Peach *et al.* 1999). **Moorhen** is also a species of potential concern because of increases in egg-stage failure rates that are concurrent with population declines measured by the CBC on farmland.
- Decreased egg-stage failure rates and increased population size: Corvids appear to have benefited from improvements in nesting success at the egg stage: **Jay**, **Magpie, Crow** and **Jackdaw**, as have **Sparrowhawk** and **Buzzard**.� Changes in persecution and the decline of the impact of organochlorine pesticides are likely to have been important factors for 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, being a relatively early nester that has taken advantage of recent climate warming (Crick *et al.* 1997, Crick & Sparks 1999) improvements in breeding performance may have helped this species� population to expand.� Four other insectivores, **Great** & **Blue Tits**, **Robin** and **Redstart** have shown population increases with improved nest success.�� The improvements in the nesting success of **Collared Dove** and **Stock Dove** could have major impacts on population size, given the relatively large number of nesting attempts made by each species each year.
- Decreased chick-stage failure rates and increased population size: Three corvids again feature here, **Jackdaw** and **Magpie**, as does the **Woodlark**, all enjoying declines in chick-stage failure rates. **Grey Heron** populations have shown a steady increase over the years, and improvements in chick-stage nest survival may have played a part in recent years, perhaps helped by the declining impact of organochlorine pesticides and improvements in water quality of riverine and standing waterbodies. **Reed Warbler** is a species that has expanded its range in the UK over the years, and the small improvement nest success at the chick stage may have played a part.

Three species show increased chick-stage failure rates and decreased population size, but BTO studies suggest that these are unlikely to have driven the population declines: **Spotted Flycatcher**, **Linnet**, **Willow Warbler**.

For a few species, long-term population data are not available and changes in nest failure rates may provide a potential warning of population declines, either because they have the potential to drive population decline (**Red-throated Diver** and **Ringed Plover**) or because they are the result of density dependent changes (**Wheatear**, **Tawny Owl** and **Ring Ouzel**).�

4.5.3 Changes in productivity from CES

The CES has only been in operation since 1983, so the changes in productivity shown in table 4.5.3 covers about 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, 21 species show declines in productivity and only 7 show improvements.�

Eight of the declines in productivity are greater than 25% over 14 years and a further 3 are greater than 50%.� For three of these species, **Redpoll**, **Spotted Flycatcher** and **Willow Warbler**, there have been substantial population declines.� While for the latter two species, declines in nesting success are unlikely to have been a major factor in driving their population declines, 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: the large decline (-43%) in CES productivity should be of conservation concern.� The declines in productivity may be a factor holding back the recovery of **Linnet**, **Reed Bunting** and **Whitethroat**, which 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, in which declines have been shown over large parts of its range.�The importance of the substantial declines in productivity of **Greenfinch**, **Blue Tit**, **Sedge Warbler** and **Garden Warbler** is unclear at the moment, but warrant close attention.

Only two species show increases greater than 10%: **Reed Warbler** and **Bullfinch**, both of which have shown declines over the last 14 years.�� These increases in productivity are also shown by the Nest Record Scheme and may reflect a density dependent response to population decline.

Table 4.5.3 Changes in productivity indices (Percentage juveniles) for CES 1984-1998 (14 years)

Species	Mean annual sample	Change	Comment
Nightingale	12	-70%[>50]	Small sample
Greenfinch	45	-64%[>50*]	
Linnet	24	-56%[>50]	
Lesser Redpoll	22	-43%[>25]	
Spotted Flycatcher	25	-39%[>25]	
Blue Tit	96	-39%[>25*]	
Sedge Warbler	66	-39%[>25]	
Garden Warbler	78	-37%[>25]	
Willow Warbler	96	-36%[>25*]	
Reed Bunting	60	-26%[>25]	
Whitethroat	71	-25%[>25]	
Song Thrush	85	-24%	
Great Tit	94	-16%	
Yellowhammer	26	-11%	
Treecreeper	63	-11%	
Robin	95	-8%	
Blackcap	91	-8%	
Blackbird	95	-8%	
Goldfinch	35	-7%	
Chaffinch	80	-6%	
Willow Tit	40	-5%	
Dunnock	95	1%	
Long-tailed Tit	78	1%	
Lesser Whitethroat	57	2%	
Wren	96	4%	
Chiffchaff	81	6%	
Reed Warbler	57	12%	
Bullfinch	85	13%	

See Help for information on what the categories mean.

4.5.4 Changes in average laying dates

Laying dates have been getting earlier over the past 25 years for many species (Crick *et al.*1997) and have shown 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 30 years, the majority of species with significant trends show trends towards earlier laying (data for 63 species were analysed in total).� Thus 22 species are laying between 22 days and 2 days earlier, on average, than they were 30 years ago.� There are no taxonomic or ecological associations between the species showing such changes, as they seem to occur across the board (Crick *et al.* 1997). Only two species show significant changes towards later laying, both 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 39 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 30 years (1968-1998)

NESPNUM	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Magpie	40	Curvilinear	day 110	day 88	-22 days	
Corn Bunting	15	Earlier laying	day 181	day 165	-16 days	Small sample
Tree Pipit	17	Curvilinear	day 145	day 132	-13 days	Small sample
Chiffchaff	40	Curvilinear	day 135	day 123	-12 days	
Long-tailed Tit	43	Curvilinear	day 108	day 96	-12 days	
Greenfinch	99	Earlier laying	day 145	day 134	-11 days	
Nuthatch	25	Earlier laying	day 122	day 113	-9 days	Small sample
Chaffinch	115	Curvilinear	day 129	day 121	-8 days	
Oystercatcher	47	Earlier laying	day 137	day 130	-7 days	
Dipper	65	Earlier laying	day 108	day 101	-7 days	
Wren	92	Curvilinear	day 133	day 126	-7 days	
Redstart	66	Curvilinear	day 140	day 133	-7 days	
Ring Ouzel	27	Earlier laying	day 135	day 128	-7 days	Small sample
Marsh Tit	14	Earlier laying	day 118	day 111	-7 days	Small sample
Treecreeper	14	Earlier laying	day 127	day 120	-7 days	Small sample
Swallow	93	Curvilinear	day 170	day 164	-6 days	
Meadow Pipit	44	Earlier laying	day 138	day 132	-6 days	
Blackcap	36	Curvilinear	day 139	day 133	-6 days	
Crow	36	Linear decline	day 108	day 102	-6 days	
Willow Warbler	92	Earlier laying	day 139	day 136	-3 days	
Jackdaw	20	Curvilinear	day 113	day 110	-3 days	Small sample
Reed Warbler	147	Curvilinear	day 166	day 164	-2 days	
Skylark	23	Curvilinear	day 146	day 148	2 days	Small sample
Grey Heron	15	Curvilinear	day 99	day 110	11 days	Small sample

See Help for information on what the categories mean.

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4. DISCUSSION

4.6����Discussion of trends

4.6.1 Candidates for conservation listing

The new analyses presented in this report suggest that conditions have worsened sufficiently for several new species to be considered as potential candidates for listing as species of conservation concern when the lists are revised.� As described in section 6, the species listed as Priority Species under the Government�s Biodiversity Action Plan (BAP) are broadly equivalent to those that are Red-listed by the conservation Non-Governmental Organisations (Gibbons *et al.* 1996), and those listed as (non-priority) BAP Species of Conservation Concern are broadly equivalent as Amber-listed species on the NGO list.�

Under the criteria used at the first listing **Yellowhammer** would come straight onto the Red list, with a population decline of >50%, and **Mistle Thrush**, **Willow Warbler** and **Cuckoo** would come onto the Amber list, with population declines of >25%.

However, under the current criteria, several species would not be included although they certainly warrant urgent conservation attention.� These include **House Sparrow** (candidate Red), and **Yellow** and **Grey Wagtails** (candidate Red and Amber listing, respectively), which have undergone substantial population declines, but have been monitored for slightly less than the previously required 25-year period. **Whitethroat** (candidate Red) could be included because it suffered a large population crash more than 25 years ago, but has since shown only a poor recovery, and certainly a much slower rate than would be expected if conditions had not remained poor for the species (conditions may have declined in the UK).�

Then there are a number of species that have declined substantially, but the monitoring schemes may not be representative for the whole population. �However, substantial declines in part of the population, when there is insufficient information to be sure that such declines have *not* occurred for the remainder, could be a valid reason for conservation listing under the precautionary principle.�� The species that are potential candidates for Red listing under this criterion are: **Redpoll** and **Tree Pipit**; and for Amber listing are: **Meadow Pipit** and **Lapwing**.

4.6.2 Candidates for changed conservation listing

Three species are candidates for upgrading from Amber to Red listing: **Starling**, and **Willow** and **Marsh Tits**, all three having declined substantially more than 50% over the past 30 years.� **Woodcock** is also a candidate for upgrading, although it is a species for which the monitoring programme may not be representative of the population in the UK as a whole: it was previously listed because of a decline in distribution, but the CBC now shows a decline in population size of >50%.

Two species warrant downgrading from Red to Amber listing, if 30 years is used as the period over which declines are assessed, but not because of a substantial improvement in their population trajectories: **Bullfinch** and **Reed Bunting**. The same applies to **Kestrel**, which shows little change over 30 years because it was still recovering from the impact of organochlorine pesticide effects in the early 1960s.� However, it still shows a decline of >25% over the last 25 years, because this is measured from the period at which it had generally recovered.

The population trajectories of two species are sufficiently changed to justify removal from the conservation listings: **Swallow** and **Goldfinch**.� Both species show relatively large-scale medium-term population fluctuations that resulted in their previous listings, but populations have recovered sufficiently to show no long-term trend over the past 30 years. The precautionary principle requires that alerts should be raised so that the statutory conservation agencies and non-governmental conservation bodies are aware of potentially worrying declines, even if they are later found to be just part of the natural range of fluctuation. Such alerts are increasingly unlikely to occur as monitoring time series increase in length and the presence of such medium-term fluctuations become more apparent for those species affected.

4.6.3 Accelerating declines

A source of considerable concern for conservation agencies should be that several species that are on the lists of conservation concern have actually accelerated their decline since the list was drawn up in 1996.� This is despite the presence of costed government Biodiversity Action Plans for some of them.� Thus the Red-listed **Grey Partridge**, **Turtle Dove**, **Tree Sparrow**, **Bullfinch** and **Corn Bunting** all show population declines of greater than 25% on CBC or BBS plots over the last 5 years.� **Kestrel**, **Starling** and **Willow Tit**, currently Amber-listed (but the last two, candidates for Red-listing), also show declines of greater than 25% over the past 5 years on CBC or BBS plots.�

Similarly, several species that have been in decline for several years, but were not considered sufficiently well-monitored throughout the UK to be listed previously, have shown a particularly large percentage decline (of >25%) over the last 5 years on CBC or BBS plots: **Yellow Wagtail**, **Tree Pipit** and **Redpoll**.� Also, two candidate species for Red or Amber listing have reached that state as a result of accelerated declines over the last 5 years: **Cuckoo** and **Yellowhammer**.

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 driving the population declines (**Linnet, Lapwing** and possibly **Nightingale**) or helping to inhibit recovery (possibly **Reed Bunting** and **Whitethroat**).� The importance of declining breeding performance for declining **Redpoll**, **Yellow** and **Pied Wagtail** and for farmland **Moorhen** populations is, as yet, undetermined.�

There are also a number of species for which increasing breeding performance may be helping to drive population expansion.� This applies to the predatory **Grey Heron**, **Sparrowhawk** and **Buzzard**; the corvids **Jackdaw**, **Magpie**, **Crow**, **Jay** and **Rook**; the seed-eaters, **Collared Dove**, **Stock Dove**, **Chaffinch** 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 decline (**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 warrant close attention.

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4. DISCUSSION

4.7������ Future Developments

The key development in this report is to provide it as a web-based report.� This allows the provision of a much greater range of information and results than previously, increasing the applicability of BTO information and its use by conservation and other bodies.� In the future, we hope to introduce other web-based features, such as the ability to undertake interactive, user-defined tabulations of the data.� This will serve to increase the value of the information and increase its usefulness for wider range of applications.

In the last report (Crick *et al.* 1998), several potential future developments have, indeed, been implemented in this new report.� Thus, we have introduced more appropriate regression analysis (Loglinear Poisson regression for population indices) and Generalised Additive Model smoothing techniques.� We have also implemented a more sophisticated system of alerts that we hope will have a broad applicability within the conservation science sphere.

While some moves have been made toward the provision of regional information, by the provision of country indices from the BBS, there is more that could be done in this regard, particularly for CBC, WBS, CES and NRS data, where there are sufficient sample sizes to permit this.� Other types of categorisation have yet to be implemented and will need discussion with JNCC and the Country Conservation Agencies.� The use of Landscape-based reporting (derived from perhaps the Countryside Survey 2000, organised by the Centre for Ecology & Hydrology) or, perhaps more appropriate species-specific habitat-based reporting could be considered.

Some form of survival rate monitoring is possible through the use of the BTO Age Specific Totals dataset derived from the Ringing Scheme. These were introduced in 1985 to collect cohort sizes (the numbers of adults, juveniles, pulli and unaged) of birds ringed during the summer (April to September) of each year (Baillie & Green 1987).�� Twenty-two species of passerine are included, covering a range of common migrant and resident birds.� This information, when combined with information on the numbers of ringed birds recovered each year, allows the calculation of age-specific survival rates, while accounting for age- and year-specific variation in recovery reporting rates.� Without information from the Age Specific Totals Lists, recovery reporting rates must be assumed to be constant, which could lead to biases in estimates of survival (Baillie & McCulloch 1993).� Ringing data submitted on disk will soon extend the range of species for which such analyses are possible.� It should be possible to provide further information on changes in survival in future reports.

4.8������Conclusion

We hope that this report will be both useful as a ready source of information for the day-to-day use of 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 and pointers about how populations are changing and where further research and conservation action needs to be taken.�

The report raises Alerts due to declines in population size or breeding performance for a considerable number of species.� These alerts will help inform conservation organisations when they are drawing up their plans for priority work, especially as the current lists, such as the *Conservation Importance List*, quickly become dated.

The information in this report on demographic factors will also help conservation organisations to target their resources more effectively.� For declining species of conservation importance, declines in breeding performance show that conservation action may need to be targeted at the breeding season; the lack of a decline in breeding performance suggests that either loss of habitat or changes in the factors affecting survival are more likely to be playing a role rather than factors affecting nesting success.

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

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4. DISCUSSION

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4. Discussion

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

4.9.1 Tables of alerts and population increases from CBC

4.9.2 Tables of alerts and population increases from WBS

4.9.3 Tables of alerts and population increases from CES

4.9.4 Tables of alerts and population increases from BBS

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4.9.1 Tables of alerts and population increases from CBC

1. Table of alerts for CBC all habitats 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	30	60	-95	-98	-88	>50	
Lesser Redpoll	30	43	-90	-95	-84	>50	Unrepresentative?
Grey Partridge	30	60	-83	-88	-77	>50	
Corn Bunting	30	24	-83	-91	-68	>50	
Spotted Flycatcher	30	70	-79	-86	-72	>50	
Tree Pipit	30	33	-77	-88	-65	>50	Unrepresentative
Woodcock	30	20	-70	-85	-48	>50	Unrepresentative? small sample
Starling	30	127	-70	-78	-61	>50	
Turtle Dove	30	60	-69	-81	-57	>50	
Willow Tit	30	32	-69	-82	-46	>50	
Marsh Tit	30	55	-66	-76	-53	>50	
Song Thrush	30	204	-60	-65	-50	>50	
Linnet	30	123	-59	-69	-45	>50	
Whitethroat	30	118	-57	-68	-39	>50	
Yellowhammer	30	133	-54	-63	-45	>50	
Skylark	30	121	-53	-62	-45	>50	
Bullfinch	30	137	-50	-59	-40	>25	
Reed Bunting	30	85	-49	-60	-35	>25	
Dunnock	30	205	-46	-54	-37	>25	
Mistle Thrush	30	143	-43	-51	-33	>25	
Willow Warbler	30	190	-39	-52	-21	>25	
Lapwing	30	53	-34	-62	-3	>25	Unrepresentative
Meadow Pipit	30	44	-34	-65	-3	>25	Unrepresentative
Cuckoo	30	105	-32	-48	-14	>25	
Blackbird	30	225	-26	-34	-19	>25	

2. Table of alerts for CBC all habitats 1973-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	25	55	-94	-98	-87	>50	
Lesser Redpoll	25	42	-94	-97	-91	>50	Unrepresentative?

Corn Bunting	25	22	-86	-93	-75	>50	
Grey Partridge	25	57	-83	-87	-77	>50	
Tree Pipit	25	32	-77	-87	-64	>50	Unrepresentative
Spotted Flycatcher	25	69	-77	-83	-69	>50	
Willow Tit	25	31	-75	-86	-57	>50	
Woodcock	25	21	-72	-88	-50	>50	Unrepresentative?
Lesser Spotted Woodpecker	25	18	-72	-88	-41	>50	Small sample
Turtle Dove	25	59	-69	-81	-56	>50	
Starling	25	129	-61	-70	-51	>50	
Reed Bunting	25	84	-61	-70	-53	>50	
Song Thrush	25	208	-57	-63	-48	>50	
Goldcrest	25	99	-57	-68	-40	>50	
Bullfinch	25	140	-56	-64	-48	>50	
Yellowhammer	25	134	-56	-63	-47	>50	
Linnet	25	124	-55	-65	-43	>50	
Skylark	25	121	-54	-62	-47	>50	
Marsh Tit	25	55	-52	-64	-36	>50	
House Sparrow	25	48	-51	-76	-29	>50	
Dunnock	25	210	-46	-54	-38	>25	
Meadow Pipit	25	45	-43	-68	-25	>25	Unrepresentative
Mistle Thrush	25	148	-43	-51	-35	>25	
Lapwing	25	53	-40	-62	-18	>25	Unrepresentative
Willow Warbler	25	194	-31	-44	-14	>25	
Red-legged Partridge	25	37	-29	-51	-3	>25	
Cuckoo	25	109	-29	-44	-10	>25	
Kestrel	25	85	-26	-44	-2	>25	
Blackbird	25	231	-25	-32	-18	>25	

3. Table of alerts for CBC all habitats 1988-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	10	15	-80	-89	-68	>50	Unrepresentative? small sample
Tree Pipit	10	21	-68	-81	-54	>50	Unrepresentative
Spotted Flycatcher	10	48	-59	-67	-48	>50	
Tree Sparrow	10	22	-58	-80	-27	>50	
Lesser Spotted Woodpecker	10	11	-56	-80	-27	>50	Small sample
Willow Tit	10	20	-56	-69	-38	>50	Small sample
Grey Partridge	10	40	-52	-62	-41	>50	
Starling	10	105	-45	-55	-35	>25	
Yellowhammer	10	111	-44	-51	-39	>25	
Woodcock	10	14	-39	-68	-11	>25	Unrepresentative? small sample

Turtle Dove	10	42	-39	-55	-22	>25	
Lesser Whitethroat	10	54	-31	-44	-18	>25	
Willow Warbler	10	172	-28	-38	-19	>25	
House Sparrow	10	65	-28	-47	-6	>25	

4. Table of alerts for CBC all habitats 1993-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Lesser Redpoll	5	11	-49	-70	-17	>25	Unrepresentative? small sample
Lesser Spotted Woodpecker	5	9	-42	-70	-15	>25	Small sample
Willow Tit	5	18	-33	-45	-17	>25	Small sample
Tree Pipit	5	20	-31	-53	-13	>25	Unrepresentative, small sample
Tree Sparrow	5	15	-30	-54	-6	>25	Small sample
Grey Partridge	5	38	-29	-39	-17	>25	
Starling	5	98	-27	-34	-19	>25	

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4.9.1 Tables of alerts and population increases from CBC

5. Table of alerts for CBC farmland 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	30	40	-94	-98	-86	>50	
Spotted Flycatcher	30	34	-79	-88	-67	>50	
Turtle Dove	30	27	-78	-89	-62	>50	
Song Thrush	30	86	-71	-78	-65	>50	
Bullfinch	30	49	-64	-76	-51	>50	
Starling	30	66	-60	-73	-47	>50	
Mistle Thrush	30	61	-59	-68	-50	>50	
Skylark	30	85	-51	-60	-42	>50	
Linnet	30	74	-50	-62	-32	>25	
Sedge Warbler	30	24	-48	-70	-5	>25	Unrepresentative
Dunnock	30	93	-44	-53	-33	>25	
Whitethroat	30	65	-43	-55	-24	>25	
Blackbird	30	97	-42	-47	-34	>25	
Yellowhammer	30	75	-42	-55	-29	>25	
Reed Bunting	30	52	-42	-59	-18	>25	
Lapwing	30	41	-40	.	.	>25	Unrepresentative
Moorhen	30	57	-32	-48	-11	>25	

6. Table of alerts for CBC farmland 1973-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	25	35	-93	-97	-86	>50	
Turtle Dove	25	26	-79	-88	-65	>50	
Spotted Flycatcher	25	32	-75	-86	-60	>50	
Bullfinch	25	48	-70	-79	-59	>50	
Song Thrush	25	83	-69	-75	-63	>50	
Reed Bunting	25	50	-57	-68	-42	>50	
Mistle Thrush	25	59	-56	-63	-47	>50	
Skylark	25	84	-53	-60	-44	>50	
Starling	25	66	-51	-65	-34	>50	
Goldcrest	25	27	-50	-68	-22	>50	
Linnet	25	73	-47	-58	-31	>25	

Moorhen	25	55	-45	-54	-31	>25	
Dunnock	25	92	-45	-55	-34	>25	
Yellowhammer	25	73	-45	-56	-36	>25	
Lapwing	25	39	-44	.	.	>25	Unrepresentative
Treecreeper	25	30	-44	-66	-22	>25	
Blackbird	25	96	-38	-44	-32	>25	

7. Table of alerts for CBC farmland 1988-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	10	17	-63	-84	-38	>50	Small sample
Spotted Flycatcher	10	24	-55	-67	-42	>50	
Turtle Dove	10	20	-42	-60	-23	>25	Small sample
Yellowhammer	10	69	-40	-48	-32	>25	
Starling	10	64	-30	-44	-18	>25	

8. Table of alerts for CBC farmland 1993-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Tree Sparrow	5	12	-36	-64	-6	>25	Small sample

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4.9.1 Tables of alerts and population increases from CBC

9. Table of alerts for CBC woodland 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	30	21	-87	.	.	>50	
Spotted Flycatcher	30	23	-83	-91	-76	>50	
Starling	30	37	-83	-94	-70	>50	
Whitethroat	30	29	-82	-89	-63	>50	
Yellowhammer	30	34	-74	-85	-59	>50	
Turtle Dove	30	20	-72	.	.	>50	Small sample
Marsh Tit	30	39	-65	-77	-50	>50	
Cuckoo	30	35	-60	-73	-36	>50	
Dunnock	30	71	-58	-66	-47	>50	
Song Thrush	30	80	-50	-59	-35	>25	
Willow Warbler	30	76	-50	-70	-29	>50	
Bullfinch	30	59	-38	-52	-22	>25	

10. Table of alerts for CBC woodland 1973-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Starling	25	38	-81	-92	-72	>50	
Linnet	25	21	-79	.	.	>50	
Spotted Flycatcher	25	23	-77	-86	-69	>50	
Yellowhammer	25	35	-74	-84	-61	>50	
Turtle Dove	25	20	-70	.	.	>50	Small sample
Cuckoo	25	37	-58	-72	-36	>50	
Whitethroat	25	29	-57	-70	-27	>50	
Goldcrest	25	56	-57	-73	-32	>50	
Dunnock	25	75	-56	-65	-46	>50	
Marsh Tit	25	40	-54	-68	-41	>50	
Song Thrush	25	86	-45	-57	-31	>25	
Bullfinch	25	63	-44	-59	-30	>25	

Willow Warbler	25	80	-41	-62	-21	>25	
Long-tailed Tit	25	66	-32	-50	-6	>25	
Mistle Thrush	25	62	-26	-44	-2	>25	

11. Table of alerts for CBC woodland 1988-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Starling	10	27	-71	-82	-60	>50	
Spotted Flycatcher	10	19	-67	-76	-58	>50	Small sample
Yellowhammer	10	28	-60	-76	-44	>50	
Turtle Dove	10	15	-46	.	.	>25	Small sample
Cuckoo	10	33	-32	-49	-9	>25	
Willow Warbler	10	78	-30	-48	-18	>25	

12. Table of alerts for CBC woodland 1993-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Starling	5	24	-47	-61	-36	>25	
Yellowhammer	5	25	-34	-56	-11	>25	
Turtle Dove	5	13	-29	.	.	>25	Small sample

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4.9.1 Tables of alerts and population increases from CBC

Table of population increases for CBC all habitats 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Long-tailed Tit	30	129	53	13	111		
Pied Wagtail	30	84	70	24	139		Unrepresentative
Jackdaw	30	76	72	15	153		
Crow	30	167	82	53	129		
Woodpigeon	30	97	86	13	184		
Coot	30	31	94	40	300		Unrepresentative?
Mallard	30	112	101	68	150		
Reed Warbler	30	24	103	43	253		Unrepresentative?
Blackcap	30	155	106	71	153		
Magpie	30	157	107	74	154		
Nuthatch	30	64	116	53	191		
Green Woodpecker	30	79	118	74	202		
Great Spotted Woodpecker	30	97	118	74	214		
Little Grebe	30	15	149	10	899		Unrepresentative? small sample
Stock Dove	30	75	157	63	293		
Mute Swan	30	20	174	34	403		Unrepresentative? small sample
Sparrowhawk	30	37	212	64	487		
Buzzard	30	22	332	204	954		Unrepresentative?
Shelduck	30	18	349	128	743		Unrepresentative? small sample
Collared Dove	30	71	1284	629	2934		
Tufted Duck	30	16	2327	918	4838		Unrepresentative? small sample

Table of population increases for CBC farmland 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wren	30	93	55	.	.		
Great Tit	30	89	61	.	.		
Crow	30	77	65	.	.		
Magpie	30	71	67	.	.		
Pied Wagtail	30	58	69	.	.		Unrepresentative

Mallard	30	63	75	.	.		
Long-tailed Tit	30	46	86	.	.		
Blackcap	30	56	143	.	.		
Stock Dove	30	37	158	.	.		
Coal Tit	30	27	169	.	.		
Green Woodpecker	30	23	237	.	.		
Great Spotted Woodpecker	30	27	344	.	.		
Collared Dove	30	40	1410	.	.		

Table of population increases for CBC woodland 1968-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Blackcap	30	71	54	.	.		
Green Woodpecker	30	43	60	.	.		
Crow	30	59	73	.	.		
Nuthatch	30	43	139	.	.		
Magpie	30	56	186	.	.		
Jackdaw	30	25	199	.	.		

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4.9.2 Tables of alerts and population increases from WBS

Table of alerts for WBS waterways 1975-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	23	22	-81	-94	-70	>50	
Reed Bunting	23	53	-68	-76	-56	>50	
Little Grebe	23	18	-51	-79	-4	>50	Small sample
Pied Wagtail	23	67	-49	-62	-35	>25	
Grey Wagtail	23	57	-48	-61	-30	>25	

Table of alerts for WBS waterways 1988-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	10	18	-68	-83	-55	>50	Small sample
Redshank	10	19	-32	-44	-23	>25	Small sample

Table of alerts for WBS waterways 1993-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Yellow Wagtail	5	17	-46	-65	-26	>25	Small sample

Table of population increases for WBS waterways 1975-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Coot	23	39	63	4	200		
Mute Swan	23	43	67	21	156		
Reed Warbler	23	19	71	19	246		Small sample
Curlew	23	20	77	16	436		Small sample
Oystercatcher	23	23	109	74	164		
Mallard	23	93	190	116	286		

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4.9.3 Tables of alerts and population increases from CES

Table of alerts for CES adults 1984-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	14	21	-87	.	.	[>50*]	
Lesser Redpoll	14	20	-75	.	.	[>50*]	Small sample
Yellowhammer	14	23	-58	.	.	[>50*]	
Spotted Flycatcher	14	18	-49	.	.	[>25]	Small sample
Reed Bunting	14	58	-47	.	.	[>25*]	
Lesser Whitethroat	14	44	-44	.	.	[>25*]	
Song Thrush	14	79	-39	.	.	[>25*]	
Willow Tit	14	25	-36	.	.	[>25]	
Whitethroat	14	56	-31	.	.	[>25]	
Willow Warbler	14	90	-31	.	.	[>25*]	

Table of alerts for CES adults 1988-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	10	25	-76	.	.	[>50*]	
Lesser Redpoll	10	22	-67	.	.	[>50*]	
Lesser Whitethroat	10	51	-53	.	.	[>50*]	
Spotted Flycatcher	10	19	-53	.	.	[>50]	Small sample
Willow Tit	10	29	-44	.	.	[>25]	
Reed Bunting	10	66	-41	.	.	[>25*]	
Yellowhammer	10	25	-35	.	.	[>25]	
Song Thrush	10	90	-30	.	.	[>25*]	

Table of alerts for CES adults 1993-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Linnet	5	26	-53	.	.	[>50*]	
Lesser							

Whitethroat	5	52	-45	.	.	[>25*]	
Lesser Redpoll	5	20	-37	.	.	[>25]	Small sample
Willow Tit	5	29	-31	.	.	[>25]	

Table of population increases for CES adults 1984-1998

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Chiffchaff	14	62	92	.	.		

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4.9.4 Tables of alerts and population increases from BBS

Table of alerts for BBS UK 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wood Warbler	5	58	-45	-60	-24	(>25)	
Grey Partridge	5	222	-43	-53	-32	(>25)	
Willow Tit	5	60	-42	-58	-18	(>25)	
Shelduck	5	110	-40	-51	-27	(>25)	
Redshank	5	63	-36	-51	-16	(>25)	
Black-headed Gull	5	425	-36	-43	-28	(>25)	
Lesser Whitethroat	5	195	-31	-42	-17	(>25)	
Kestrel	5	502	-30	-38	-21	(>25)	
Common Sandpiper	5	63	-29	-46	-7	(>25)	
Yellow Wagtail	5	155	-29	-41	-14	(>25)	
Bullfinch	5	432	-28	-37	-19	(>25)	
Cuckoo	5	744	-27	-33	-20	(>25)	
Corn Bunting	5	148	-26	-37	-13	(>25)	

Table of alerts for BBS England 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wood Warbler	5	27	-63	-77	-42	(>50)	Small sample
Lesser Redpoll	5	47	-60	-75	-37	(>50)	Small sample
Great Black-backed Gull	5	36	-51	-61	-39	(>50)	Small sample
Grey Partridge	5	194	-45	-55	-33	(>25)	
Willow Tit	5	53	-40	-57	-15	(>25)	
Snipe	5	50	-36	-54	-12	(>25)	Small sample
Black-headed Gull	5	320	-33	-41	-23	(>25)	
Lesser Whitethroat	5	186	-31	-43	-17	(>25)	
Cuckoo	5	607	-30	-36	-23	(>25)	
Bullfinch	5	340	-28	-38	-18	(>25)	

Yellow Wagtail	5	153	-27	-39	-12	(>25)	
Tree Pipit	5	64	-26	-43	-3	(>25)	

Table of alerts for BBS Scotland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Kestrel	5	42	-61	-75	-39	(>50)	Small sample
Black-headed Gull	5	75	-59	-69	-45	(>50)	
Redshank	5	21	-50	-68	-23	(>50)	Small sample
Lapwing	5	87	-34	-46	-20	(>25)	
Golden Plover	5	49	-33	-53	-5	(>25)	Small sample
Pheasant	5	99	-27	-40	-12	(>25)	

Table of alerts for BBS Wales 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Bullfinch	5	43	-50	-66	-26	(>50)	Small sample
Mallard	5	45	-49	-64	-28	(>25)	Small sample
Starling	5	70	-41	-56	-21	(>25)	
Cuckoo	5	52	-31	-51	-3	(>25)	
Yellowhammer	5	35	-31	-52	-2	(>25)	Small sample
Pheasant	5	57	-29	-45	-8	(>25)	

Table of alerts for BBS N.Ireland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Mistle Thrush	5	32	-60	-77	-30	(>50)	Small sample
House Sparrow	5	28	-47	-68	-12	(>25)	Small sample

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4.9.4 Tables of alerts and population increases from BBS

Table of population increases for BBS UK 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Goldcrest	5	490	61	47	76		
Stonechat	5	66	80	32	147		
Greylag Goose	5	78	100	46	173		

Table of population increases for BBS England 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Redstart	5	69	53	17	102		
Goldcrest	5	329	67	49	86		
Stonechat	5	26	77	10	186		Small sample
Common Gull	5	50	84	20	183		Small sample
Common Tern	5	38	86	24	177		Small sample
Little Grebe	5	37	89	25	184		Small sample
Siskin	5	31	90	26	187		Small sample

Table of population increases for BBS Scotland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Wren	5	175	60	39	85		
Mallard	5	85	73	36	120		
Grey Heron	5	40	83	17	186		Small sample
Tree Pipit	5	27	86	19	190		Small sample
Treecreeper	5	27	86	11	210		Small sample
Goldcrest	5	69	87	40	149		
Blackcap	5	26	92	25	196		Small sample
Grey Wagtail	5	24	107	24	246		Small sample
House Martin	5	41	375	198	657		Small sample

Table of population increases for BBS Wales 1994-1999

Species	Period	Plots	Change	Lower	Upper	Alert	Comment

	(yrs)	(n)	(%)	limit	limit		
Swift	5	49	53	6	121		Small sample
Goldfinch	5	78	57	20	105		
Blackcap	5	76	59	25	102		
House Sparrow	5	79	62	31	100		
Treecreeper	5	33	75	11	178		Small sample
House Martin	5	67	104	53	173		
Lesser Black-backed Gull	5	40	465	235	854		Small sample

Table of population increases for BBS N.Ireland 1994-1999

Species	Period (yrs)	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Great Tit	5	36	60	2	153		Small sample
Chaffinch	5	53	64	20	123		
Willow Warbler	5	46	68	19	138		Small sample
Crow	5	43	81	19	177		Small sample
Goldcrest	5	26	98	4	279		Small sample
Rook	5	42	107	42	201		Small sample
Dunnock	5	37	174	58	372		Small sample

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What the categories mean

6. 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 30 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 provide 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 30 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).

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

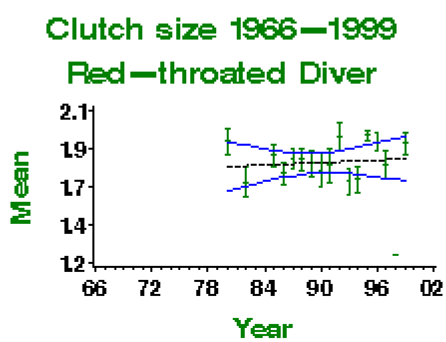
Status Summary

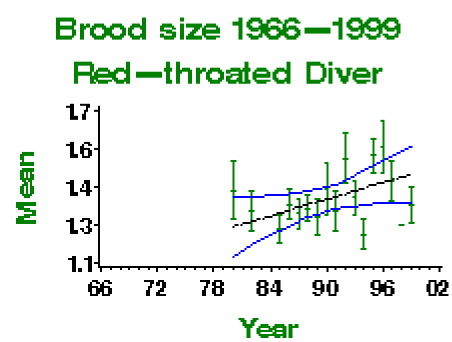
Increasing nest failure rates during the egg stage is worrying for this species because of its unfavourable European conservation status. The increase represents a change from 13% to 42% of nests failing over the 27-day egg stage (26d incubation + 1d egg laying). It should be noted that, although many of the nest records come from Orkney, there are reasonable numbers of records also from Shetland, mainland Scotland and Western Isles. Population trends are not monitored by the BTO, but the UK Seabird Monitoring Programme shows that numbers on Shetland have fluctuated around a stable level between 1980-99 (Upton *et al.* 2000).

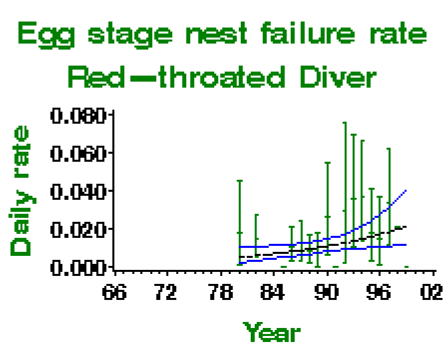
Annual breeding population changes are not currently monitored by BTO for this species

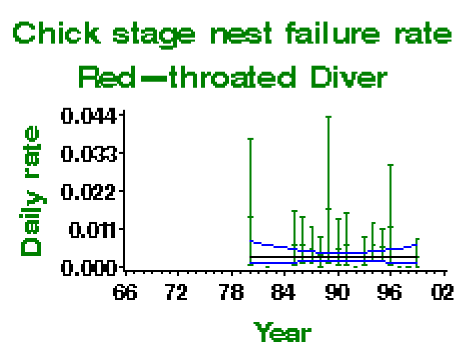
Table of productivity information for Red-throated Diver

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	18	1980-1998	29	None				Small sample
Brood size	18	1980-1998	42	Linear increase	1.25 chicks	1.44 chicks	0.19 chicks	
Daily failure rate (eggs)	18	1980-1998	17	Linear increase	0.005 nests/day	0.0199 nests/day	0.0149 nests/day	Small sample
Daily failure rate (chicks)	18	1980-1998	22	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 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 late 1970s, while the increase shown by the CBC may suggest that wider populations (including small stillwaters) 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 controlled.

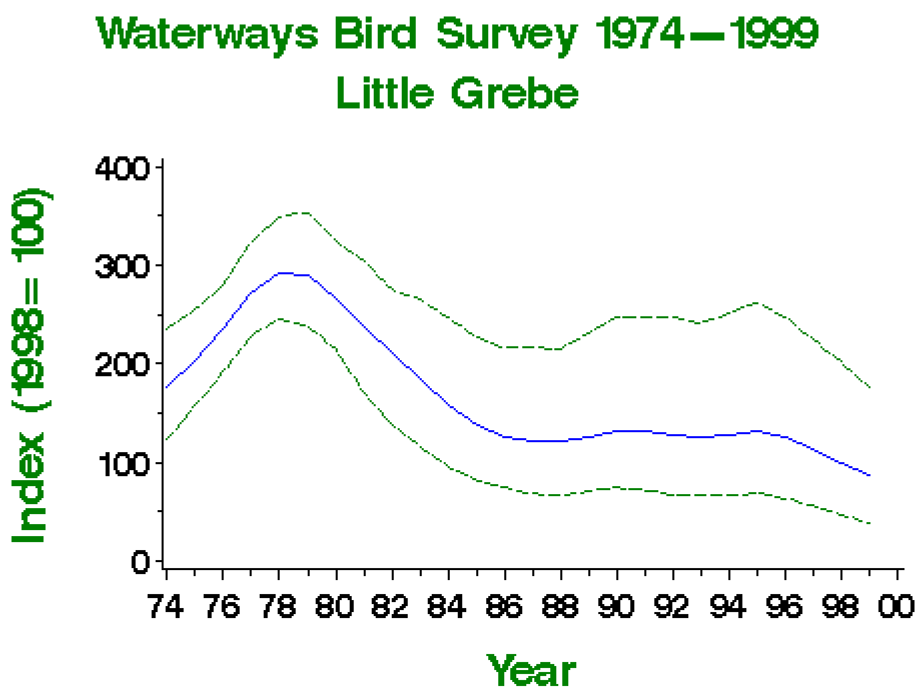
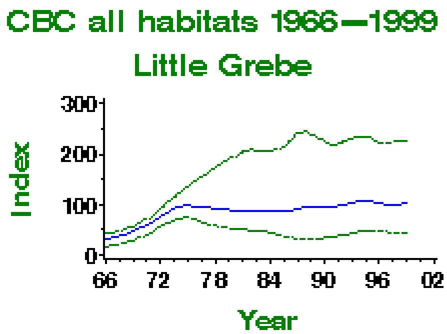


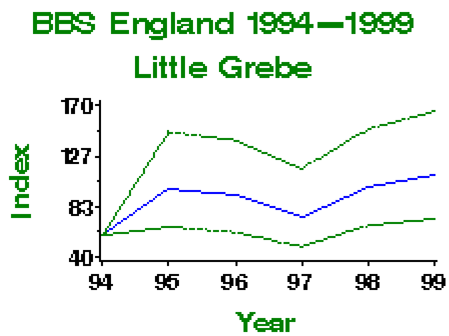
Table of population changes for Little Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	15	149	10	899		Unrepresentative? small sample
	25	1973-1998	16	13	-45	190		Unrepresentative? small sample
	10	1988-1998	13	8	-39	101		Unrepresentative? small sample
	5	1993-1998	15	-2	-32	46		Unrepresentative? small sample
WBS waterways	23	1975-1998	18	-51	-79	-4	>50	Small sample
	10	1988-1998	16	-17	-48	19		Small sample

	5	1993-1998	16	-20	-44	-2		Small sample
BBS UK	5	1994-1999	43	41	-3	105		Small sample
BBS England	5	1994-1999	37	89	25	184		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.

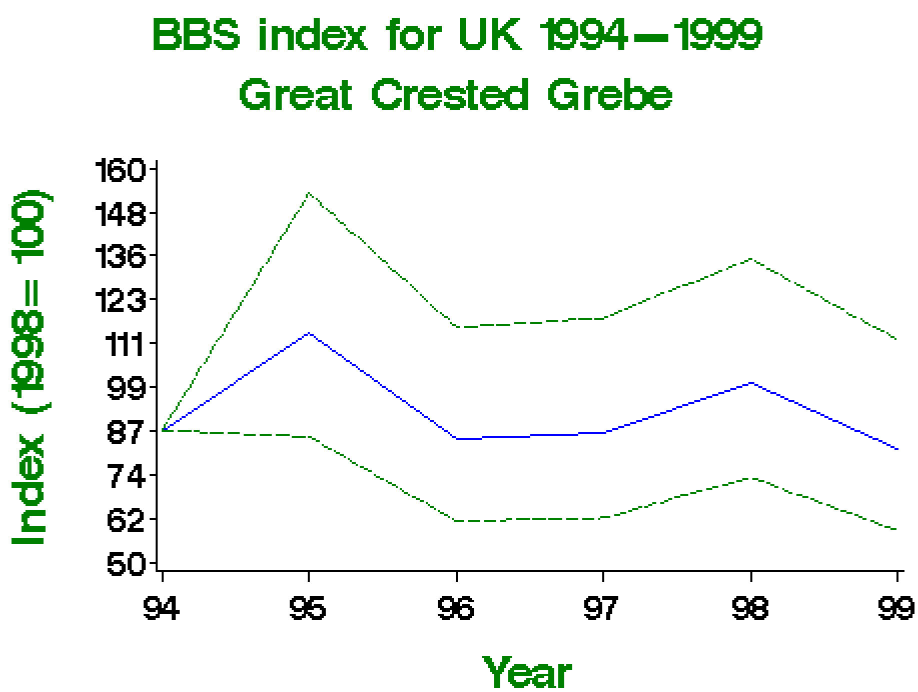


Table of population changes for Great Crested Grebe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	54	-6	-32	29		
BBS England	5	1994-1999	48	1	-28	40		Small sample

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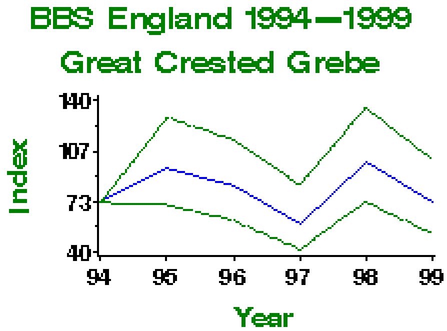

Productivity information is not currently available for this species

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.

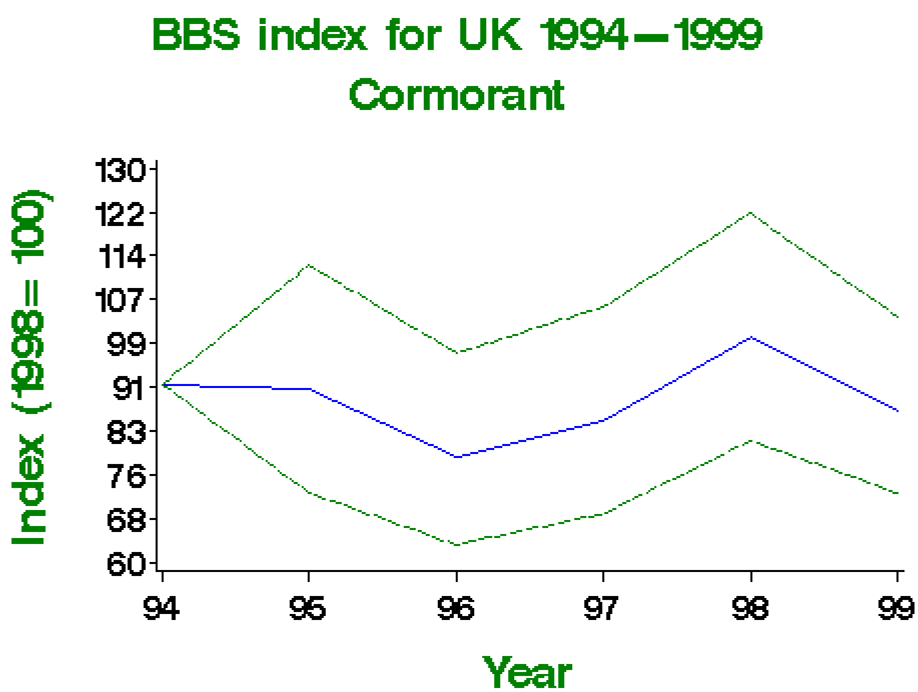

Table of population changes for Cormorant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	130	-5	-21	13		
BBS England	5	1994-1999	107	-9	-24	10		

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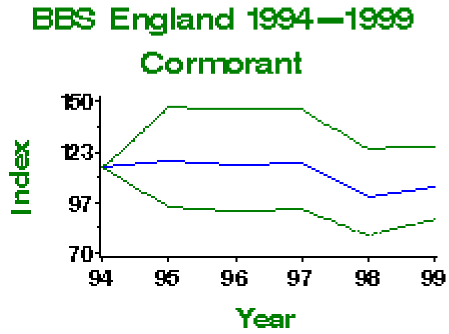

Productivity information is not currently available for this species

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 1962-1963 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 prep.).

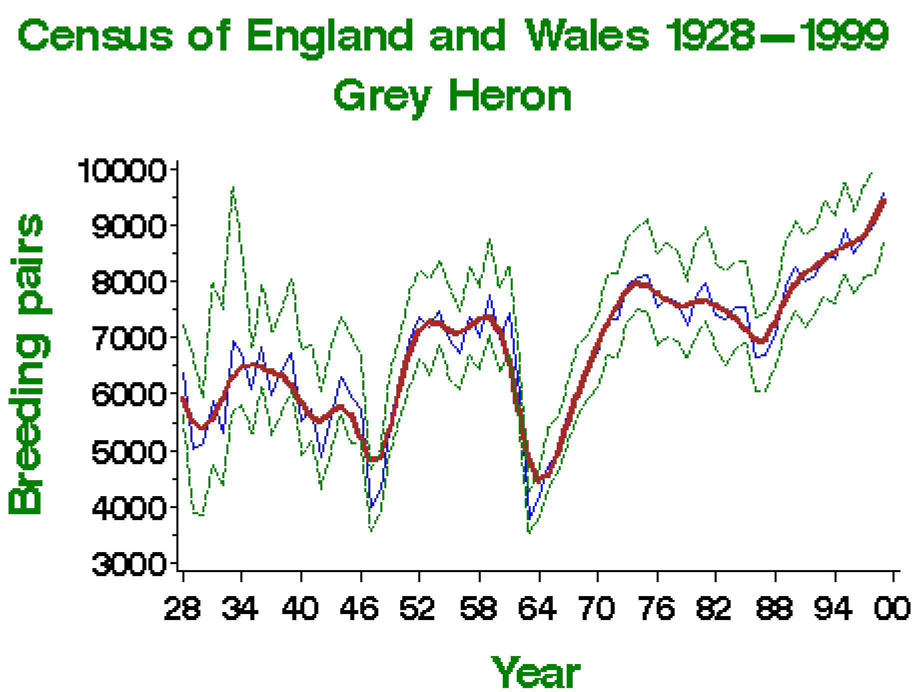

Table of population changes for Grey Heron

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
Heronries Census	69	1929-1998	.	65	.	.		
	25	1973-1998	.	16	.	.		
	10	1988-1998	.	26	.	.		
	5	1993-1998	.	8	.	.		
BBS UK	5	1994-1999	441	14	1	28		
BBS England	5	1994-1999	357	0	-12	13		
BBS		1994-						Small

Scotland	5	1999	40	83	17	186		sample
BBS Wales	5	1994-1999	31	-2	-37	53		Small sample

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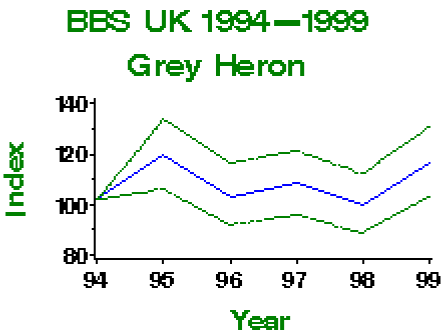
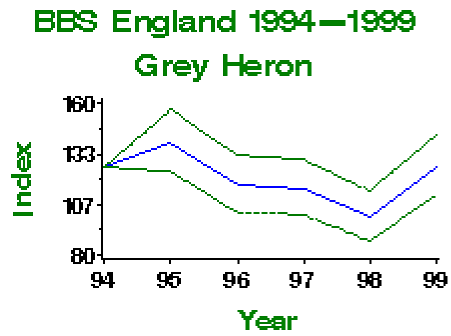
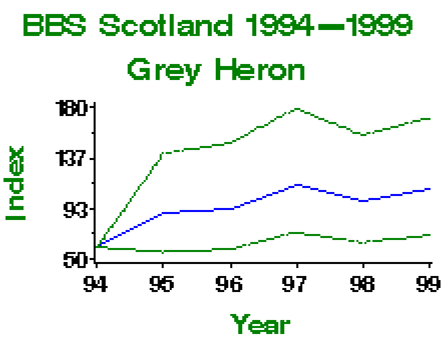






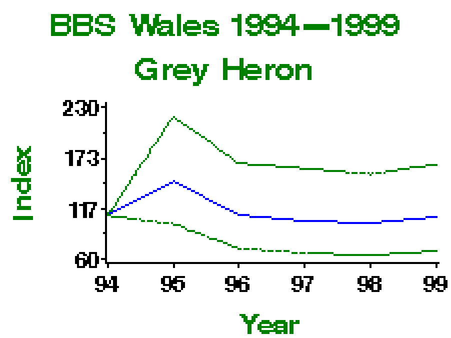
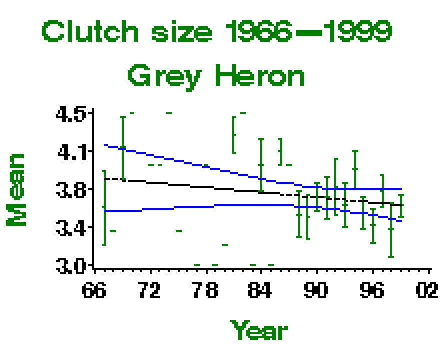
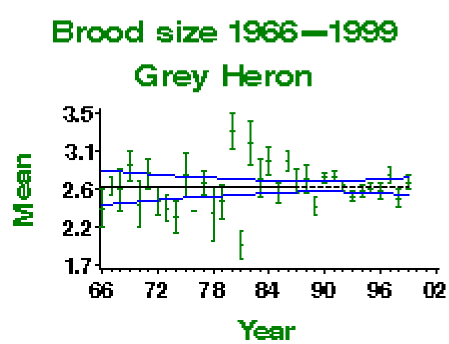
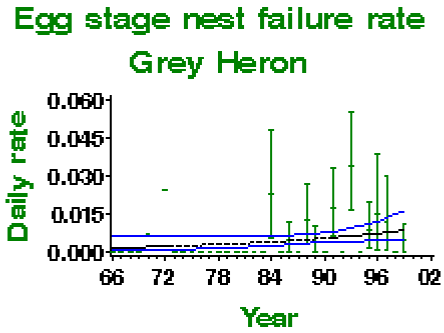


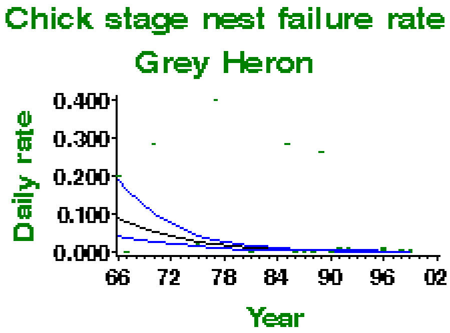
Table of productivity information for Grey Heron

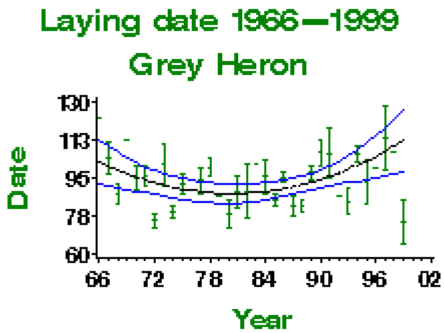
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	12	None				Small sample
Brood size	30	1968-1998	75	None				
Daily failure rate (eggs)	30	1968-1998	14	None				Small sample
Daily failure rate (chicks)	30	1968-1998	26	Linear decline	0.0688 nests/day	0.0008 nests/day	-0.068 nests/day	Small sample
Laying date	30	1968-1998	15	Curvilinear	day 99	day 110	11 days	Small sample











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 continually 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.

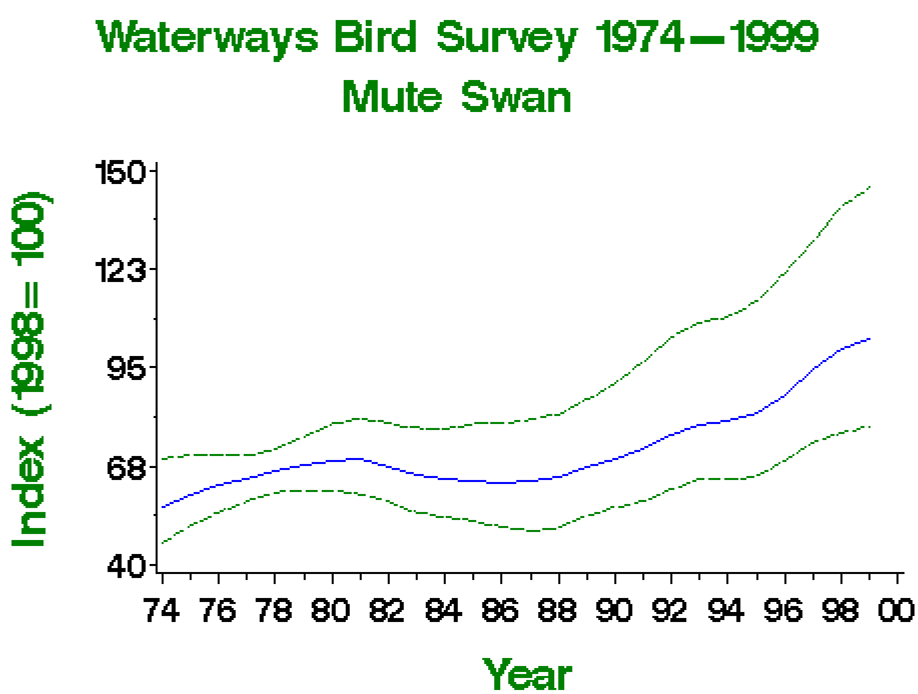


Table of population changes for Mute Swan

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	20	174	34	403		Unrepresentative? small sample
	25	1973-1998	22	165	23	317		Unrepresentative?
	10	1988-1998	23	73	37	128		Unrepresentative?
	5	1993-1998	27	35	14	69		Unrepresentative?
WBS waterways	23	1975-1998	43	67	21	156		
	10	1988-1998	52	54	28	97		

	5	1993-1998	60	27	14	43		
BBS UK	5	1994-1999	159	16	-3	38		
BBS England	5	1994-1999	139	-15	-28	1		

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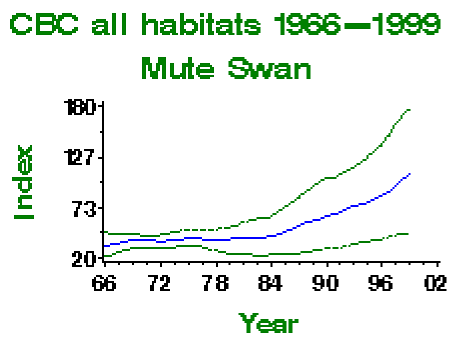
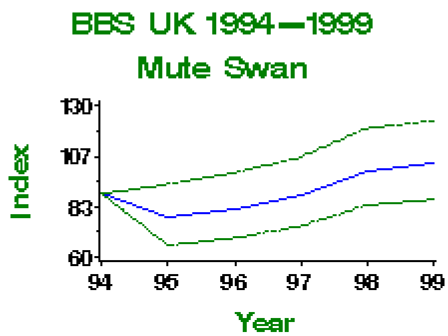




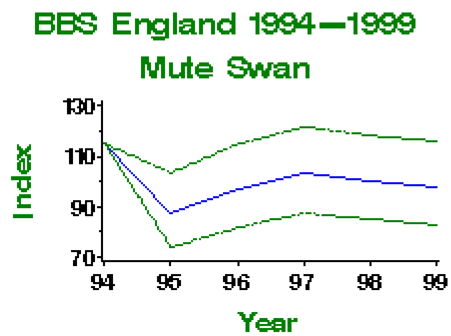
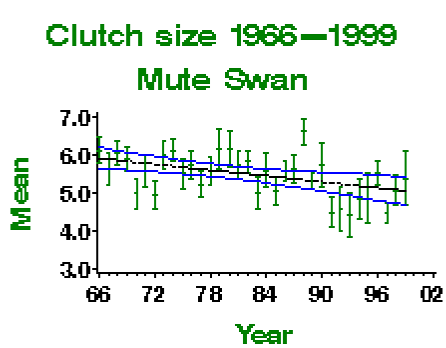
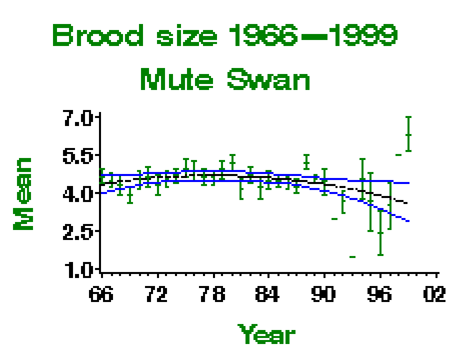
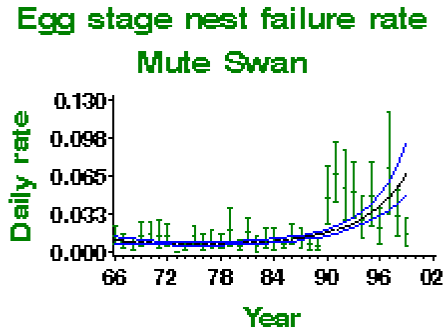


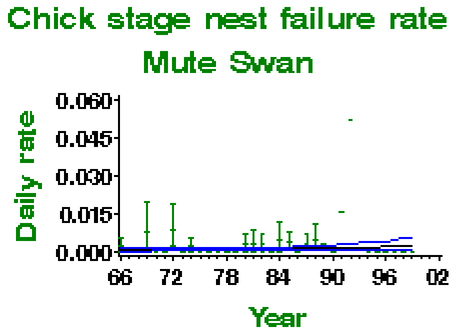
Table of productivity information for Mute Swan

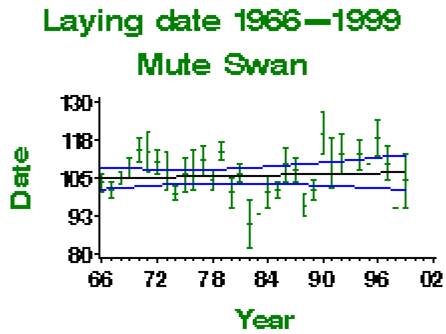
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	19	Linear decline	5.88 eggs	5.09 eggs	-0.79 eggs	Small sample
Brood size	30	1968-1998	34	Curvilinear	4.47 chicks	3.74 chicks	-0.73 chicks	
Daily failure rate (eggs)	30	1968-1998	26	Curvilinear	0.0086 nests/day	0.0556 nests/day	0.047 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	21	None				Small sample
Laying date	30	1968-1998	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, as a breeding bird, 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 (Pollitt *et al.* 2000).

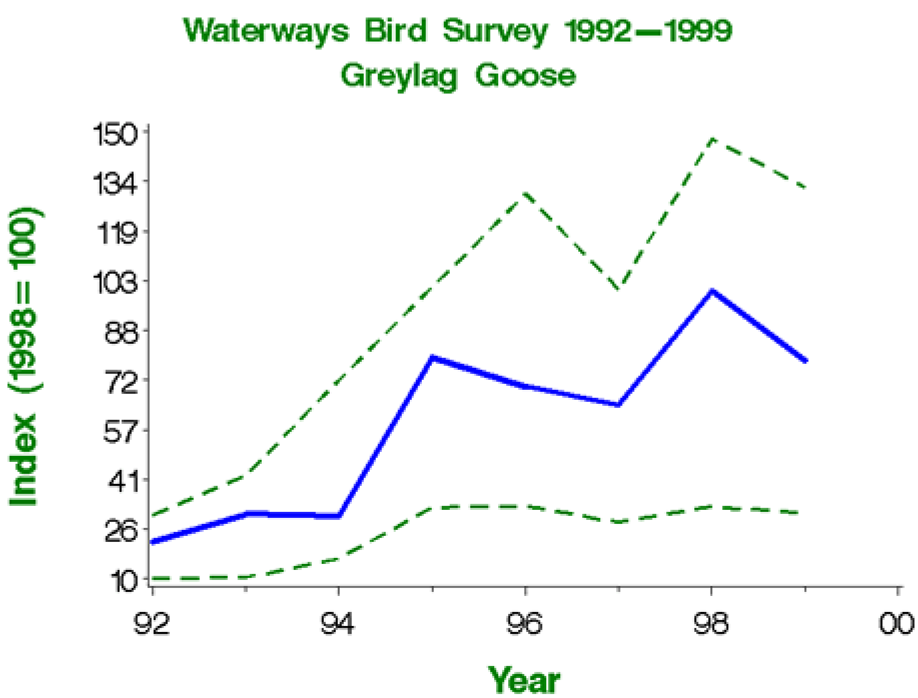
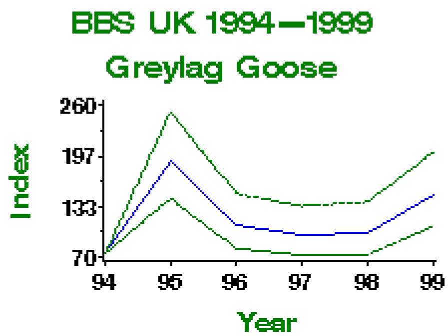
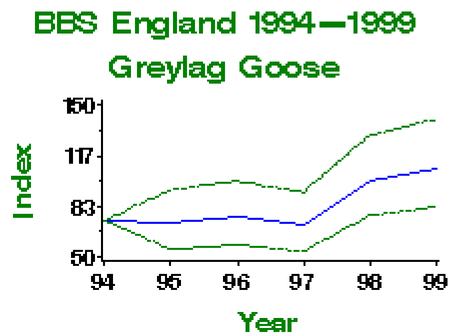


Table of population changes for Greylag Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	5	1993-1998	10	231	8	1031		Small sample
BBS UK	5	1994-1999	78	100	46	173		
BBS England	5	1994-1999	61	46	12	90		

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 breeding season surveys. Winter monitoring by WeBS shows a continuing long-term increase (Pollitt *et al*. 2000).

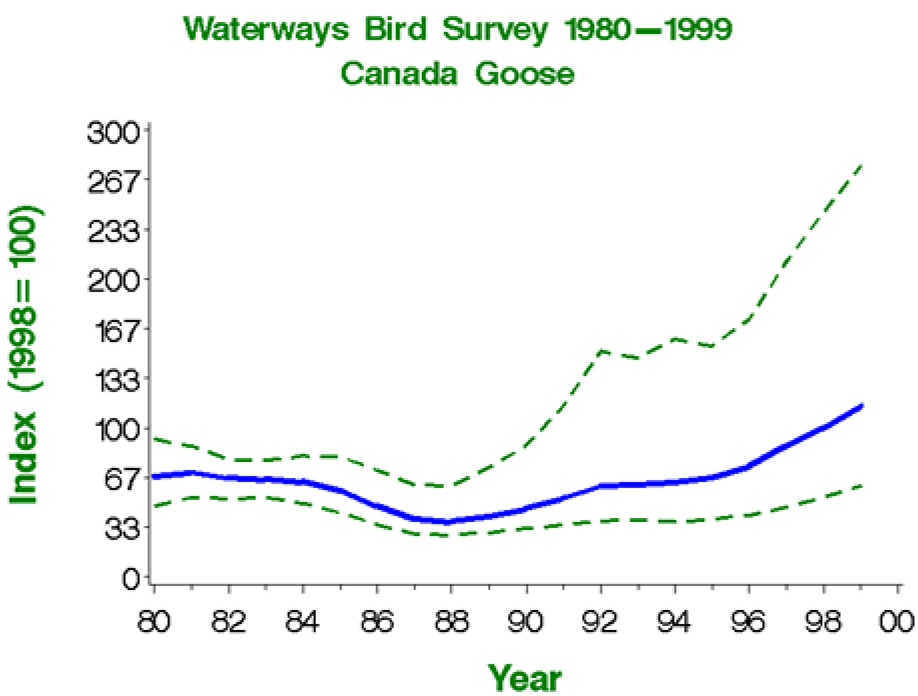
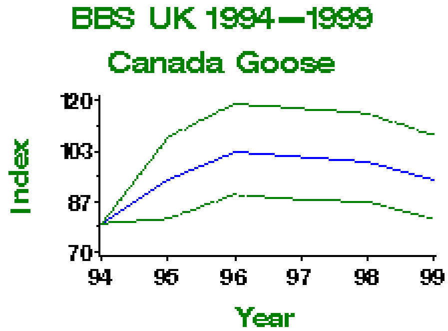
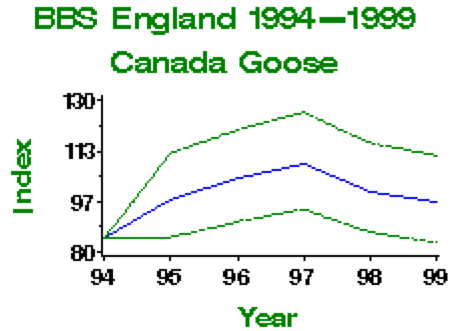


Table of population changes for Canada Goose

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	17	1981-1998	28	43	-23	324		
	10	1988-1998	33	170	70	321		
	5	1993-1998	39	62	18	113		
BBS UK	5	1994-1999	270	18	2	37		
BBS England	5	1994-1999	259	14	-2	32		

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 Shelduck population has shown steady increases since 1965 (Pollitt *et al.* 2000). The CBC shows a similar pattern, despite being unlikely to be representative of the population as a whole. Recent declines shown by the BBS and by WeBS (Pollitt *et al.* 2000) may reveal emerging problems for the species.

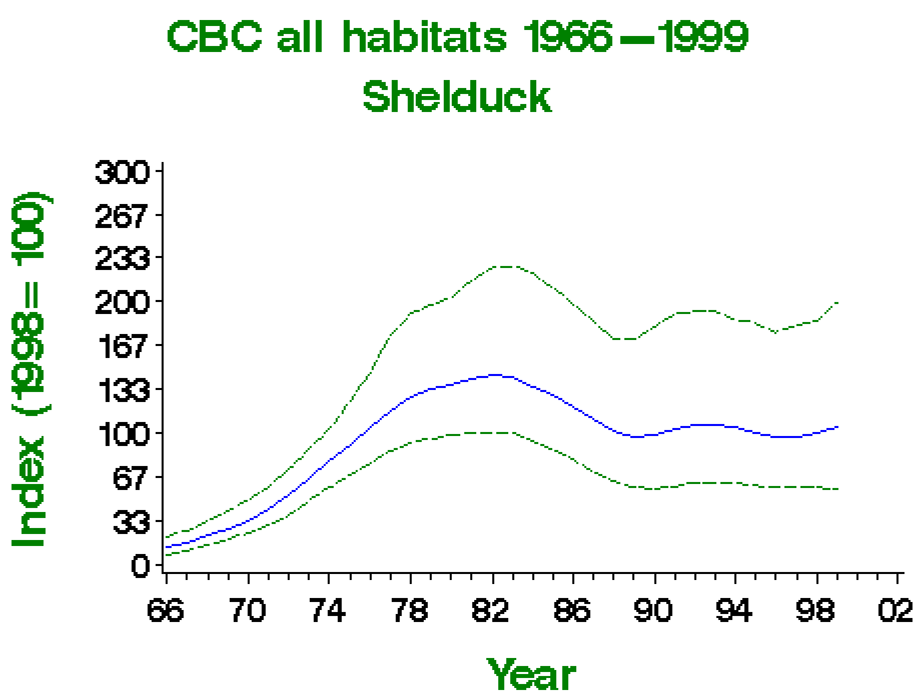
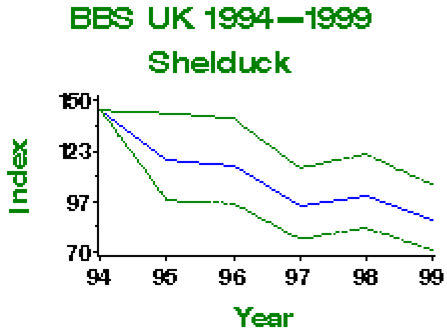


Table of population changes for Shelduck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	18	349	128	743		Unrepresentative? small sample
	25	1973-1998	20	53	-12	183		Unrepresentative? small sample
	10	1988-1998	20	-2	-30	29		Unrepresentative? small sample
	5	1993-1998	22	-6	-31	27		Unrepresentative?
BBS UK	5	1994-1999	110	-40	-51	-27	(>25)	

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 (Pollitt *et al.* 2000), perhaps because these releases have been reduced in scale.

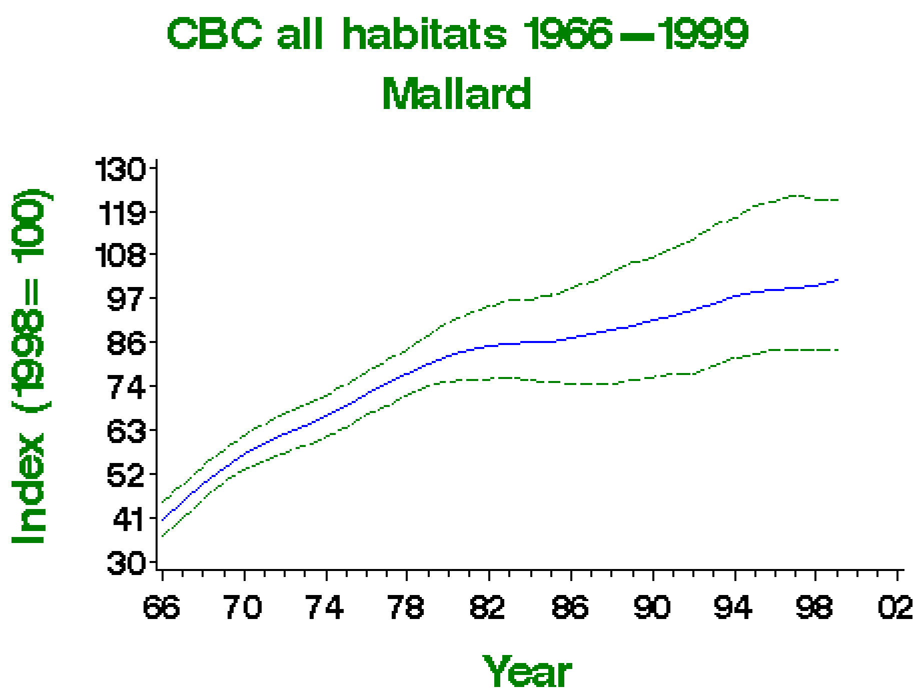


Table of population changes for Mallard

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	112	101	68	150		
	25	1973-1998	117	55	34	85		
	10	1988-1998	110	13	0	27		
	5	1993-1998	118	5	-3	15		
CBC farmland	30	1968-1998	63	75	.	.		
	25	1973-1998	64	34	.	.		

	10	1988-1998	65	10	.	.		
	5	1993-1998	68	3	.	.		
WBS waterways	23	1975-1998	93	190	116	286		
	10	1988-1998	107	69	39	103		
	5	1993-1998	115	22	11	33		
BBS UK	5	1994-1999	874	21	13	30		
BBS England	5	1994-1999	728	16	8	25		
BBS Scotland	5	1994-1999	85	73	36	120		
BBS Wales	5	1994-1999	45	-49	-64	-28	(>25)	Small sample

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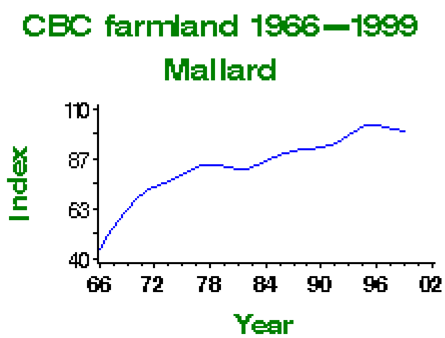

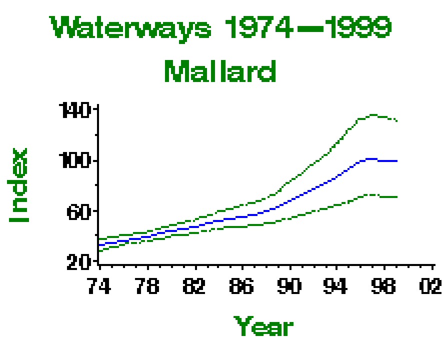

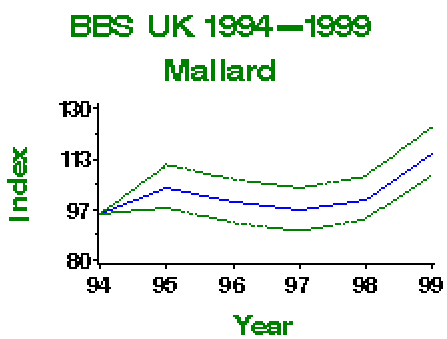

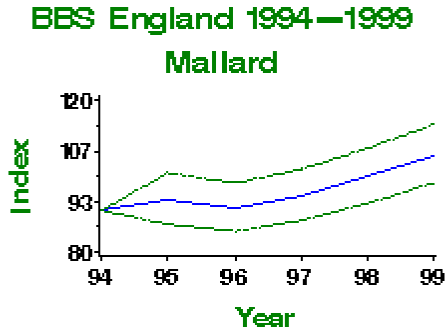

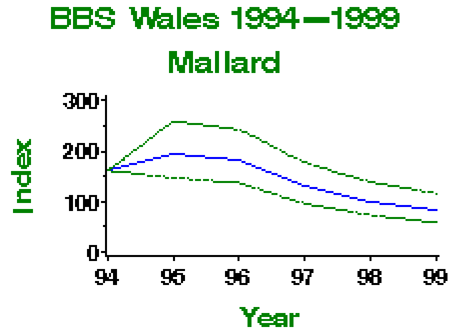

Productivity information is not currently available for this species

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 suggests that populations away from linear waterways may be increasing slowly, a pattern supported by the species' winter trend in the UK (Pollitt *et al.* 2000). It is thought that the spread of the zebra mussel has helped this species in the recent past (Gibbons *et al.* 1993).

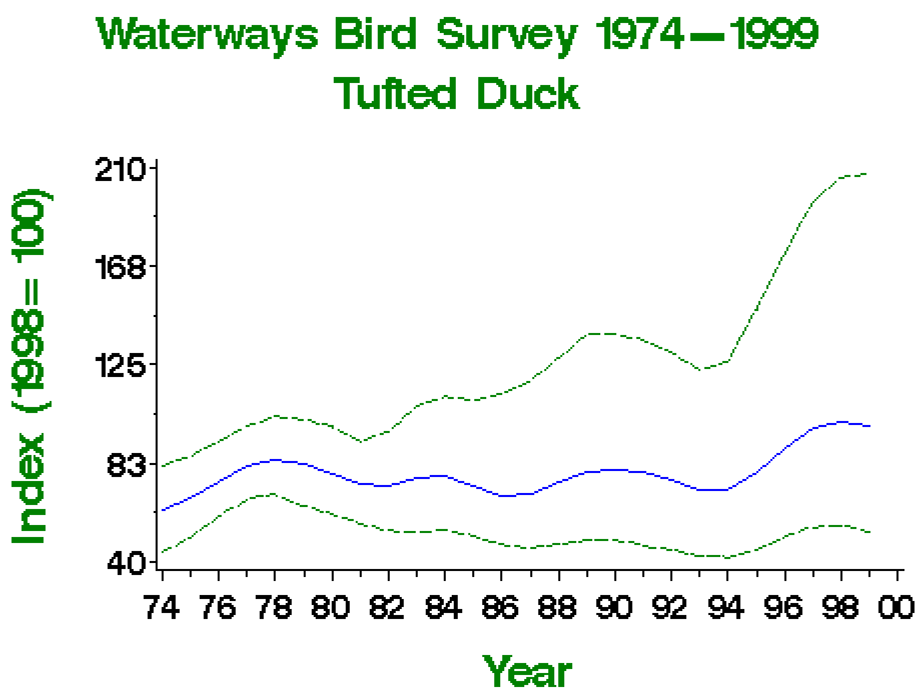

Table of population changes for Tufted Duck

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	16	2327	918	4838		Unrepresentative? small sample
	25	1973-1998	17	645	325	1344		Unrepresentative? small sample
	10	1988-1998	18	87	24	175		Unrepresentative? small sample
	5	1993-1998	21	2	-20	37		Unrepresentative?
WBS waterways	23	1975-1998	23	48	-21	252		
	10	1988-1998	27	34	-9	112		
	5	1993-	29	40	2	94		

		1998						
BBS UK	5	1994-1999	117	9	-13	36		
BBS England	5	1994-1999	101	18	-6	48		

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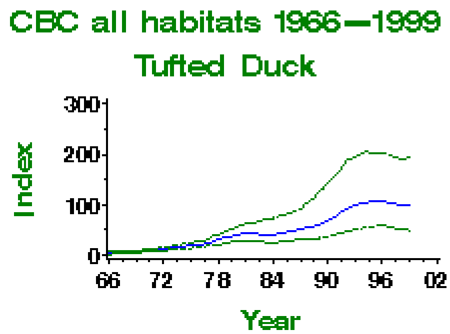
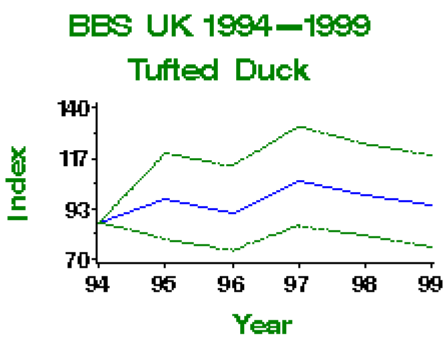
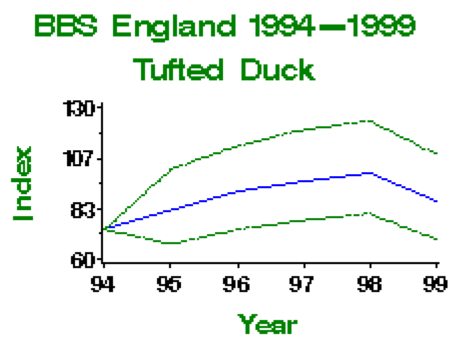






Productivity information is not currently available for this species

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.

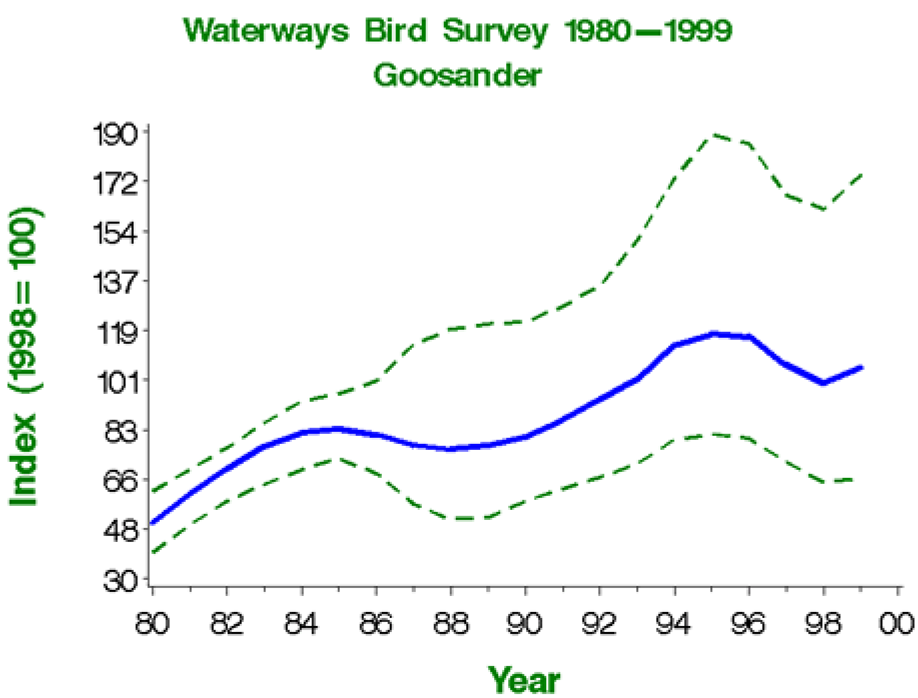


Table of population changes

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	17	1981-1998	22	66	4	215		
	10	1988-1998	26	31	-6	79		
	5	1993-1998	29	-1	-19	19		

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

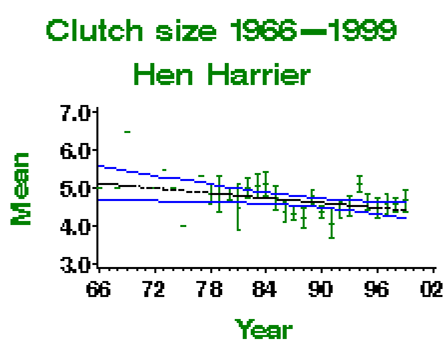
Status Summary

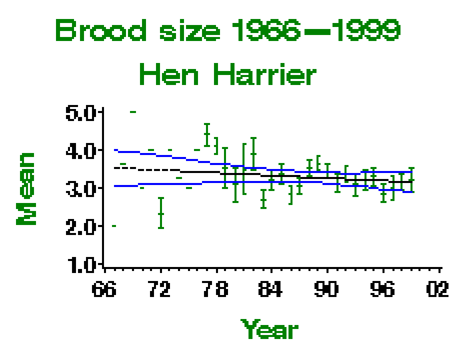
Listed because of substantial declines over the last 200 years, this species has suffered from persecution on grouse moors (Etheridge *et al.* 1997) and more recently from loss of habitat as forestry plantations have matured (Bibby & Etheridge 1993). The UK population was unchanged between surveys in 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).

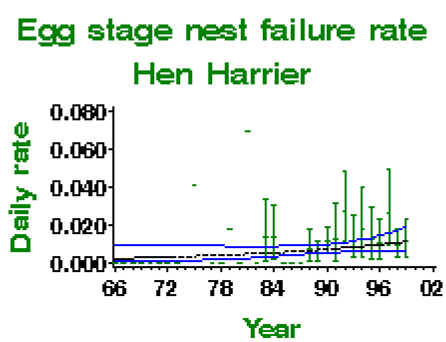
Annual breeding population changes for this species
are not currently monitored by BTO

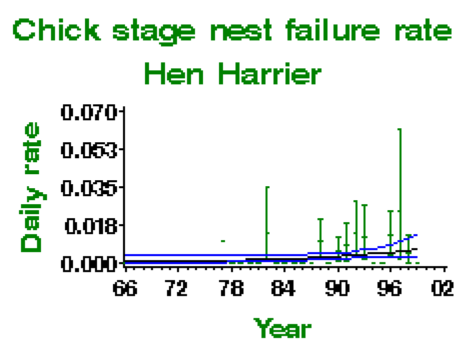
Table of productivity information for Hen Harrier

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	Linear decline	5.09 eggs	4.44 eggs	-0.65 eggs	Small sample
Brood size	30	1968-1998	19	None				Small sample
Daily failure rate (eggs)	30	1968-1998	11	None				Small sample
Daily failure rate (chicks)	30	1968-1998	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 17% to 6%. The population seems to have stabilised since the mid-1990s.

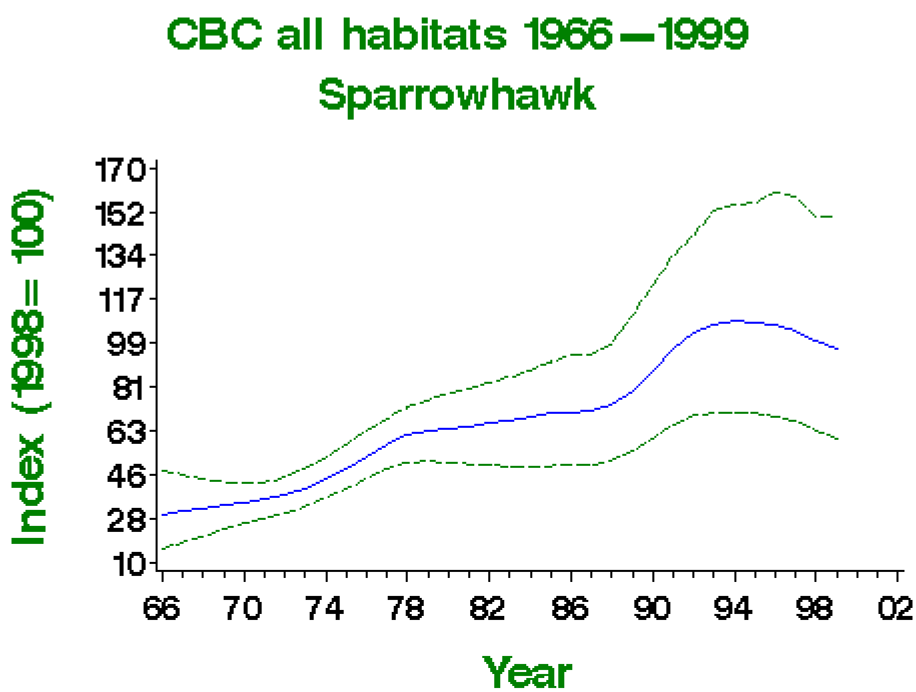


Table of population changes for Sparrowhawk

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	37	212	64	487		
	25	1973-1998	43	149	59	274		
	10	1988-1998	51	35	10	62		
	5	1993-1998	57	-6	-21	12		
BBS UK	5	1994-1999	257	1	-15	18		
BBS England	5	1994-1999	214	-2	-18	16		

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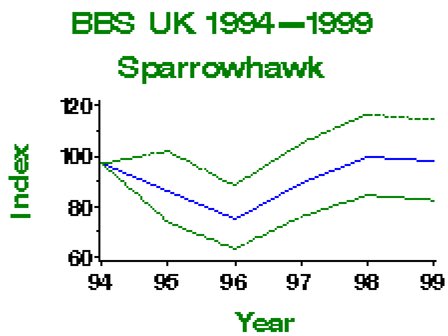


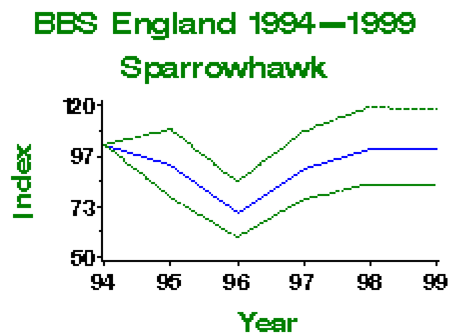
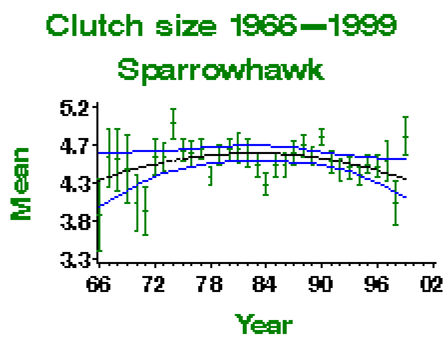
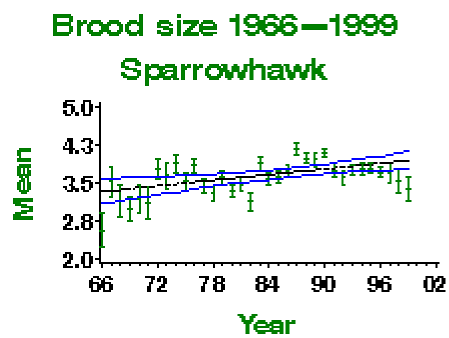
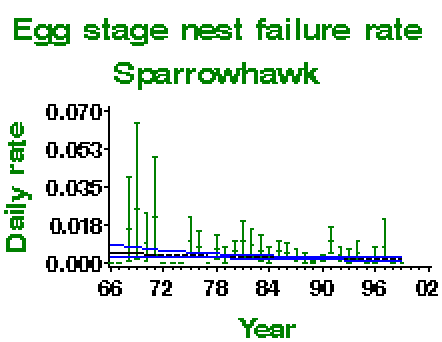


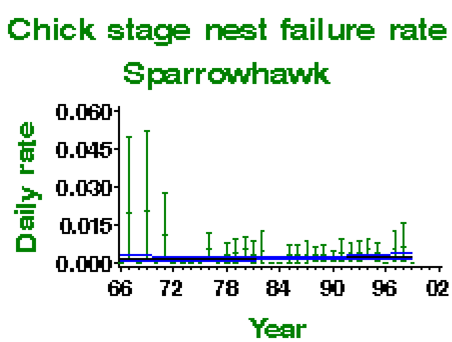
Table of productivity information for Sparrowhawk

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	44	Curvilinear	4.37 eggs	4.35 eggs	-0.02 eggs	
Brood size	30	1968-1998	85	Linear increase	3.37 chicks	3.93 chicks	0.56 chicks	
Daily failure rate (eggs)	30	1968-1998	40	Linear decline	0.0043 nests/day	0.0015 nests/day	-0.0028 nests/day	
Daily failure rate (chicks)	30	1968-1998	56	None				
Laying date	30	1968-1998	18	None				Small sample

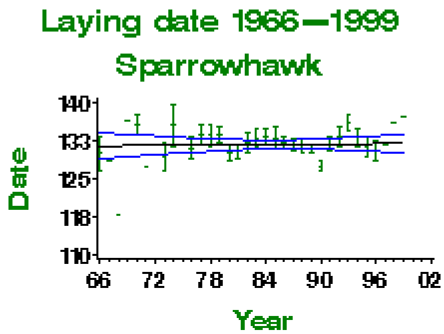








Insufficient data on CES available for this species


Laying date 1966—1999
Sparrowhawk
Date
140
133
125
118
110
66
72
78
84
90
96
02
Year

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 and England and Scotland individually. 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 rates at the egg stage (c.42 days from laying the first egg) is from 23% down to 9%.

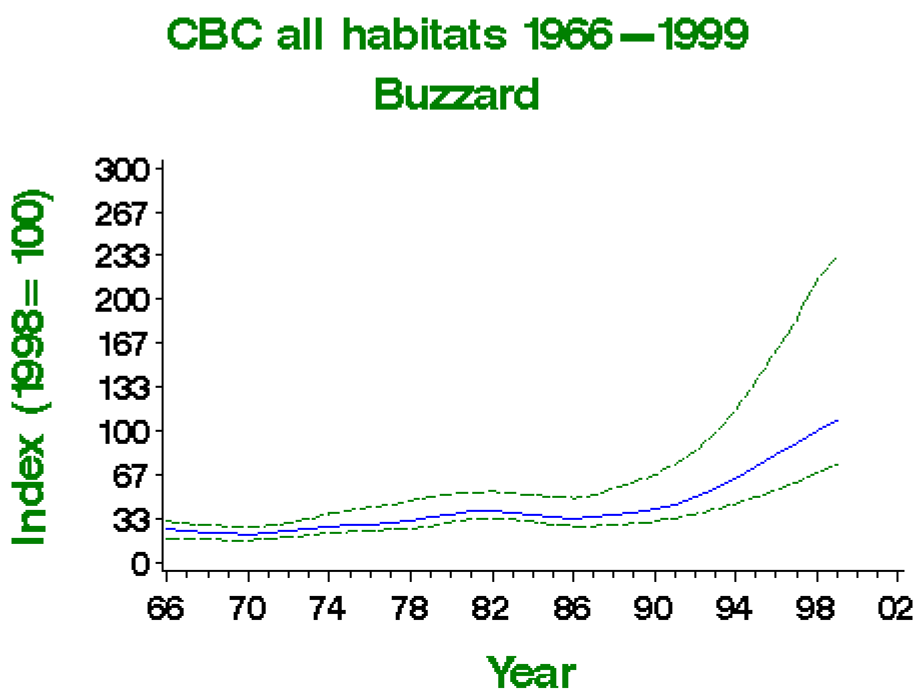


Table of population changes for Buzzard

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	22	332	204	954		Unrepresentative?
	25	1973-1998	24	290	181	719		Unrepresentative?
	10	1988-1998	31	175	107	363		Unrepresentative?
	5	1993-1998	39	78	52	131		Unrepresentative?
BBS UK	5	1994-1999	414	29	16	44		

BBS England	5	1994-1999	225	29	12	49		
BBS Scotland	5	1994-1999	89	44	12	86		
BBS Wales	5	1994-1999	92	0	-20	26		

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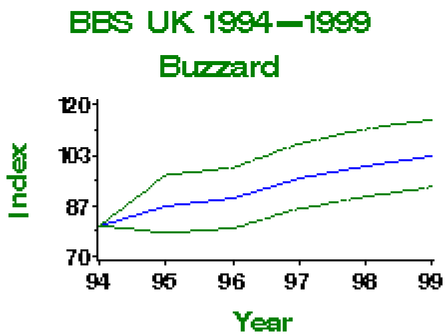
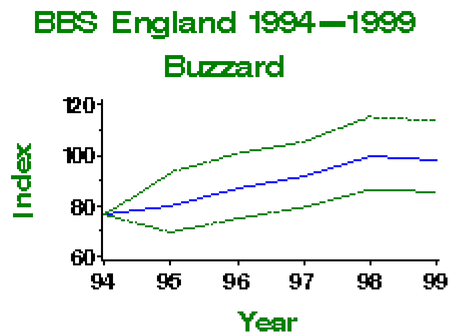
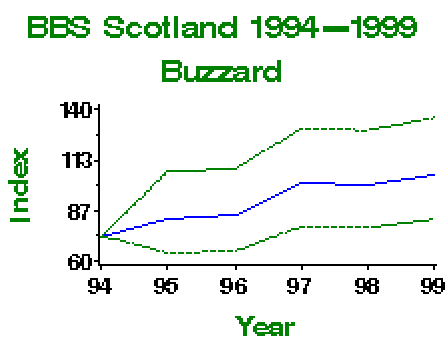






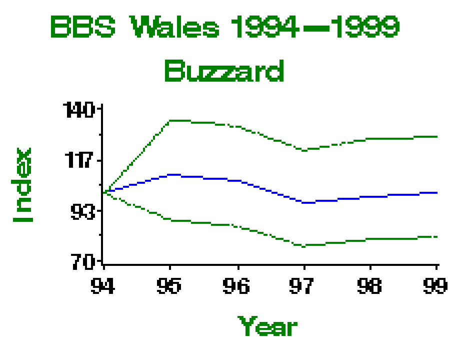
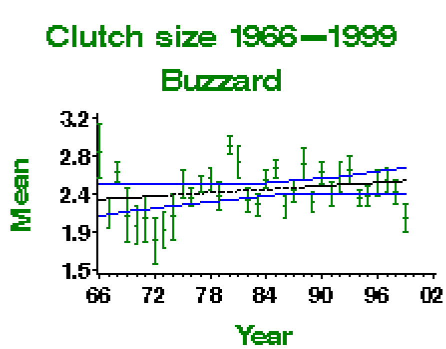
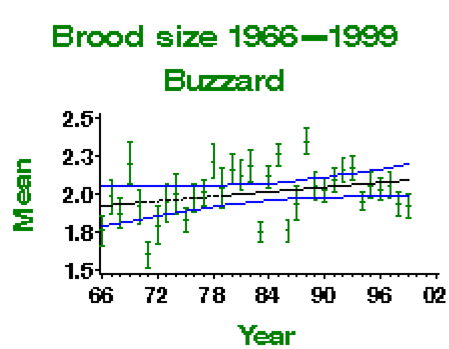
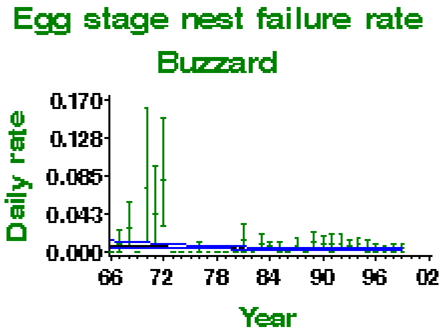


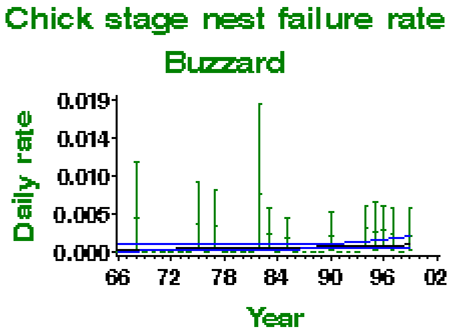
Table of productivity information

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	30	None				
Brood size	30	1968-1998	85	None				
Daily failure rate (eggs)	30	1968-1998	23	Linear decline	0.0062 nests/day	0.0022 nests/day	-0.004 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	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 decline in failure rates at the egg stage (c.28 days from laying the first egg) is from 16% down 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.

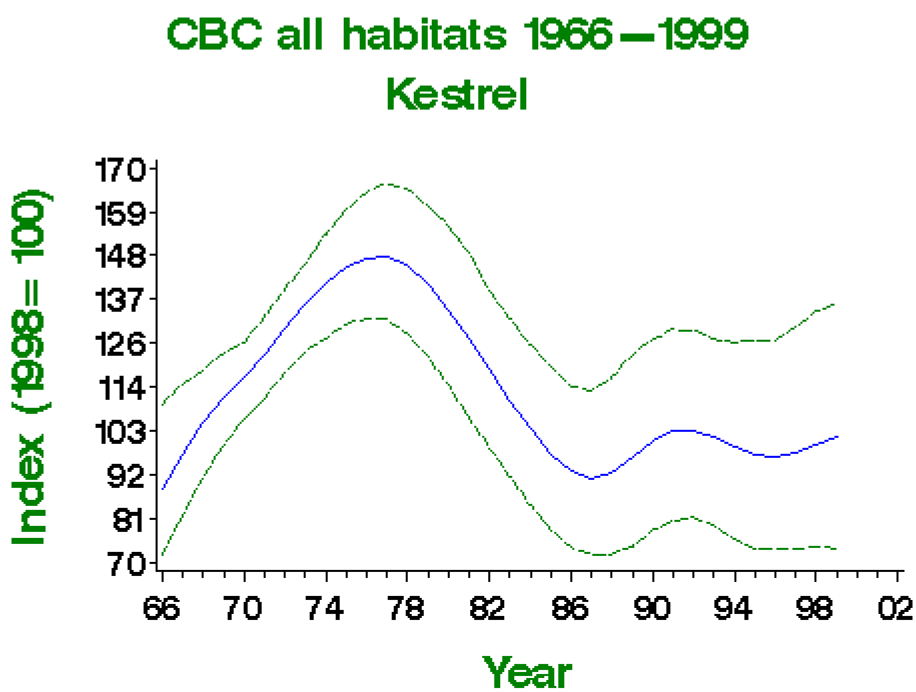


Table of population changes for Kestrel

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	81	-5	-31	36		
	25	1973-1998	85	-26	-44	-2	>25	
	10	1988-1998	72	7	-8	25		
	5	1993-1998	75	-2	-13	11		
BBS UK	5	1994-1999	502	-30	-38	-21	(>25)	

BBS England	5	1994-1999	431	-19	-28	-8		
BBS Scotland	5	1994-1999	42	-61	-75	-39	(>50)	Small sample

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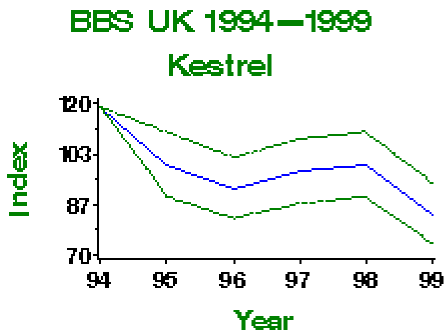
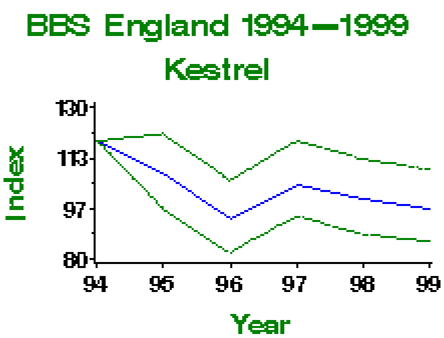




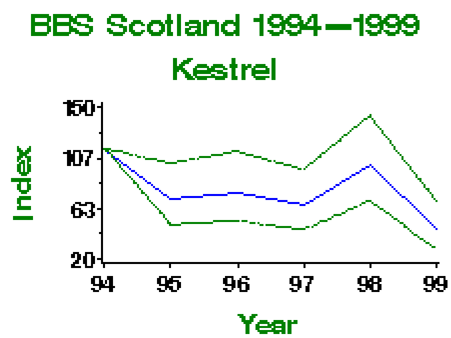
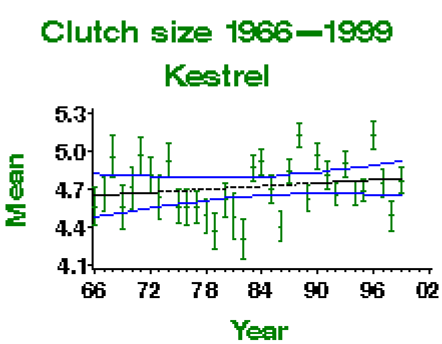
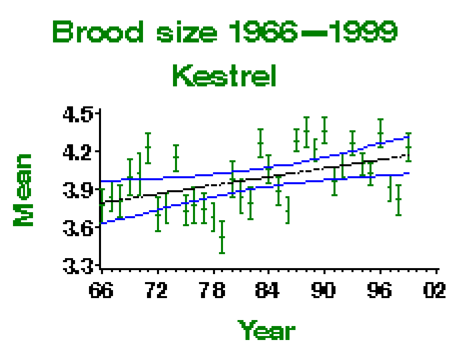
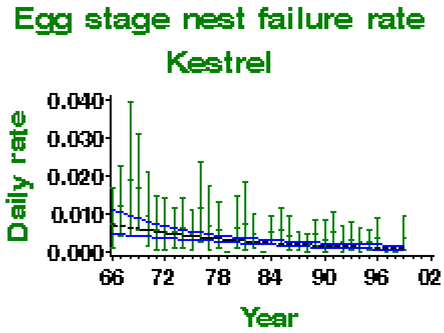


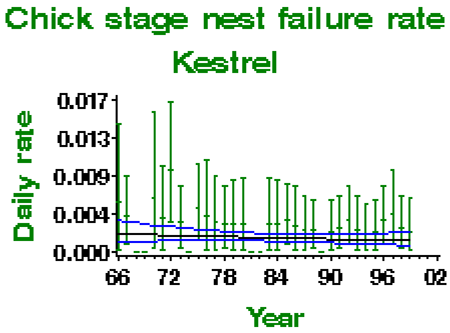
Table of productivity information for Kestrel

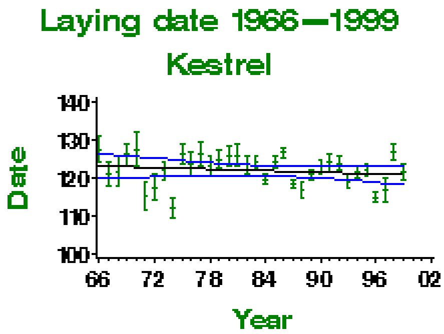
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	52	None				
Brood size	30	1968-1998	113	Linear increase	3.82 chicks	4.16 chicks	0.34 chicks	
Daily failure rate (eggs)	30	1968-1998	41	Linear decline	0.0064 nests/day	0.001 nests/day	-0.0054 nests/day	
Daily failure rate (chicks)	30	1968-1998	62	None				
Laying date	30	1968-1998	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

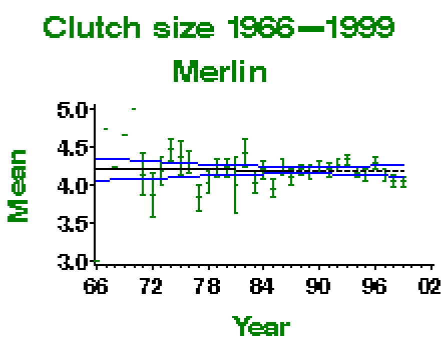
Status Summary

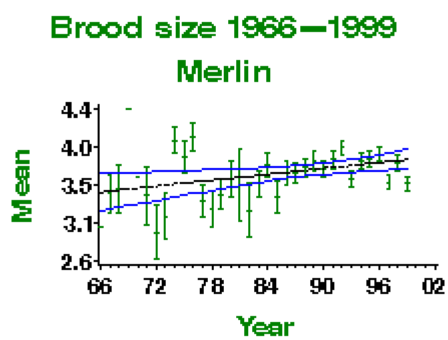
Having declined substantially over the past two centuries, there are indications that it has increased recently (DETR 2000), perhaps associated with an increased use of forest edge as a nesting habitat (Parr 1994). Breeding performance has tended to improve since the 1960s, probably linked to the declining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

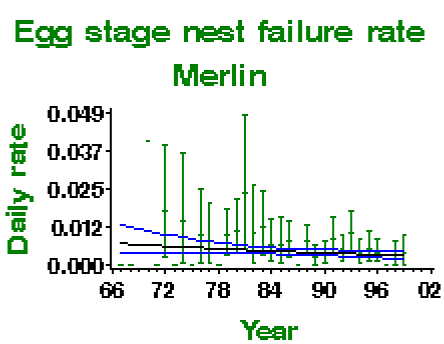
Annual breeding population changes for this species
are not currently monitored by BTO

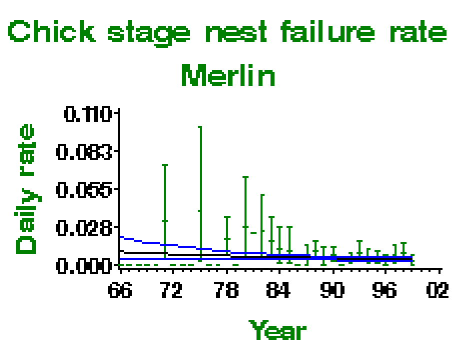
Table of productivity information for Merlin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	40	None				
Brood size	30	1968-1998	56	Linear increase	3.44 chicks	3.79 chicks	0.35 chicks	
Daily failure rate (eggs)	30	1968-1998	29	None				Small sample
Daily failure rate (chicks)	30	1968-1998	29	None				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

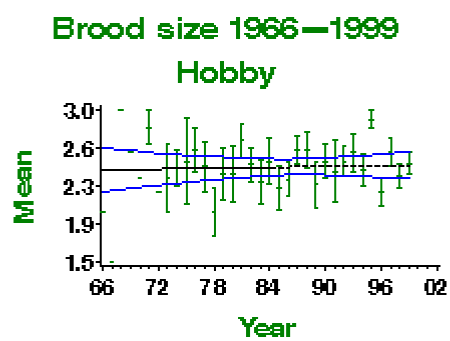
This species is poorly monitored by standard BTO monitoring schemes due to its low population density and unobtrusive habits. Its distribution has increased markedly northwards in England since the 1970s (Gibbons *et al.* 1993), perhaps linked to increases in its dragonfly prey supplies (Prince & Clarke 1995) and a decreasing dependency on its traditional heathland habitat. Small annual samples of nest record cards only permit analysis 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	30	1968-1998	15	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

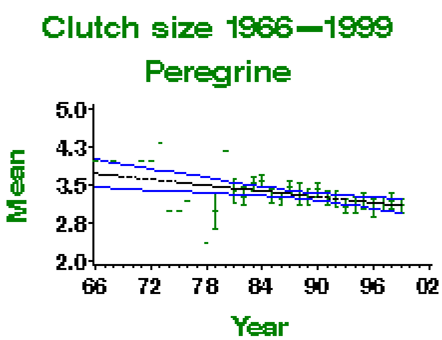
Status Summary

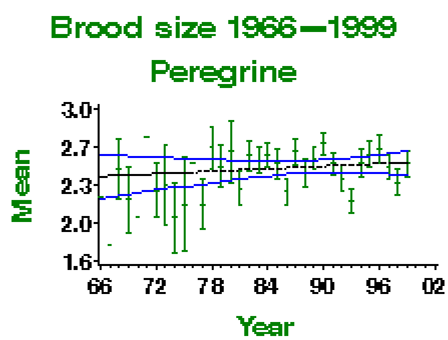
Although Peregrine has an unfavourable conservation status in Europe, its population size and distribution in the UK have largely recovered from the detrimental effects of organocholorine pesticides in the 1950s and 1960s; however, populations have declined recently in north-west Scotland and the Northern 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 -0.58 eggs (below) is calculated over the full 30-year time-period, when only small samples are available for the first 10 years. So a better estimate would be to suggest a clutch size decline of 0.4 eggs over the 20-year period from 1978-98. Population size of breeding pairs has been censused every 10 years by BTO/JNCC/RSPB/Raptor Study Groups since 1961. Surveys: 1961: 385 pairs; 1971: 489 pairs; 1981: 728 pairs; 1991: 1283 pairs (Ratcliffe 1996).

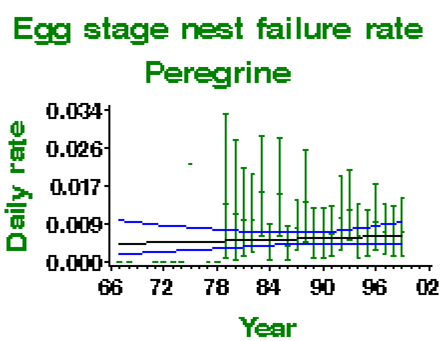
Population changes are not monitored for this species

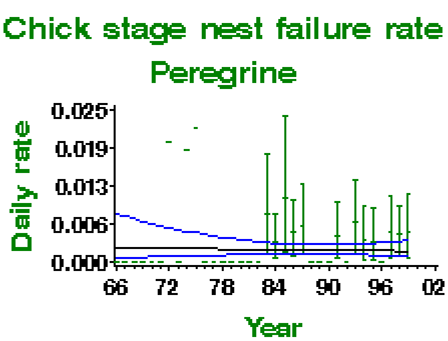
Table of productivity information for Peregrine Falcon

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	16	Linear decline	3.69 eggs	3.11 eggs	-0.58 eggs	Small sample
Brood size	30	1968-1998	39	None				
Daily failure rate (eggs)	30	1968-1998	20	None				Small sample
Daily failure rate (chicks)	30	1968-1998	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 BBS shows recent increases in the Red Grouse population, especially in Scotland, but 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.

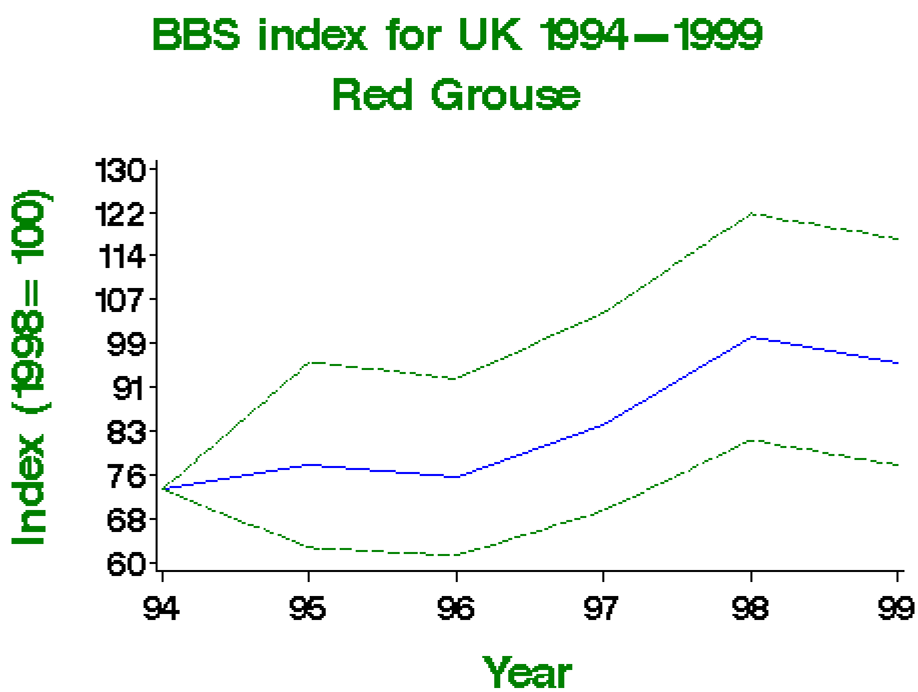


Table of population changes for Red Grouse

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	103	31	6	61		
BBS England	5	1994-1999	38	1	-23	34		Small sample
BBS Scotland	5	1994-1999	61	46	10	95		

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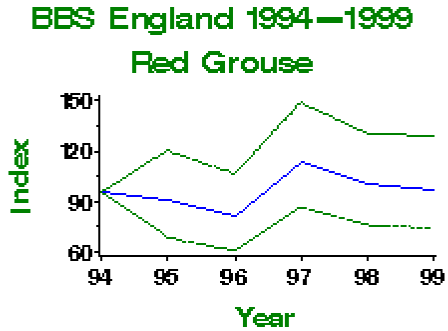

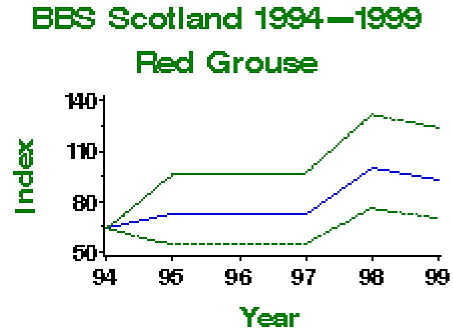

Productivity information is not currently available for this species

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.

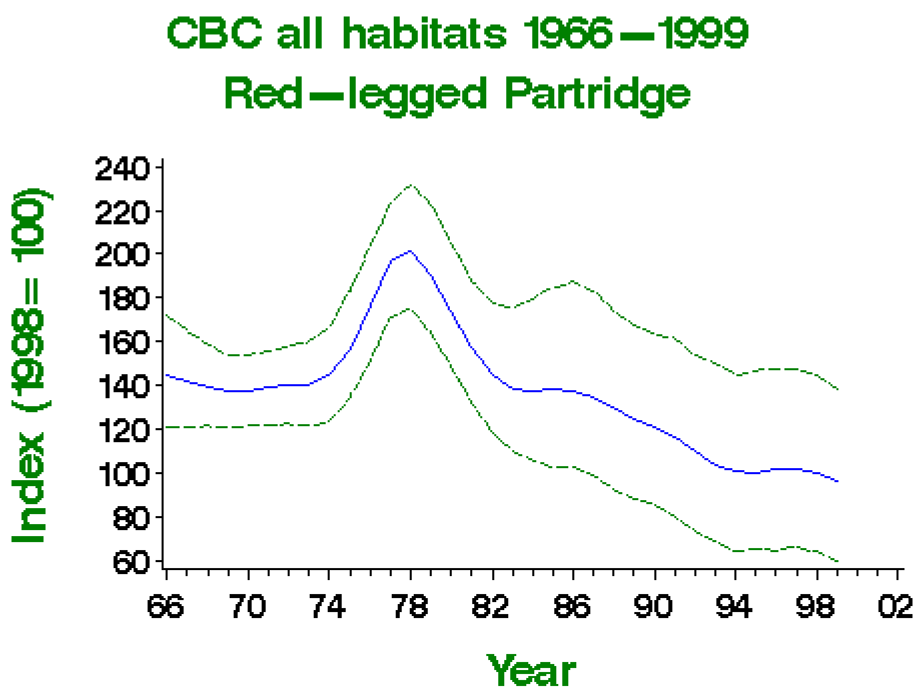

Table of population changes for Red-legged Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	35	-28	-54	2		
	25	1973-1998	37	-29	-51	-3		
	10	1988-1998	34	-23	-39	-4		
	5	1993-1998	34	-4	-21	15		
CBC farmland	30	1968-1998	27	-28	-55	13		
	25	1973-1998	28	-26	-53	18		
		1988-						

	10	1998	30	-22	-40	-3		
	5	1993-1998	30	-5	-23	13		
BBS UK	5	1994-1999	363	16	4	30		
BBS England	5	1994-1999	359	16	4	30		

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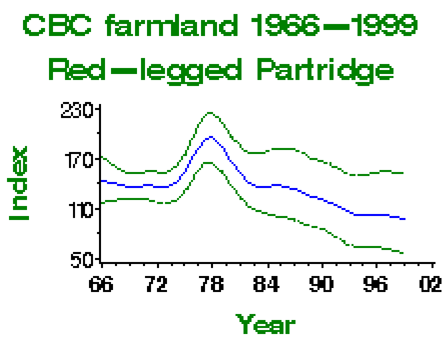

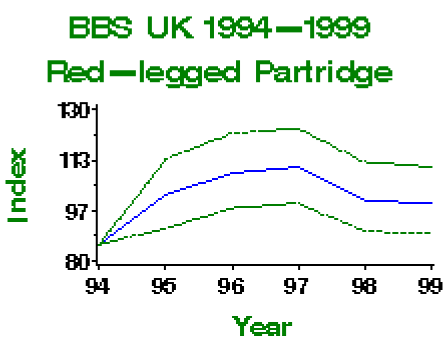

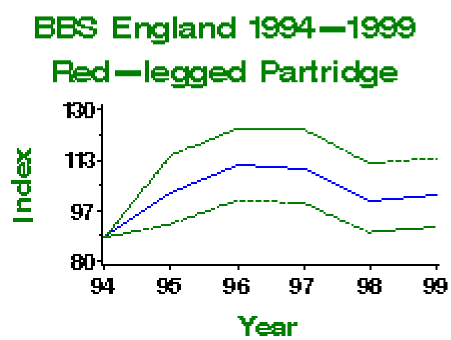

Productivity information is not currently available for this species

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 suggests that recent efforts to boost the population have not been successful.

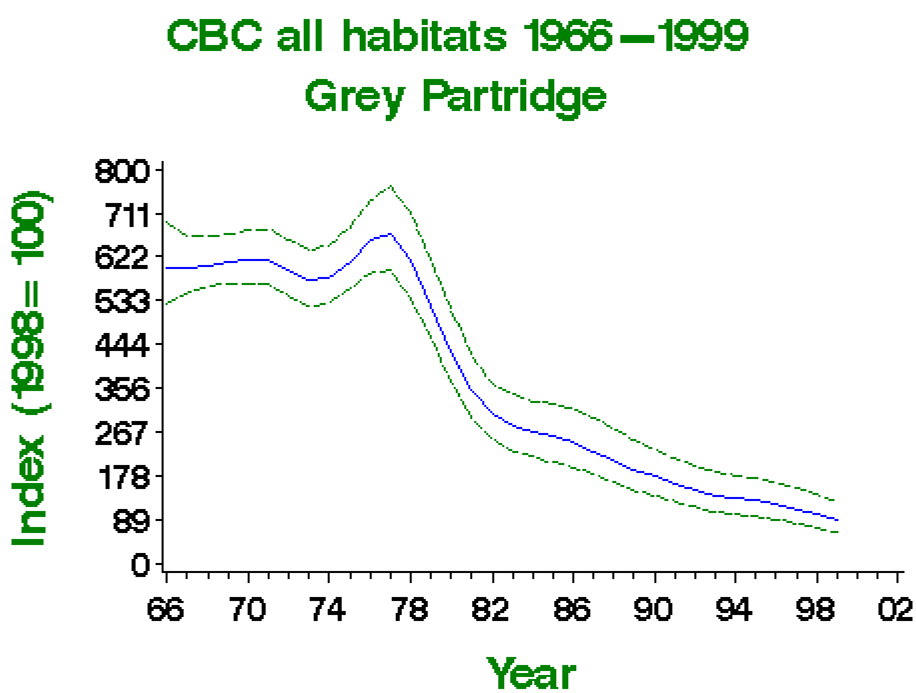

Table of population changes for Grey Partridge

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	60	-83	-88	-77	>50	
	25	1973-1998	57	-83	-87	-77	>50	
	10	1988-1998	40	-52	-62	-41	>50	
	5	1993-1998	38	-29	-39	-17	>25	
BBS UK	5	1994-1999	222	-43	-53	-32	(>25)	
BBS England	5	1994-1999	194	-45	-55	-33	(>25)	
BBS		1994-						Small

Scotland	5	1999	26	-34	-63	20		sample

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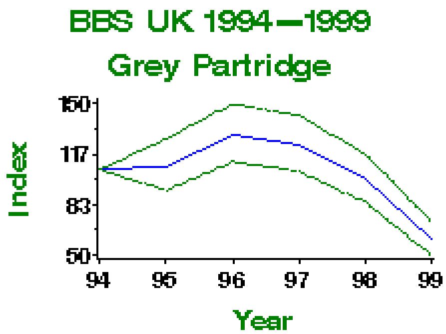

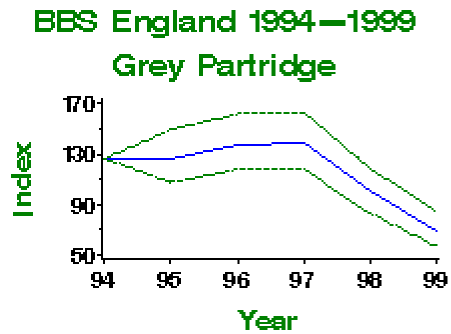

Productivity information is not currently available for this species

PHEASANT *Phasianus colchicus*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Shallow increase

Status Summary

Pheasants have increased in abundance since 1980, but numbers of this introduced gamebird are determined principally by releases for shooting (Marchant *et al.* 1990).

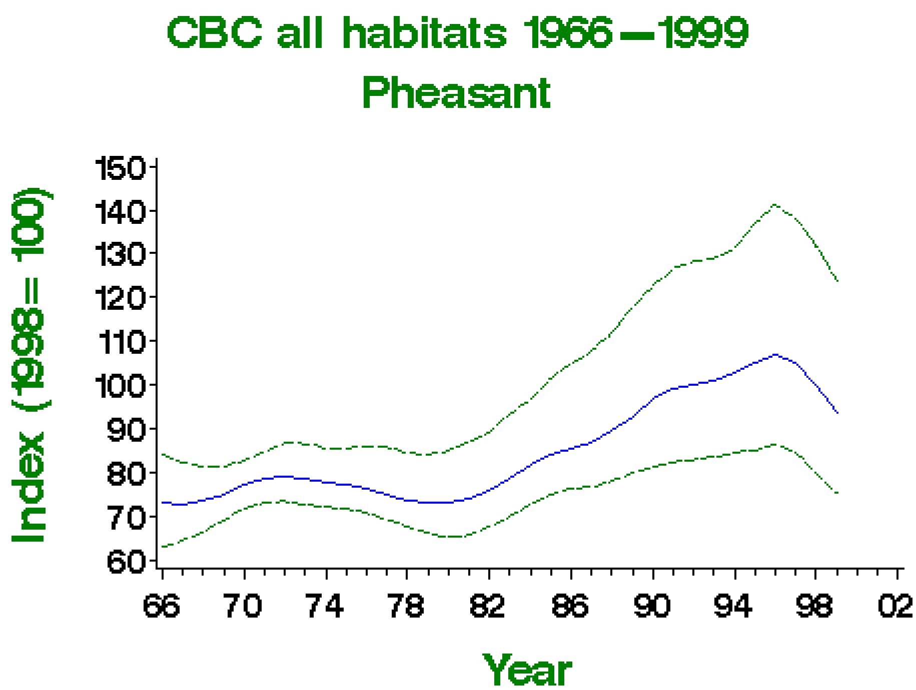

Table of population changes for Pheasant

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	126	36	9	87		
	25	1973-1998	131	27	5	63		
	10	1988-1998	141	12	-2	25		
	5	1993-1998	150	-1	-10	8		
CBC farmland	30	1968-1998	64	44	.	.		
	25	1973-1998	64	35	.	.		
	10	1988-1998	74	24	.	.		
	5	1993-	78	3	.	.		

		1998						
CBC woodland	30	1968-1998	41	36	.	.		
	25	1973-1998	45	29	.	.		
	10	1988-1998	53	0	.	.		
	5	1993-1998	57	-5	.	.		
BBS UK	5	1994-1999	1178	1	-4	6		
BBS England	5	1994-1999	997	9	4	15		
BBS Scotland	5	1994-1999	99	-27	-40	-12		
BBS Wales	5	1994-1999	57	-29	-45	-8		

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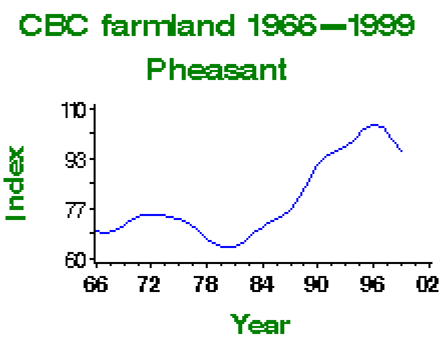

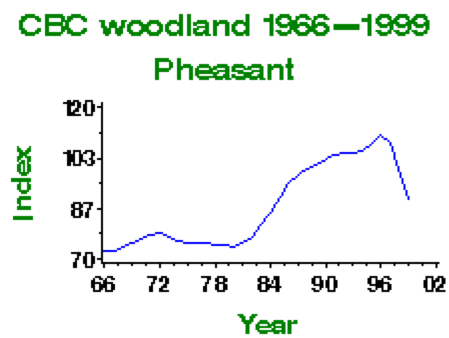

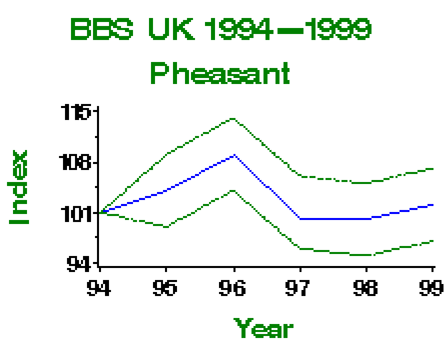

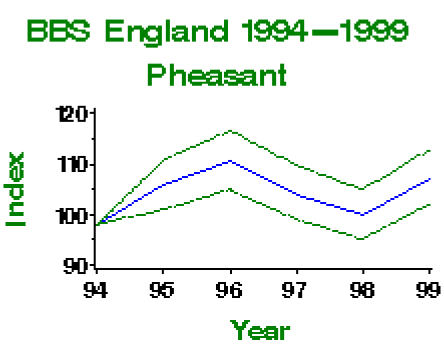

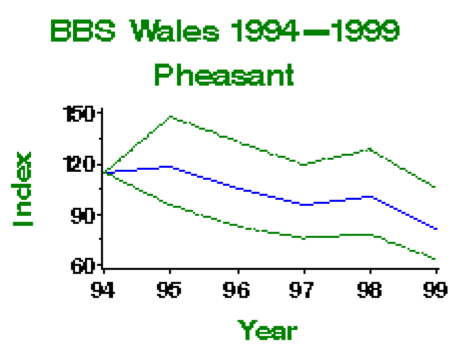

Productivity information is not currently available for this species

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 40%.

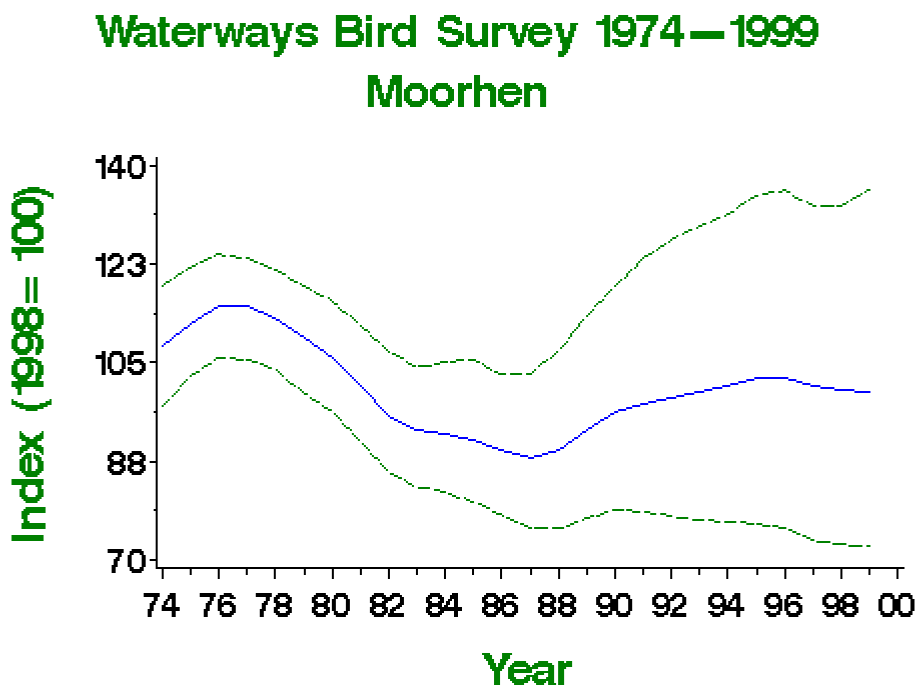

Table of population changes for Moorhen

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	100	-5	-28	17		
	25	1973-1998	101	-22	-37	-5		
	10	1988-1998	90	-7	-19	6		
	5	1993-1998	94	-8	-16	0		
CBC farmland	30	1968-1998	57	-32	-48	-11	>25	
	25	1973-1998	55	-45	-54	-31	>25	

	10	1988-1998	52	-3	-12	7		
	5	1993-1998	53	-5	-14	7		
WBS waterways	23	1975-1998	79	-11	-33	16		
	10	1988-1998	90	12	-9	34		
	5	1993-1998	96	0	-8	8		
BBS UK	5	1994-1999	478	18	6	30		
BBS England	5	1994-1999	438	17	5	29		

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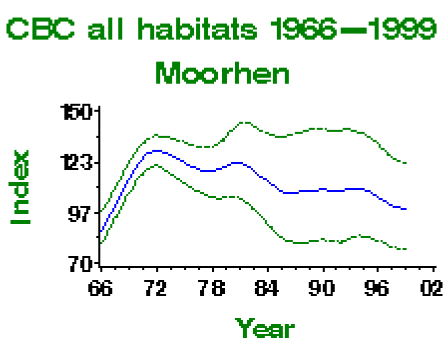
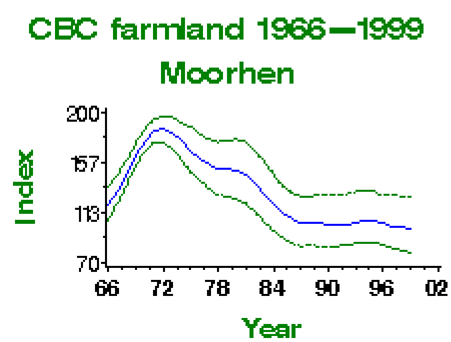
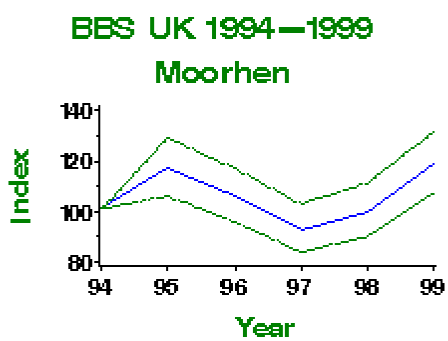






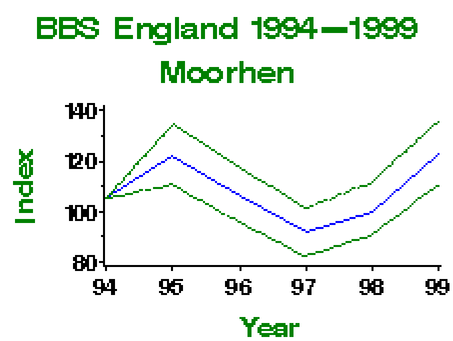
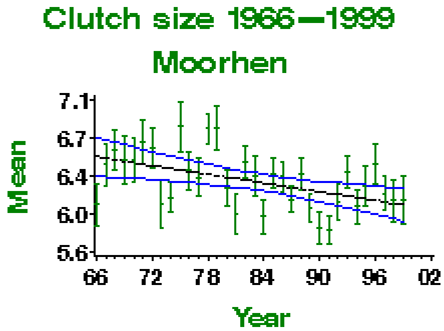
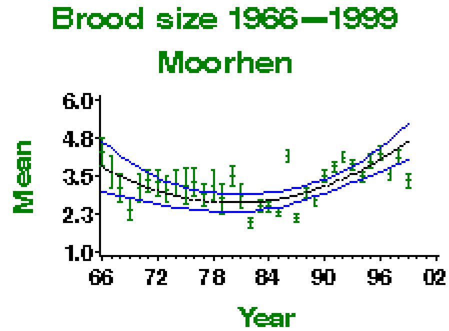
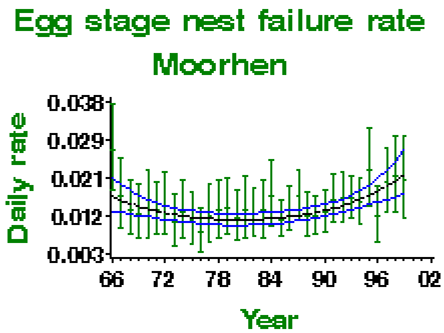


Table of productivity information for Moorhen

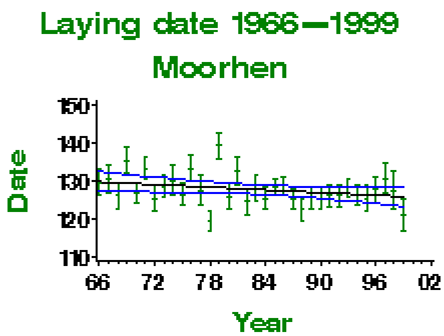
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	98	Linear decline	6.52 eggs	6.08 eggs	-0.44 eggs	
Brood size	30	1968-1998	80	Curvilinear	3.51 chicks	4.43 chicks	0.92 chicks	
Daily failure rate (eggs)	30	1968-1998	113	Curvilinear	0.0146 nests/day	0.0199 nests/day	0.0053 nests/day	
Laying date	30	1968-1998	74	None				







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 stillwaters, as monitored by WeBS (Pollitt *et al.* 2000).

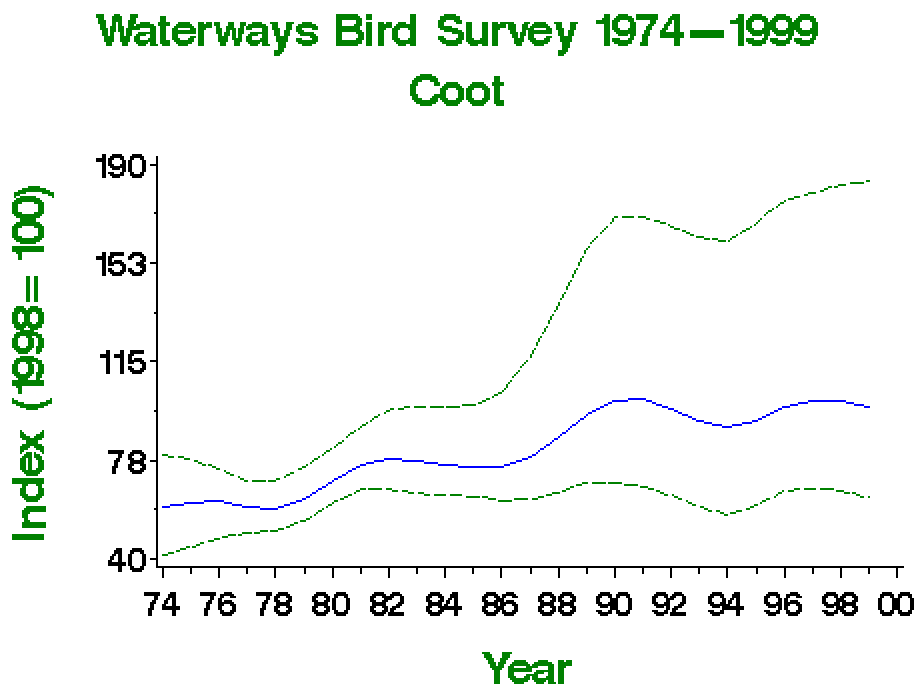


Table of population changes for Coot

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	31	94	40	300		Unrepresentative?
	25	1973-1998	33	29	-9	119		Unrepresentative?
	10	1988-1998	32	12	-9	39		Unrepresentative?
	5	1993-1998	37	1	-16	18		Unrepresentative?
WBS waterways	23	1975-1998	39	63	4	200		
	10	1988-1998	49	16	-11	56		
	5	1993-1998	54	8	-5	32		
BBS UK	5	1994-	178	33	14	56		

		1999						
BBS England	5	1994-1999	161	45	24	71		

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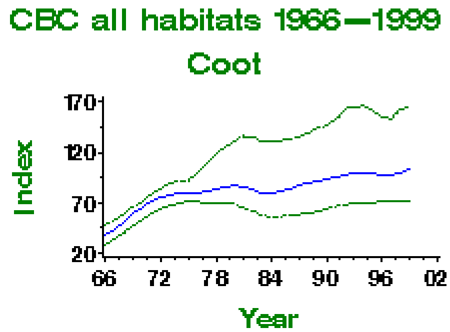
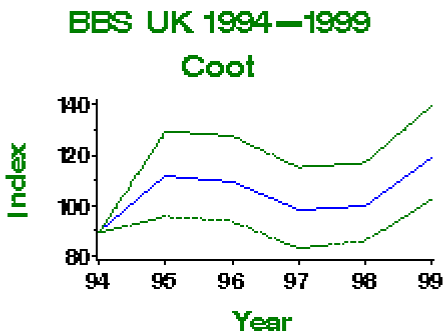
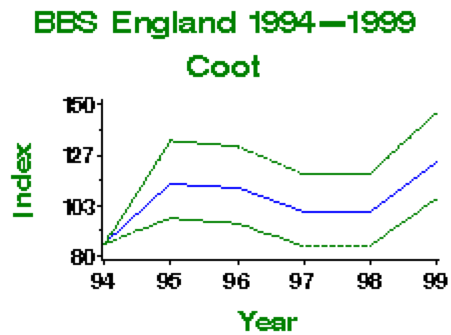






Productivity information is not currently available for this species

OYSTERCATCHER *Haematopus ostralegus*

Conservation Listings

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

Long term trend

UK Waterways: Stable after rapid increase
Scotland: Recent decline

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 (Pollitt *et al.* 2000). 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). The recent declines shown by the BBS, especially in Scotland, may reveal a new problem for conservation and the situation should be monitored.

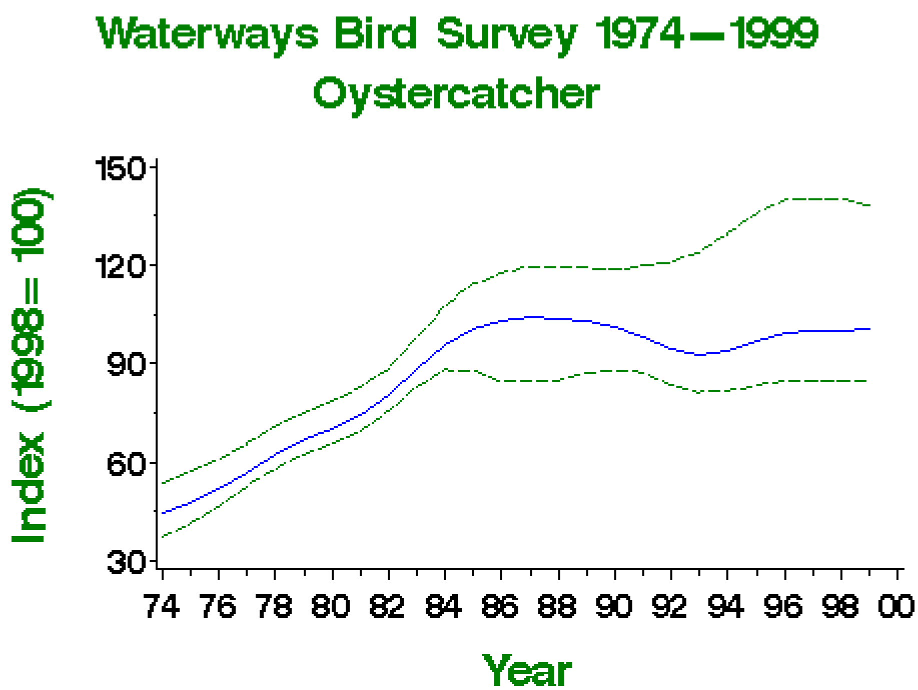
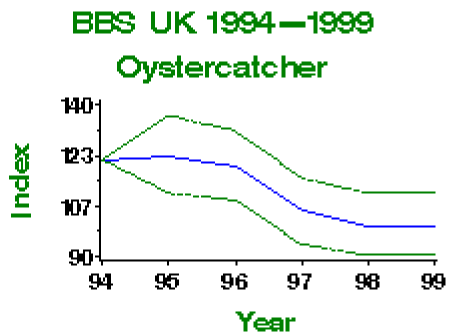


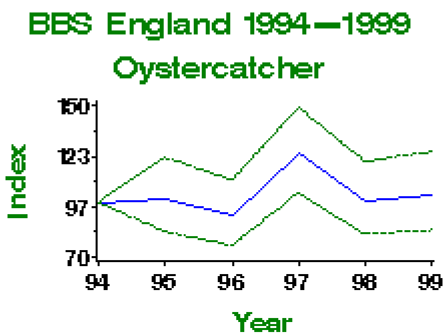
Table of population changes for Oystercatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	23	109	74	164		
	10	1988-1998	28	-3	-21	32		
	5	1993-1998	32	8	1	16		
BBS UK	5	1994-1999	227	-18	-26	-9		
BBS England	5	1994-1999	99	4	-15	27		
		1994-						

BBS Scotland	5	1999	118	-22	-33	-9		

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





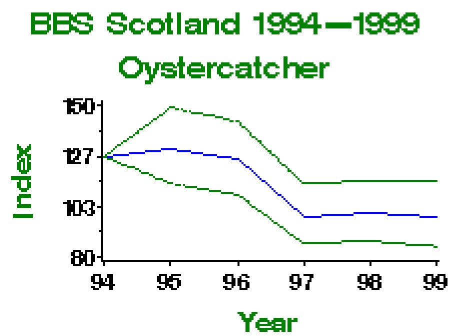
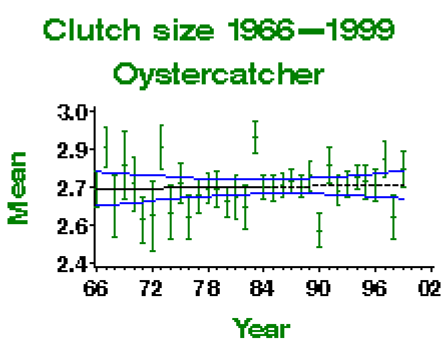
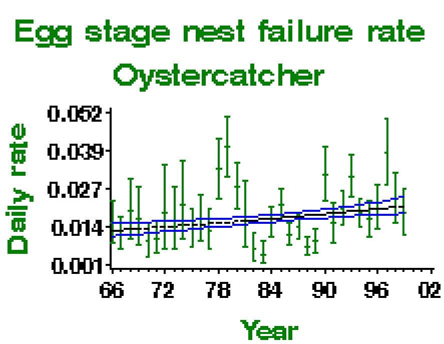


Table of productivity information for Oystercatcher

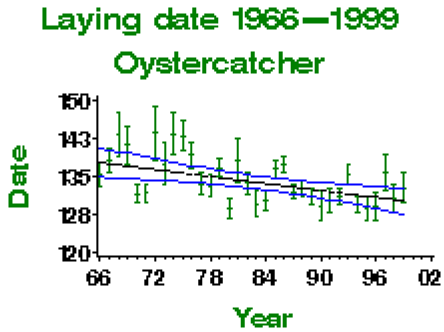
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	106	None				
Daily failure rate (eggs)	30	1968-1998	112	Linear increase	0.0129 nests/day	0.0205 nests/day	0.0076 nests/day	
Laying date	30	1968-1998	47	Linear decline	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

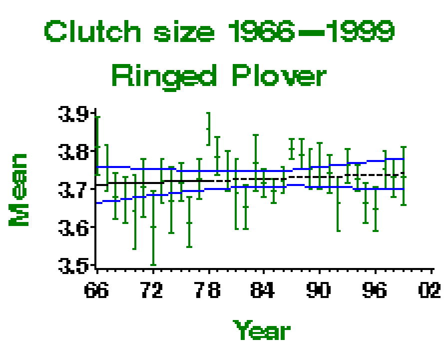
Status Summary

Although the breeding population is not monitored annually by the BTO, its distribution has spread inland, especially in England, probably associated with the inrease 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 fail rate for the 27-day egg stage (24 days for incubation + 3 days for laying) has increased from 56% to 70%.

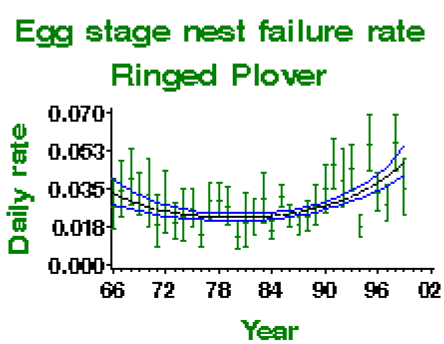
Annual breeding population changes for this species are not currently monitored by BTO

Table of productivity information for Ringed Plover

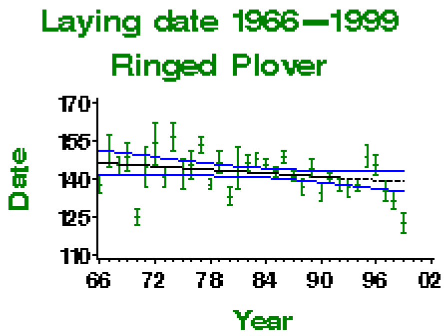
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	90	None				
Daily failure rate (eggs)	30	1968-1998	131	Curvilinear	0.0295 nests/day	0.0439 nests/day	0.0144 nests/day	
Laying date	30	1968-1998	42	None				



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

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 only poorly monitored (in summer and in winter) before the inception of the BBS. Since then, there has been no clear trend in abundance. 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 from an intensive study that provide an unusual proportion of 2 and 3-egg clutches (Pearce-Higgins, pers.comm.).

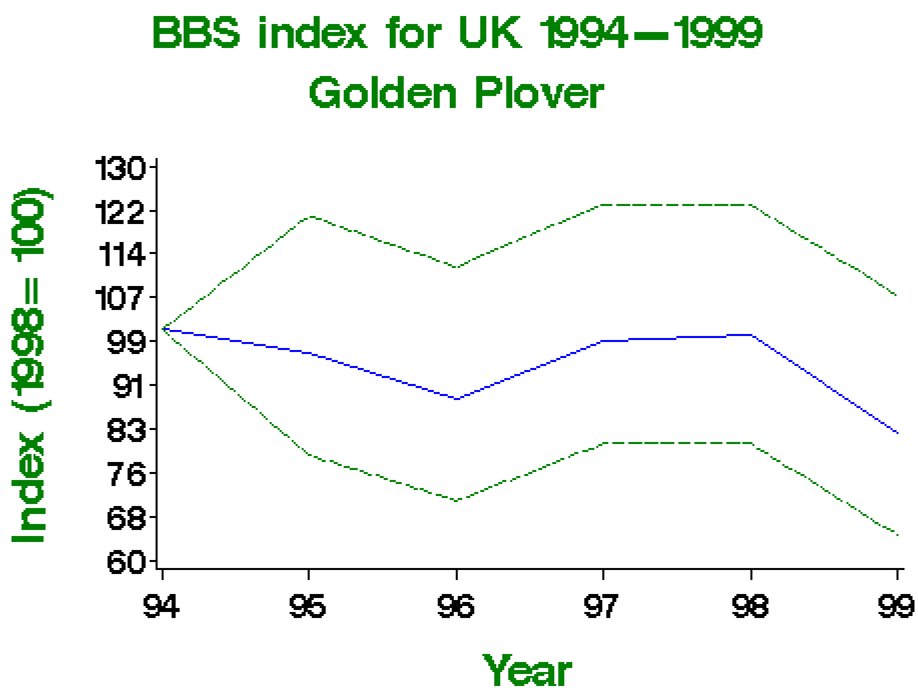


Table of population changes for Golden Plover

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	78	-18	-36	6		
BBS England	5	1994-1999	28	15	-18	63		Small sample
BBS Scotland	5	1994-1999	49	-33	-53	-5	(>25)	Small sample

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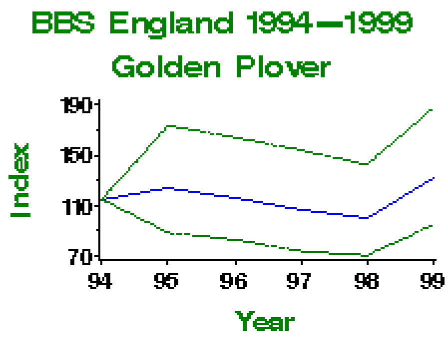


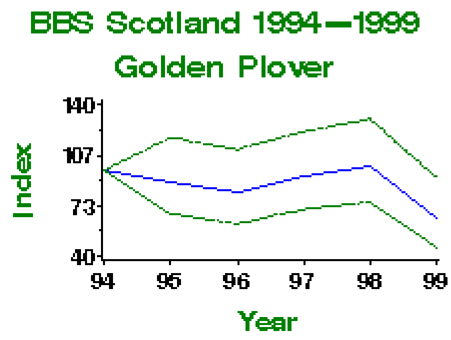
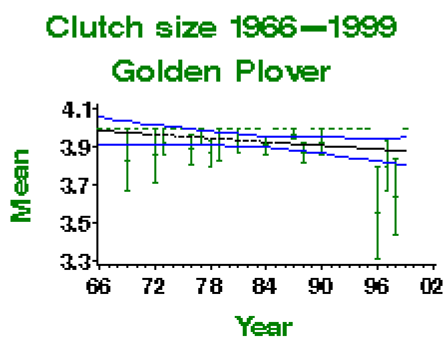


Table of productivity information for Golden Plover

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	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. 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 shows 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 critical that the BBS shows a decline through the late 1990s. 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.

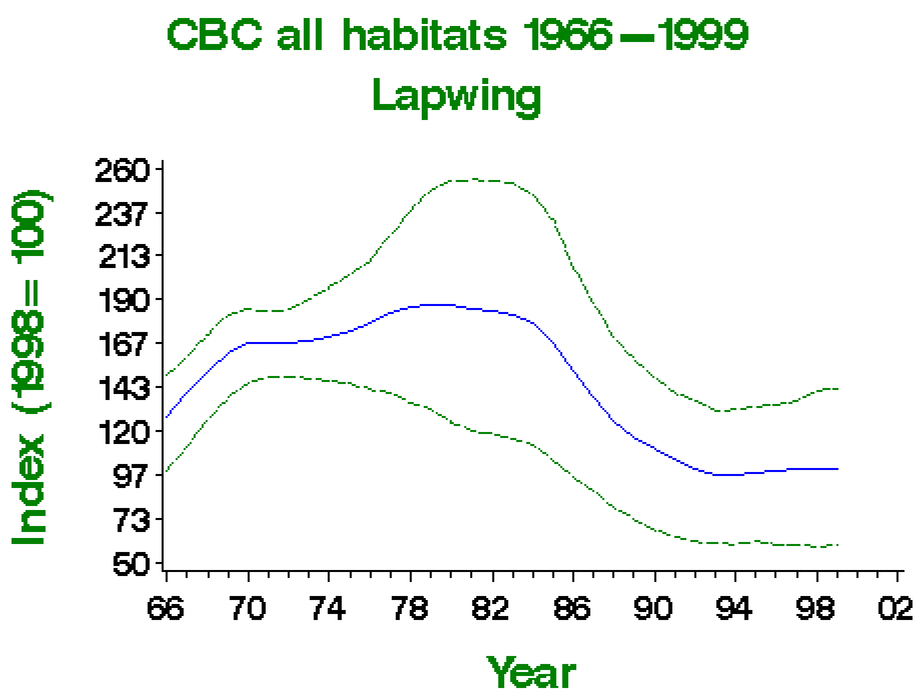


Table of population changes for Lapwing

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	53	-34	-62	-3	>25	Unrepresentative
	25	1973-1998	53	-40	-62	-18	>25	Unrepresentative
		1988-						

	10	1998	38	-21	-36	-3		Unrepresentative
	5	1993-1998	36	3	-15	22		Unrepresentative
CBC farmland	30	1968-1998	41	-40	.	.	>25	Unrepresentative
	25	1973-1998	39	-44	.	.	>25	Unrepresentative
	10	1988-1998	31	-22	.	.		Unrepresentative
	5	1993-1998	30	-1	.	.		Unrepresentative
WBS waterways	23	1975-1998	33	174	0	842		
	10	1988-1998	41	-23	-43	-5		
	5	1993-1998	43	-9	-24	11		
BBS UK	5	1994-1999	525	-20	-26	-12		
BBS England	5	1994-1999	417	-3	-13	7		
BBS Scotland	5	1994-1999	87	-34	-46	-20	(>25)	

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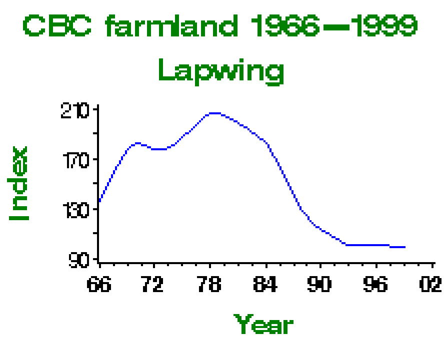
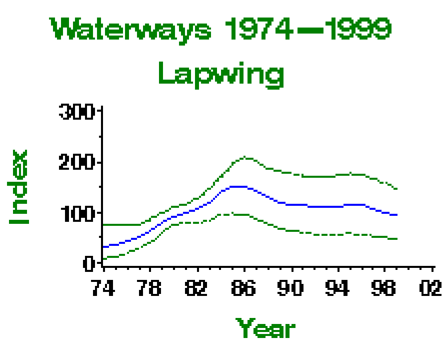
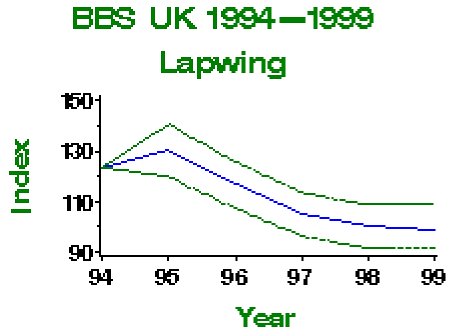
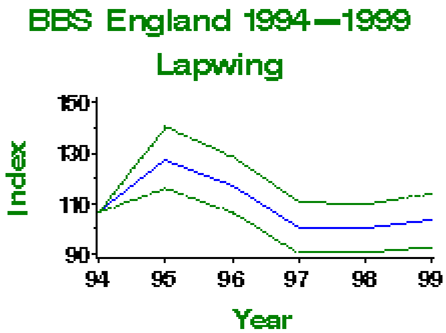








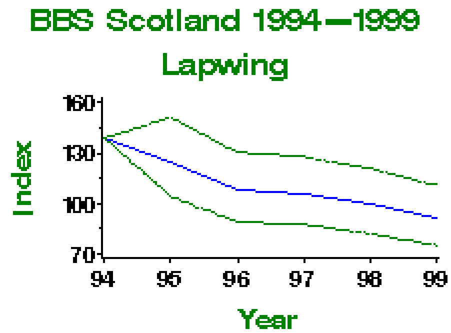
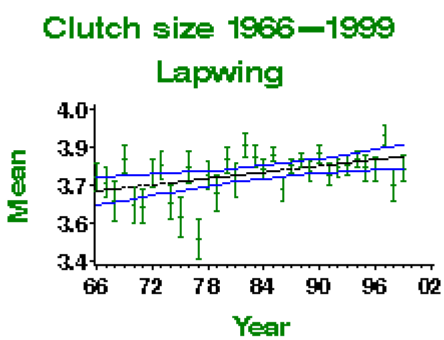
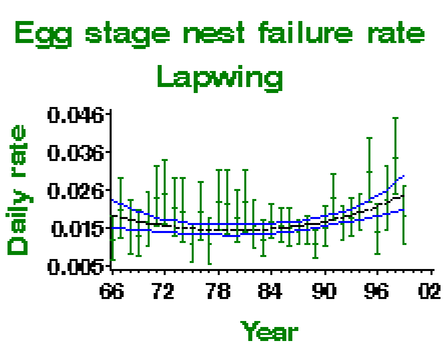


Table of productivity information for Lapwing

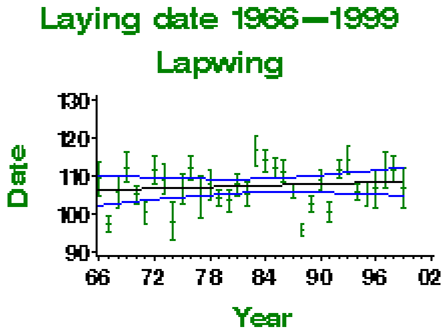
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	131	Linear increase	3.69 eggs	3.81 eggs	0.12 eggs	
Daily failure rate (eggs)	30	1968-1998	143	Curvilinear	0.0175 nests/day	0.0232 nests/day	0.0057 nests/day	
Laying date	30	1968-1998	34	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

Snipe are poorly monitored by the CBC because of their northern, western and upland breeding distribution, and they are now found on too few plots to allow an index to be calculated. The decline in, and range contraction from, 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 but does suggest a moderate decline in England over the last 5 years.

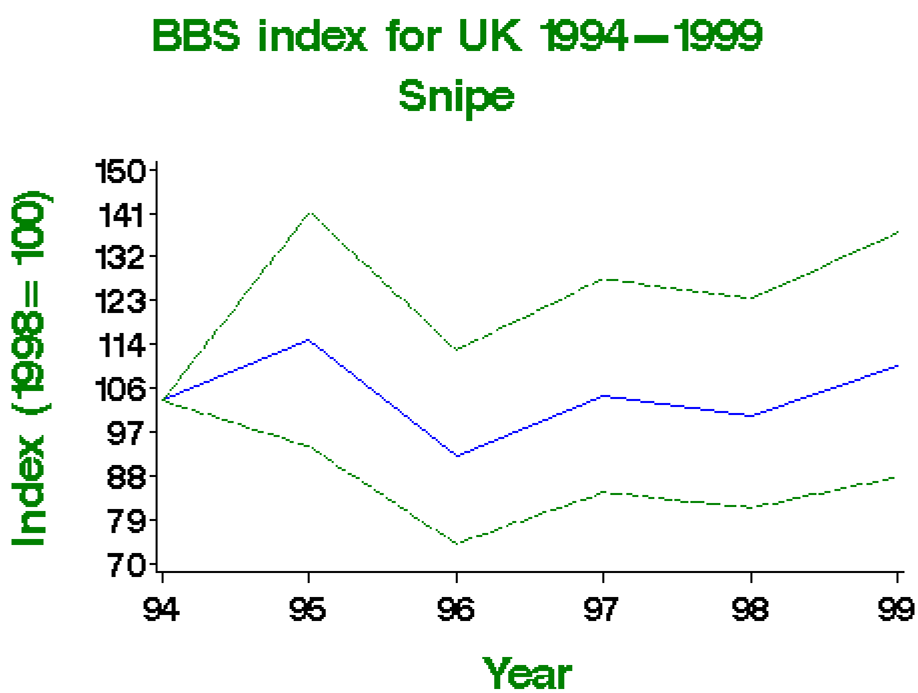


Table of population changes for Snipe

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	117	7	-15	33		
BBS England	5	1994-1999	50	-36	-54	-12	(>25)	Small sample
BBS Scotland	5	1994-1999	55	39	0	95		

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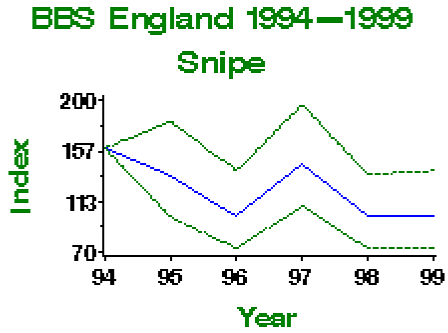


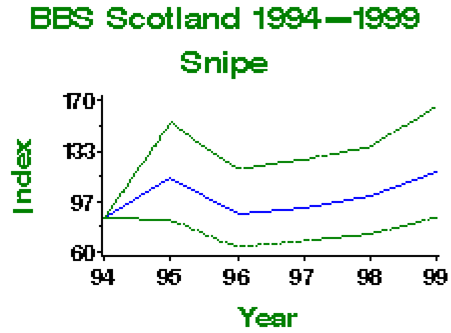
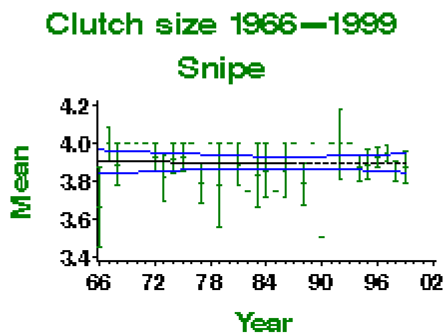
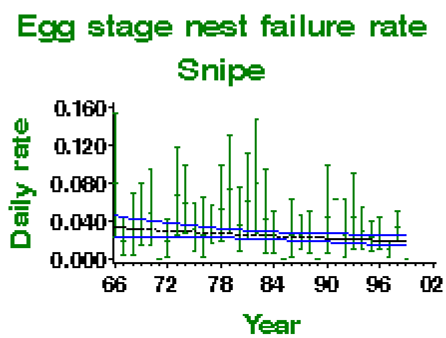


Table of productivity information for Snipe

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	None				Small sample
Daily failure rate (eggs)	30	1968-1998	18	Linear decline	0.032 nests/day	0.0189 nests/day	-0.0131 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 (Pollit *et al.* 2000), but the BBS shows a recent decline, especially in Scotland. In Northern Ireland, breeding declines greater than 50% have occurred since the mid 1980s with birds affected across the wider countryside (Henderson *et al.* in press). 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 56%.

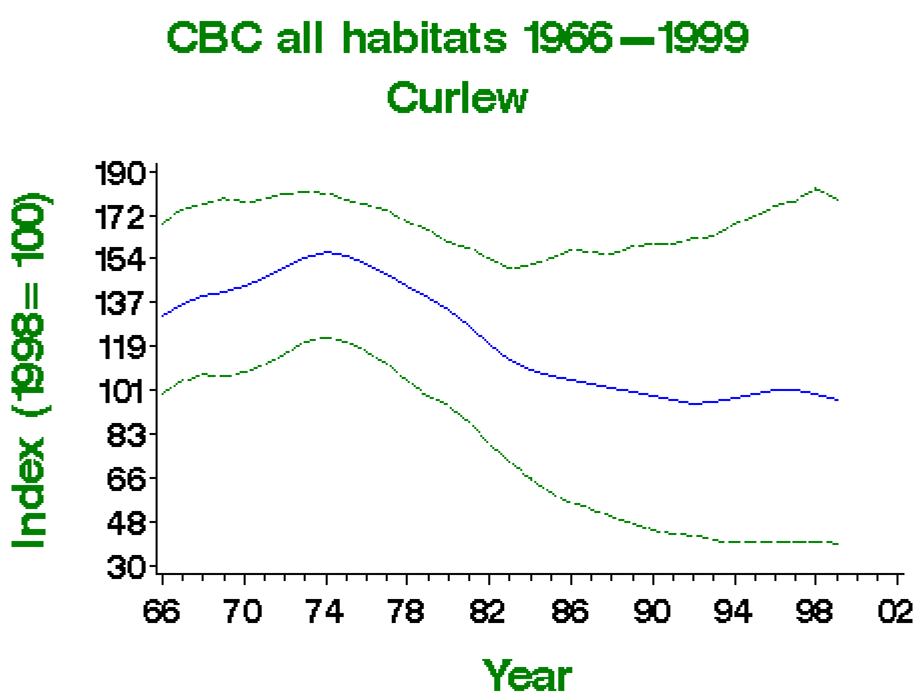


Table of population changes for Curlew

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	23	-28	-69	8		Unrepresentative?
	25	1973-1998	24	-36	-70	3		Unrepresentative?
	10	1988-1998	22	-2	-32	28		Unrepresentative?
	5	1993-1998	25	4	-7	16		Unrepresentative?
WBS waterways	23	1975-1998	20	77	16	436		Small sample

	10	1988-1998	26	2	-17	40		
	5	1993-1998	28	5	-10	28		
BBS UK	5	1994-1999	420	-12	-19	-4		
BBS England	5	1994-1999	237	-7	-16	3		
BBS Scotland	5	1994-1999	125	-18	-31	-4		
BBS Wales	5	1994-1999	35	1	-30	46		Small sample

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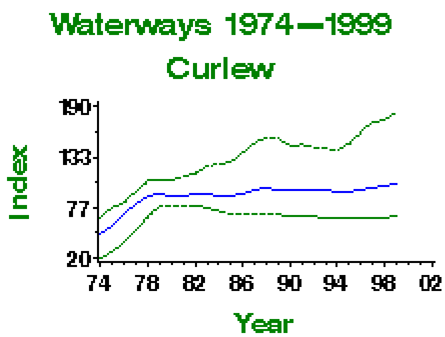
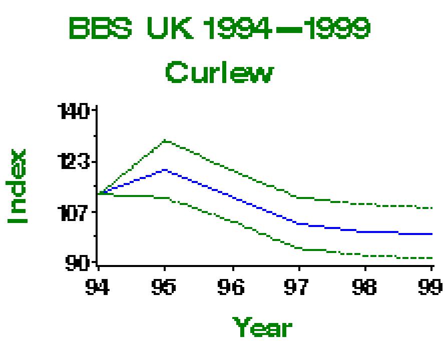
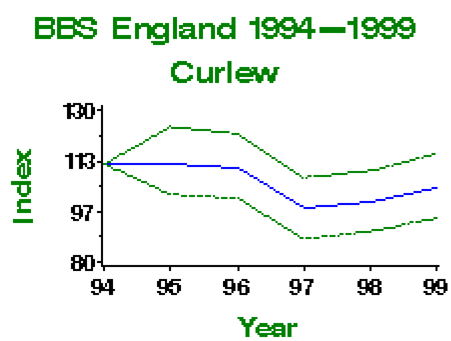
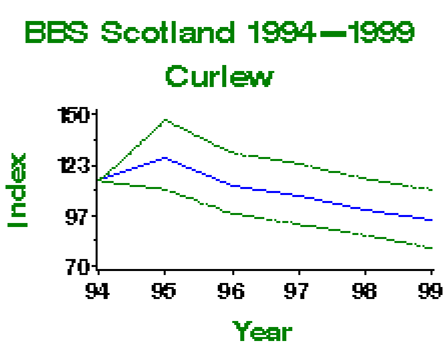








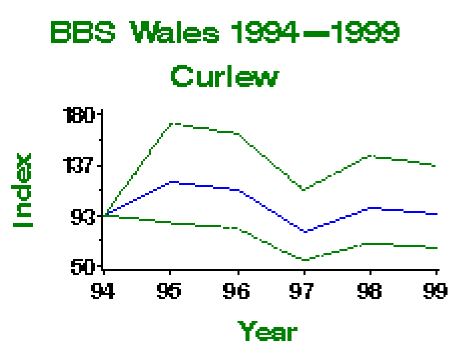
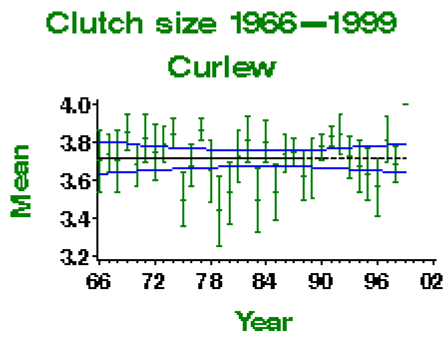
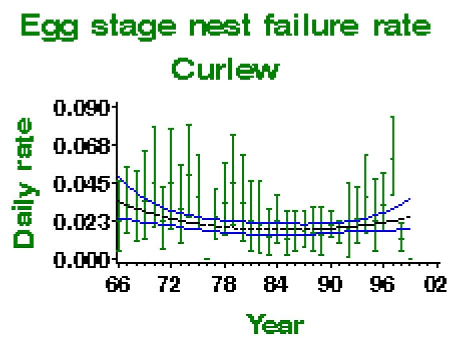


Table of productivity information for Curlew

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	25	None				Small sample
Daily failure rate (eggs)	30	1968-1998	28	Curvilinear	0.03 nests/day	0.0237 nests/day	-0.0063 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.

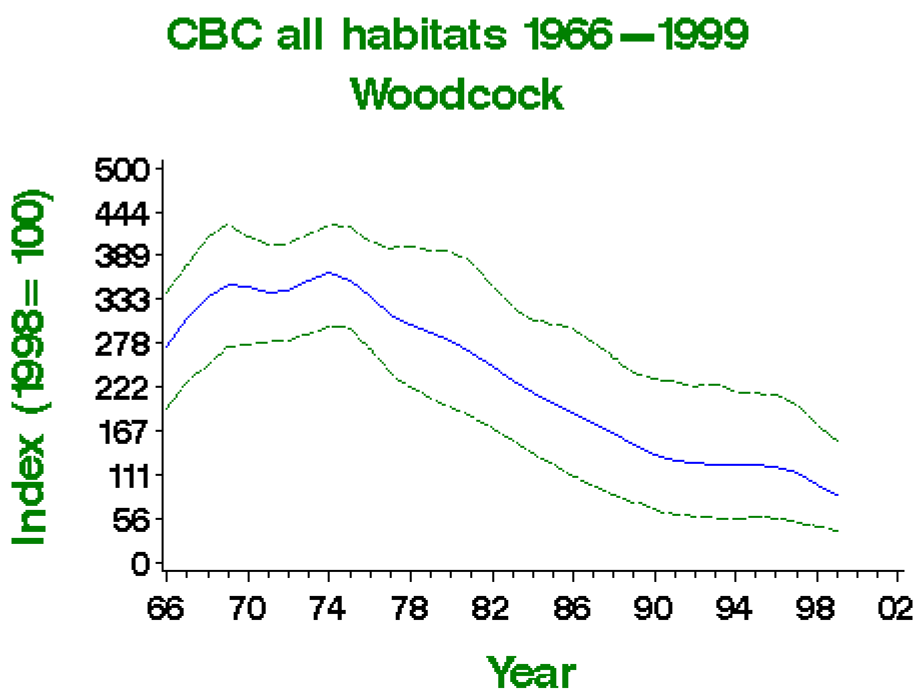


Table of population changes for Woodcock

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	20	-70	-85	-48	>50	Unrepresentative? small sample
	25	1973-1998	21	-72	-88	-50	>50	Unrepresentative?
	10	1988-1998	14	-39	-68	-11	>25	Unrepresentative? small sample
	5	1993-1998	13	-20	-42	5		Unrepresentative? small sample

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

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 wintering populations (augmented by Icelandic and Arctic breeders) are stable, The BBS suggests that UK abundance and especially Scottish abundance is currently in decline..

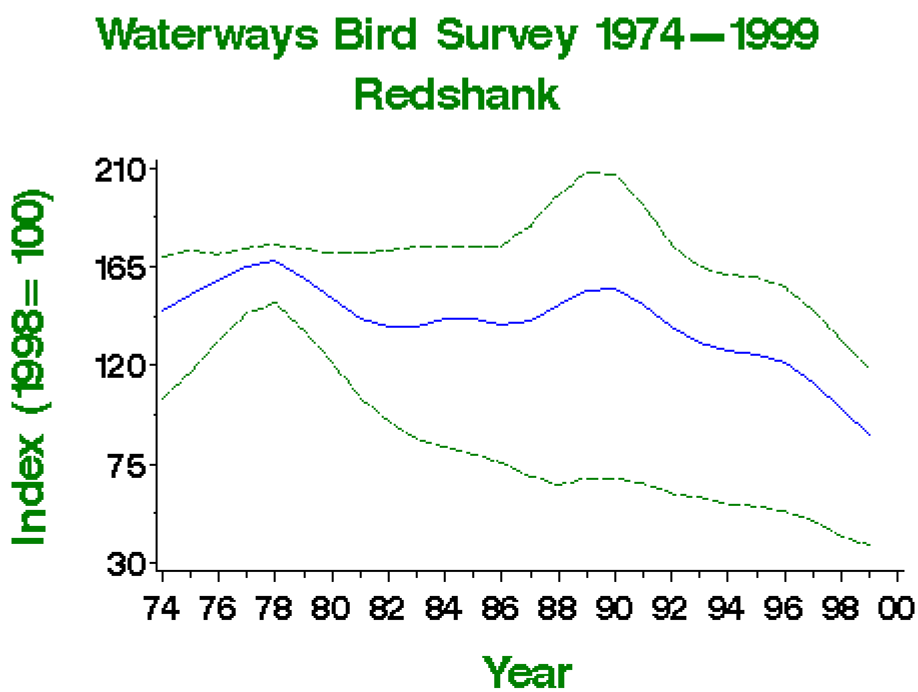


Table of population changes for Redshank

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	19	-34	-76	5		Small sample
	10	1988-1998	19	-32	-44	-23	>25	Small sample
	5	1993-1998	19	-23	-37	-7		Small sample
BBS UK	5	1994-1999	63	-36	-51	-16	(>25)	
BBS England	5	1994-1999	41	1	-28	43		Small sample
BBS Scotland	5	1994-1999	21	-50	-68	-23	(>50)	Small sample

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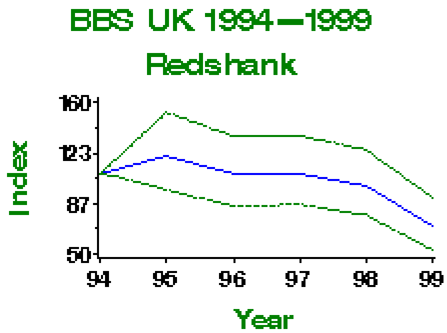
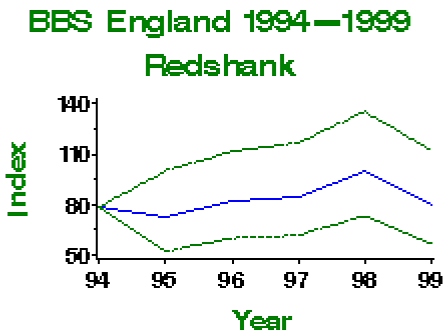




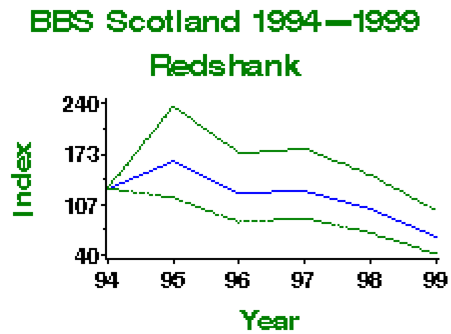
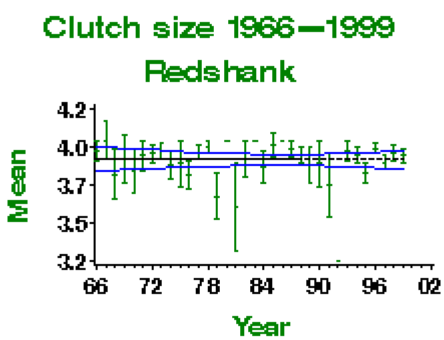
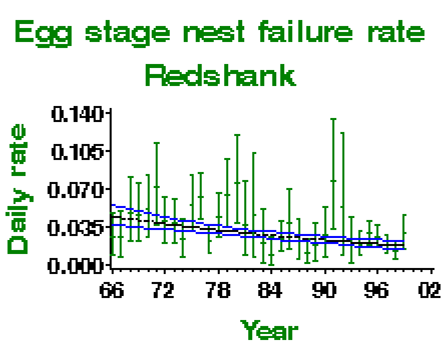


Table of productivity information for Redshank

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	25	None				Small sample
Daily failure rate (eggs)	30	1968-1998	32	Linear decline	0.0425 nests/day	0.0182 nests/day	-0.0243 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

Insufficient data on CES

available for this species

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 comparisons falls near the population peak.

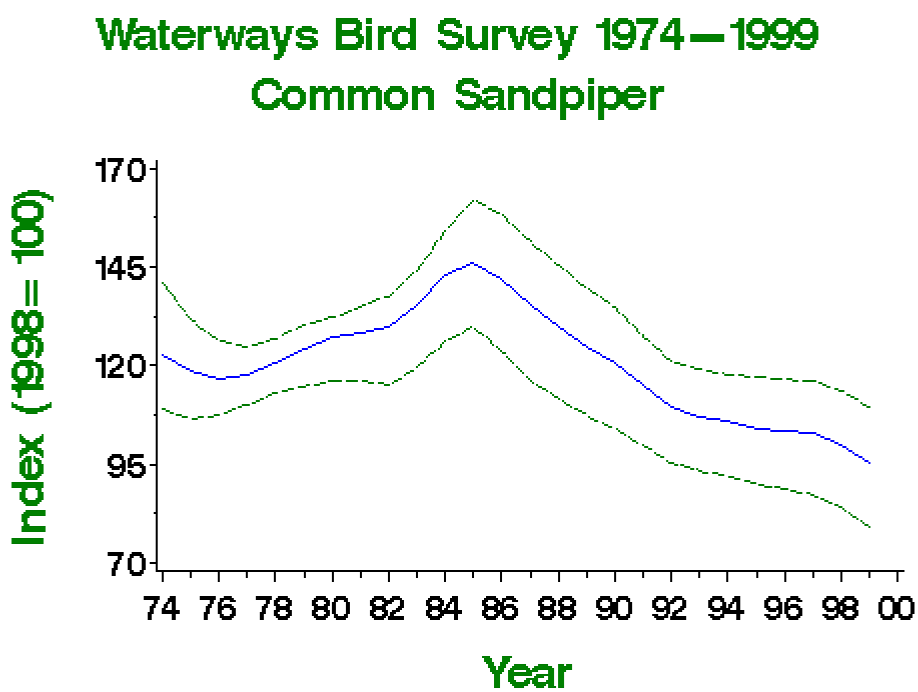


Table of population changes for Common Sandpiper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	27	-16	-34	-2		
	10	1988-1998	31	-23	-31	-16		
	5	1993-1998	30	-7	-15	2		
BBS UK	5	1994-1999	63	-29	-46	-7	(>25)	
BBS Scotland	5	1994-1999	38	-30	-51	1		Small sample

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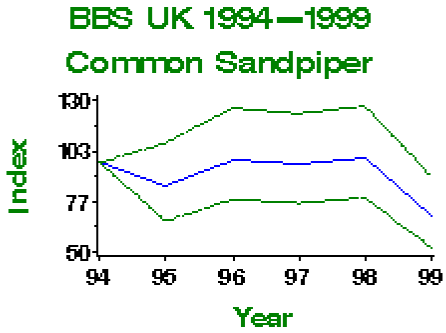


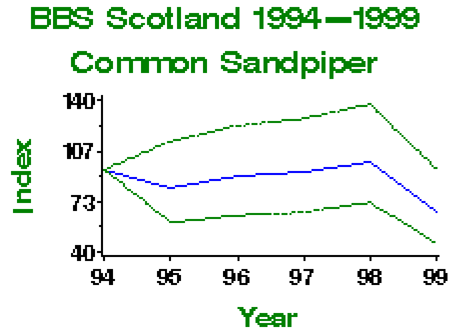
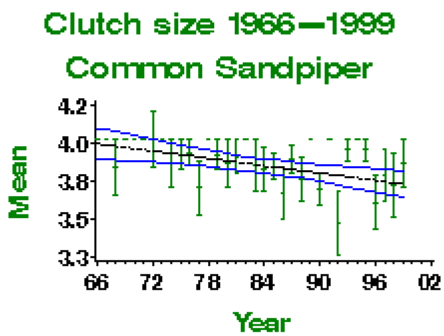
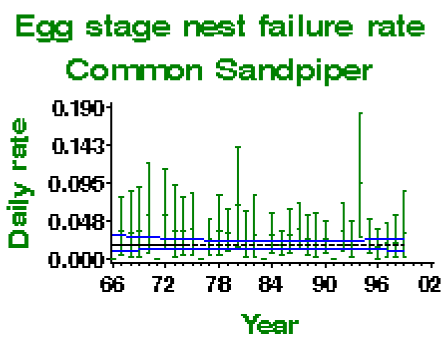


Table of productivity information for Common Sandpiper

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	Linear decline	3.96 eggs	3.75 eggs	-0.21 eggs	Small sample
Daily failure rate (eggs)	30	1968-1998	15	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 13%, and were not detectable in farmland habitats alone (Siriwardena *et al.* 2000b). BBS indices suggest that abundance is currently stable.

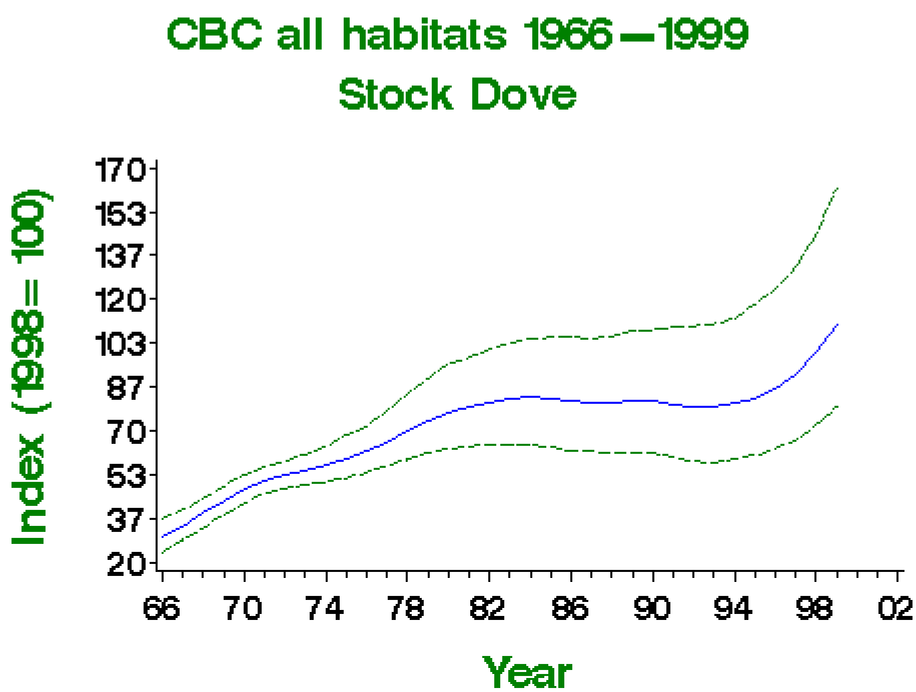


Table of population changes for Stock Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	75	157	63	293		
	25	1973-1998	79	81	34	153		
	10	1988-1998	75	24	6	49		
	5	1993-1998	71	26	11	42		
CBC farmland	30	1968-1998	37	158	.	.		
	25	1973-1998	38	96	.	.		

	10	1988-1998	37	32	.	.		
	5	1993-1998	34	32	.	.		
BBS UK	5	1994-1999	564	10	-1	21		
BBS England	5	1994-1999	521	12	1	24		
BBS Wales	5	1994-1999	23	-2	-50	90		Small sample

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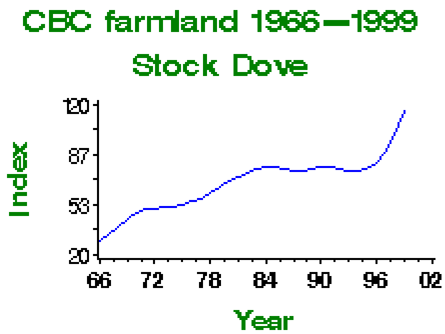
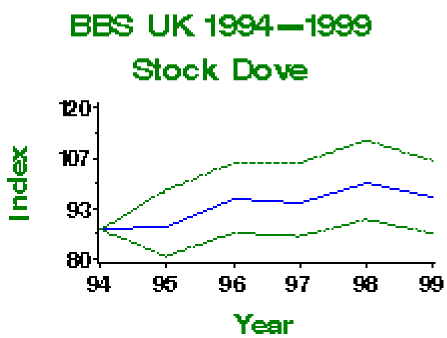
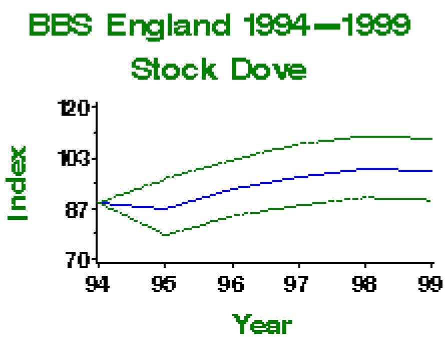






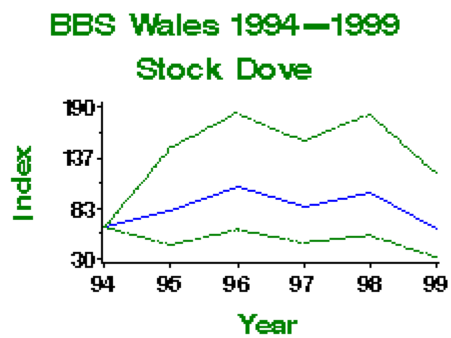
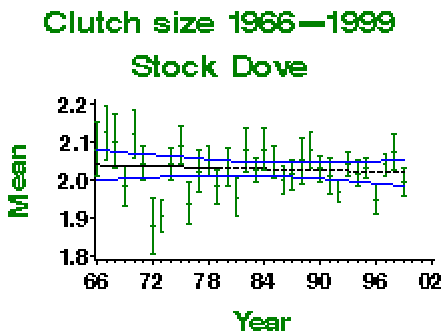
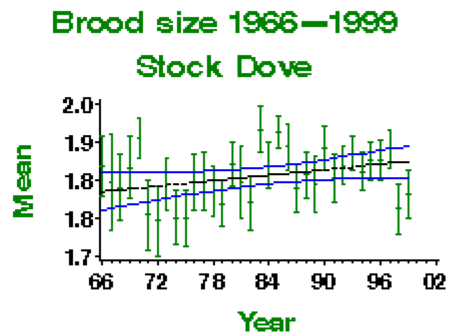
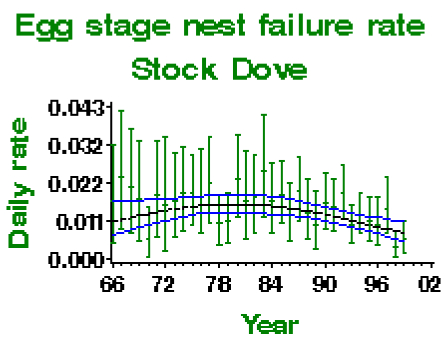


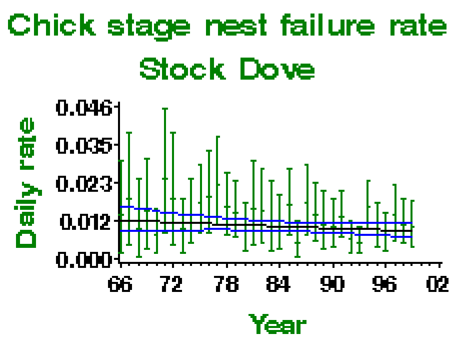
Table of productivity information for Stock Dove

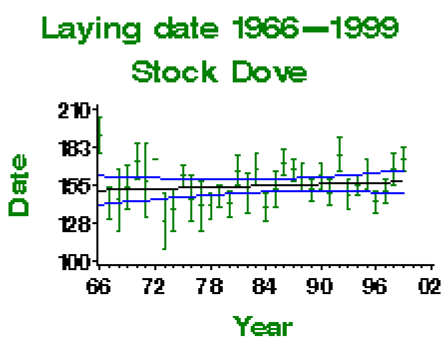
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	64	None				
Brood size	30	1968-1998	87	None				
Daily failure rate (eggs)	30	1968-1998	62	Curvilinear	0.0116 nests/day	0.0079 nests/day	-0.0037 nests/day	
Daily failure rate (chicks)	30	1968-1998	47	None				
Laying date	30	1968-1998	13	None				Small sample











Insufficient data on CES
available for this species

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. 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).

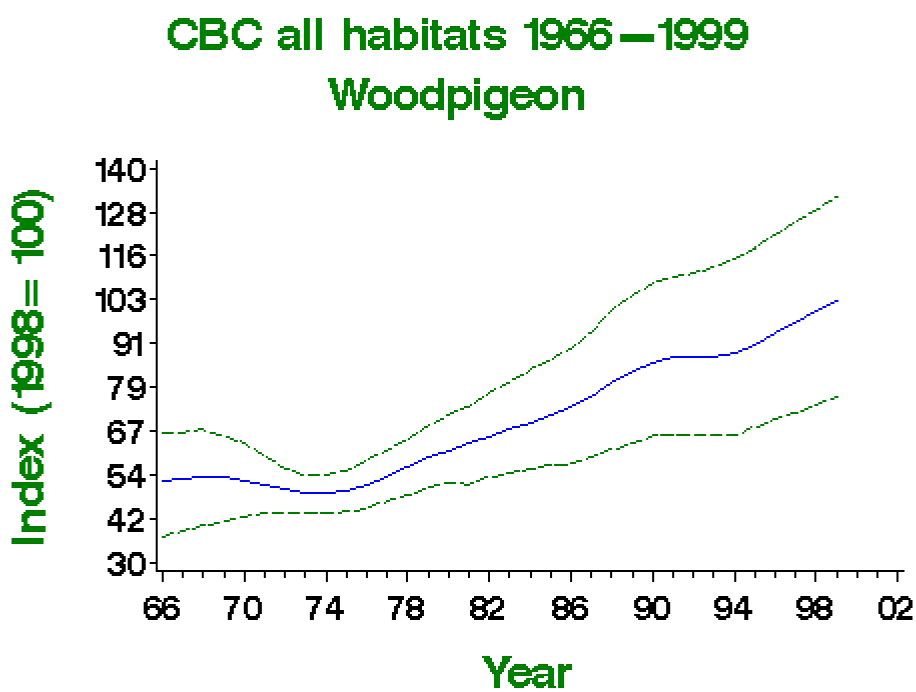


Table of population changes for Woodpigeon

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	97	86	13	184		
	25	1973-1998	113	101	48	167		
	10	1988-1998	149	25	13	36		
	5	1993-1998	163	14	8	21		
BBS UK	5	1994-1999	1751	0	-3	5		
BBS England	5	1994-1999	1411	2	-3	6		
BBS Scotland	5	1994-1999	156	-7	-20	7		

BBS Wales	5	1994-1999	128	1	-12	15		
BBS N.Ireland	5	1994-1999	47	-3	-30	35		Small sample

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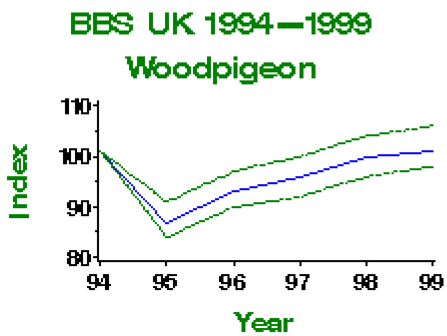

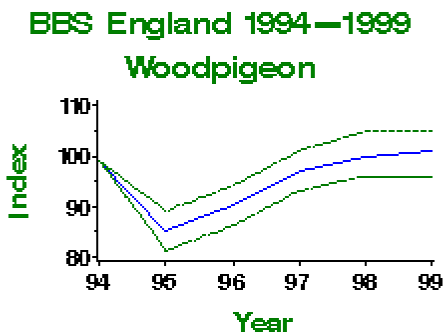

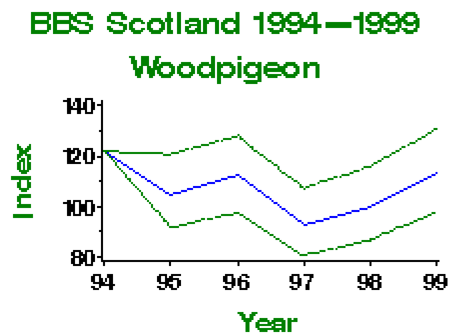

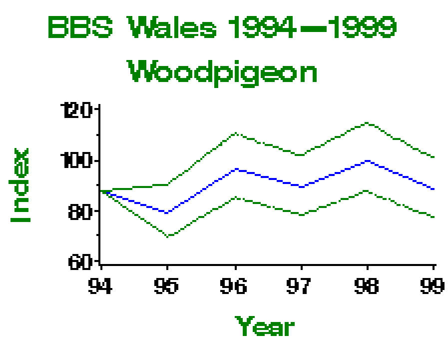

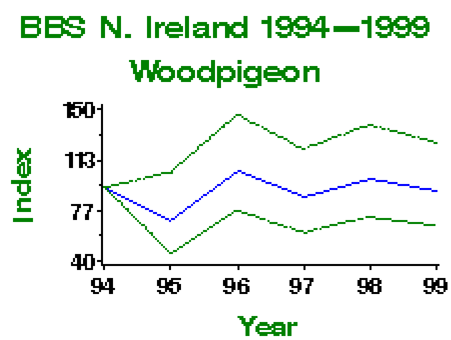

Productivity information is not currently available for this species

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).

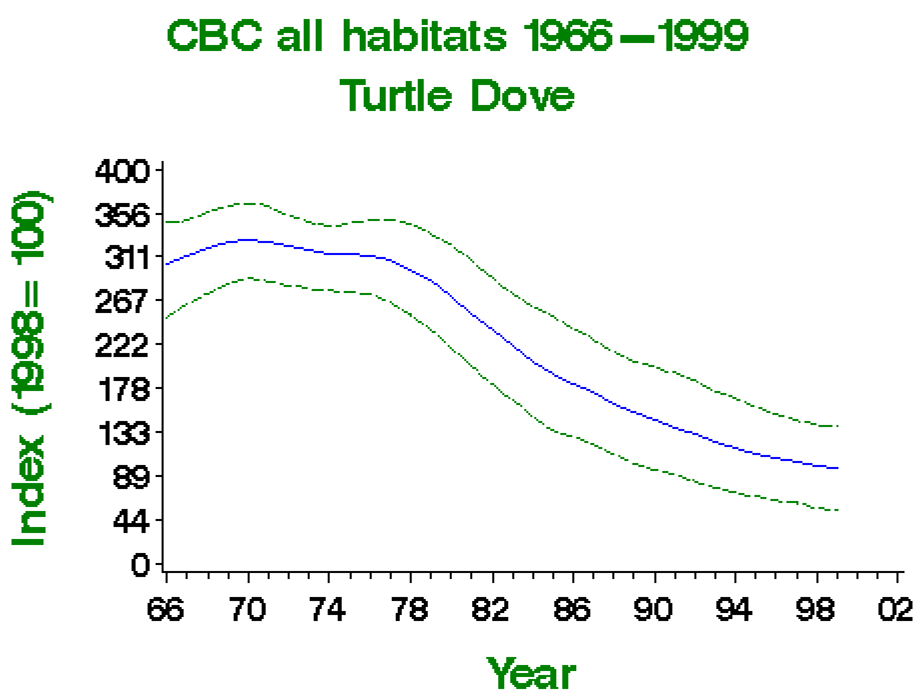

Table of population changes for Turtle Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	60	-69	-81	-57	>50	
	25	1973-1998	59	-69	-81	-56	>50	
	10	1988-1998	42	-39	-55	-22	>25	
	5	1993-1998	37	-19	-36	-5		
CBC farmland	30	1968-1998	27	-78	-89	-62	>50	

	25	1973-1998	26	-79	-88	-65	>50	
	10	1988-1998	20	-42	-60	-23	>25	Small sample
	5	1993-1998	18	-17	-39	1		Small sample
CBC woodland	30	1968-1998	20	-72	.	.	>50	Small sample
	25	1973-1998	20	-70	.	.	>50	Small sample
	10	1988-1998	15	-46	.	.	>25	Small sample
	5	1993-1998	13	-29	.	.	>25	Small sample
BBS UK	5	1994-1999	190	-18	-31	-2		
BBS England	5	1994-1999	187	-17	-31	-1		

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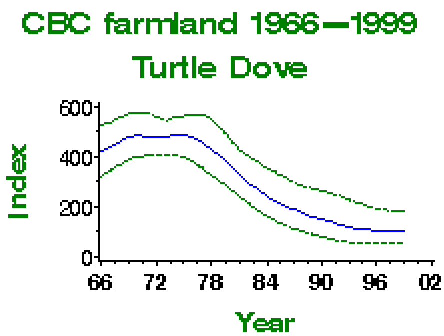
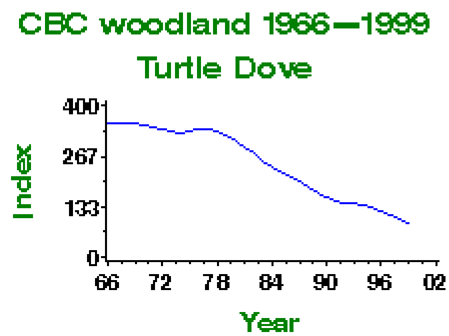
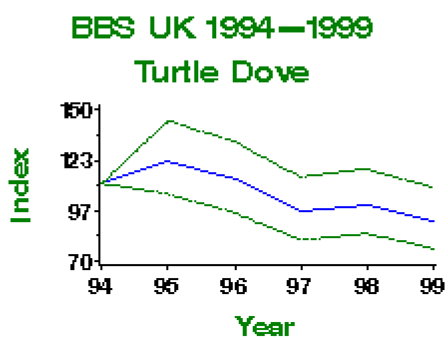






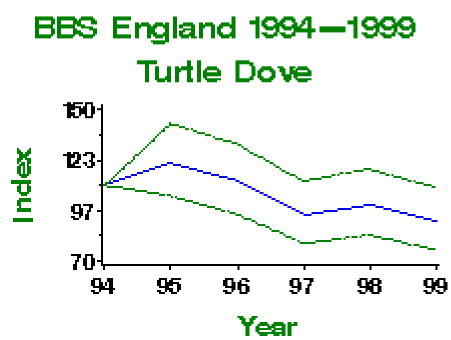
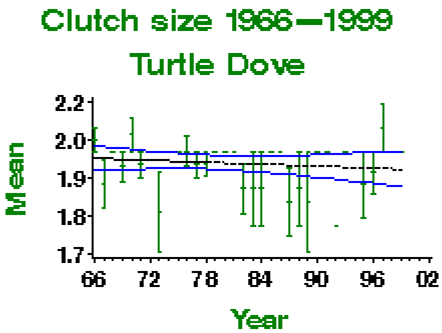
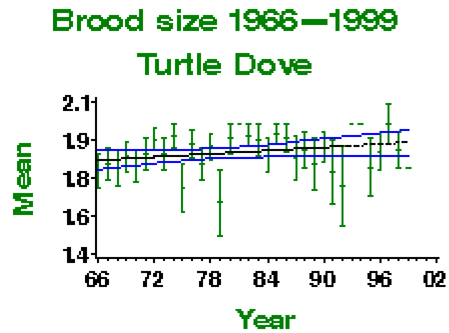
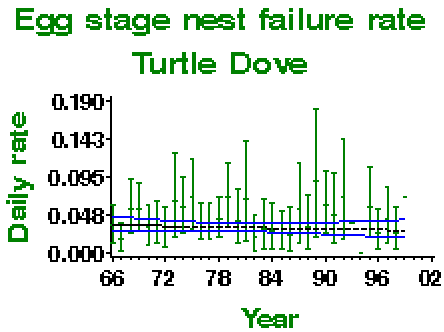


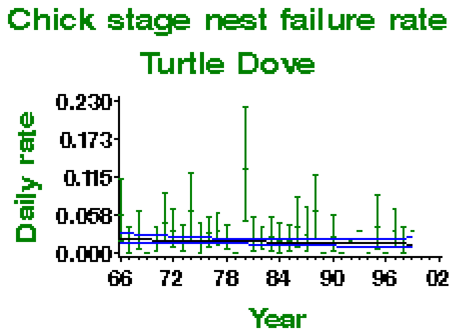
Table of productivity information for Turtle Dove

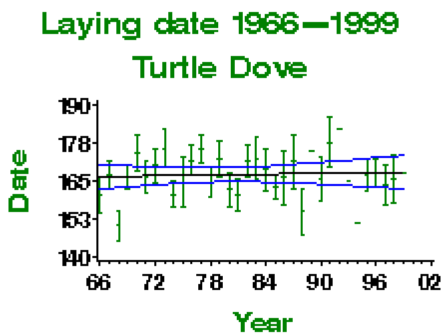
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	None				Small sample
Brood size	30	1968-1998	18	None				Small sample
Daily failure rate (eggs)	30	1968-1998	18	None				Small sample
Daily failure rate (chicks)	30	1968-1998	13	None				Small sample
Laying date	30	1968-1998	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.

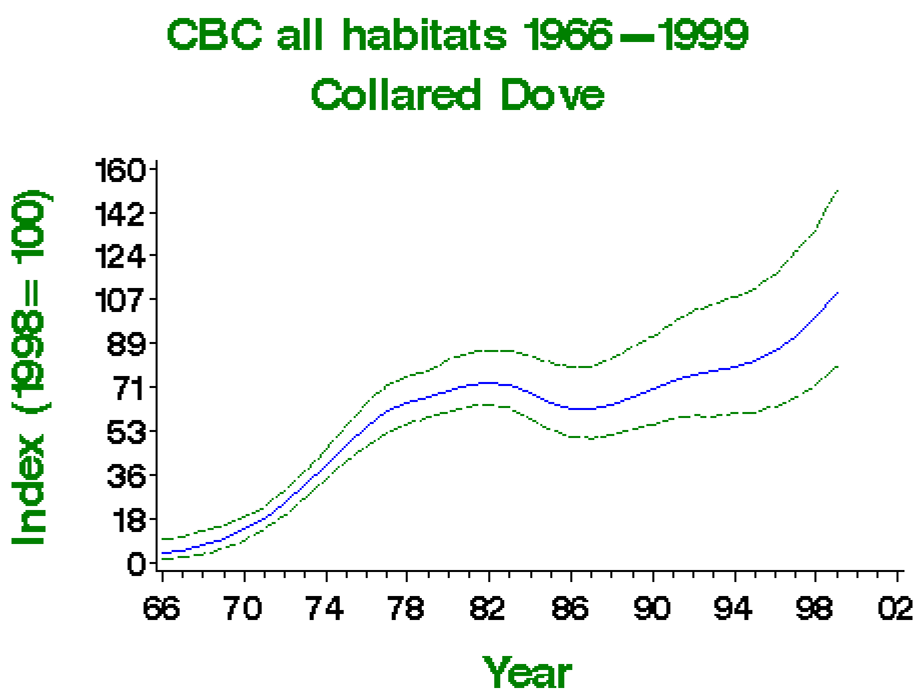


Table of population changes for Collared Dove

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	71	1284	629	2934		
	25	1973-1998	80	216	138	335		
	10	1988-1998	77	56	27	92		
	5	1993-1998	77	29	16	44		
CBC farmland	30	1968-1998	40	1410	.	.		
	25	1973-1998	45	284	.	.		
	10	1988-1998	49	64	.	.		

	5	1993-1998	50	28	.	.		
BBS UK	5	1994-1999	941	18	12	25		
BBS England	5	1994-1999	844	20	13	28		
BBS Scotland	5	1994-1999	35	-16	-41	22		Small sample
BBS Wales	5	1994-1999	45	25	-9	73		Small sample

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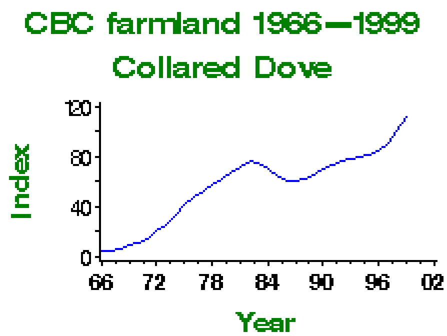
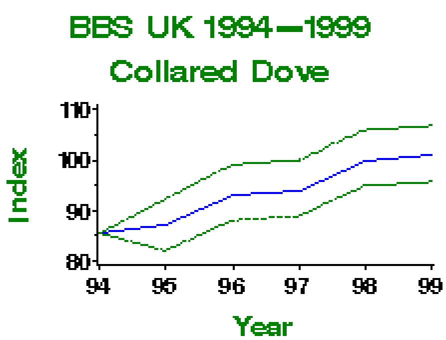
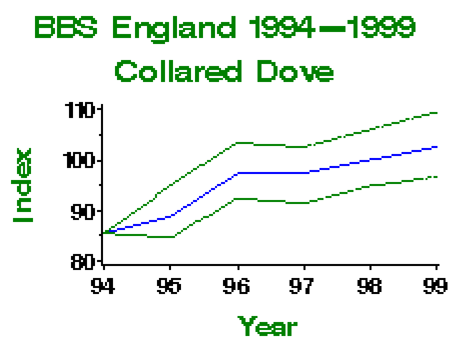
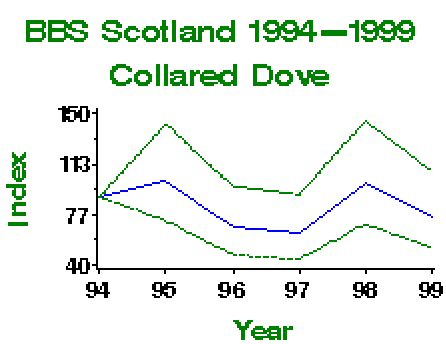








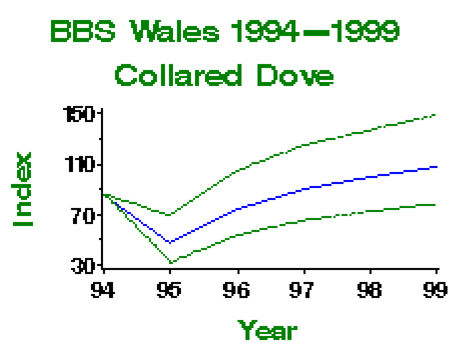
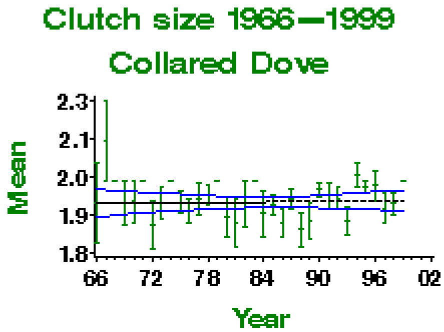
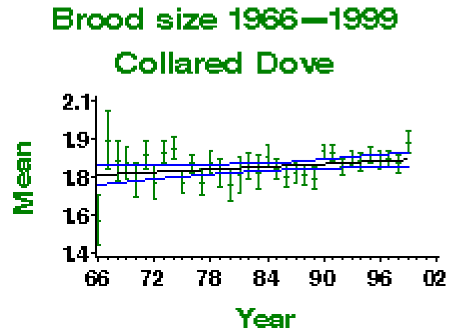


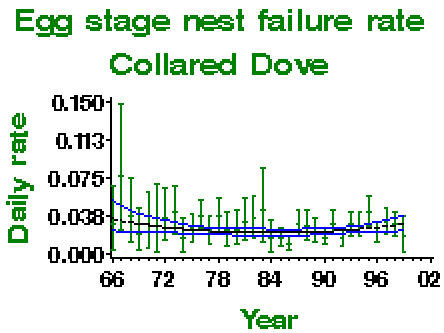
Table of productivity information for Collared Dove

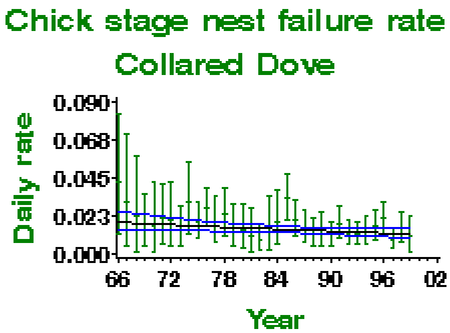
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	42	None				
Brood size	30	1968-1998	67	Linear increase	1.76 chicks	1.83 chicks	0.07 chicks	
Daily failure rate (eggs)	30	1968-1998	57	Curvilinear	0.0313 nests/day	0.0282 nests/day	-0.0031 nests/day	
Daily failure rate (chicks)	30	1968-1998	51	None				
Laying date	30	1968-	41	None				

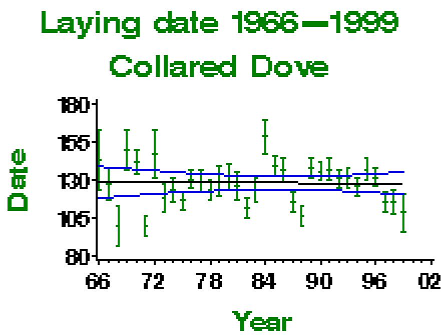
1998











Insufficient data on CES available for this species

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.* 1980). 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).

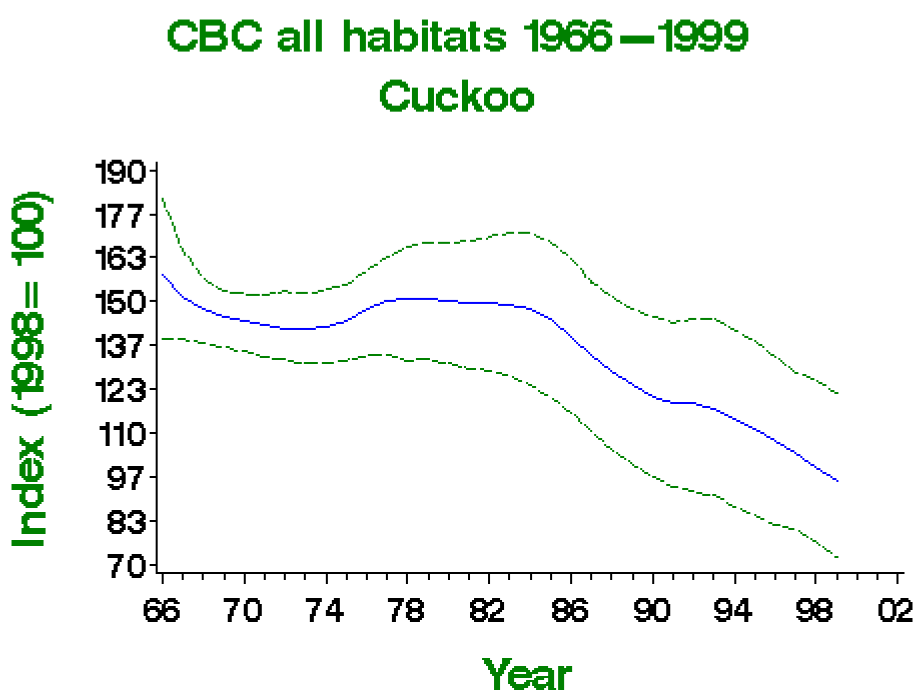
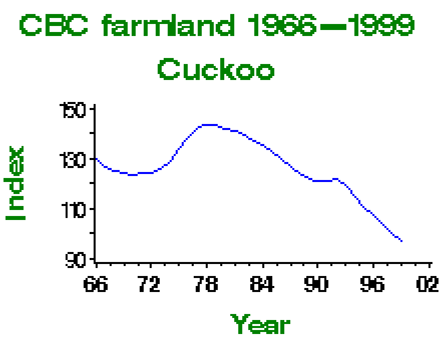


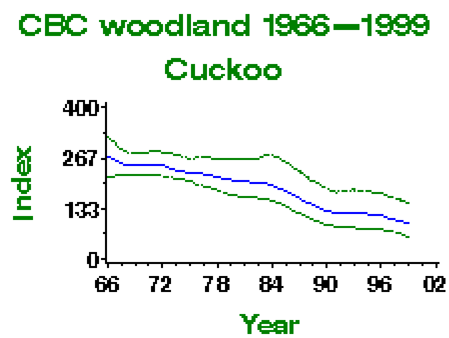
Table of population changes for Cuckoo

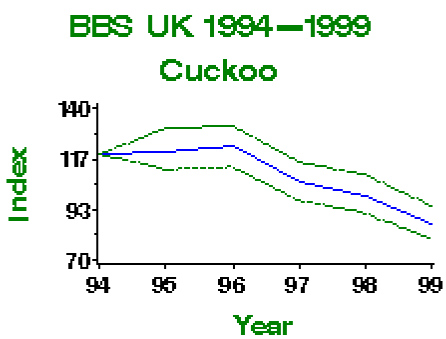
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	105	-32	-48	-14	>25	
	25	1973-1998	109	-29	-44	-10	>25	
	10	1988-1998	94	-22	-32	-10		
	5	1993-1998	91	-15	-25	-5		
CBC farmland	30	1968-1998	50	-20	.	.		
	25	1973-1998	50	-21	.	.		

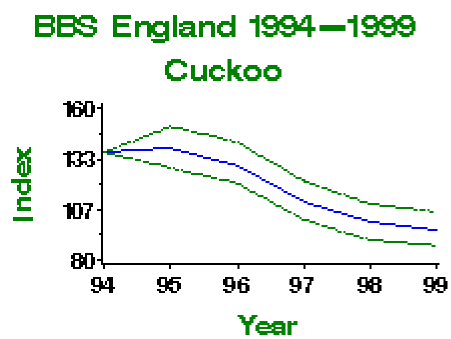
	10	1988-1998	48	-19	.	.		
	5	1993-1998	46	-16	.	.		
CBC woodland	30	1968-1998	35	-60	-73	-36	>50	
	25	1973-1998	37	-58	-72	-36	>50	
	10	1988-1998	33	-32	-49	-9	>25	
	5	1993-1998	32	-17	-39	0		
BBS UK	5	1994-1999	744	-27	-33	-20	(>25)	
BBS England	5	1994-1999	607	-30	-36	-23	(>25)	
BBS Scotland	5	1994-1999	68	-10	-34	23		
BBS Wales	5	1994-1999	52	-31	-51	-3	(>25)	

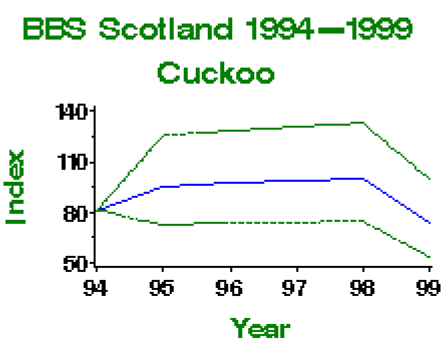
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

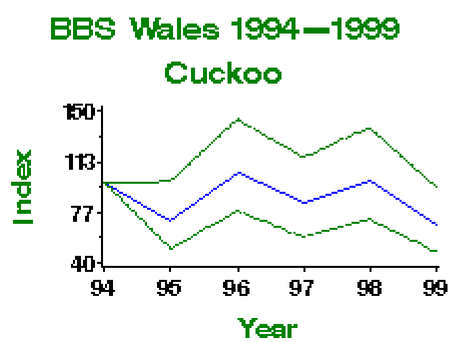












Productivity information is not currently available for this species

BARN OWL *Tyto alba*

Conservation Listings

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

Long term trend

UK: Uncertain

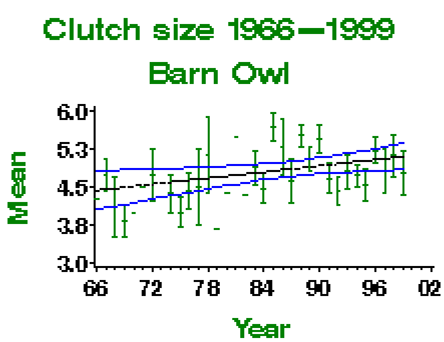
Status Summary

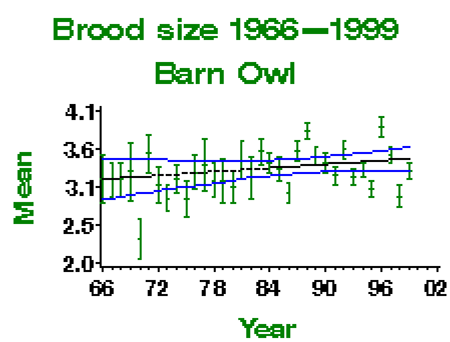
Productivity has tended to improve since the 1950s and 1960s when Barn Owls appear to have been affected by organochlorine pesticides (Percival 1990). In addition to an increase in clutch size, nest failure rates have fallen at the egg stage (34 days) from 20% to 7% and at the nestling stage (60 days) 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.

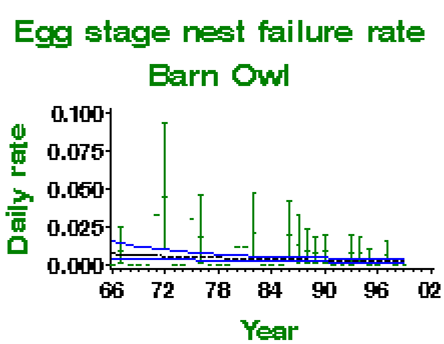
Annual breeding population changes for this species
are not currently monitored by BTO

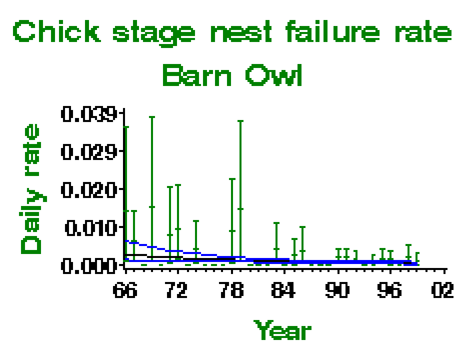
Table of productivity information for Barn Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	Linear increase	4.48 eggs	5.09 eggs	0.61 eggs	Small sample
Brood size	30	1968-1998	63	None				
Daily failure rate (eggs)	30	1968-1998	11	Linear decline	0.0066 nests/day	0.0021 nests/day	-0.0045 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	38	Linear decline	0.0024 nests/day	0.0003 nests/day	-0.0021 nests/day	









Insufficient data on laying date

Insufficient data on CES

available for this species

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)

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 and 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.

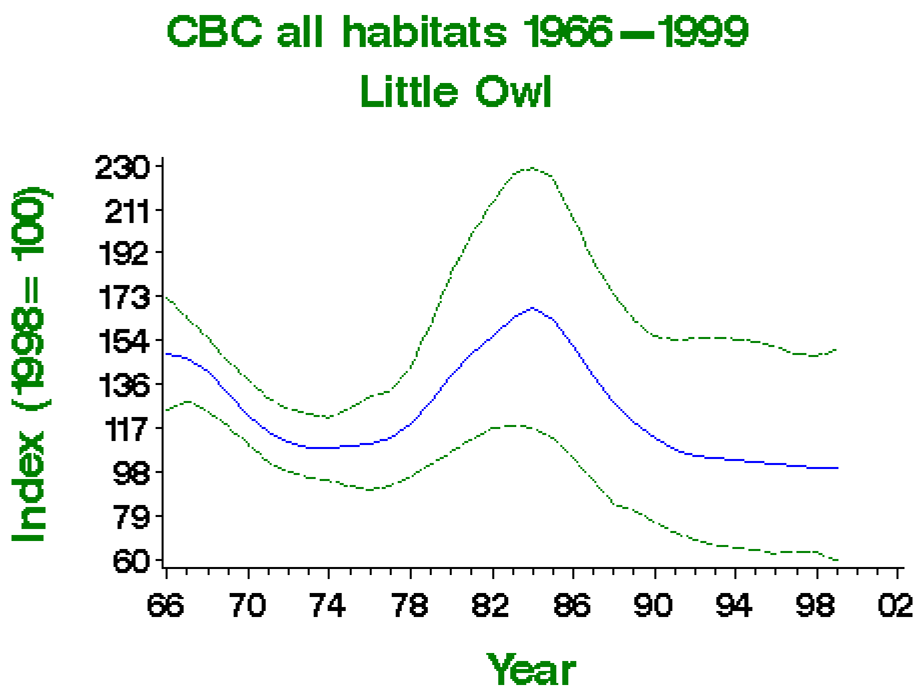
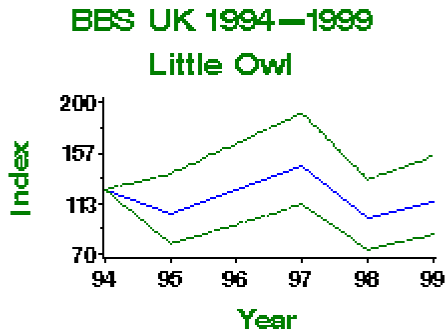


Table of population changes for Little Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	29	-29	-56	12		
	25	1973-1998	30	-8	-44	39		
	10	1988-1998	28	-22	-45	6		
	5	1993-1998	28	-4	-26	20		
BBS UK	5	1994-1999	84	-8	-31	23		
BBS England	5	1994-1999	81	-5	-29	29		

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



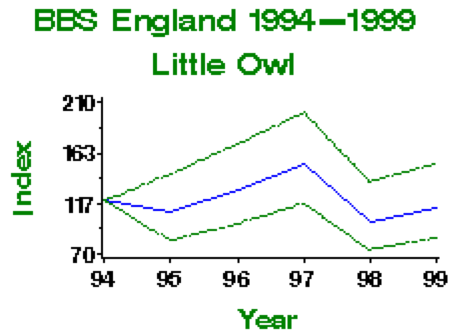
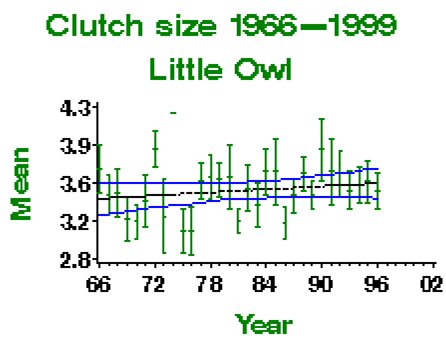
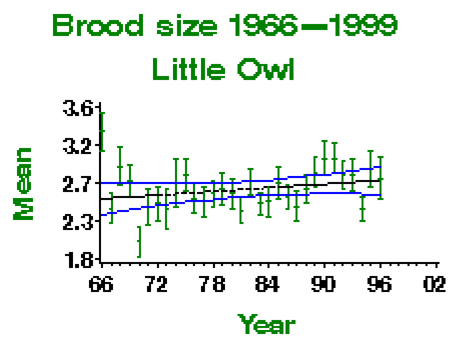
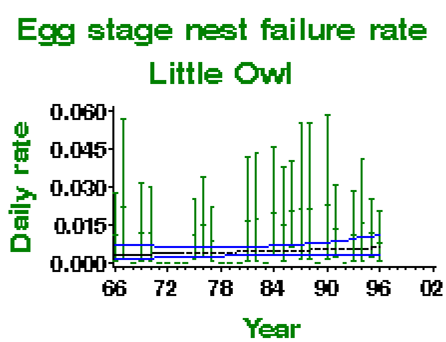


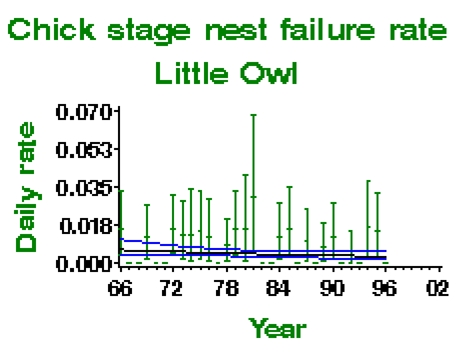
Table of productivity information for Little Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	None				Small sample
Brood size	30	1968-1998	31	None				
Daily failure rate (eggs)	30	1968-1998	12	None				Small sample
Daily failure rate (chicks)	30	1968-1998	17	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%.

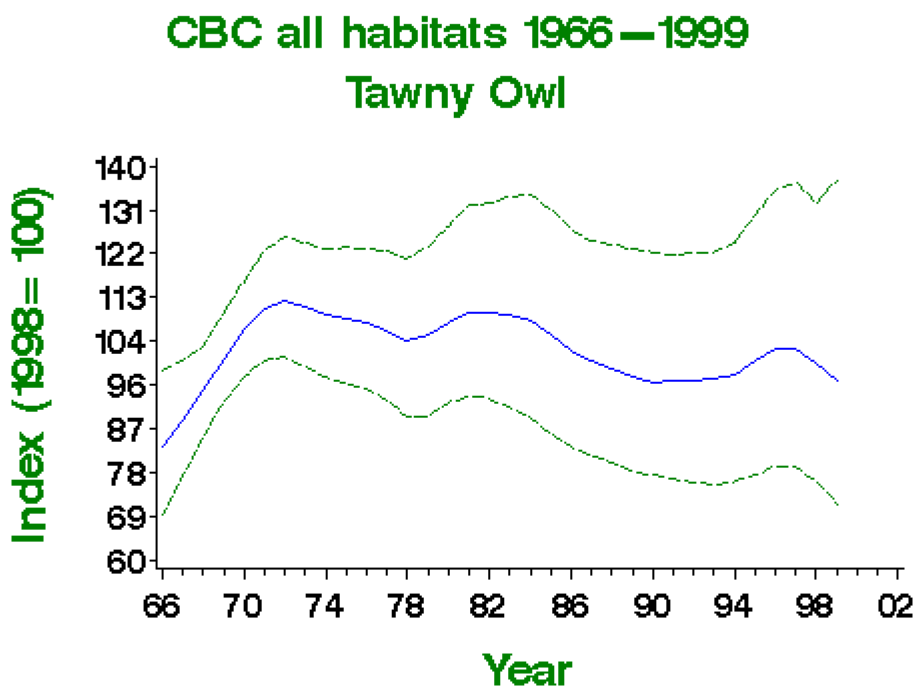
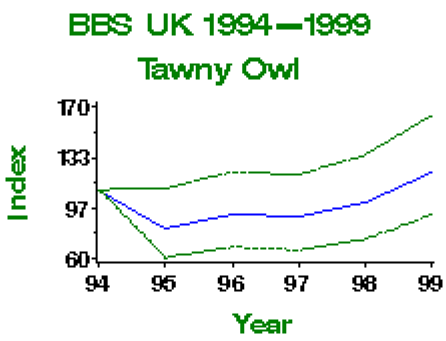


Table of population changes for Tawny Owl

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	59	6	-24	48		
	25	1973-1998	63	-10	-31	16		
	10	1988-1998	60	1	-19	26		
	5	1993-1998	58	3	-11	23		
BBS UK	5	1994-1999	76	11	-17	49		
BBS	5	1994-	63	29	-6	77		

England		1999						

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



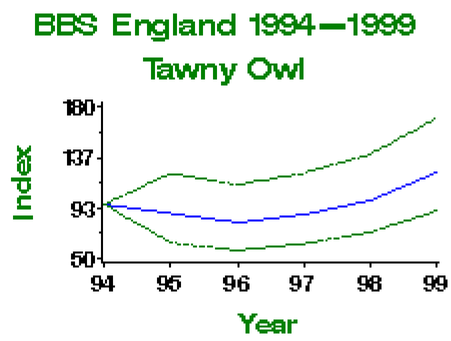
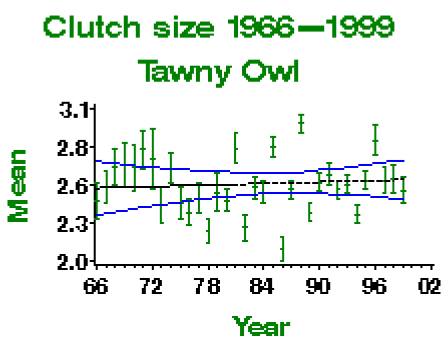
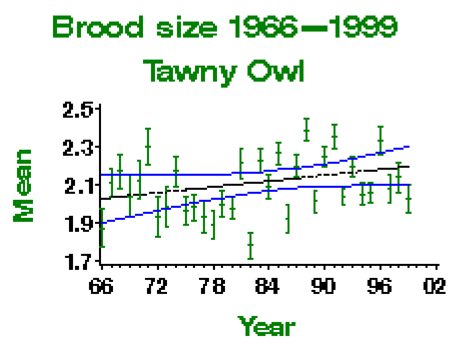
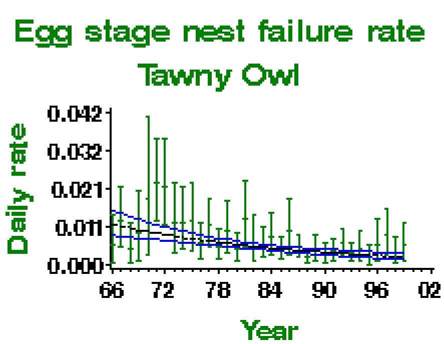


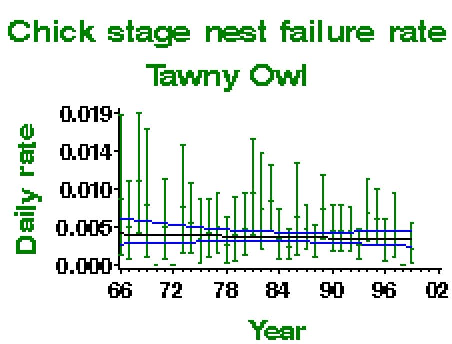
Table of productivity information for Tawny Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	78	None				
Brood size	30	1968-1998	134	None				
Daily failure rate (eggs)	30	1968-1998	54	Linear decline	0.0101 nests/day	0.0023 nests/day	-0.0078 nests/day	
Daily failure rate (chicks)	30	1968-1998	80	None				
Laying date	30	1968-1998	13	None				Small sample

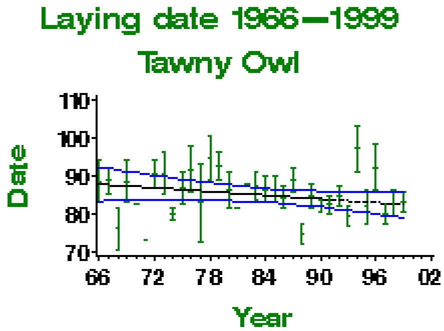








Insufficient data on CES available for this species


Laying date 1966–1999
Tawny Owl
Date
Year
110
100
90
80
70
66
72
78
84
90
96
02

LONG-EARED OWL *Asio otus*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown

Status Summary

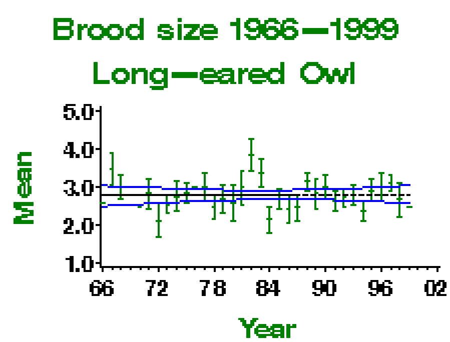
This is one of the most poorly monitored UK species, being very secretive and nocturnal. Only brood size is recorded in sufficient numbers for this species, and indicates no trend over time. Its distribution appears to have decreased markedly but for unknown reasons (Gibbons *et al.* 1993).

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

Table of productivity information for Long-eared Owl

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	10	None				Small sample

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

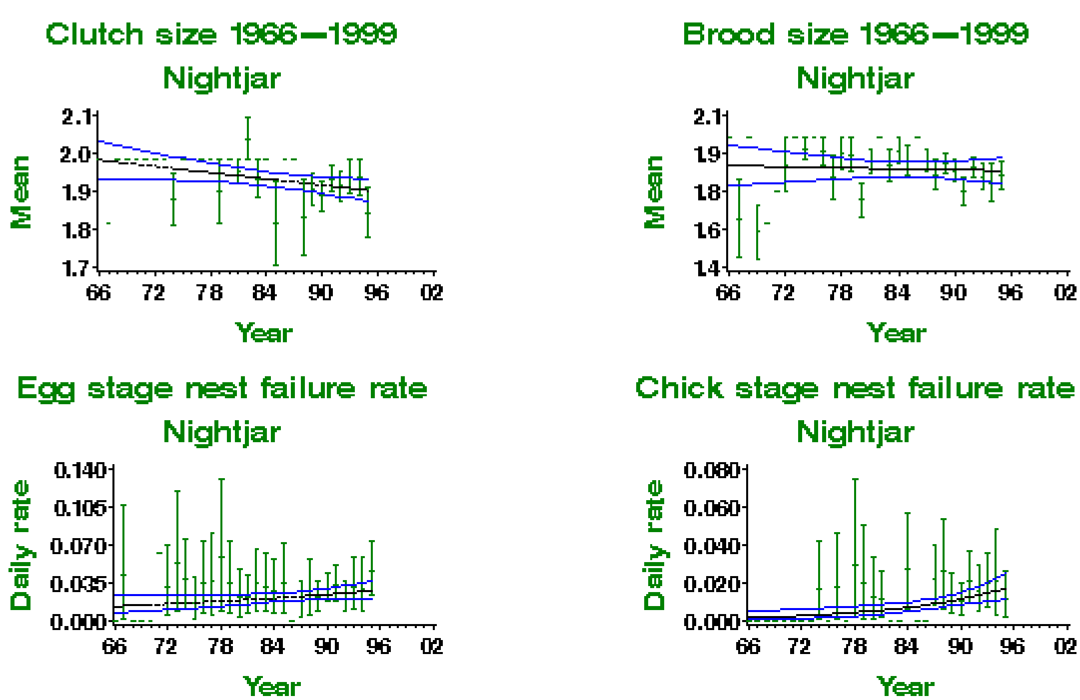
Status Summary

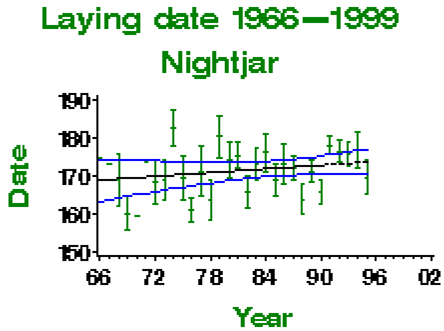
Having suffered a decline in range of more than 50% between breeding atlases, the 1992 national survey revealed a welcome increase of 50% in population size since 1981, probably due to increased availability of young forest habitat as plantations have been felled and replanted (Morris *et al.* 1994). 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*. (For more information on Concern for Swift contact Chris Mead)

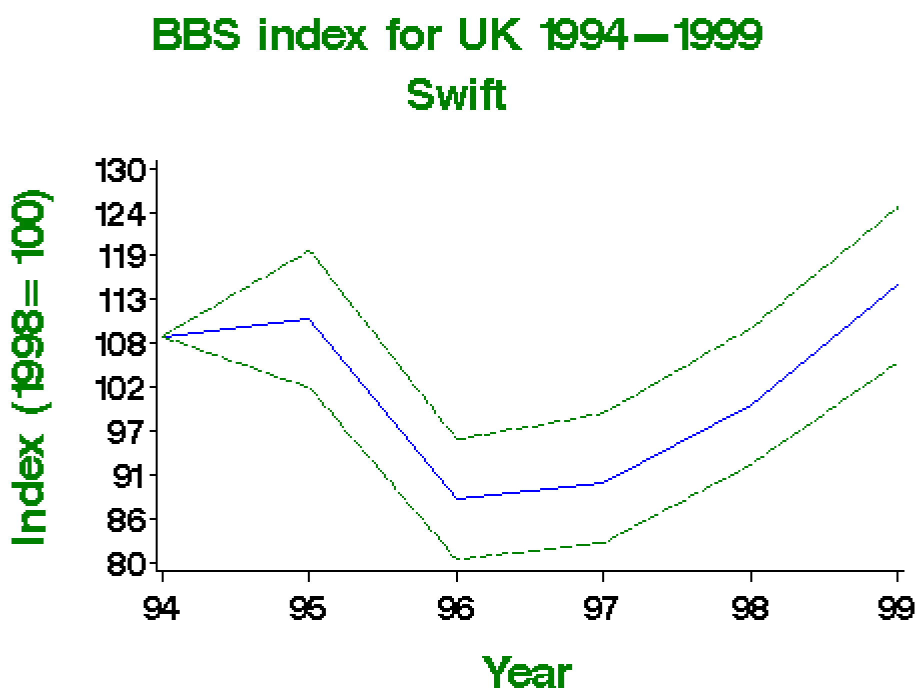
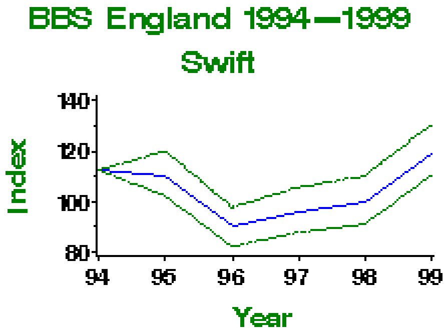
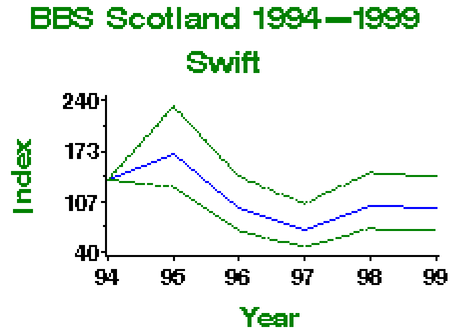


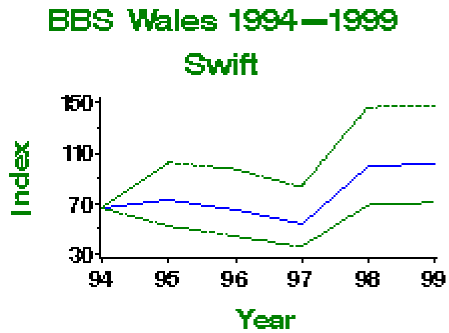
Table of population changes for Swift

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	824	6	-3	15		
BBS England	5	1994-1999	722	6	-2	16		
BBS Scotland	5	1994-1999	40	-28	-50	3		Small sample
BBS Wales	5	1994-1999	49	53	6	121		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)

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 intervals around the WBS trend mean, however, that we cannot be confident that this recovery has been complete. The decline was associated with a contraction in range in England (Gibbons *et al.* 1993).

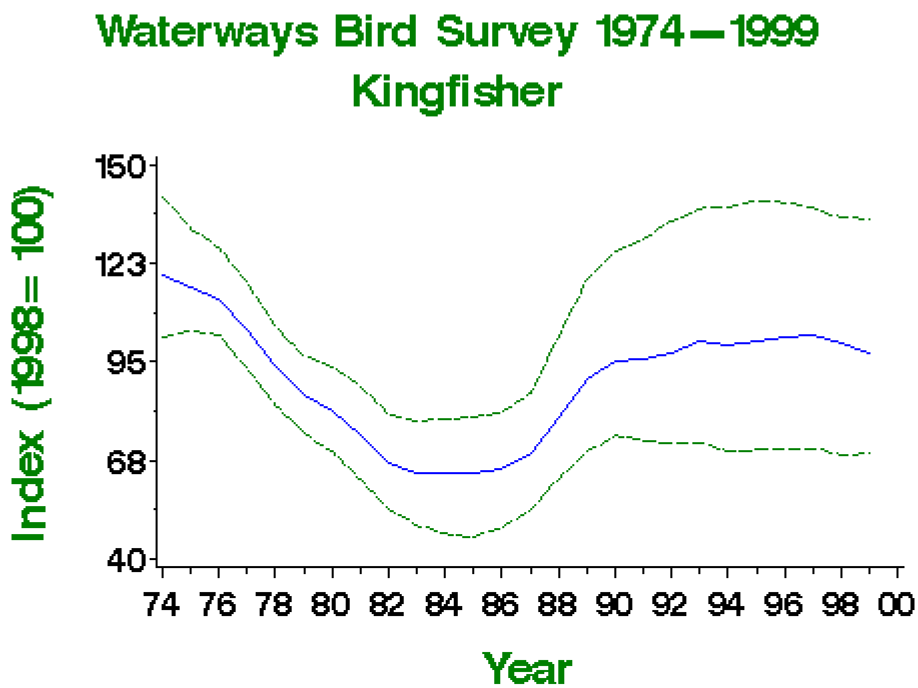
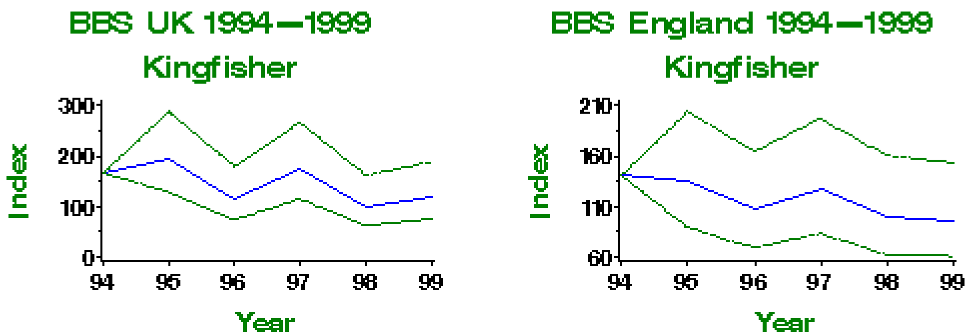


Table of population changes for Kingfisher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	32	-14	-43	20		
	10	1988-1998	37	26	-3	62		
	5	1993-1998	40	-1	-18	17		
BBS UK	5	1994-1999	39	-28	-55	13		Small sample
BBS England	5	1994-1999	34	-32	-57	9		Small sample

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



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. The ecological factors underlying the increase are not yet known.

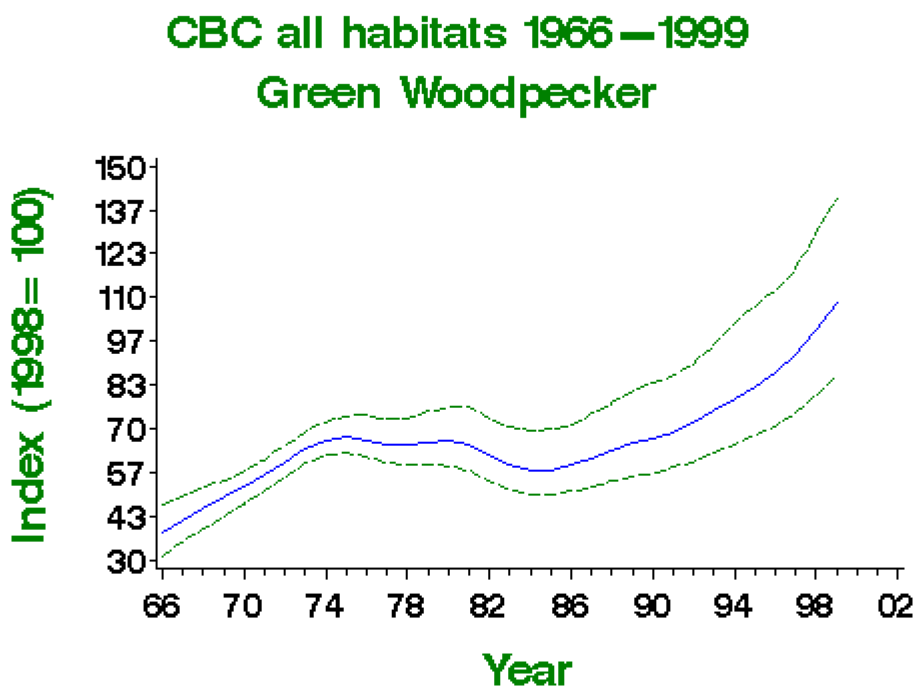
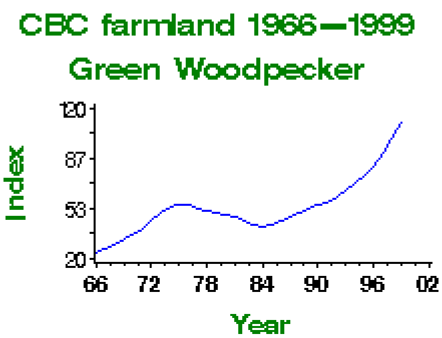


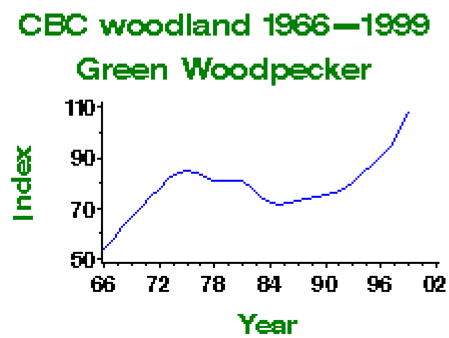
Table of population changes for Green Woodpecker

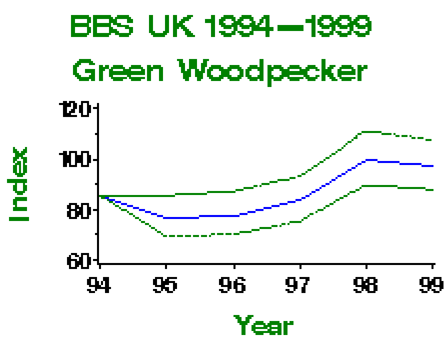
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	79	118	74	202		
	25	1973-1998	85	56	29	105		
	10	1988-1998	92	57	37	80		
	5	1993-1998	100	33	20	44		
CBC farmland	30	1968-1998	23	237	.	.		
	25	1973-1998	24	98	.	.		
	10	1988-1998	28	98	.	.		

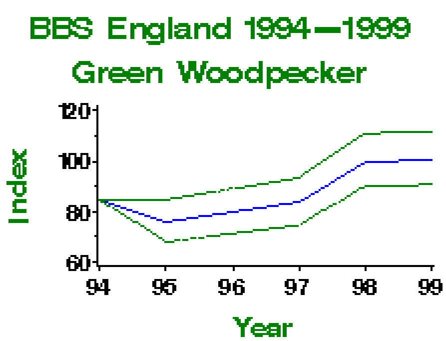
	5	1993-1998	31	54	.	.		
CBC woodland	30	1968-1998	43	60	.	.		
	25	1973-1998	47	23	.	.		
	10	1988-1998	52	35	.	.		
	5	1993-1998	55	24	.	.		
BBS UK	5	1994-1999	507	14	3	26		
BBS England	5	1994-1999	465	19	7	32		
BBS Wales	5	1994-1999	35	23	-22	94		Small sample

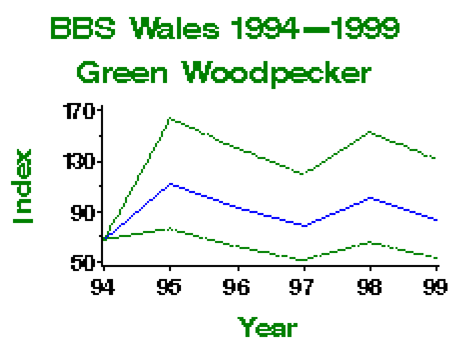
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











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 but has been more stable subsequently. The more shallow 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.

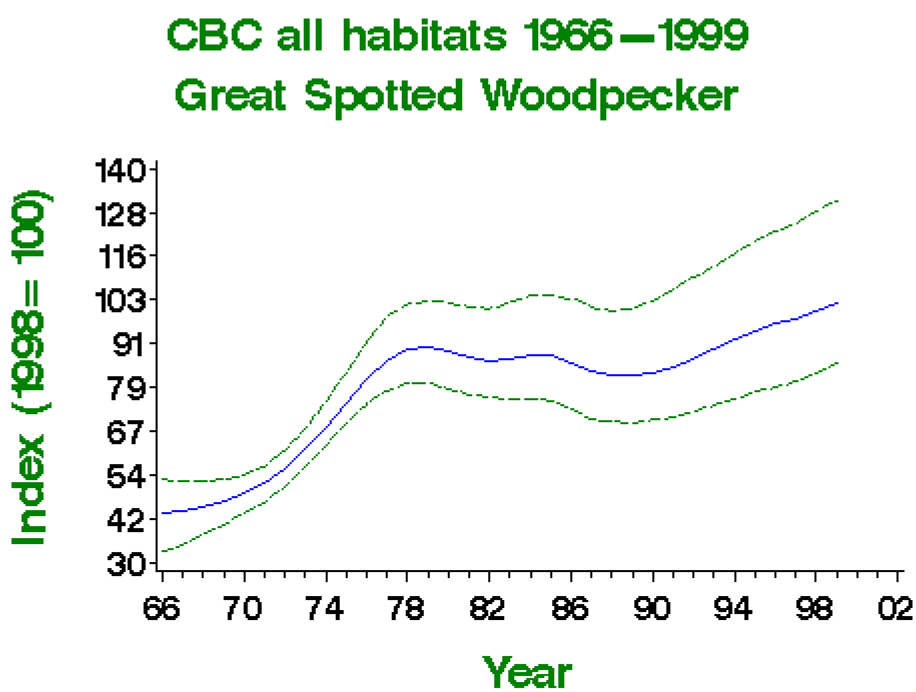
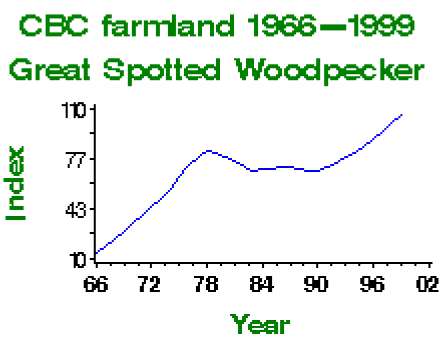


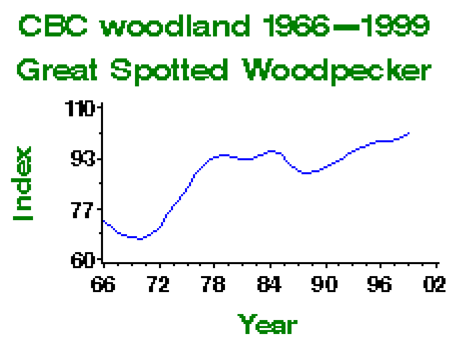
Table of population changes for Great Spotted Woodpecker

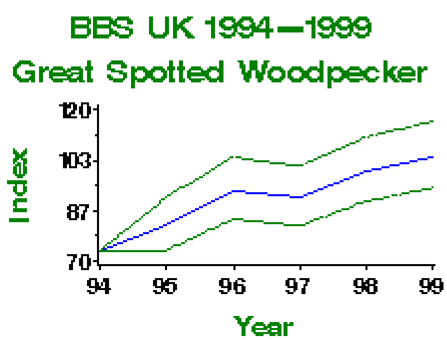
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	97	118	74	214		
	25	1973-1998	107	62	32	98		
	10	1988-1998	112	21	9	34		
	5	1993-1998	122	12	3	21		
CBC farmland	30	1968-1998	27	344	.	.		
	25	1973-1998	30	101	.	.		

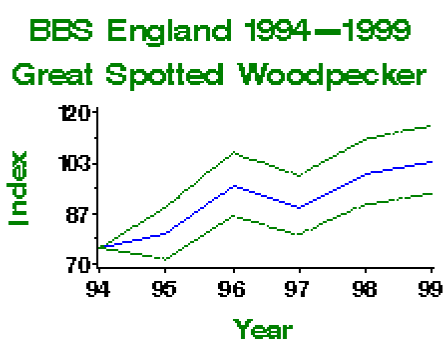
	10	1988-1998	32	44	.	.		
	5	1993-1998	34	30	.	.		
CBC woodland	30	1968-1998	58	47	.	.		
	25	1973-1998	64	34	.	.		
	10	1988-1998	72	13	.	.		
	5	1993-1998	79	5	.	.		
BBS UK	5	1994-1999	543	42	28	58		
BBS England	5	1994-1999	487	38	24	54		
BBS Wales	5	1994-1999	39	30	-13	95		Small sample

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









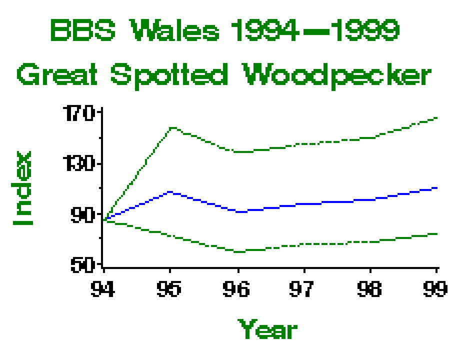
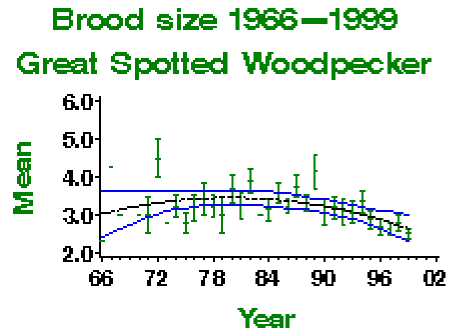


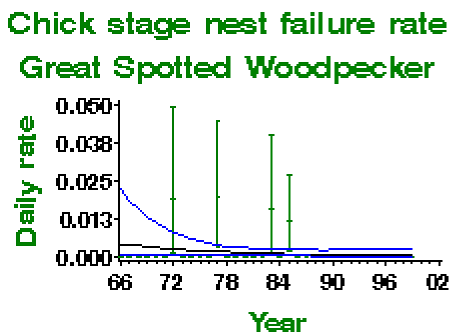
Table of productivity information for Gt Spotted Woodpecker

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	14	Curvilinear	3.14 chicks	2.73 chicks	-0.41 chicks	Small sample
Daily failure rate (chicks)	30	1968-1998	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).

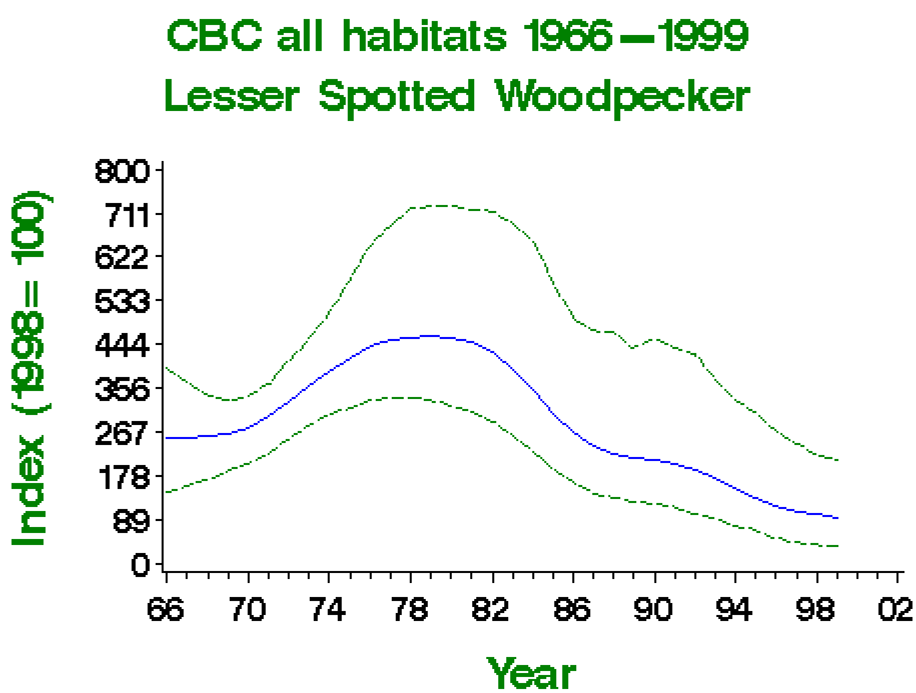


Table of population changes for Lesser Spotted Woodpecker

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	17	-61	-85	16		Small sample
	25	1973-1998	18	-72	-88	-41	>50	Small sample
	10	1988-1998	11	-56	-80	-27	>50	Small sample
	5	1993-1998	9	-42	-70	-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

WOODLARK *Lullula arborea*

Conservation Listings

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

Long term trend

UK: Increase

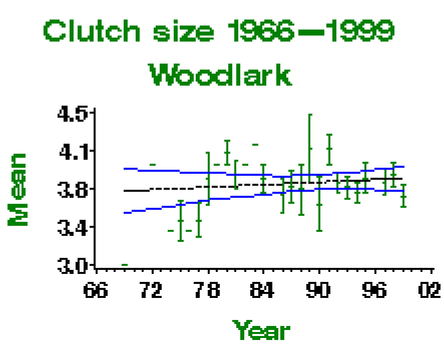
Status Summary

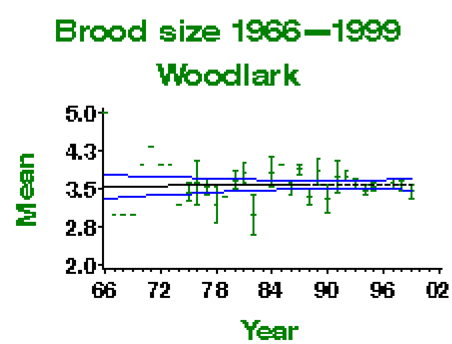
Sitters *et al.* (1996) report that the population of this rare breeding bird has increased from c.250 pairs in 1986 to c.600 pairs in 1993, probably helped by recent mild winters and increased habitat availability due to forest storm damage, forest restocking, and heathland management. A national survey 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 45% to 20% between 1975 and 1998 (extrapolation before 1975 is not reliable because of paucity of data).

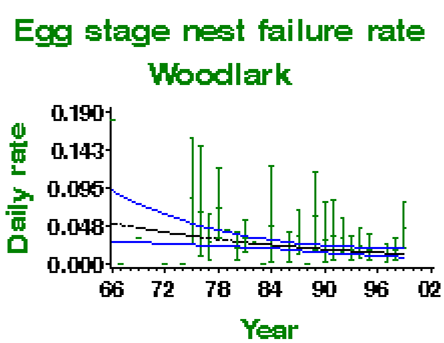
Annual breeding population changes for this species
are not currently monitored by BTO

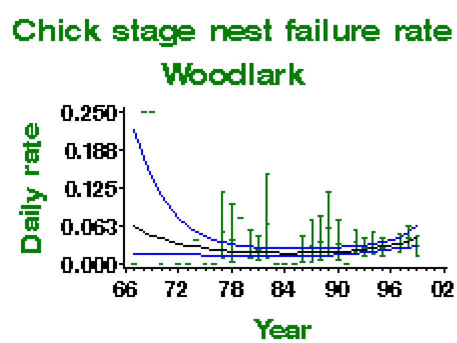
Table of productivity information for Woodlark

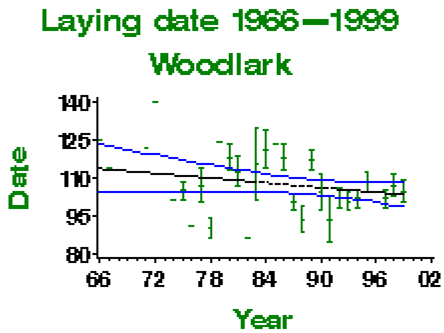
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	14	None				Small sample
Brood size	30	1968-1998	22	None				Small sample
Daily failure rate (eggs)	30	1968-1998	16	Linear decline	0.047 nests/day	0.0127 nests/day	-0.0343 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	22	Curvilinear	0.0537 nests/day	0.0374 nests/day	-0.0163 nests/day	Small sample
Laying date	30	1968-1998	15	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 over-winter survival by reducing the available area of stubbles (Wilson *et al.* 1997, Donald & Vickery 2000). Breeding performance 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).

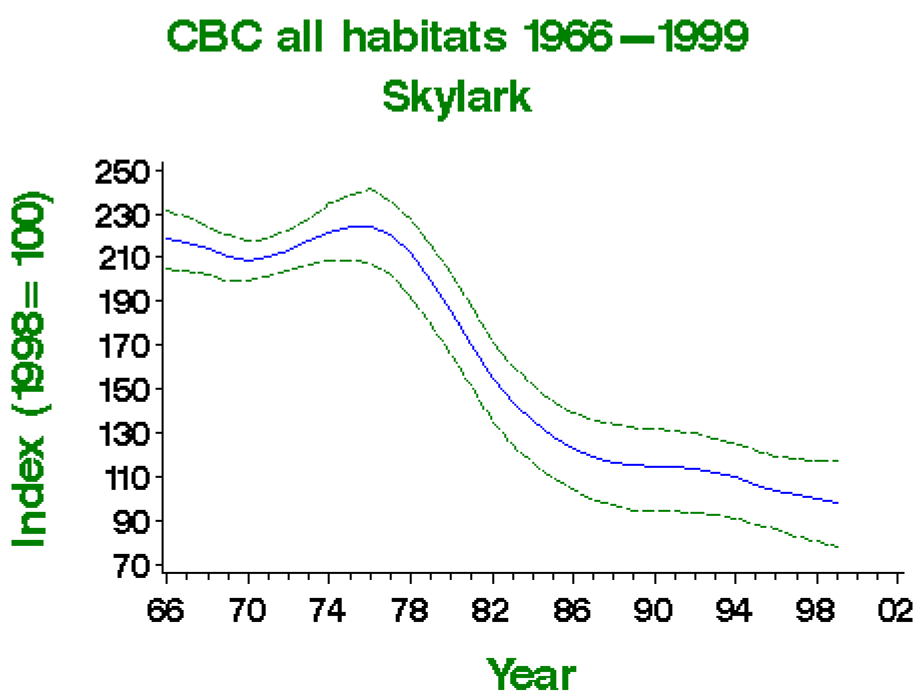


Table of population changes for Skylark

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	121	-53	-62	-45	>50	
	25	1973-1998	121	-54	-62	-47	>50	
	10	1988-1998	106	-14	-23	-2		
	5	1993-1998	107	-11	-17	-5		

CBC farmland	30	1968-1998	85	-51	-60	-42	>50	
	25	1973-1998	84	-53	-60	-44	>50	
	10	1988-1998	81	-19	-26	-11		
	5	1993-1998	81	-13	-18	-7		
BBS UK	5	1994-1999	1354	-16	-20	-13		
BBS England	5	1994-1999	1051	-20	-24	-17		
BBS Scotland	5	1994-1999	194	-13	-22	-3		
BBS Wales	5	1994-1999	78	13	-4	32		
BBS N.Ireland	5	1994-1999	28	-9	-36	30		Small sample

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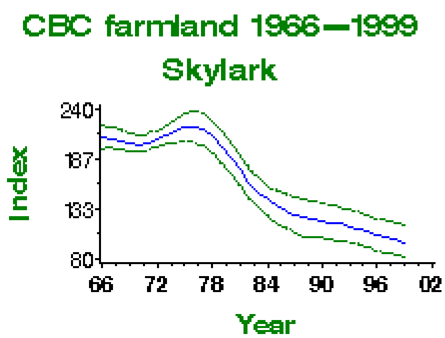
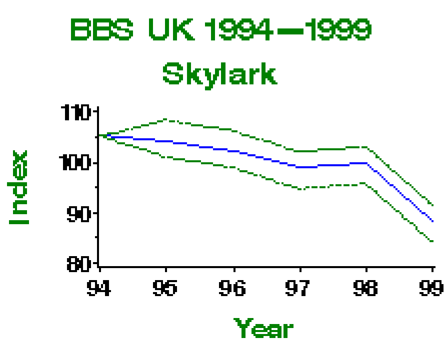
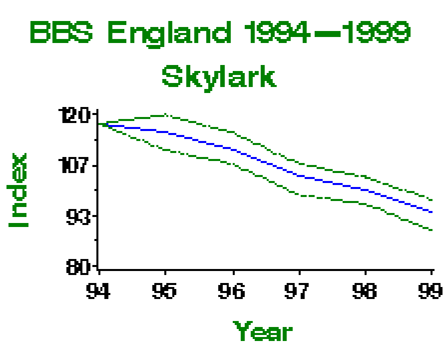
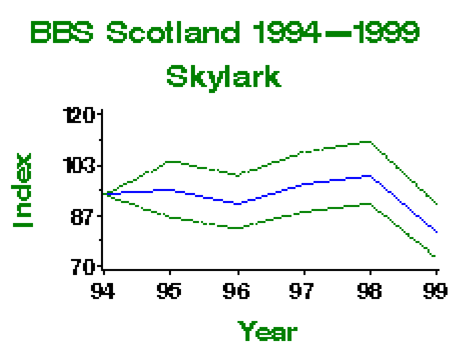
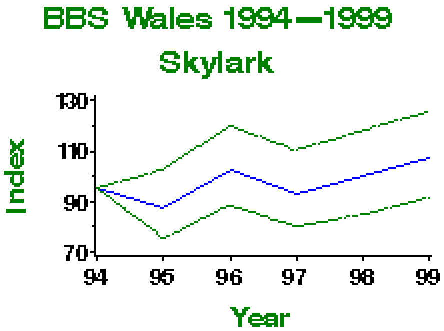










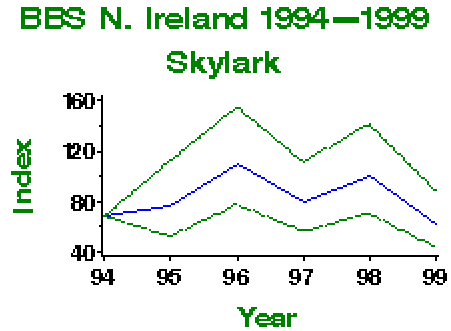
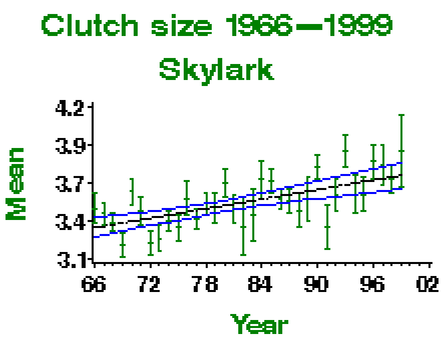
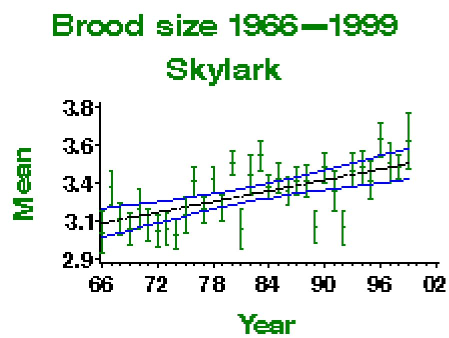
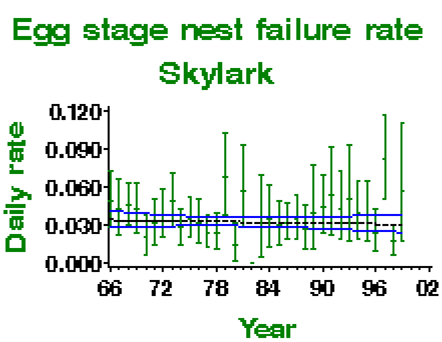


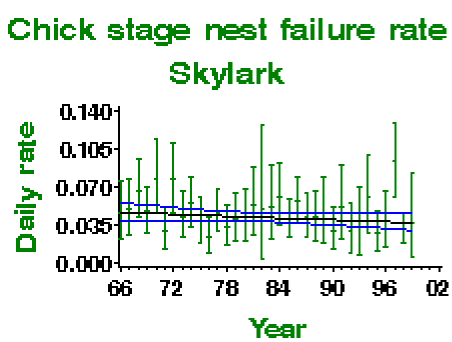
Table of productivity information for Skylark

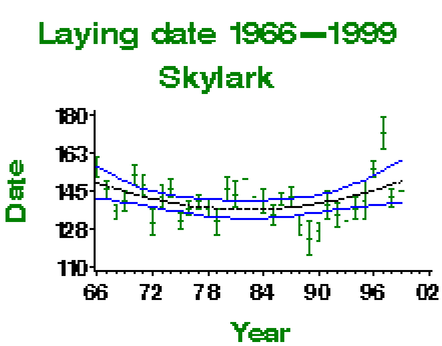
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	43	Linear increase	3.34 eggs	3.69 eggs	0.35 eggs	
Brood size	30	1968-1998	75	Linear increase	3.13 chicks	3.45 chicks	0.32 chicks	
Daily failure rate (eggs)	30	1968-1998	52	None				
Daily failure rate (chicks)	30	1968-1998	61	None				
Laying date	30	1968-1998	23	Curvilinear	day 146	day 148	2 days	Small sample











Insufficient data on CES available for this species

SWALLOW *Hirundo rustica*

Conservation Listings

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

Long term trend

UK: Fluctuations with no long-term trend

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. 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, 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).

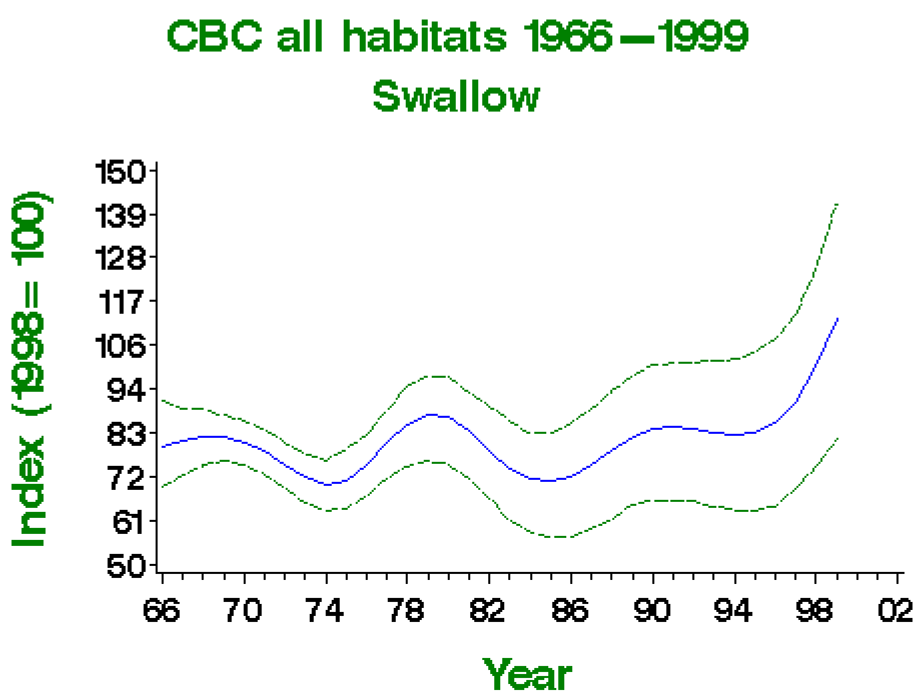


Table of population changes for Swallow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	79	21	-9	52		
	25	1973-1998	80	39	4	73		
	10	1988-1998	78	26	8	45		
	5	1993-1998	78	20	5	35		

CBC farmland	30	1968-1998	63	35	.	.		
	25	1973-1998	63	53	.	.		
	10	1988-1998	65	27	.	.		
	5	1993-1998	64	20	.	.		
BBS UK	5	1994-1999	1353	10	5	16		
BBS England	5	1994-1999	1051	6	0	13		
BBS Scotland	5	1994-1999	128	1	-15	19		
BBS Wales	5	1994-1999	115	37	14	66		
BBS N.Ireland	5	1994-1999	49	14	-17	56		Small sample

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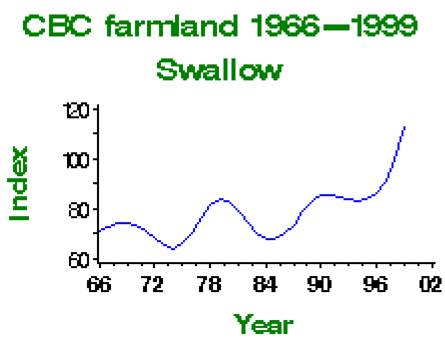
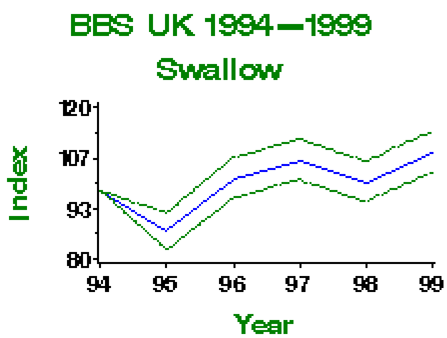
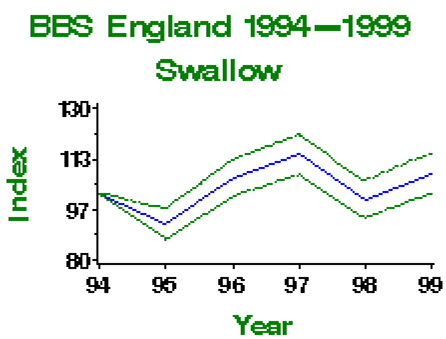
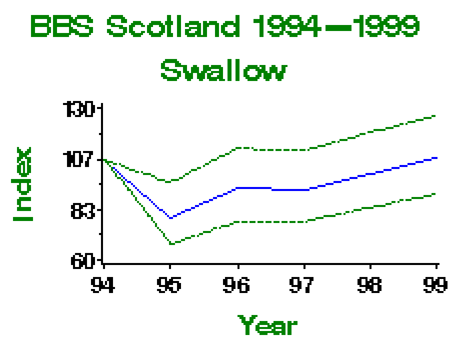
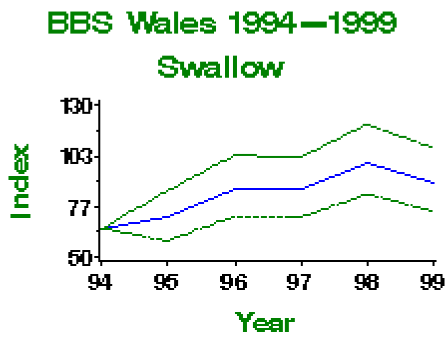










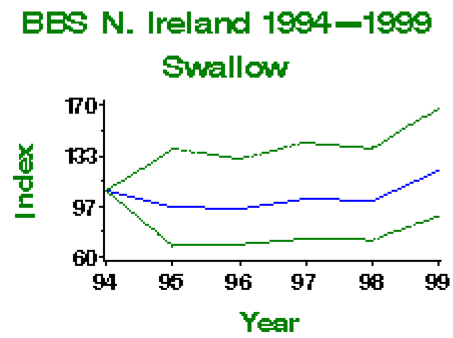
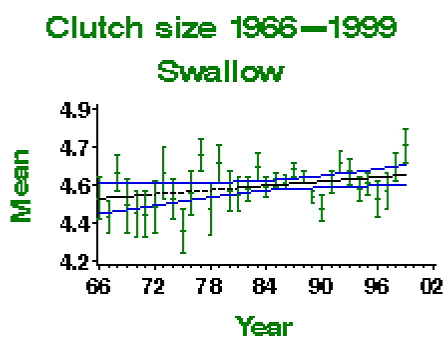
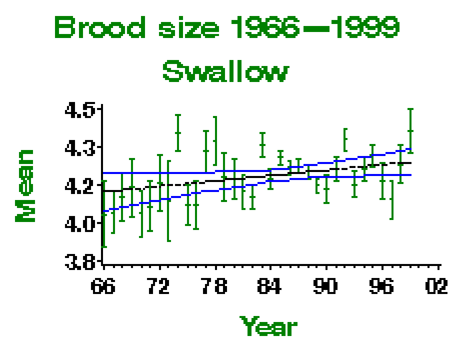
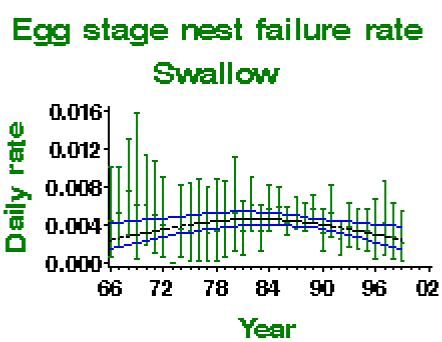


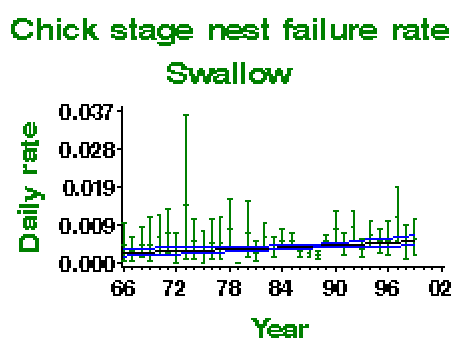
Table of productivity information

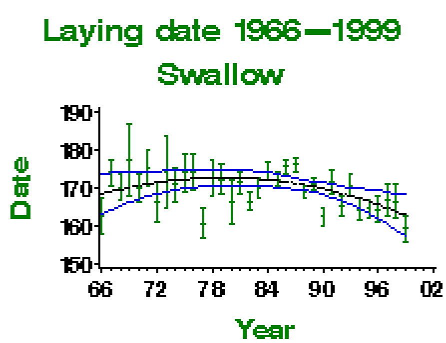
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	186	None				
Brood size	30	1968-1998	303	Linear increase	4.13 chicks	4.25 chicks	0.12 chicks	
Daily failure rate (eggs)	30	1968-1998	232	Curvilinear	0.0028 nests/day	0.0026 nests/day	-0.0002 nests/day	
Daily failure rate (chicks)	30	1968-1998	205	Linear increase	0.0025 nests/day	0.0052 nests/day	0.0027 nests/day	
Laying date	30	1968-1998	93	Curvilinear	day 170	day 164	-6 days	











Insufficient data on CES 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)

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' sub-Saharan wintering grounds are believed to affect annual survival and thus abundance in the following breeding season.

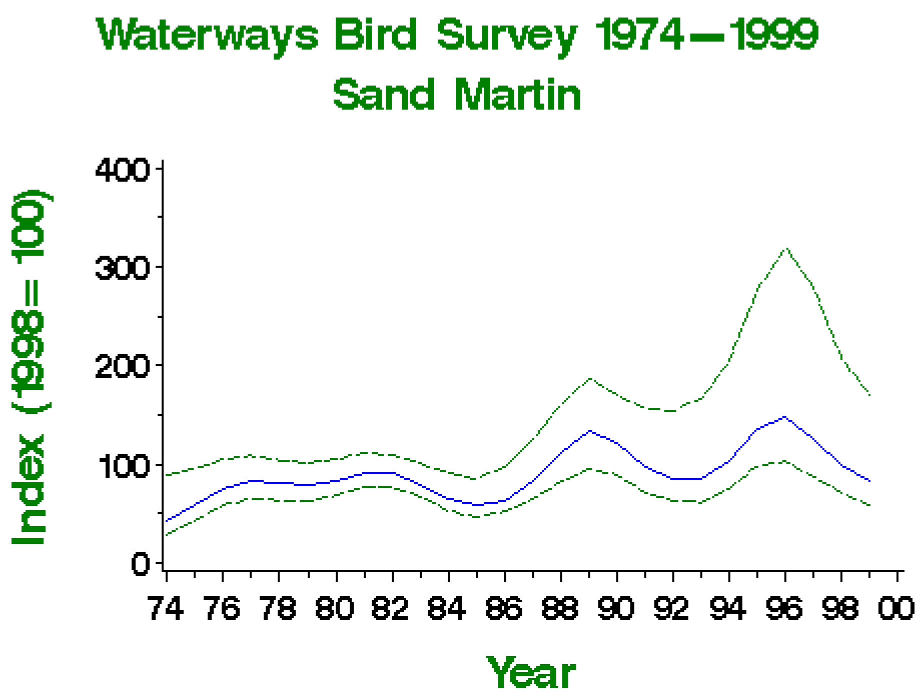
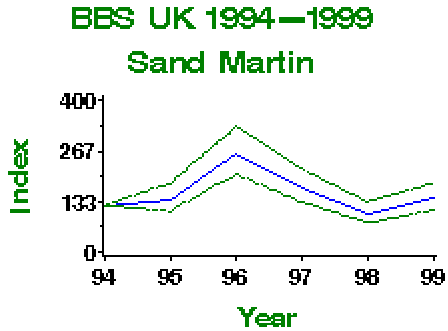


Table of population changes for Sand Martin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	18	70	-11	276		Small sample
	10	1988-1998	24	-11	-35	57		
	5	1993-1998	26	16	-11	55		
BBS UK	5	1994-1999	92	15	-11	48		
BBS England	5	1994-1999	61	17	-14	60		

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



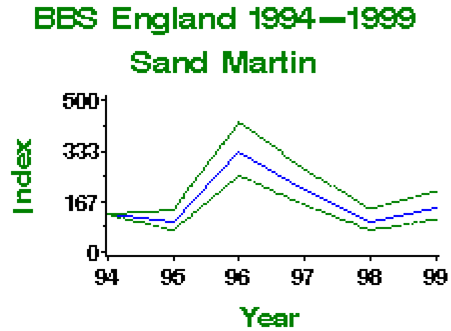
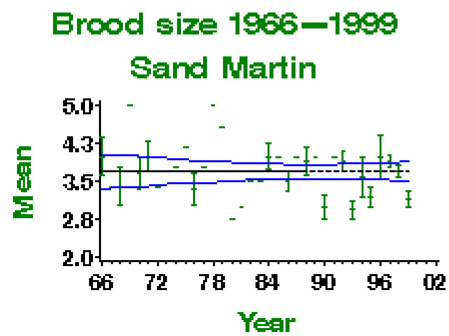


Table of productivity information for Sand Martin

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	12	None				Small sample

Insufficient data on clutch size available for this species



Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying dates 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.

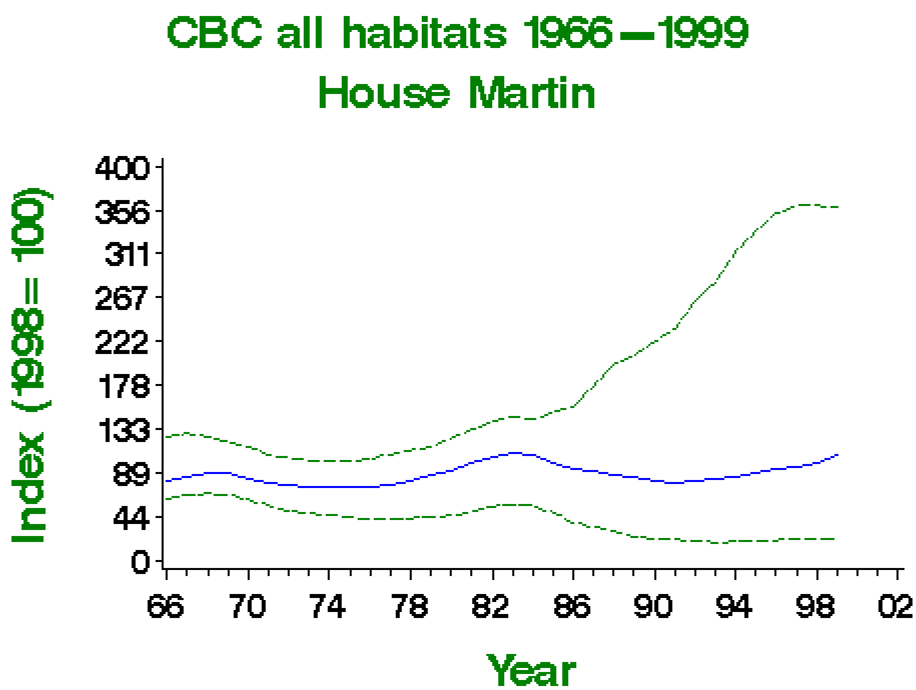
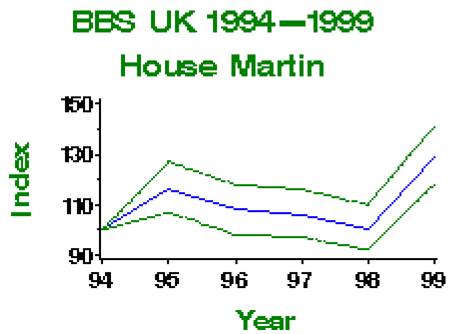


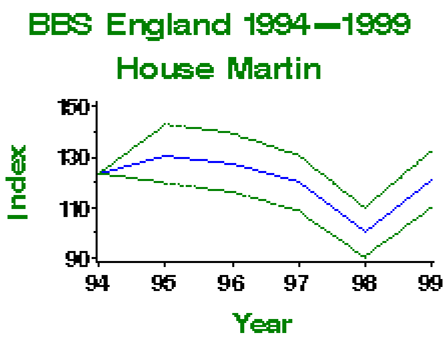
Table of population changes for House Martin

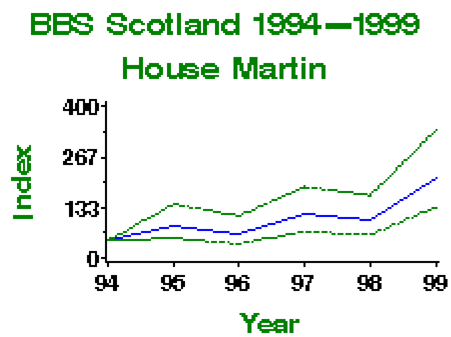
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	22	12	-76	255		
	25	1973-1998	22	32	-66	326		
	10	1988-1998	21	14	-49	133		
	5	1993-1998	21	20	-21	78		
BBS UK	5	1994-1999	688	29	18	41		
BBS England	5	1994-1999	555	-2	-11	7		
BBS Scotland	5	1994-1999	41	375	198	657		Small sample

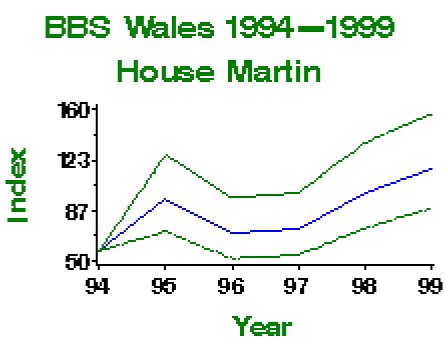
BBS Wales	5	1994-1999	67	104	53	173		
BBS N.Ireland	5	1994-1999	21	68	-15	233		Small sample

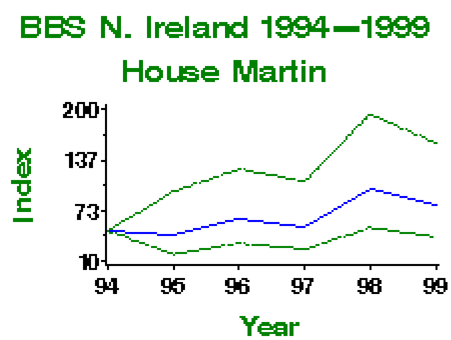
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











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 confirmed by the contrasting patterns of change shown by the BBS in Scotland and England. While populations have increased in Scotland, there has been a substantial decline in England over the past 5 years, corroborating the decline shown by the CBC over the same time period. 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 17%. 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).

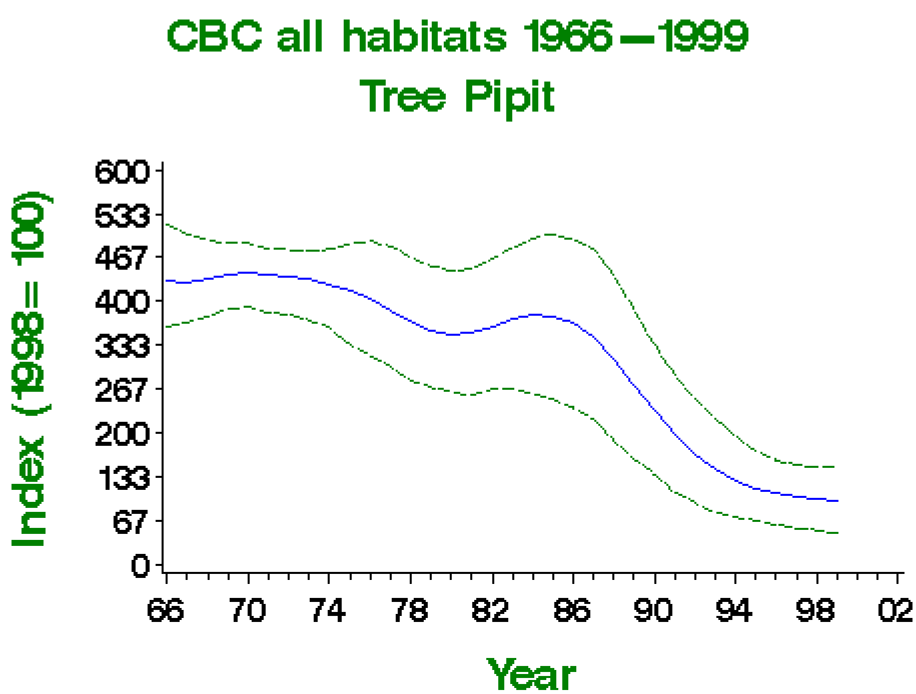


Table of population changes for Tree Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	33	-77	-88	-65	>50	Unrepresentative
	25	1973-1998	32	-77	-87	-64	>50	Unrepresentative
	10	1988-1998	21	-68	-81	-54	>50	Unrepresentative
	5	1993-1998	20	-31	-53	-13	>25	Unrepresentative, small sample
		1994-						

BBS UK	5	1999	119	21	-1	48		
BBS England	5	1994-1999	64	-26	-43	-3	(>25)	
BBS Scotland	5	1994-1999	27	86	19	190		Small sample

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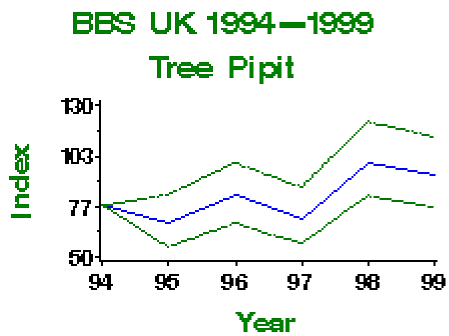
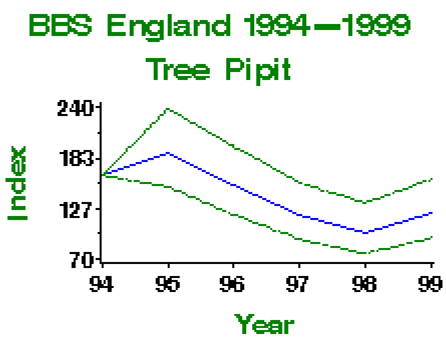




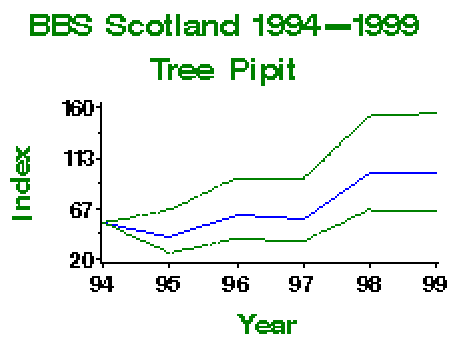
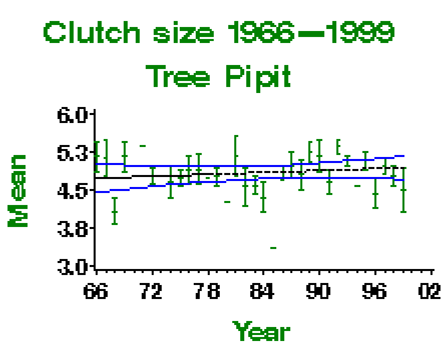
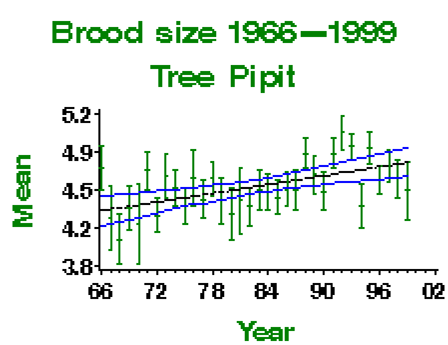
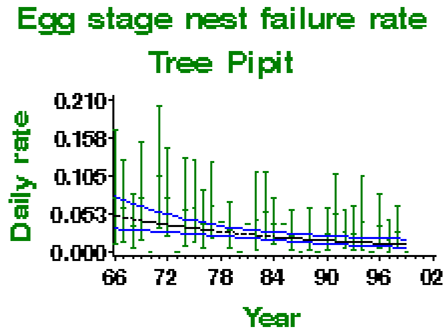


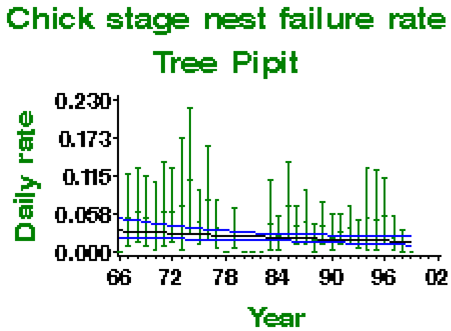
Table of productivity information for Tree Pipit

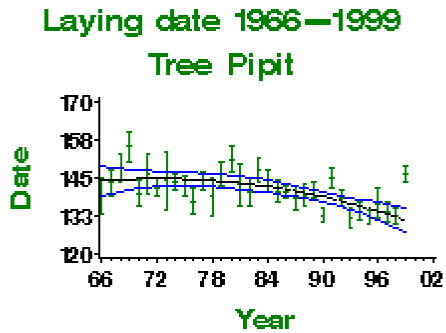
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	29	Linear increase	4.33 chicks	4.74 chicks	0.41 chicks	Small sample
Daily failure rate (eggs)	30	1968-1998	12	Linear decline	0.0453 nests/day	0.0104 nests/day	-0.0349 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	18	None				Small sample
Laying date	30	1968-1998	17	Curvilinear	day 145	day 132	-13 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 may warrant conservation attention, especially because it was accompanied by a contraction range 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 12%, which may reflect the loss of birds from suboptimal areas. Changes in laying date are related to climate change (Crick & Sparks 1999).

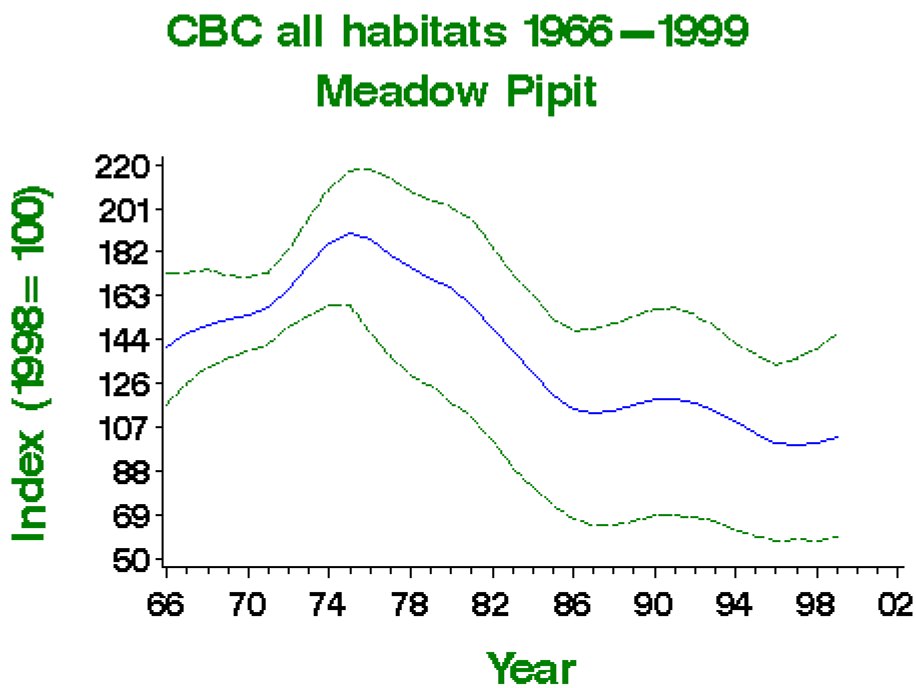


Table of population changes for Meadow Pipit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	44	-34	-65	-3	>25	Unrepresentative
	25	1973-1998	45	-43	-68	-25	>25	Unrepresentative
	10	1988-1998	36	-12	-31	8		Unrepresentative
	5	1993-1998	37	-12	-27	4		Unrepresentative
BBS UK	5	1994-1999	609	-7	-12	-2		
BBS		1994-						

England	5	1999	297	-6	-12	2		
BBS Scotland	5	1994-1999	205	-17	-25	-8		
BBS Wales	5	1994-1999	62	44	23	68		
BBS N.Ireland	5	1994-1999	41	30	1	67		Small sample

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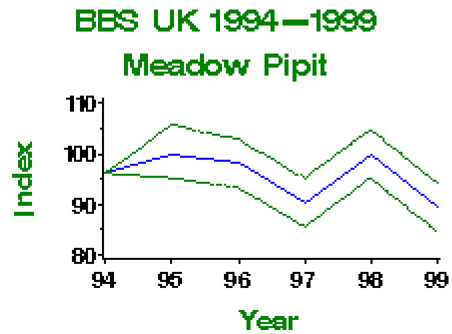
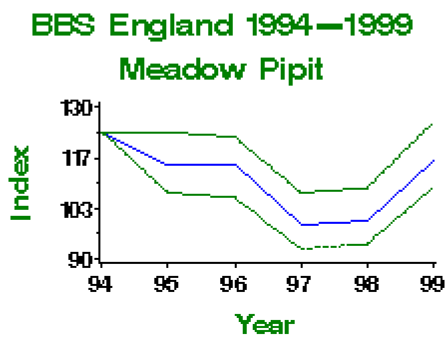
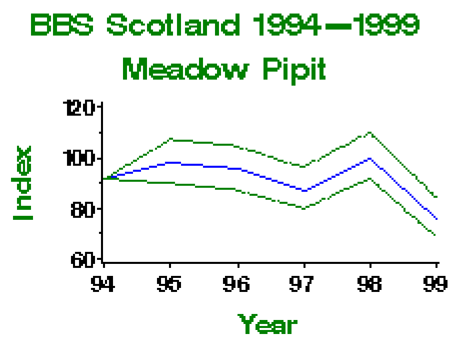
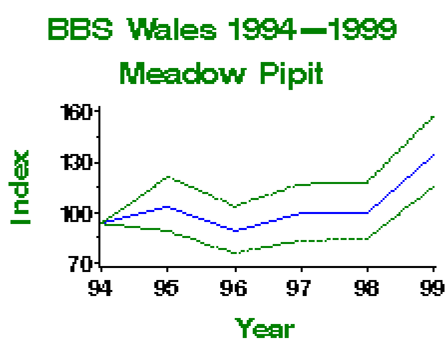








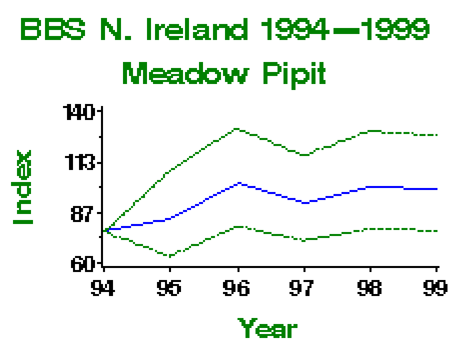
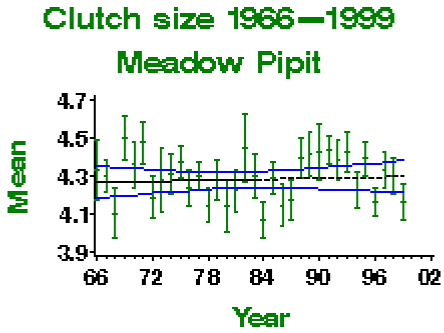
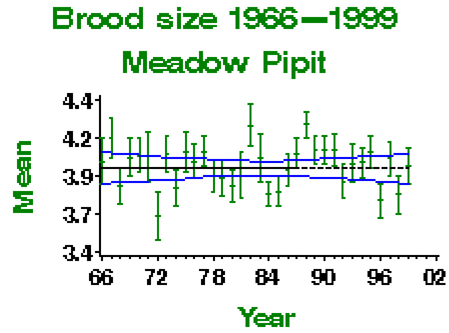
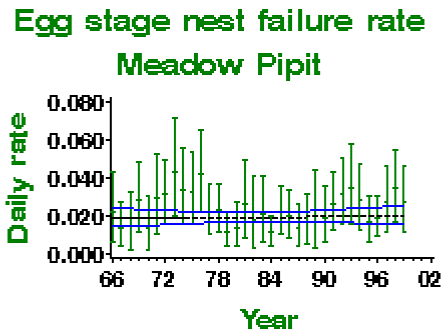


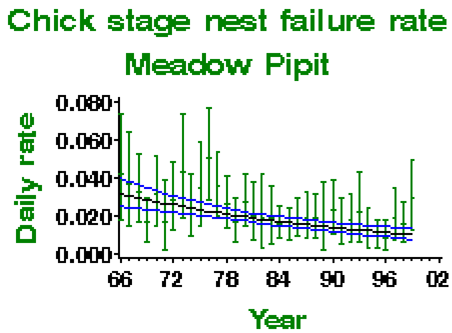
Table of productivity information for Meadow Pipit

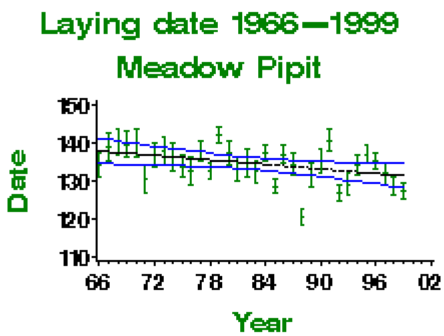
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	41	None				
Brood size	30	1968-1998	77	None				
Daily failure rate (eggs)	30	1968-1998	52	None				
Daily failure rate (chicks)	30	1968-1998	70	Linear decline	0.0297 nests/day	0.0106 nests/day	-0.0191 nests/day	
Laying date	30	1968-1998	44	Linear decline	day 138	day 132	-6 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

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 is 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.

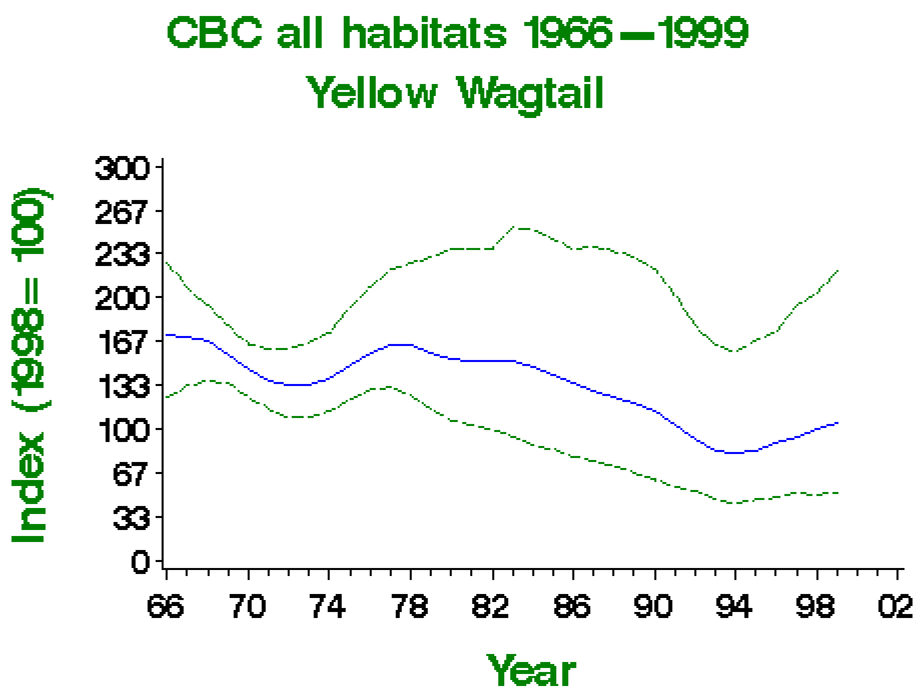


Table of population changes for Yellow Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	27	-40	-70	36		
	25	1973-1998	26	-25	-63	60		
	10	1988-1998	19	-20	-51	8		Small sample
	5	1993-1998	17	19	-20	55		Small sample
WBS waterways	23	1975-1998	22	-81	-94	-70	>50	
	10	1988-	18	-68	-83	-55	>50	Small

		1998						sample
	5	1993-1998	17	-46	-65	-26	>25	Small sample
BBS UK	5	1994-1999	155	-29	-41	-14	(>25)	
BBS England	5	1994-1999	153	-27	-39	-12	(>25)	

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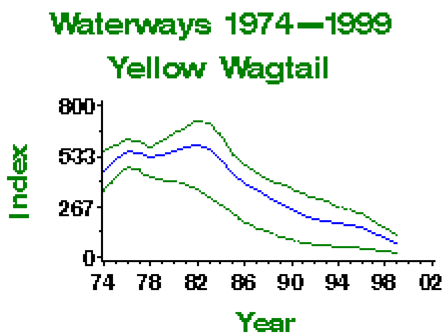
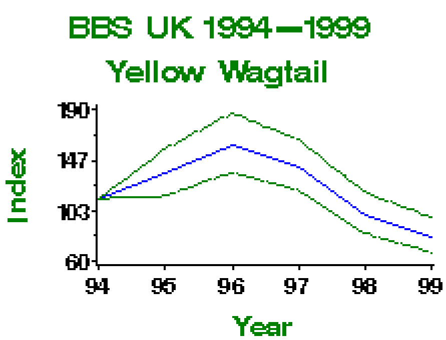




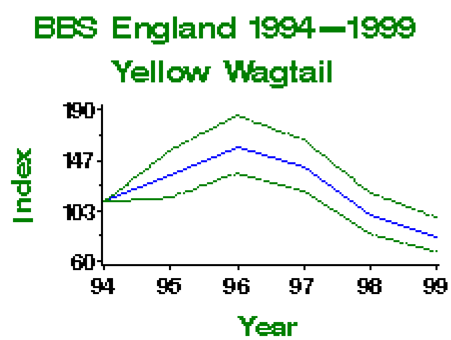
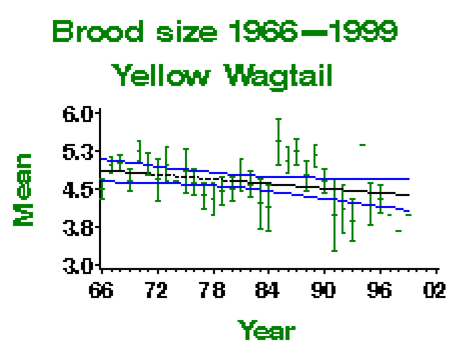


Table of productivity information for Yellow Wagtail

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	13	Linear decline	4.85 chicks	4.4 chicks	-0.45 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

Insufficient data on CES

available for this species

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: Rapid 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 will cover 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 have similar causes. Grey Wagtail breeding performance has improved markedly over time, suggesting that it cannot be the demographic rate responsible for the decline or for holding the population constant subsequently. (The change in the 12-day nestling stage failure rates is from 16% to 9%.)

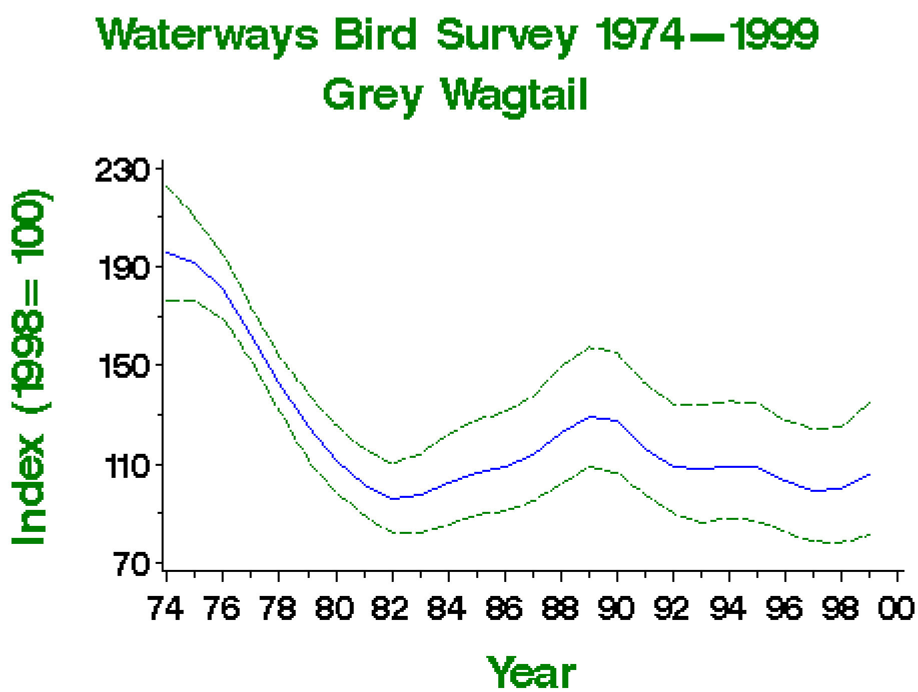


Table of population changes for Grey Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	18	45	-21	388		Unrepresentative? small sample
	25	1973-1998	19	-24	-49	42		Unrepresentative? small sample
	10	1988-1998	20	8	-23	49		Unrepresentative? small sample
	5	1993-1998	20	2	-20	23		Unrepresentative? small sample
WBS waterways	23	1975-1998	57	-48	-61	-30	>25	
		1988-						

	10	1998	65	-18	-33	-2		
	5	1993-1998	67	-7	-18	4		
BBS UK	5	1994-1999	138	40	14	73		
BBS England	5	1994-1999	86	24	-5	61		
BBS Scotland	5	1994-1999	24	107	24	246		Small sample

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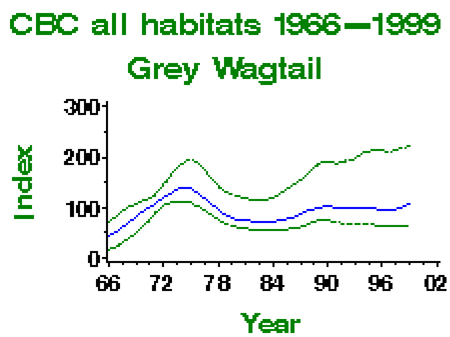
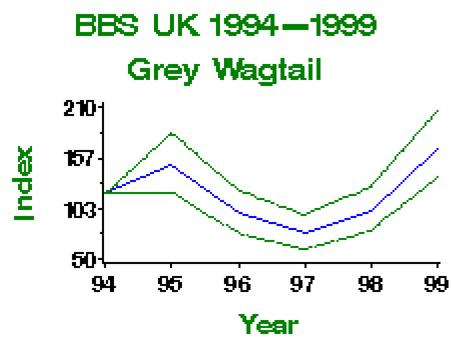
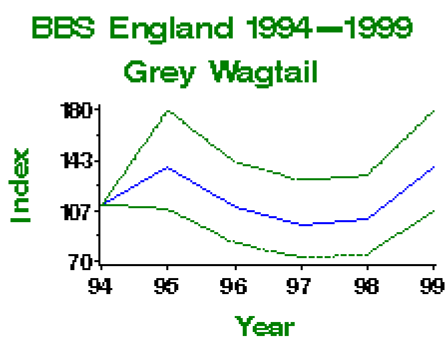






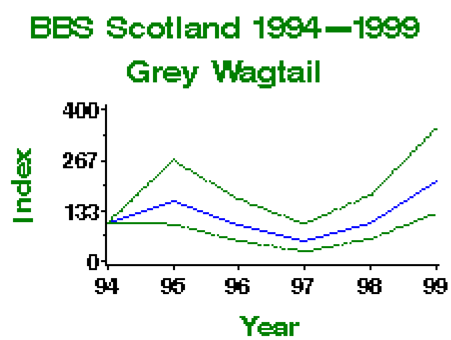
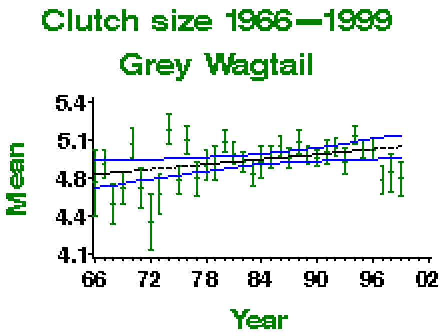
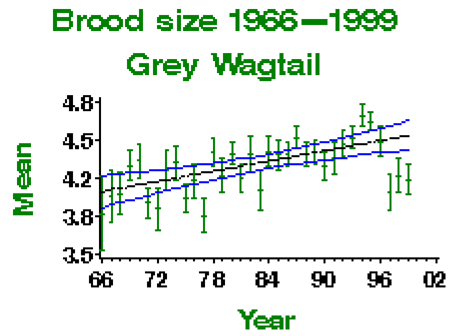
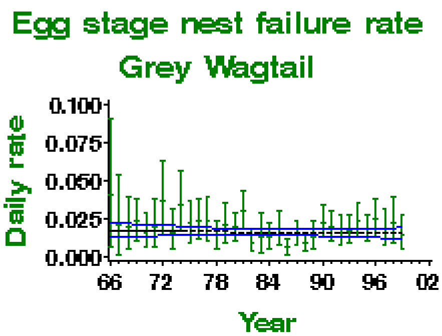


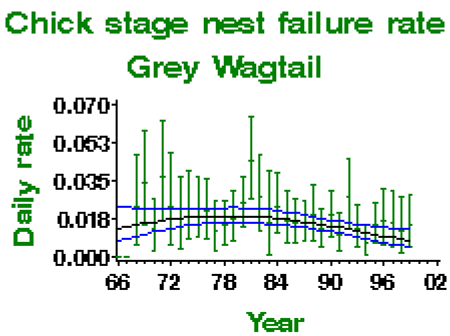
Table of productivity information for Grey Wagtail

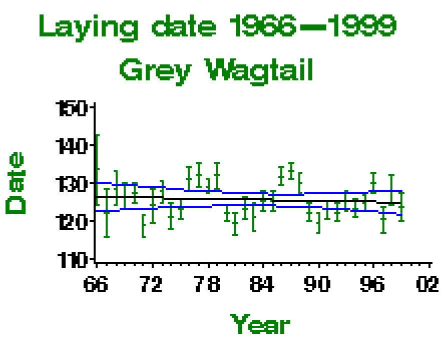
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	43	Linear increase	4.8 eggs	5.01 eggs	0.21 eggs	
Brood size	30	1968-1998	88	Linear increase	4.06 chicks	4.5 chicks	0.44 chicks	
Daily failure rate (eggs)	30	1968-1998	65	None				
Daily failure rate (chicks)	30	1968-1998	63	Curvilinear	0.0146 nests/day	0.0081 nests/day	-0.0065 nests/day	
Laying date	30	1968-1998	68	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

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 impacts of 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).

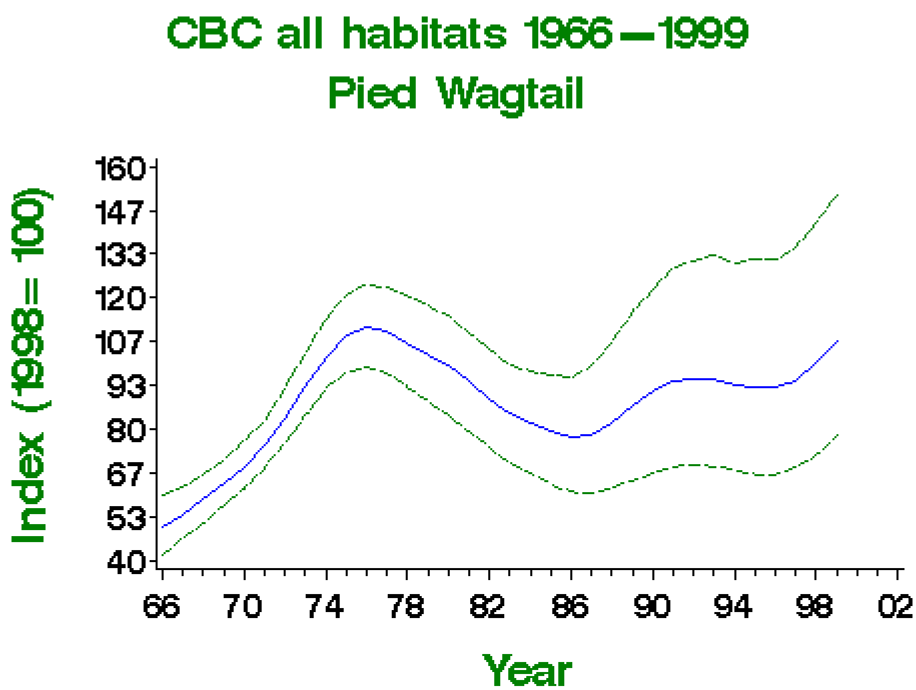


Table of population changes for Pied Wagtail

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	84	70	24	139		Unrepresentative
	25	1973-1998	87	8	-18	46		Unrepresentative
	10	1988-1998	75	22	2	52		Unrepresentative
	5	1993-	76	5	-4	18		Unrepresentative

		1998						
CBC farmland	30	1968-1998	58	69	.	.		Unrepresentative
	25	1973-1998	59	9	.	.		Unrepresentative
	10	1988-1998	59	20	.	.		Unrepresentative
	5	1993-1998	62	7	.	.		Unrepresentative
WBS waterways	23	1975-1998	67	-49	-62	-35	>25	
	10	1988-1998	70	-14	-28	7		
	5	1993-1998	73	-19	-27	-8		
BBS UK	5	1994-1999	907	18	9	27		
BBS England	5	1994-1999	687	20	10	30		
BBS Scotland	5	1994-1999	116	23	-1	53		
BBS Wales	5	1994-1999	80	9	-15	39		
BBS N.Ireland	5	1994-1999	21	-23	-64	64		Small sample

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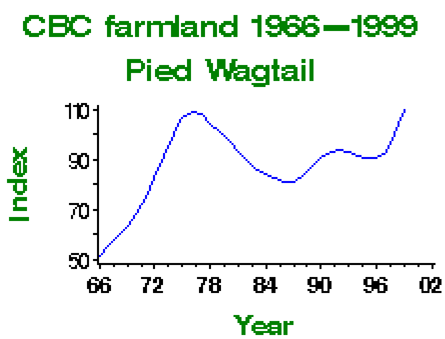
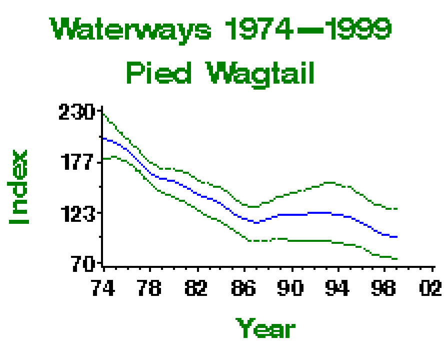
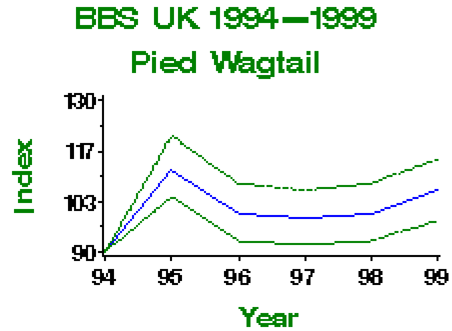
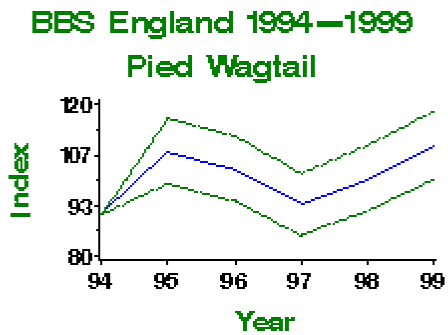
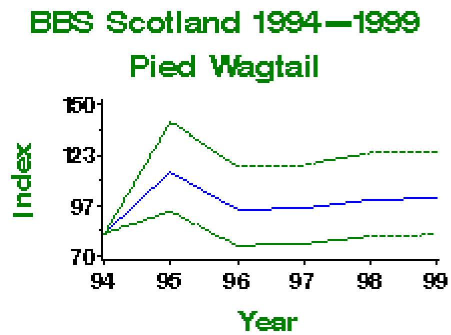
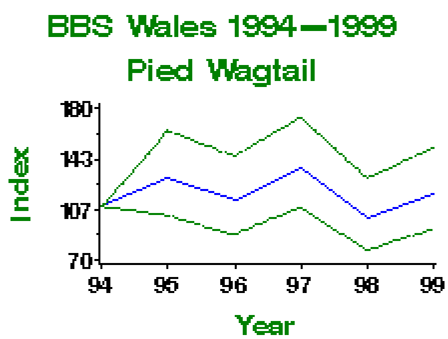












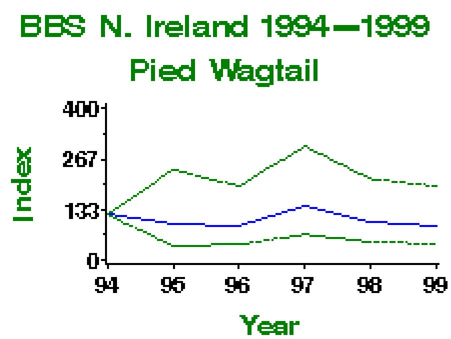
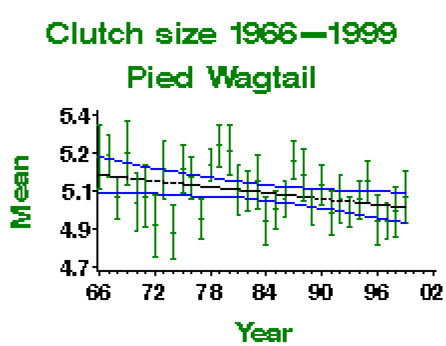
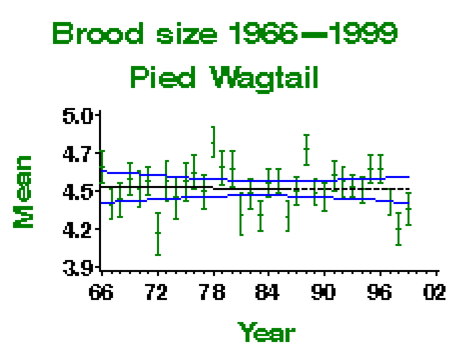
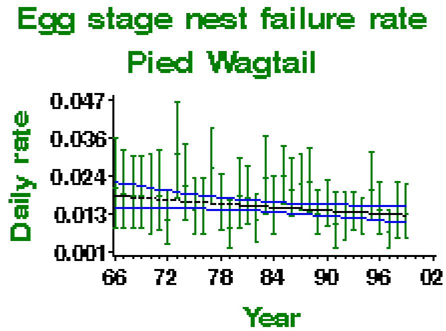


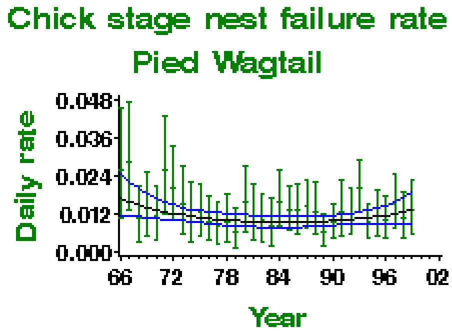
Table of productivity information for Pied Wagtail

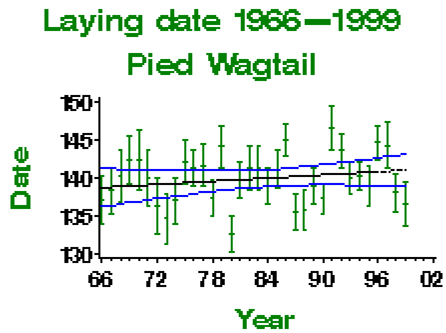
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	61	Linear decline	5.12 eggs	4.98 eggs	-0.14 eggs	
Brood size	30	1968-1998	113	None				
Daily failure rate (eggs)	30	1968-1998	84	Linear decline	0.0176 nests/day	0.0123 nests/day	-0.0053 nests/day	
Daily failure rate (chicks)	30	1968-1998	91	Curvilinear	0.015 nests/day	0.0125 nests/day	-0.0025 nests/day	
Laying date	30	1968-1998	81	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 37% down to 5%.

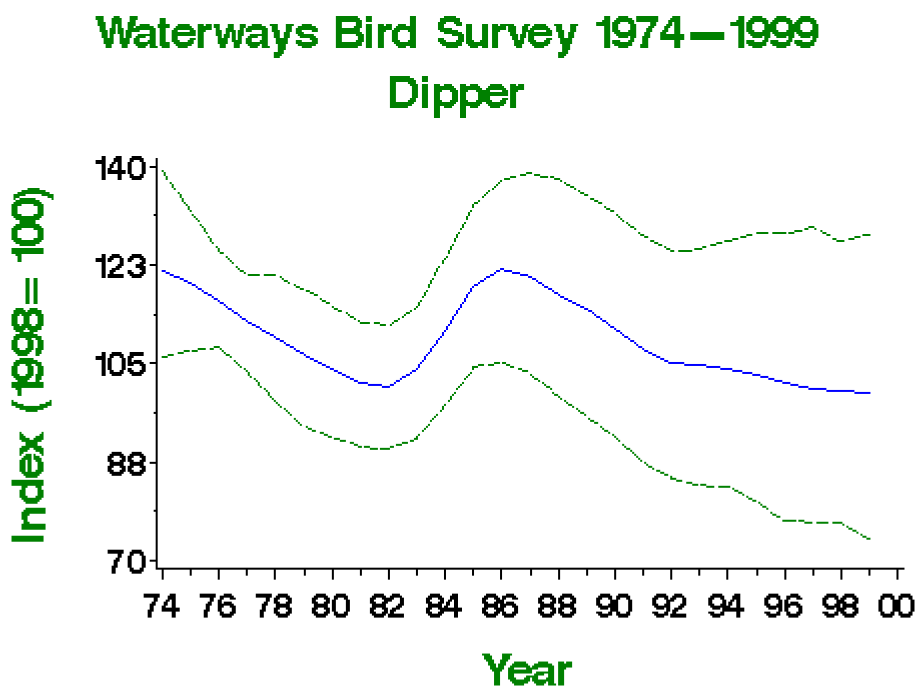


Table of population changes for Dipper

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
WBS waterways	23	1975-1998	37	-16	-41	11		
	10	1988-1998	40	-15	-31	3		
	5	1993-1998	38	-5	-17	9		
BBS UK	5	1994-1999	44	28	-14	92		Small sample
BBS Scotland	5	1994-1999	21	33	-26	138		Small sample

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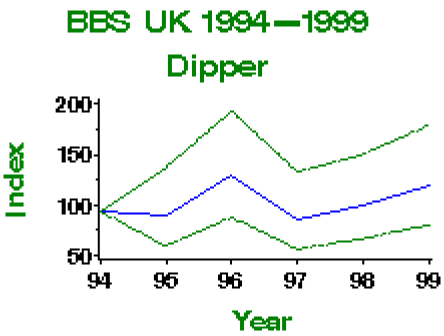


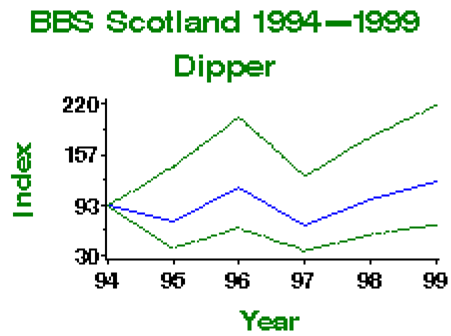
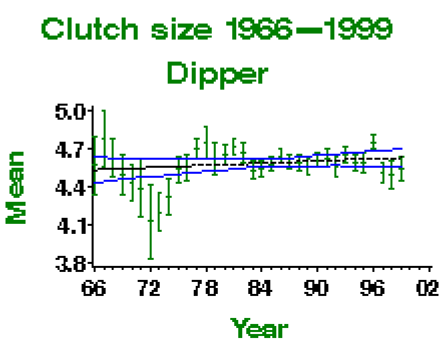
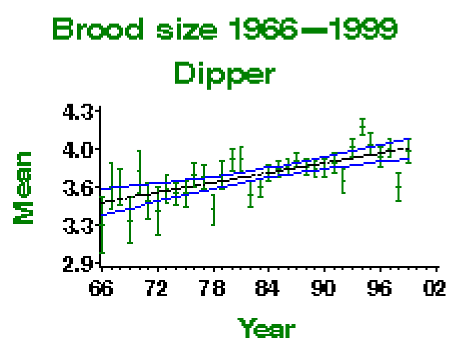
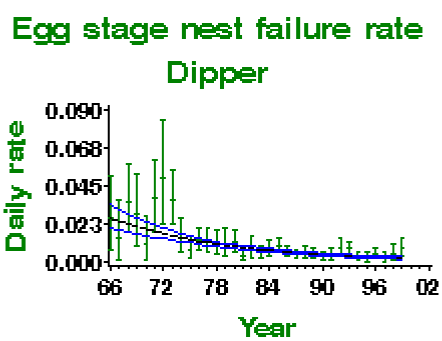


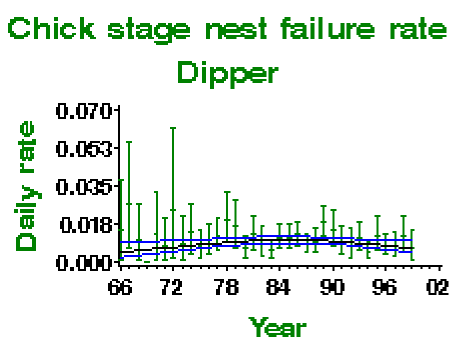
Table of productivity information for Dipper

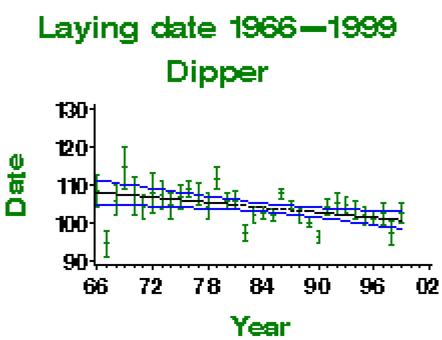
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	79	None				
Brood size	30	1968-1998	151	Linear increase	3.49 chicks	3.95 chicks	0.46 chicks	
Daily failure rate (eggs)	30	1968-1998	109	Linear decline	0.0225 nests/day	0.0023 nests/day	-0.0202 nests/day	
Daily failure rate (chicks)	30	1968-1998	86	Curvilinear	0.0052 nests/day	0.0068 nests/day	0.0016 nests/day	
Laying date	30	1968-1998	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.* 1998) and breeding performance tends to have increased.

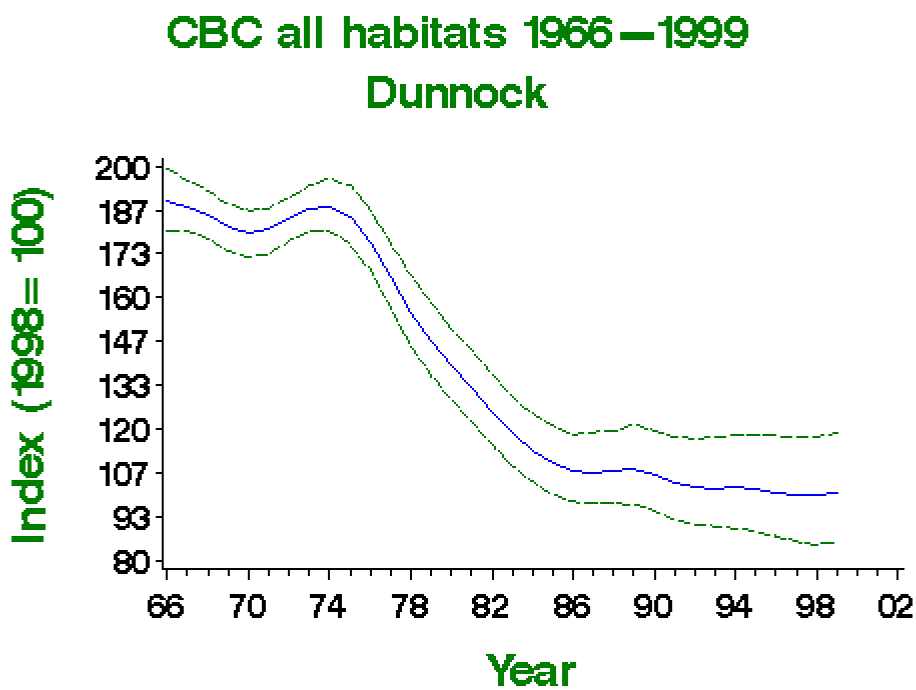


Table of population changes for Dunnock

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	205	-46	-54	-37	>25	
	25	1973-1998	210	-46	-54	-38	>25	
	10	1988-1998	188	-7	-15	2		
	5	1993-1998	193	-2	-8	4		
CBC farmland	30	1968-1998	93	-44	-53	-33	>25	
	25	1973-	92	-45	-55	-34	>25	

		1998						
	10	1988-1998	91	-1	-12	9		
	5	1993-1998	92	2	-5	10		
CBC woodland	30	1968-1998	71	-58	-66	-47	>50	
	25	1973-1998	75	-56	-65	-46	>50	
	10	1988-1998	74	-17	-27	-7		
	5	1993-1998	78	-9	-14	-2		
CES adults	14	1984-1998	91	-13	.	.		
	10	1988-1998	104	-10	.	.		
	5	1993-1998	113	-1	.	.		
CES juveniles	14	1984-1998	88	-15	.	.		
	10	1988-1998	101	-10	.	.		
	5	1993-1998	111	-10	.	.		
BBS UK	5	1994-1999	1414	7	2	13		
BBS England	5	1994-1999	1169	5	0	10		
BBS Scotland	5	1994-1999	97	9	-15	38		
BBS Wales	5	1994-1999	102	16	-4	39		
BBS N.Ireland	5	1994-1999	37	174	58	372		Small sample

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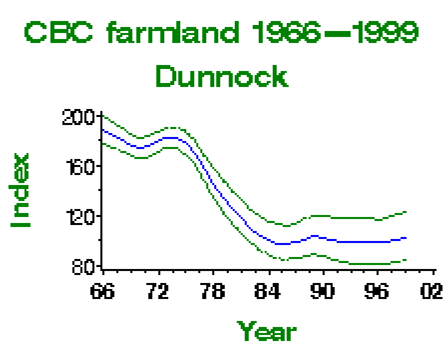
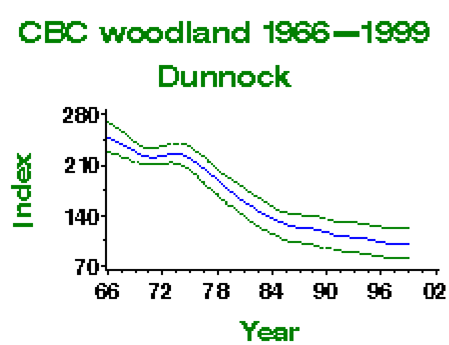
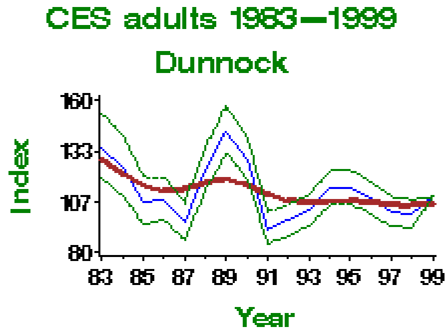
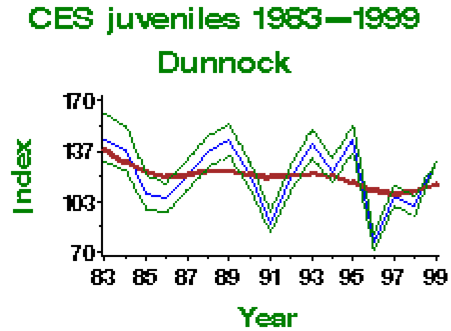
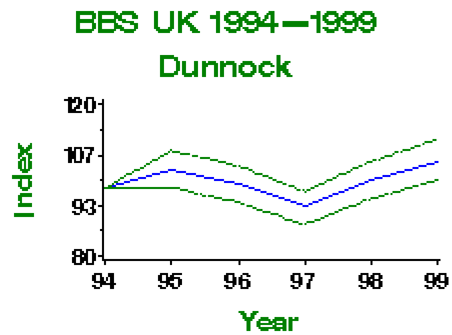
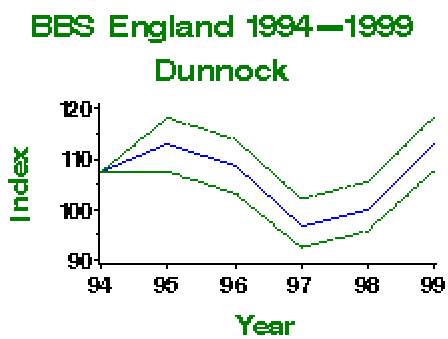


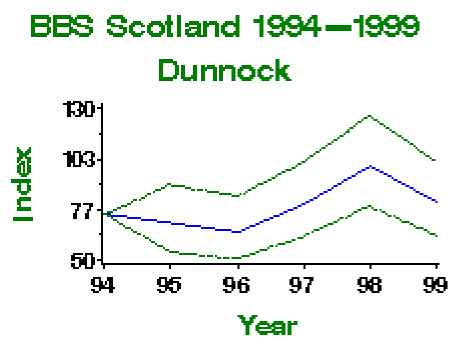


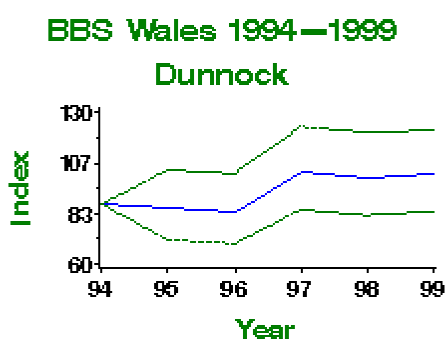












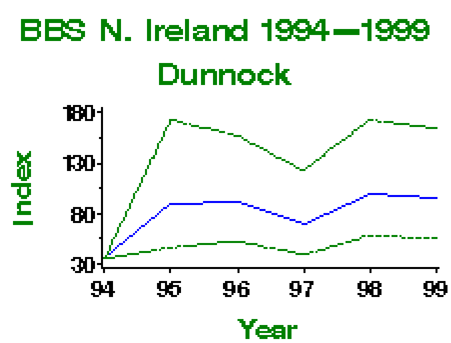
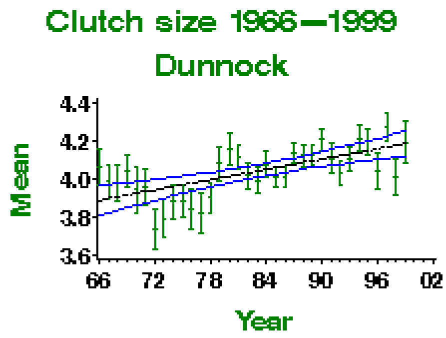
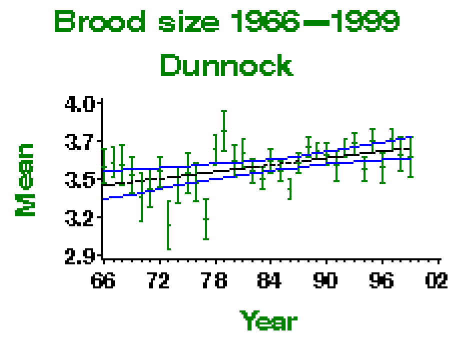


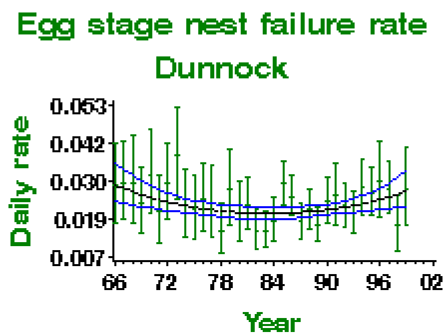
Table of productivity information for Dunnock

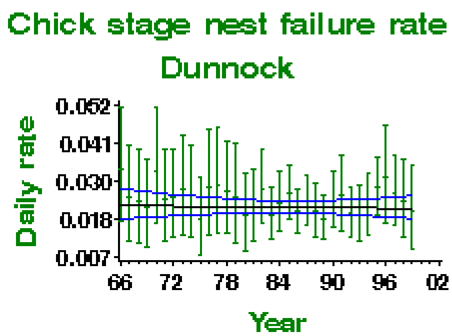
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	104	Linear increase	3.91 eggs	4.18 eggs	0.27 eggs	
Brood size	30	1968-1998	110	Linear increase	3.42 chicks	3.67 chicks	0.25 chicks	
Daily failure rate (eggs)	30	1968-1998	146	Curvilinear	0.0269 nests/day	0.026 nests/day	-0.0009 nests/day	
Daily failure rate (chicks)	30	1968-1998	116	None				
Laying date	30	1968-1998	83	None				
Percentage juveniles (CES)	14	1984-1998	95	Smoothed trend	99 productivity index	100 productivity index	1%	
					102	100		

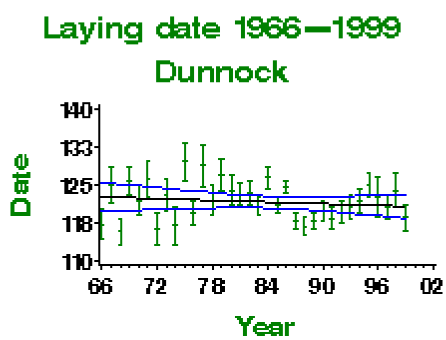
Percentage juveniles (CES)	10	1988-1998	109	Smoothed trend	productivity index	productivity index	-2%	
Percentage juveniles (CES)	5	1993-1998	117	Smoothed trend	106 productivity index	100 productivity index	-6%	

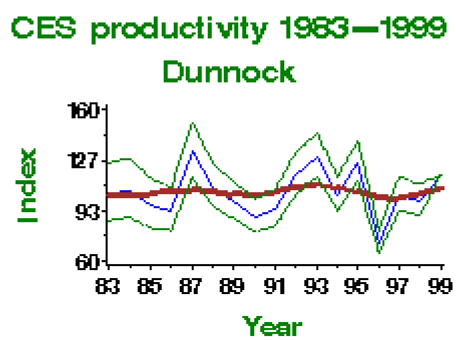












WREN *Troglodytes troglodytes*

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 23%) is approximately counter-balanced by the increase in chick-stage failures (from 15% to 23%). The long-term trend towards earlier laying is explained by recent climate warming (Crick & Sparks 1999).

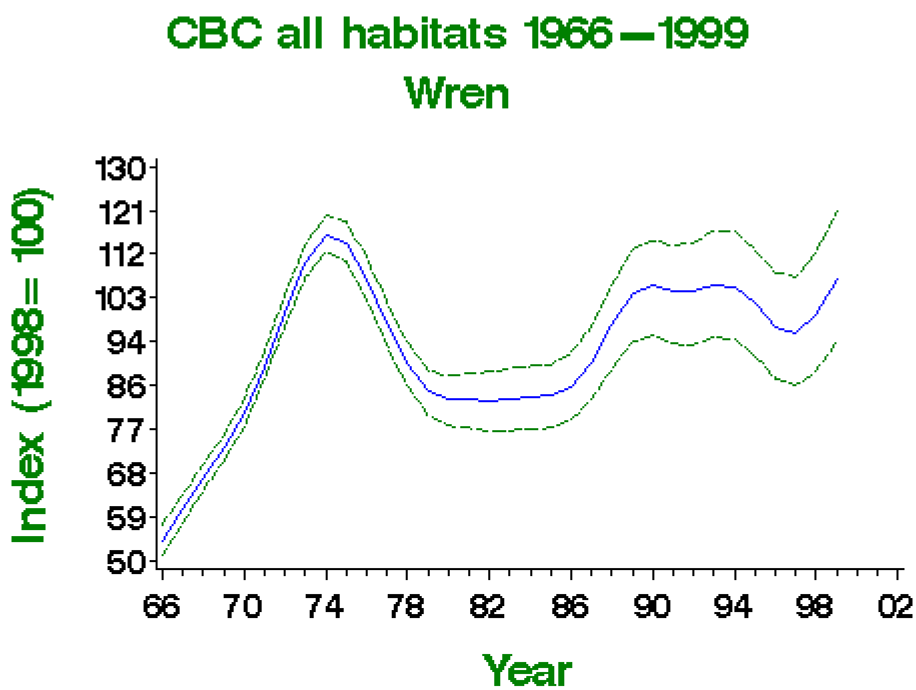
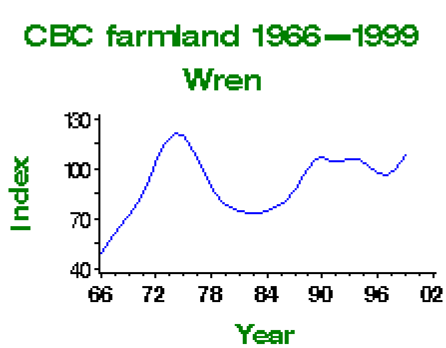


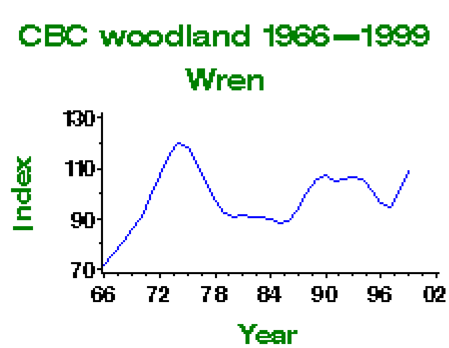
Table of population changes for Wren

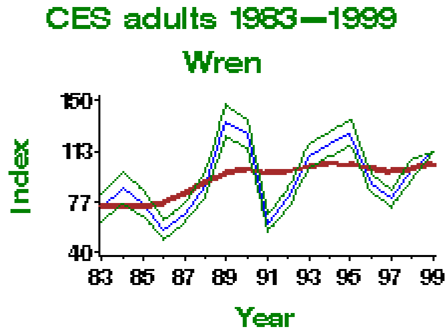
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	220	50	31	68		
	25	1973-1998	227	-9	-20	0		
	10	1988-1998	214	2	-3	8		
	5	1993-1998	222	-6	-10	-2		
CBC farmland	30	1968-1998	93	55	.	.		

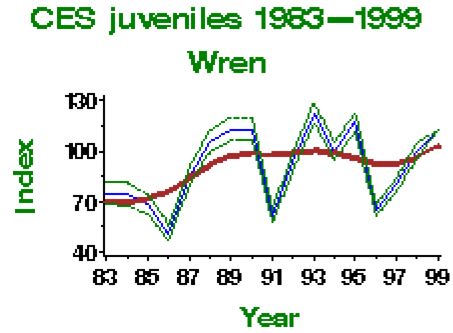
	25	1973-1998	93	-13	.	.		
	10	1988-1998	93	4	.	.		
	5	1993-1998	95	-5	.	.		
CBC woodland	30	1968-1998	86	23	.	.		
	25	1973-1998	92	-14	.	.		
	10	1988-1998	97	0	.	.		
	5	1993-1998	102	-6	.	.		
CES adults	14	1984-1998	91	37	.	.		
	10	1988-1998	105	10	.	.		
	5	1993-1998	114	-2	.	.		
CES juveniles	14	1984-1998	90	38	.	.		
	10	1988-1998	103	5	.	.		
	5	1993-1998	113	-4	.	.		
BBS UK	5	1994-1999	1698	17	13	21		
BBS England	5	1994-1999	1327	10	7	14		
BBS Scotland	5	1994-1999	175	60	39	85		
BBS Wales	5	1994-1999	132	15	3	27		
BBS N.Ireland	5	1994-1999	53	48	12	95		

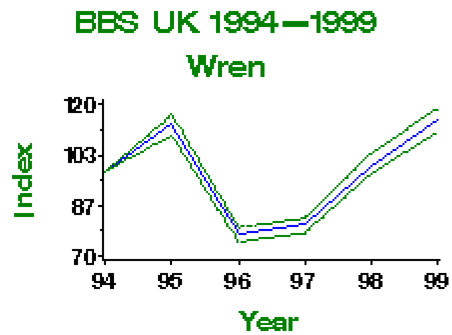
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

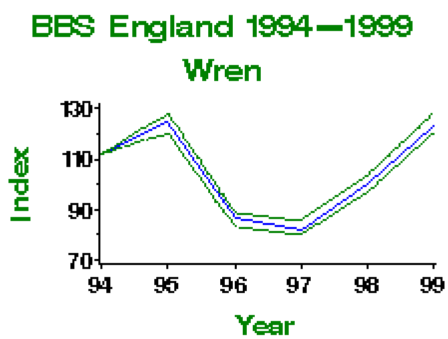


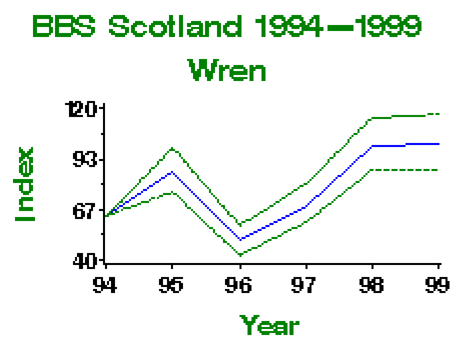


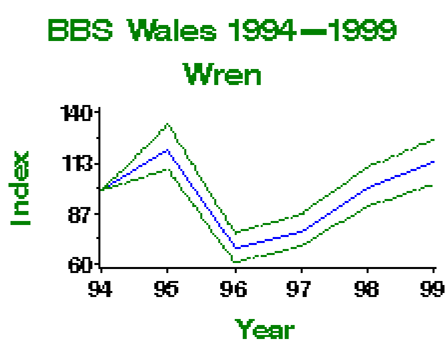












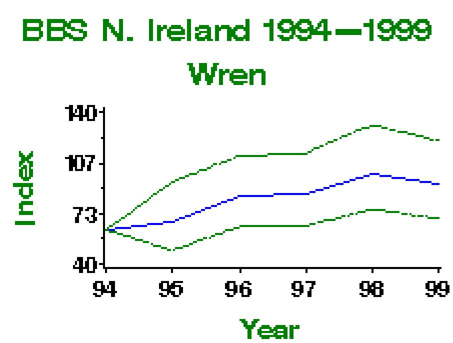
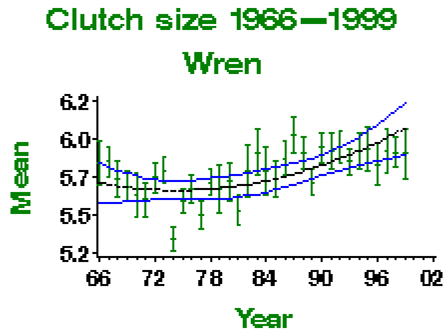
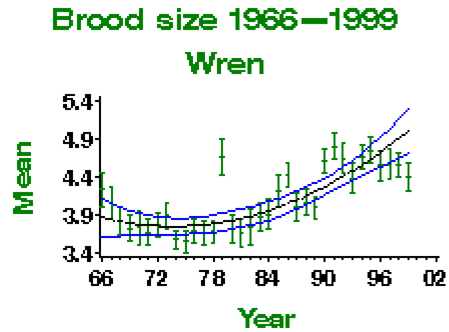


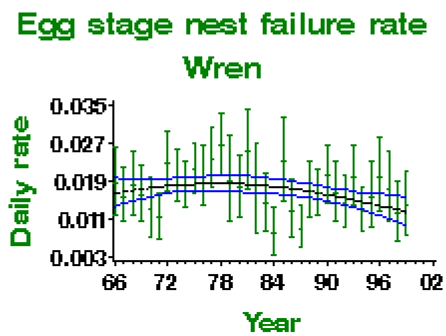
Table of productivity information for Wren

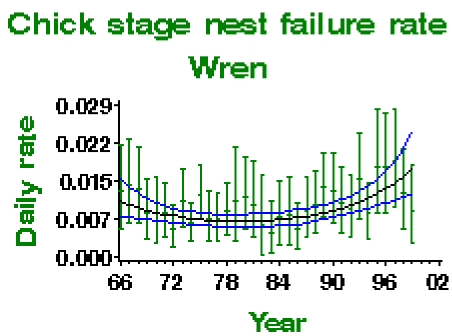
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	101	Curvilinear	5.64 eggs	6 eggs	0.36 eggs	
Brood size	30	1968-1998	127	Curvilinear	3.82 chicks	4.92 chicks	1.1 chicks	
Daily failure rate (eggs)	30	1968-1998	149	Curvilinear	0.0171 nests/day	0.0129 nests/day	-0.0042 nests/day	
Daily failure rate (chicks)	30	1968-1998	102	Curvilinear	0.0094 nests/day	0.0154 nests/day	0.006 nests/day	
Laying date	30	1968-1998	92	Curvilinear	day 133	day 126	-7 days	
Percentage juveniles (CES)	14	1984-1998	96	Smoothed trend	96 productivity index	100 productivity index	4%	
					108	100		

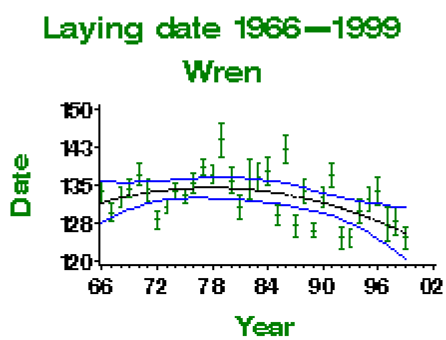
Percentage juveniles (CES)	10	1988-1998	109	Smoothed trend	productivity index	productivity index	-8%	
Percentage juveniles (CES)	5	1993-1998	117	Smoothed trend	104 productivity index	100 productivity index	-4%	

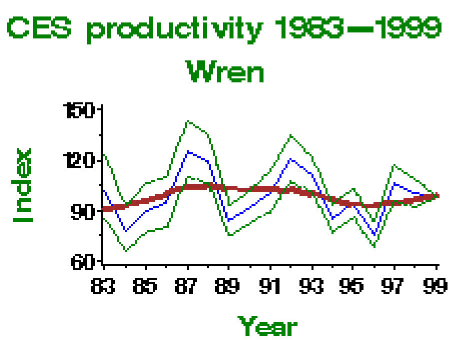












ROBIN *Erithacus rubecula*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: 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 20%). 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.

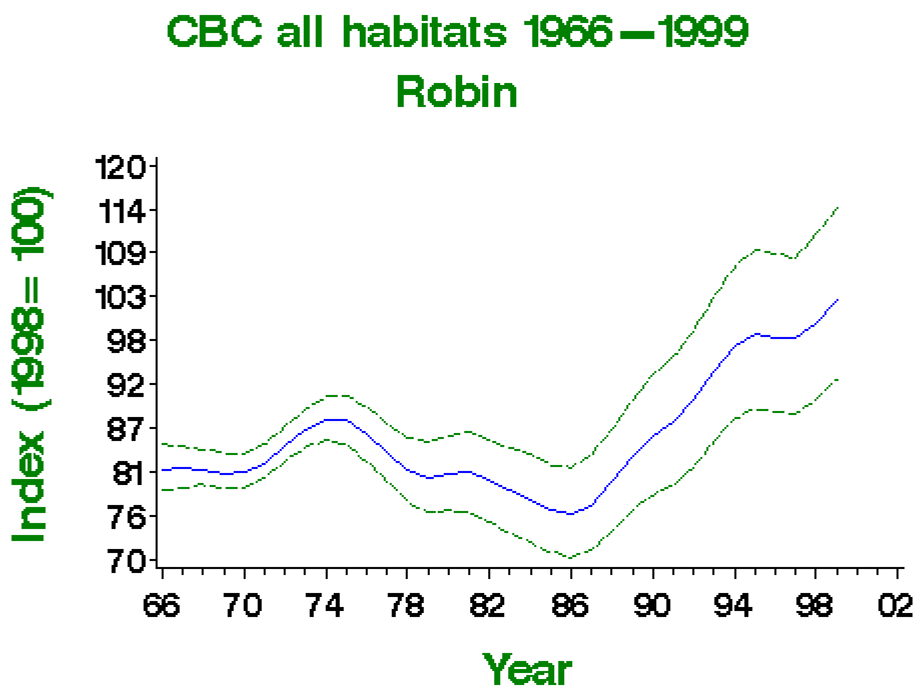
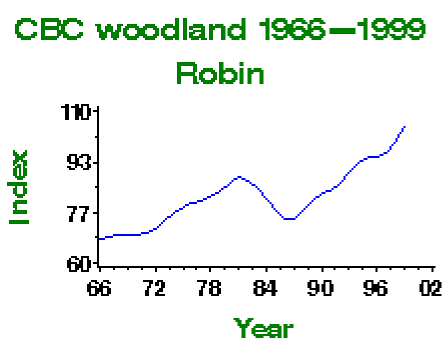


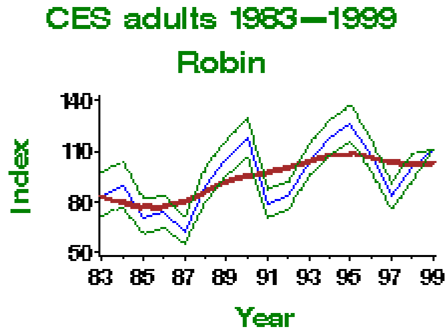
Table of population changes for Robin

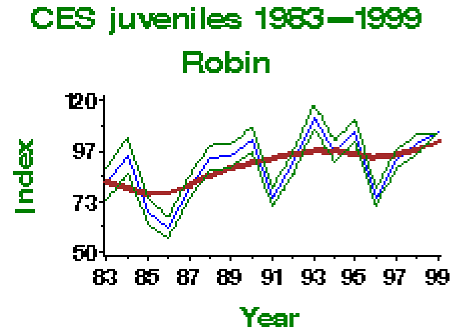
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	217	23	11	39		
	25	1973-1998	224	16	6	29		
	10	1988-1998	211	25	19	32		
	5	1993-1998	219	6	3	11		
CBC farmland	30	1968-1998	92	9	.	.		
	25	1973-1998	91	3	.	.		

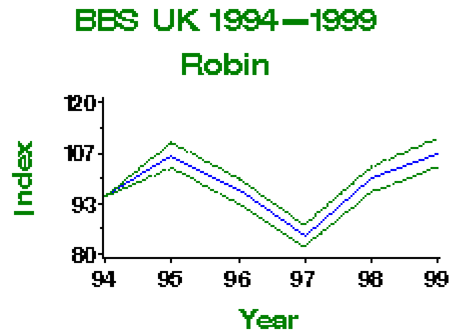
	10	1988-1998	92	26	.	.		
	5	1993-1998	93	4	.	.		
CBC woodland	30	1968-1998	71	45	.	.		
	25	1973-1998	77	36	.	.		
	10	1988-1998	87	29	.	.		
	5	1993-1998	92	11	.	.		
CES adults	14	1984-1998	85	29	.	.		
	10	1988-1998	99	20	.	.		
	5	1993-1998	107	-1	.	.		
CES juveniles	14	1984-1998	90	23	.	.		
	10	1988-1998	104	15	.	.		
	5	1993-1998	113	1	.	.		
BBS UK	5	1994-1999	1641	12	8	16		
BBS England	5	1994-1999	1300	11	7	15		
BBS Scotland	5	1994-1999	150	17	1	36		
BBS Wales	5	1994-1999	129	11	-1	23		
BBS N.Ireland	5	1994-1999	52	27	-2	63		

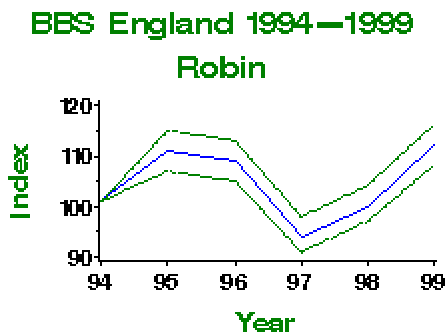
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

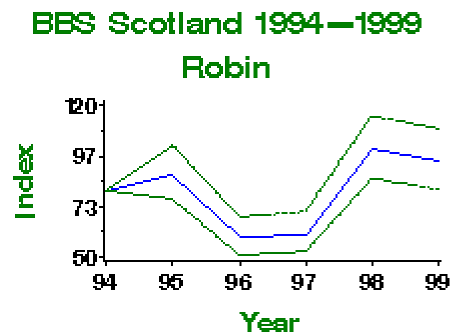


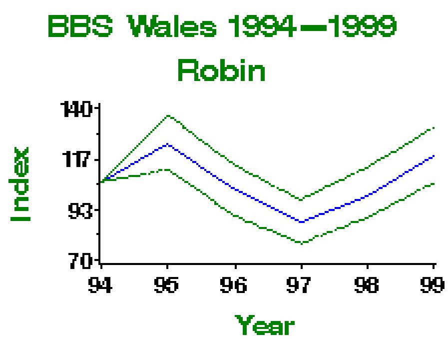












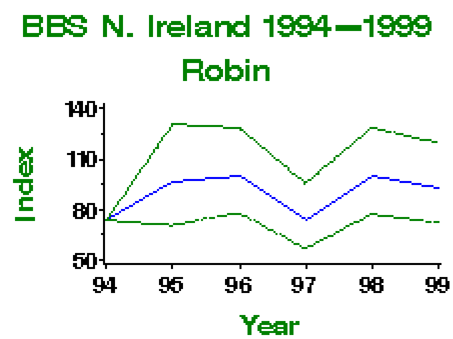
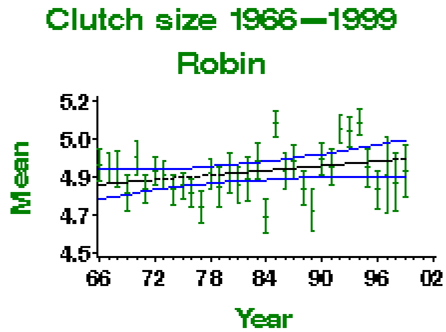
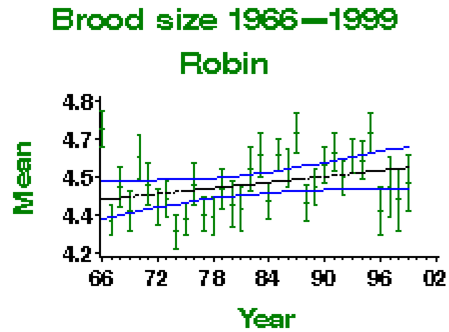


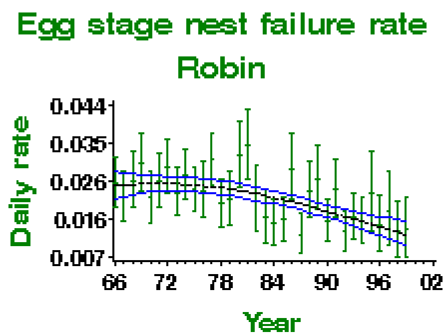
Table of productivity information for Robin

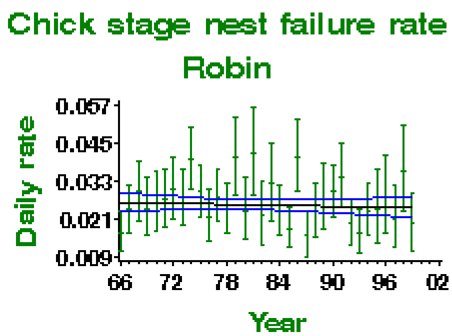
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	125	None				
Brood size	30	1968-1998	166	None				
Daily failure rate (eggs)	30	1968-1998	187	Curvilinear	0.0248 nests/day	0.0131 nests/day	-0.0117 nests/day	
Daily failure rate (chicks)	30	1968-1998	156	None				
Laying date	30	1968-1998	122	None				
Percentage juveniles (CES)	14	1984-1998	95	Smoothed trend	109 productivity index	100 productivity index	-8%	
					108	100		

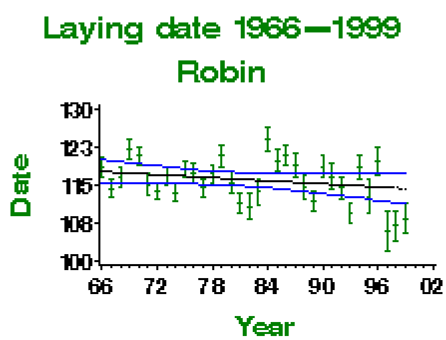
Percentage juveniles (CES)	10	1988-1998	109	Smoothed trend	productivity index	productivity index	-8%	
Percentage juveniles (CES)	5	1993-1998	117	Smoothed trend	101 productivity index	100 productivity index	-1%	

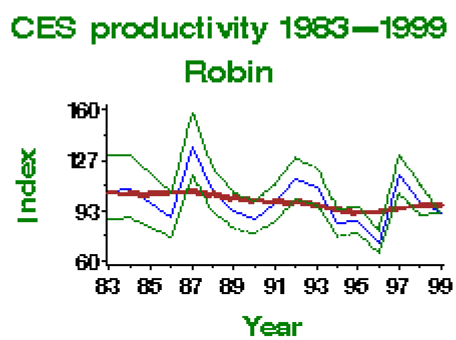












NIGHTINGALE *Luscinia megarhynchos*

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. 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.

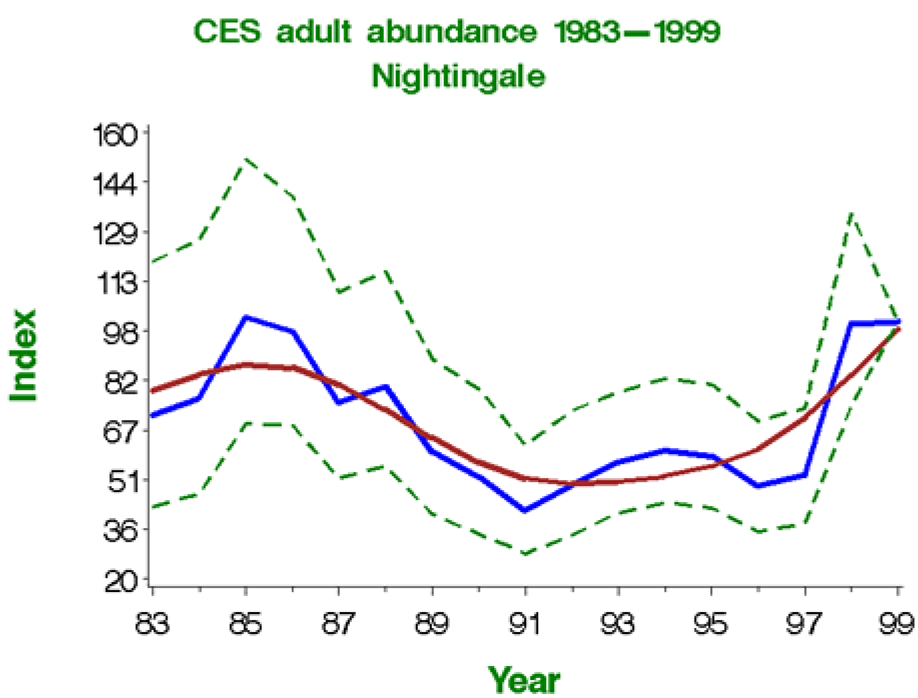


Table of population changes for Nightingale

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CES adults	14	1984-1998	10	0	.	.		Small sample
	10	1988-1998	11	14	.	.		Small sample
	5	1993-1998	13	66	.	.		Small sample
CES juveniles	14	1984-1998	7	-58	.	.	[>50]	Small sample
	10	1988-1998	6	-11	.	.		Small sample

	5	1993-1998	8	1	.	.		Small sample
BBS England	5	1994-1999	28	8	-27	59		Small sample

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

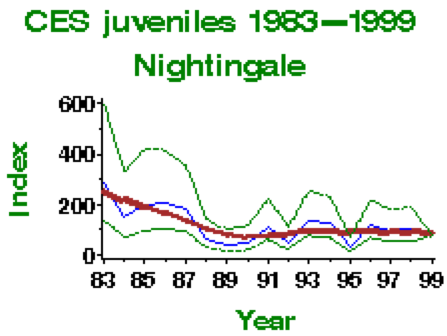


Table of productivity information for Nightingale

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Percentage juveniles (CES)	14	1984-1998	12	Smoothed trend	328 productivity index	100 productivity index	-70% [>50]	Small sample
Percentage juveniles (CES)	10	1988-1998	13	Smoothed trend	122 productivity index	100 productivity index	-18%	Small sample
Percentage juveniles (CES)	5	1993-1998	16	Smoothed trend	171 productivity index	100 productivity index	-42% [>25]	Small sample

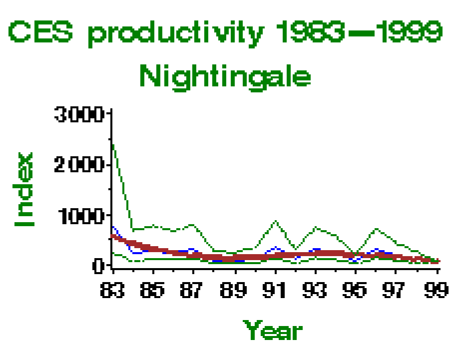
Insufficient data on clutch size available for this species

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



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

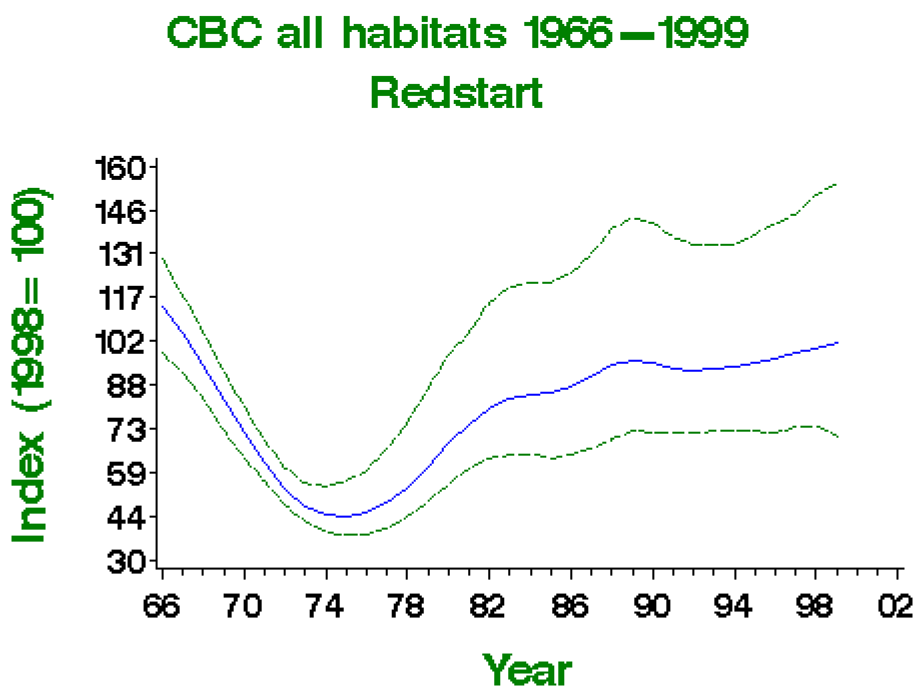


Table of population changes for Redstart

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	23	6	-26	78		Unrepresentative
	25	1973-1998	23	109	50	197		Unrepresentative
	10	1988-1998	26	6	-10	20		Unrepresentative
	5	1993-1998	27	7	-10	25		Unrepresentative
BBS UK	5	1994-1999	128	37	13	66		
BBS England	5	1994-1999	69	53	17	102		
		1994-						

BBS Wales	5	1999	48	1	-22	32		Small sample

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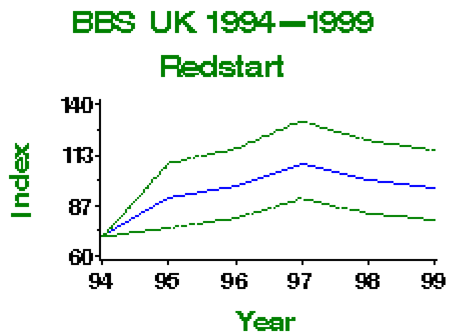
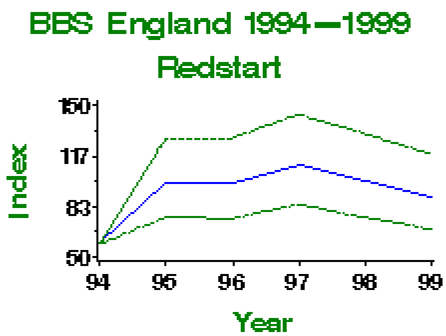




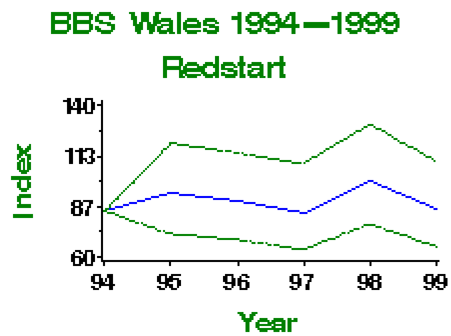
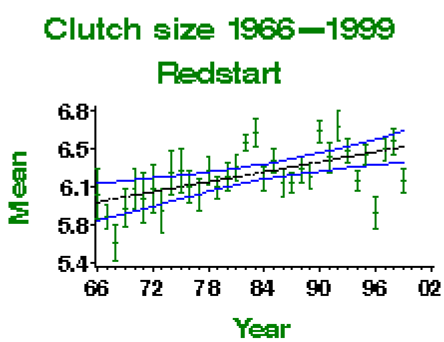
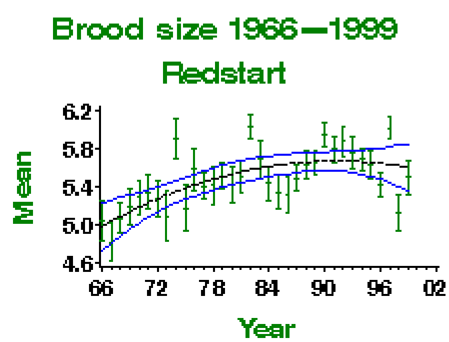
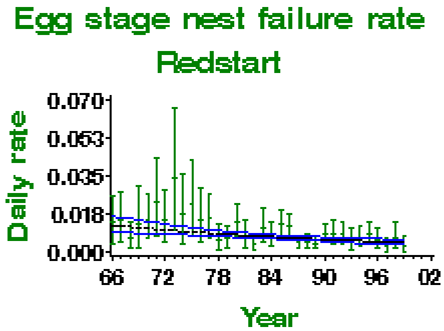


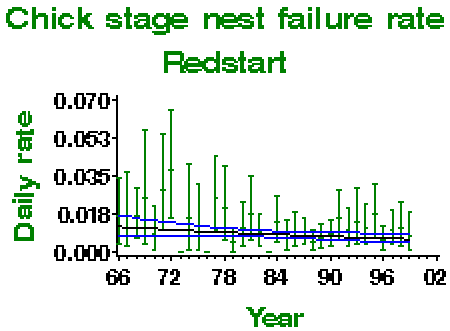
Table of productivity information for Redstart

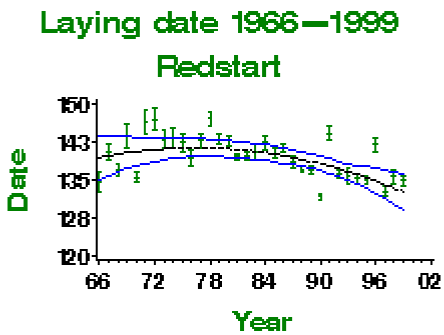
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	52	Linear increase	5.99 eggs	6.46 eggs	0.47 eggs	
Brood size	30	1968-1998	91	Curvilinear	5.09 chicks	5.63 chicks	0.54 chicks	
Daily failure rate (eggs)	30	1968-1998	78	Linear decline	0.0115 nests/day	0.0044 nests/day	-0.0071 nests/day	
Daily failure rate (chicks)	30	1968-1998	55	None				
Laying date	30	1968-1998	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.

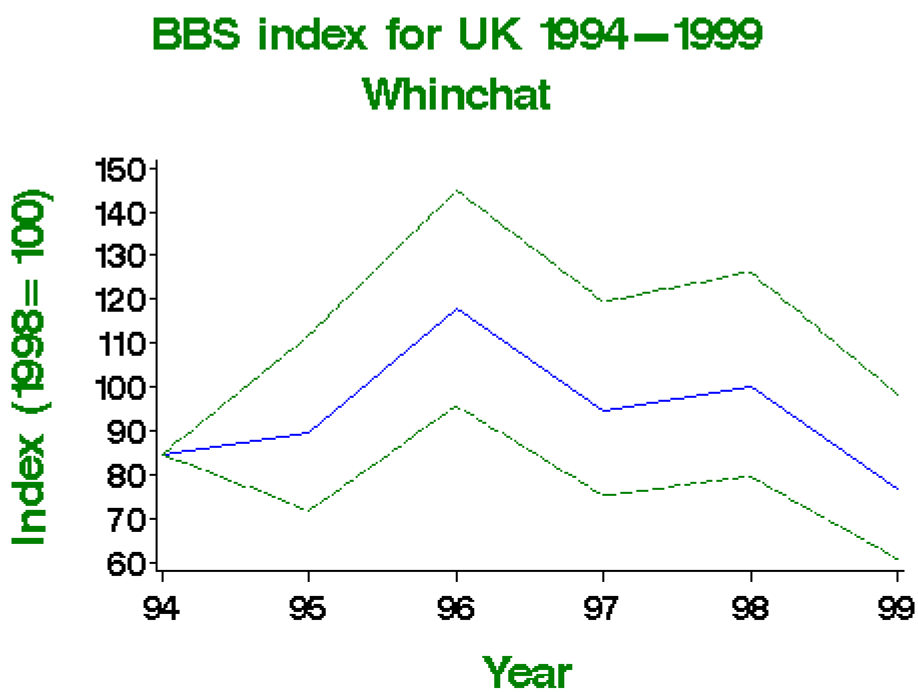
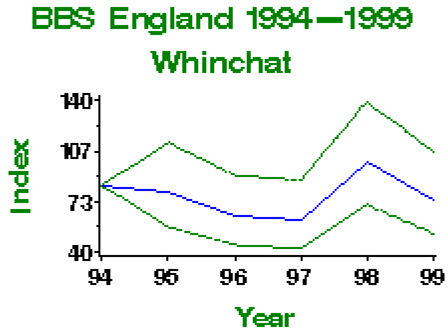


Table of population changes for Whinchat

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	82	-9	-28	16		
BBS England	5	1994-1999	31	-11	-38	27		Small sample
BBS Scotland	5	1994-1999	33	2	-34	59		Small sample

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



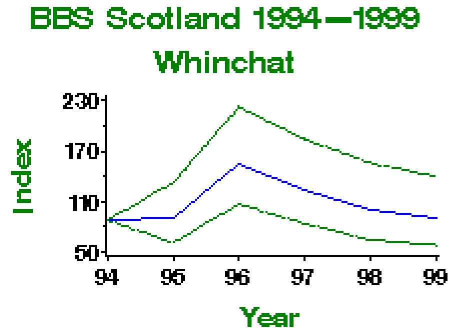
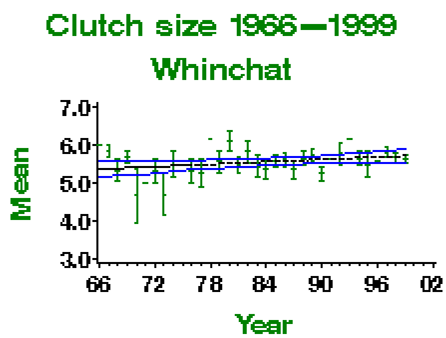
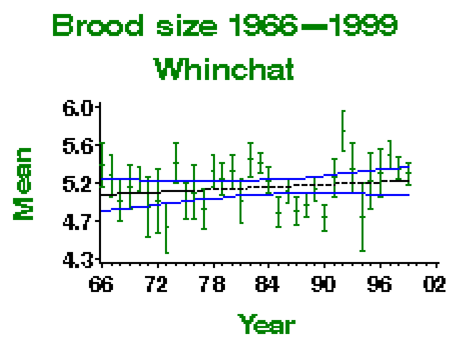
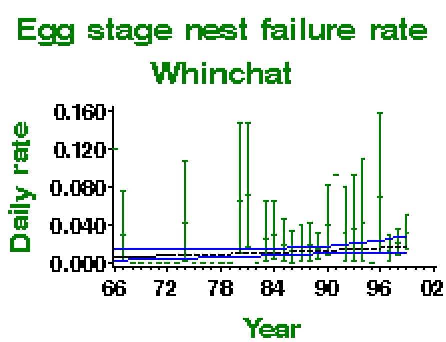


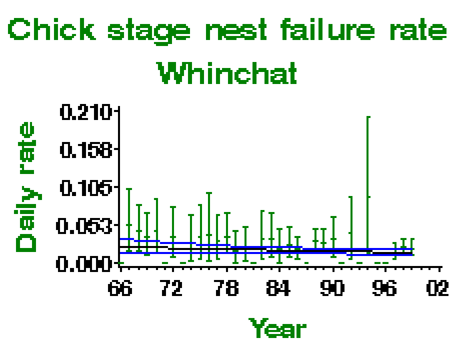
Table of productivity information for Whinchat

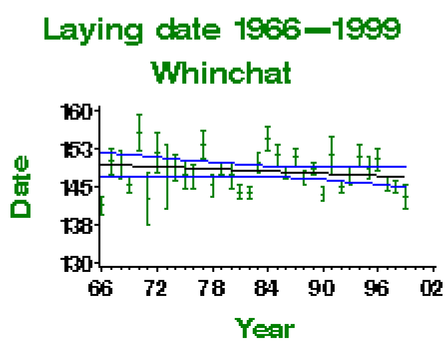
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	12	Linear increase	5.4 eggs	5.72 eggs	0.32 eggs	Small sample
Brood size	30	1968-1998	42	None				
Daily failure rate (eggs)	30	1968-1998	15	None				Small sample
Daily failure rate (chicks)	30	1968-1998	27	None				Small sample
Laying date	30	1968-1998	29	None				Small sample











Insufficient data on CES available for this species

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.

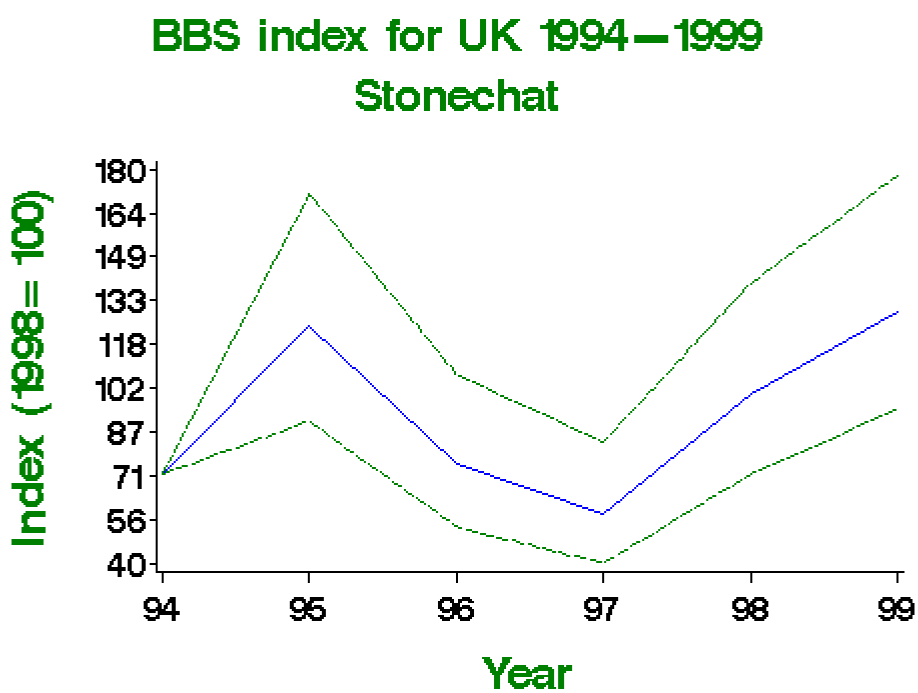


Table of population changes for Stonechat

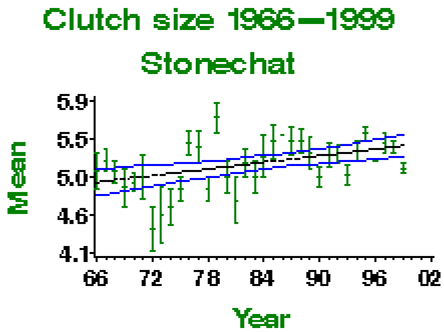
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	66	80	32	147		
BBS England	5	1994-1999	26	77	10	186		Small sample

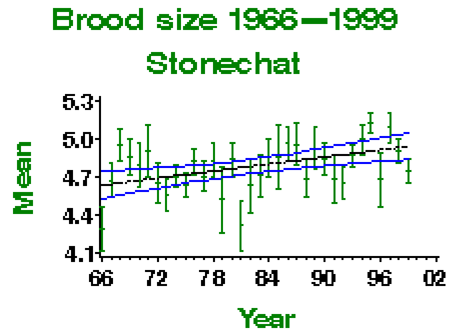
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

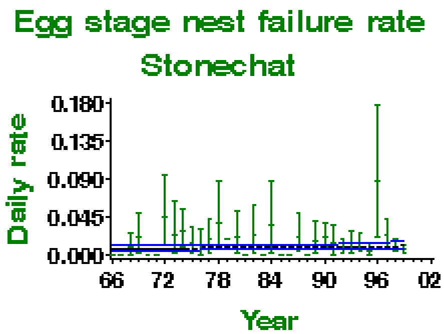
Table of productivity information for Stonechat

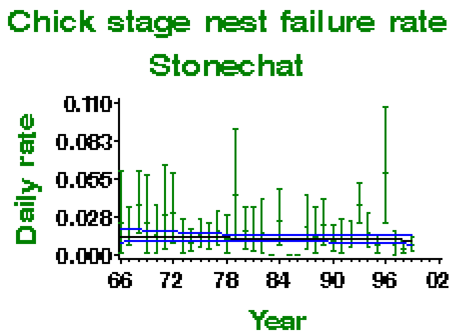
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	20	Linear increase	4.97 eggs	5.36 eggs	0.39 eggs	Small sample
Brood size	30	1968-1998	52	Linear increase	4.65 chicks	4.94 chicks	0.29 chicks	

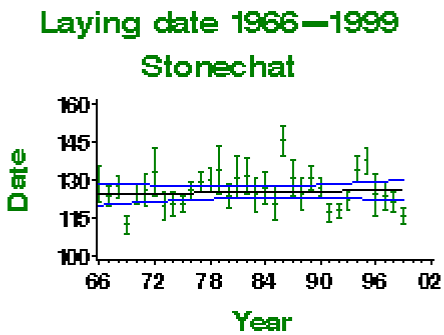
Daily failure rate (eggs)	30	1968-1998	24	None				Small sample
Daily failure rate (chicks)	30	1968-1998	45	None				
Laying date	30	1968-1998	29	None				Small sample











Insufficient data on CES available for this species

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 chick stage (18 days, comprising 14 days incubation + 4 days laying) have fallen from 27% in 1975 to 13% in 1998). The BBS shows no clear trend in abundance since 1994.

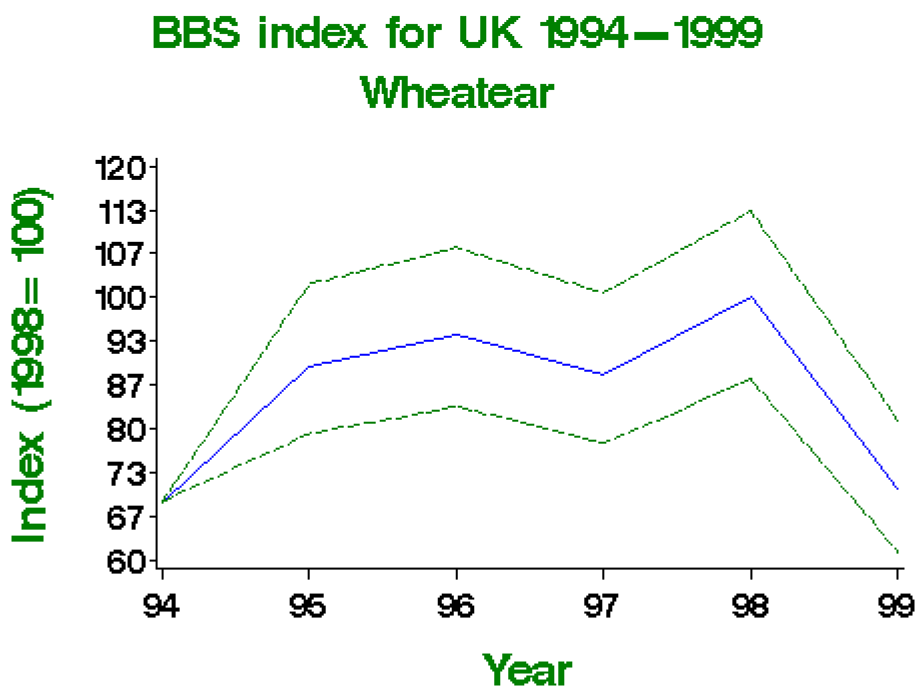


Table of population changes for Wheatear

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	234	3	-11	18		
BBS England	5	1994-1999	112	6	-13	30		
BBS Scotland	5	1994-1999	78	-2	-24	26		
BBS Wales	5	1994-1999	36	7	-26	57		Small sample

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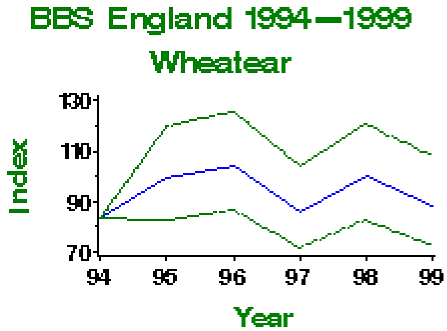
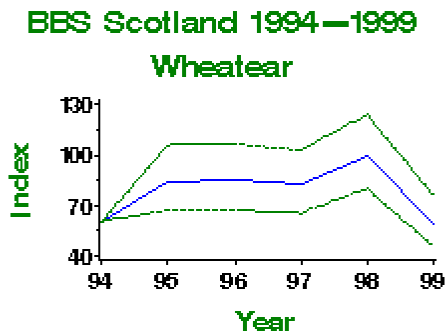




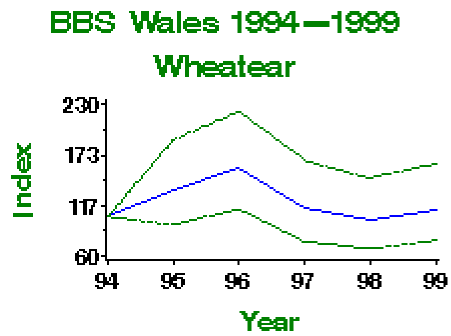
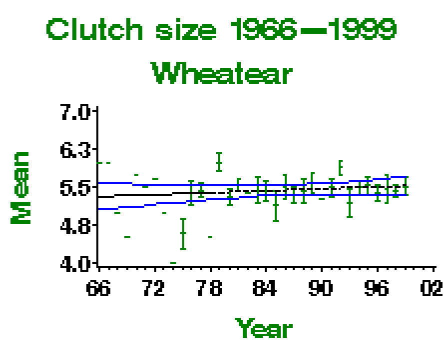
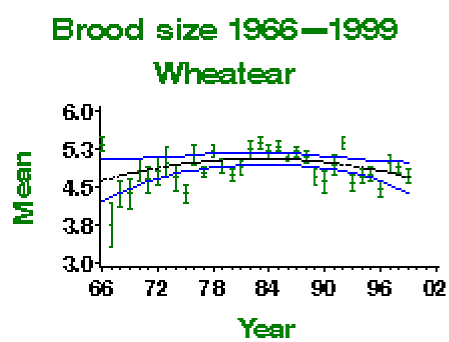
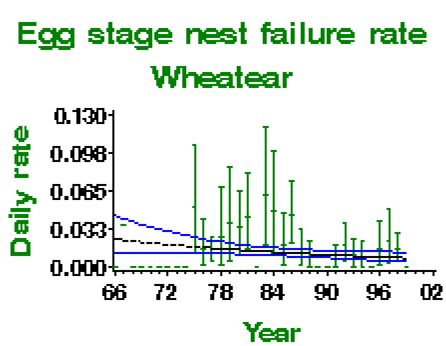


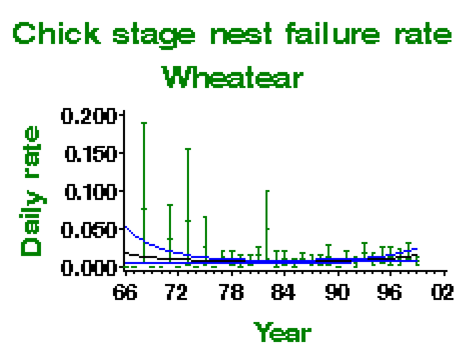
Table of productivity information for Wheatear

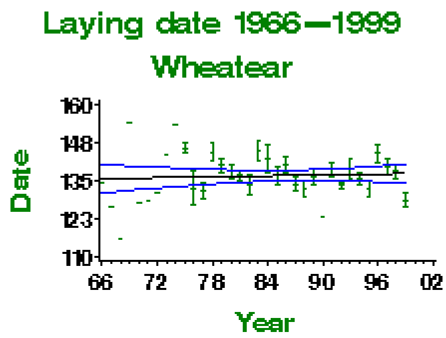
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	14	None				Small sample
Brood size	30	1968-1998	64	Curvilinear	4.72 chicks	4.75 chicks	0.03 chicks	
Daily failure rate (eggs)	30	1968-1998	21	Linear decline	0.0219 nests/day	0.0077 nests/day	-0.0142 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	43	Curvilinear	0.0138 nests/day	0.013 nests/day	-0.0008 nests/day	
Laying date	30	1968-1998	15	None				Small sample











Insufficient data on CES available for this species

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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

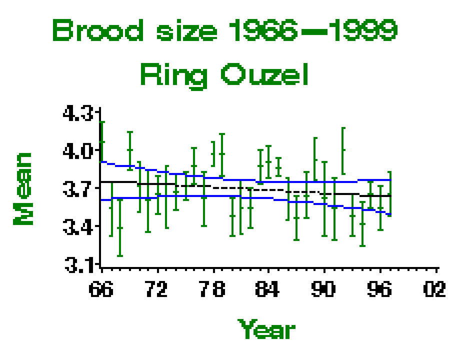
The *New Breeding Atlas* showed a decline throughout its range of 27% in the number of 10-km squares occupied between 1968-72 and 1988-91 (Gibbons *et al.* 1993). Reasons for the decline are unknown but the following have been suggested: afforestation, disturbance, climate warming and competition with Blackbirds. Declines in chick stage failure rates (14 days) from 28% to 9% may have occurred as the species retreats to its most favoured areas.

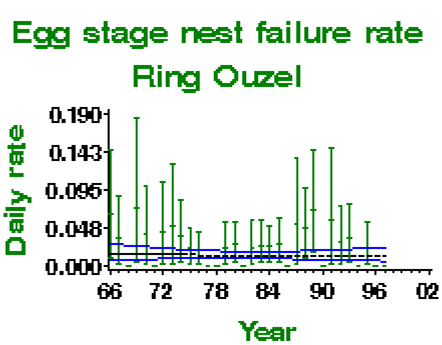
Annual breeding population changes for this species
are not currently monitored by BTO

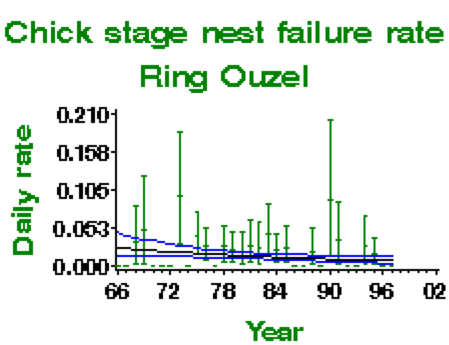
Table of productivity information for Ring Ouzel

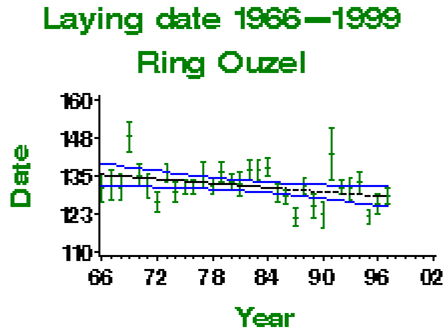
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	25	None				Small sample
Daily failure rate (eggs)	30	1968-1998	12	None				Small sample
Daily failure rate (chicks)	30	1968-1998	16	Linear decline	0.0229 nests/day	0.0064 nests/day	-0.0165 nests/day	Small sample
Laying date	30	1968-1998	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: Moderate decline

Status Summary

Both the CBC and the CES show long-term declines in Blackbird abundance; the CBC shows that this decline began in the mid-1970s. 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 its occurrence 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.

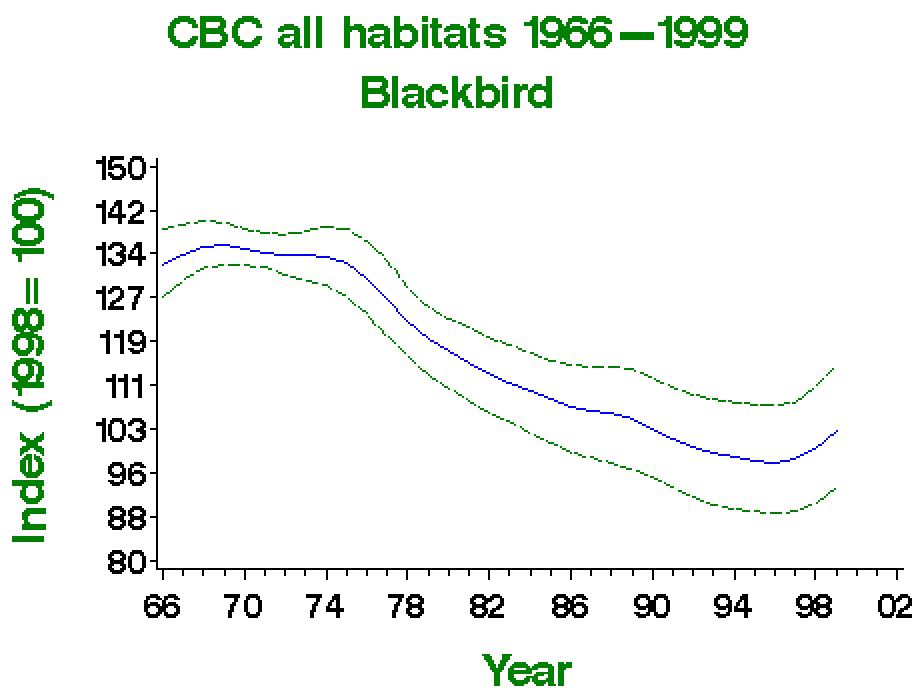
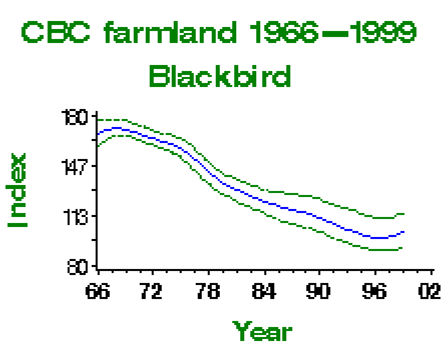


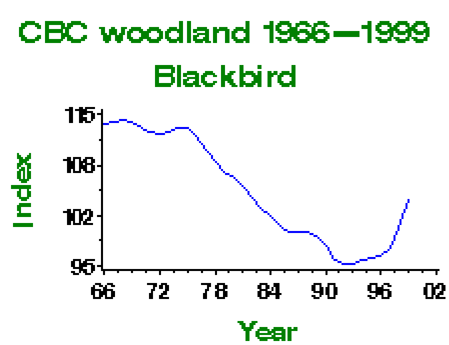
Table of population changes for Blackbird

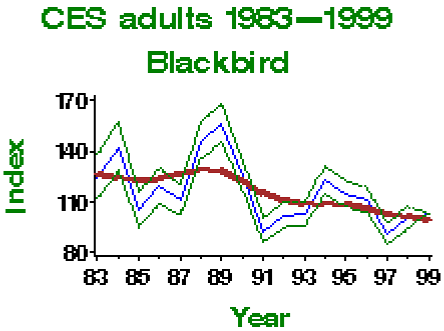
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	225	-26	-34	-19	>25	
	25	1973-1998	231	-25	-32	-18	>25	
	10	1988-1998	215	-6	-10	0		
	5	1993-1998	223	1	-2	5		
CBC farmland	30	1968-1998	97	-42	-47	-34	>25	
	25	1973-	96	-38	-44	-32	>25	

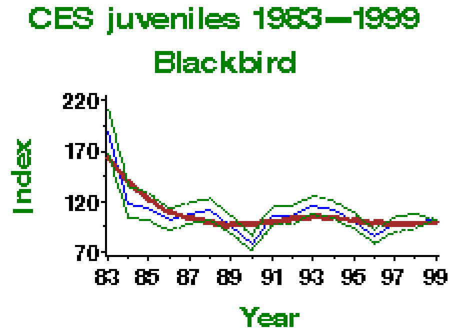
		1998						
	10	1988-1998	95	-13	-18	-7		
	5	1993-1998	96	-4	-9	1		
CBC woodland	30	1968-1998	85	-12	.	.		
	25	1973-1998	91	-11	.	.		
	10	1988-1998	96	1	.	.		
	5	1993-1998	102	5	.	.		
CES adults	14	1984-1998	93	-19	.	.		
	10	1988-1998	106	-22	.	.		
	5	1993-1998	115	-8	.	.		
CES juveniles	14	1984-1998	83	-30	.	.	[>25]	
	10	1988-1998	95	-1	.	.		
	5	1993-1998	104	-7	.	.		
BBS UK	5	1994-1999	1724	12	9	15		
BBS England	5	1994-1999	1392	13	10	16		
BBS Scotland	5	1994-1999	142	4	-8	17		
BBS Wales	5	1994-1999	129	13	2	26		
BBS N.Ireland	5	1994-1999	51	47	13	91		

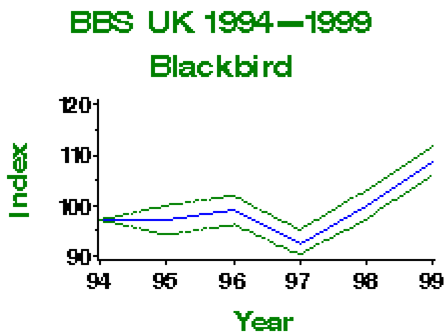
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

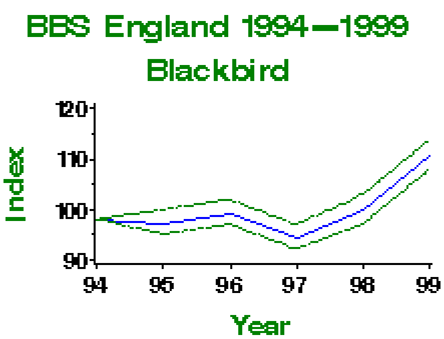


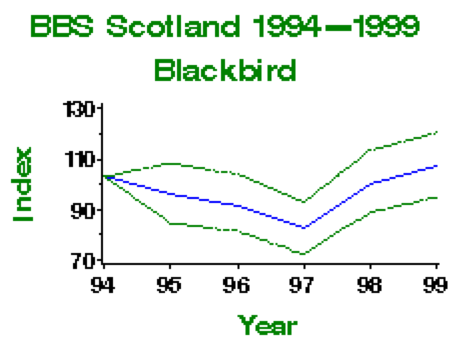


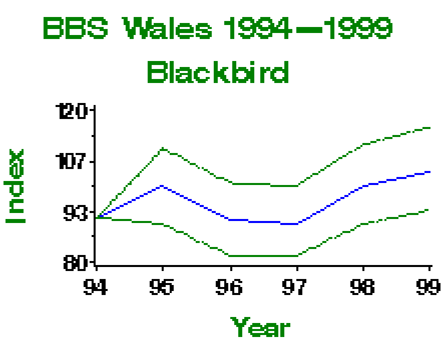












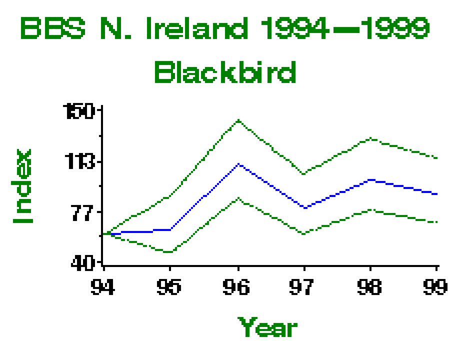
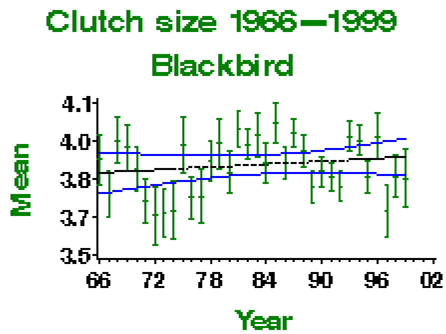
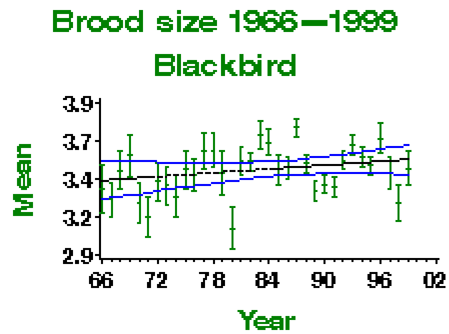


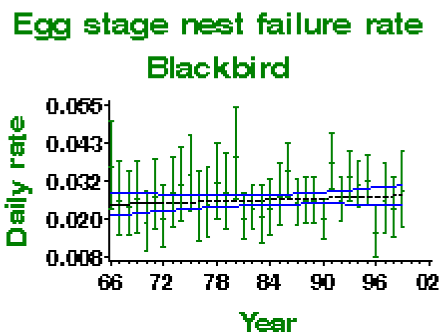
Table of productivity information for Blackbird

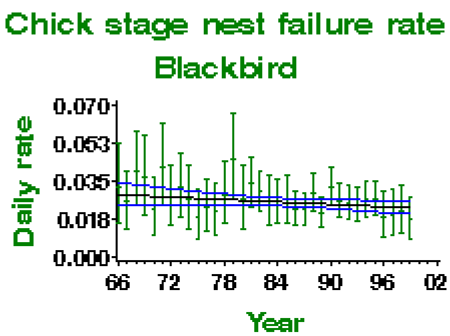
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	94	None				
Brood size	30	1968-1998	115	None				
Daily failure rate (eggs)	30	1968-1998	132	None				
Daily failure rate (chicks)	30	1968-1998	111	None				
Laying date	30	1968-1998	113	None				
Percentage juveniles (CES)	14	1984-1998	95	Smoothed trend	108 productivity index	100 productivity index	-8%	
					79	100		

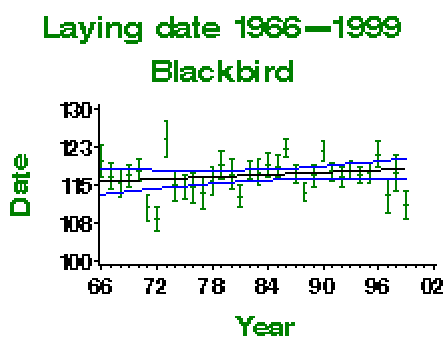
Percentage juveniles (CES)	10	1988-1998	108	Smoothed trend	productivity index	productivity index	26%	
Percentage juveniles (CES)	5	1993-1998	116	Smoothed trend	96 productivity index	100 productivity index	4%	

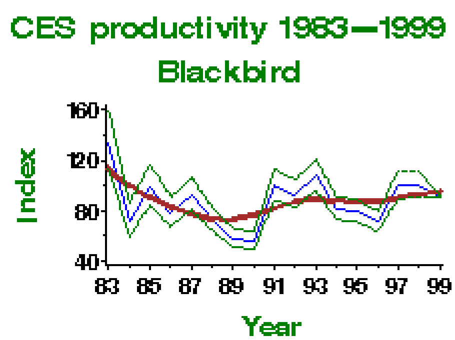












The report should be cited as: Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R. and Wernham, C.V. (2001) Breeding Birds in the Wider Countryside: their conservation status 2000. BTO Research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

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 and latter half of the decline can also be seen in the CES index. CES productivity shows no clear temporal trend and breeding performance from the NRS has improved (the change in failure at the egg stage (16 days, comprising 13 days incubation + 3 days laying) was only from 49% in 1981 to 42% in 1998); 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. The decline 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).

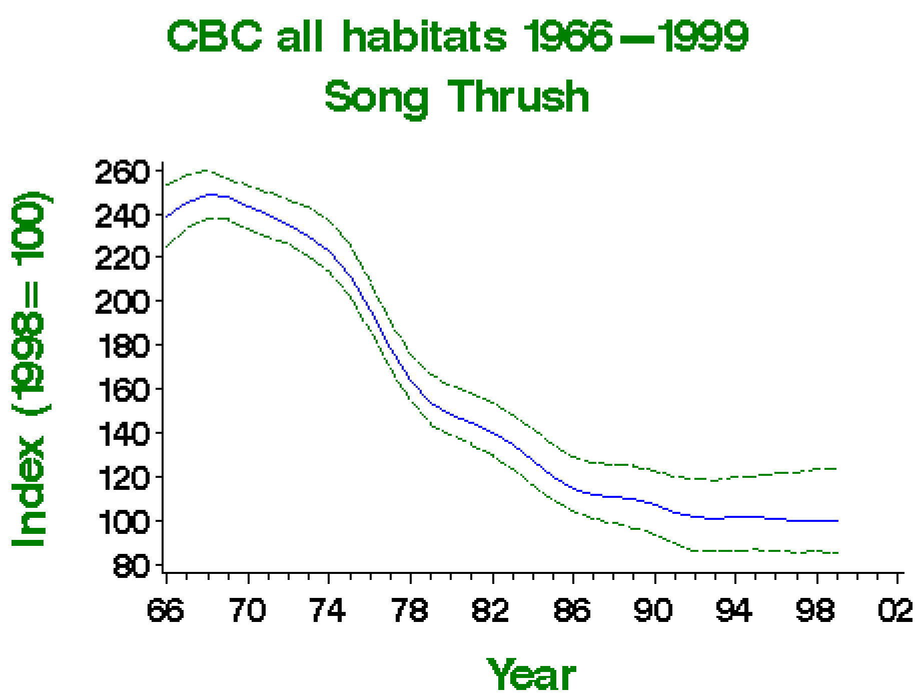
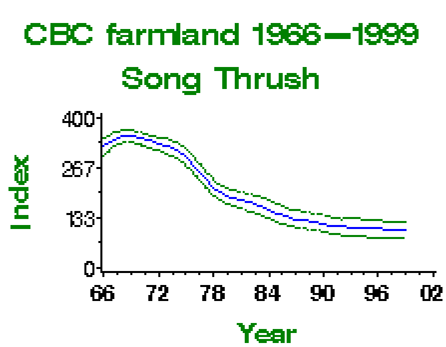


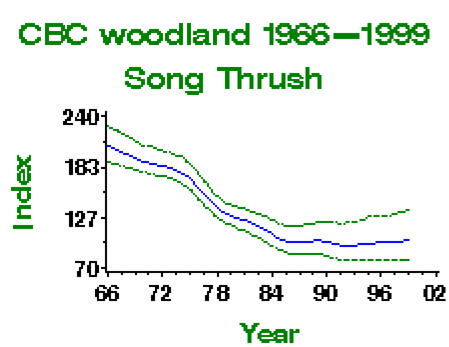
Table of population changes for Song Thrush

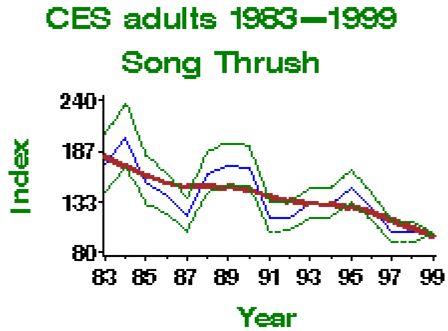
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	204	-60	-65	-50	>50	
	25	1973-1998	208	-57	-63	-48	>50	
	10	1988-1998	186	-10	-20	1		
	5	1993-1998	192	-1	-8	7		

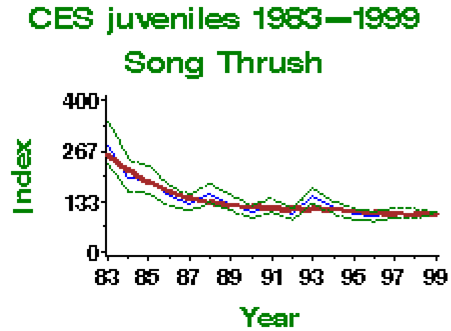
CBC farmland	30	1968-1998	86	-71	-78	-65	>50	
	25	1973-1998	83	-69	-75	-63	>50	
	10	1988-1998	76	-20	-31	-9		
	5	1993-1998	75	-6	-15	4		
CBC woodland	30	1968-1998	80	-50	-59	-35	>25	
	25	1973-1998	86	-45	-57	-31	>25	
	10	1988-1998	90	0	-13	19		
	5	1993-1998	95	5	-3	16		
CES adults	14	1984-1998	79	-39	.	.	[>25*]	
	10	1988-1998	90	-30	.	.	[>25*]	
	5	1993-1998	95	-21	.	.		
CES juveniles	14	1984-1998	63	-54	.	.	[>50*]	
	10	1988-1998	72	-24	.	.		
	5	1993-1998	77	-13	.	.		
BBS UK	5	1994-1999	1316	6	0	11		
BBS England	5	1994-1999	1029	1	-4	7		
BBS Scotland	5	1994-1999	128	20	-1	45		
BBS Wales	5	1994-1999	109	12	-6	32		
BBS N.Ireland	5	1994-1999	42	9	-27	63		Small sample

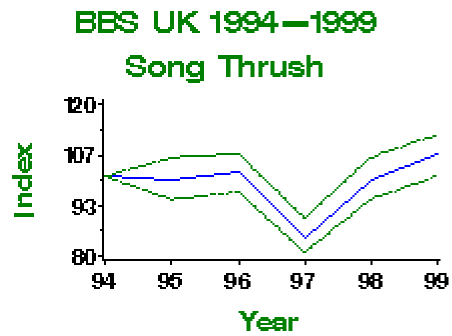
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

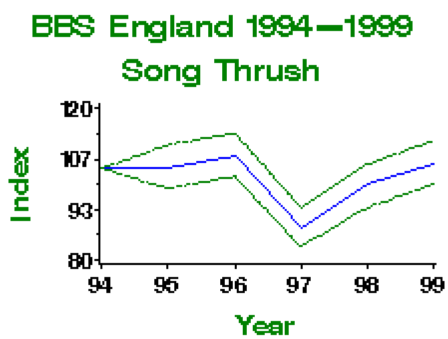


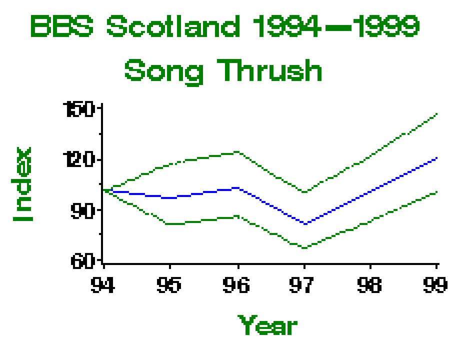


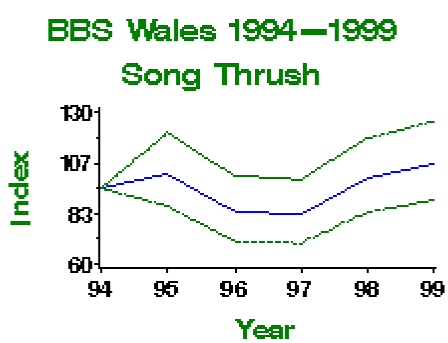












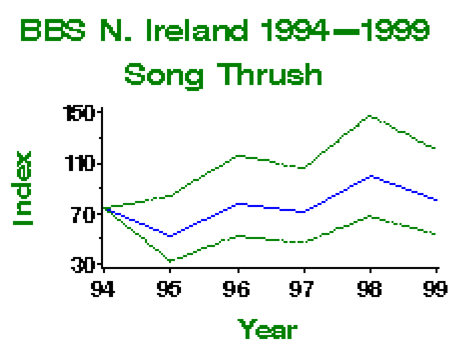
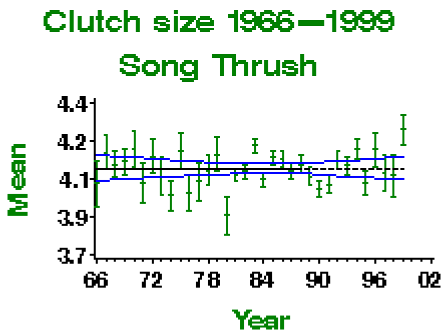
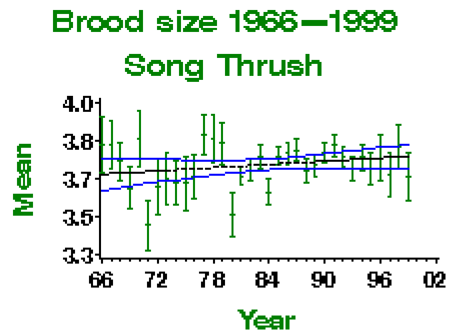


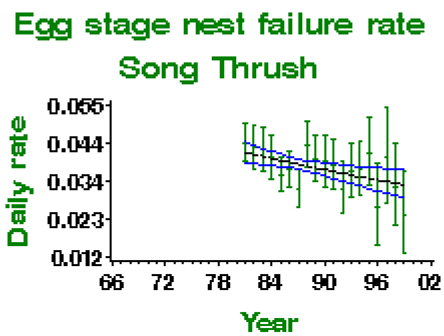
Table of productivity information for Song Thrush

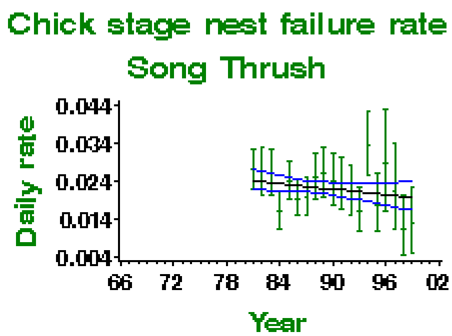
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	172	None				
Brood size	30	1968-1998	189	None				
Daily failure rate (eggs)	17	1981-1998	201	Linear decline	0.0417 nests/day	0.033 nests/day	-0.0087 nests/day	
Daily failure rate (chicks)	17	1981-1998	149	None				
Laying date	30	1968-1998	198	None				
Percentage juveniles (CES)	14	1984-1998	85	Smoothed trend	132 productivity index	100 productivity index	-24%	
					86	100		

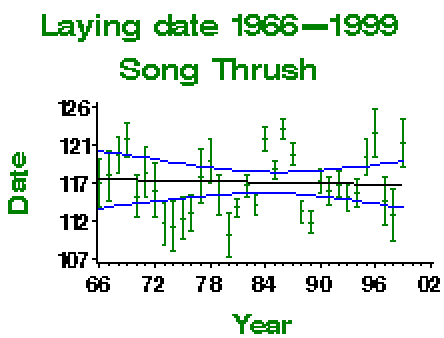
Percentage juveniles (CES)	10	1988-1998	97	Smoothed trend	productivity index	productivity index	17%	
Percentage juveniles (CES)	5	1993-1998	104	Smoothed trend	87 productivity index	100 productivity index	15%	

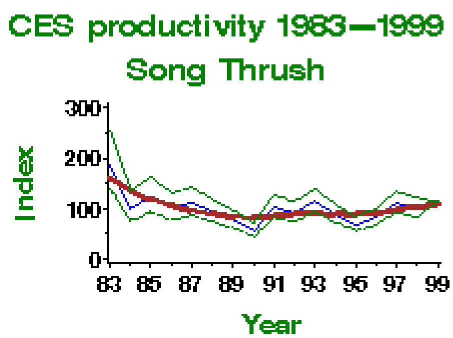












MISTLE THRUSH *Turdus viscivorus*

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 the BBS in particular suggests 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).

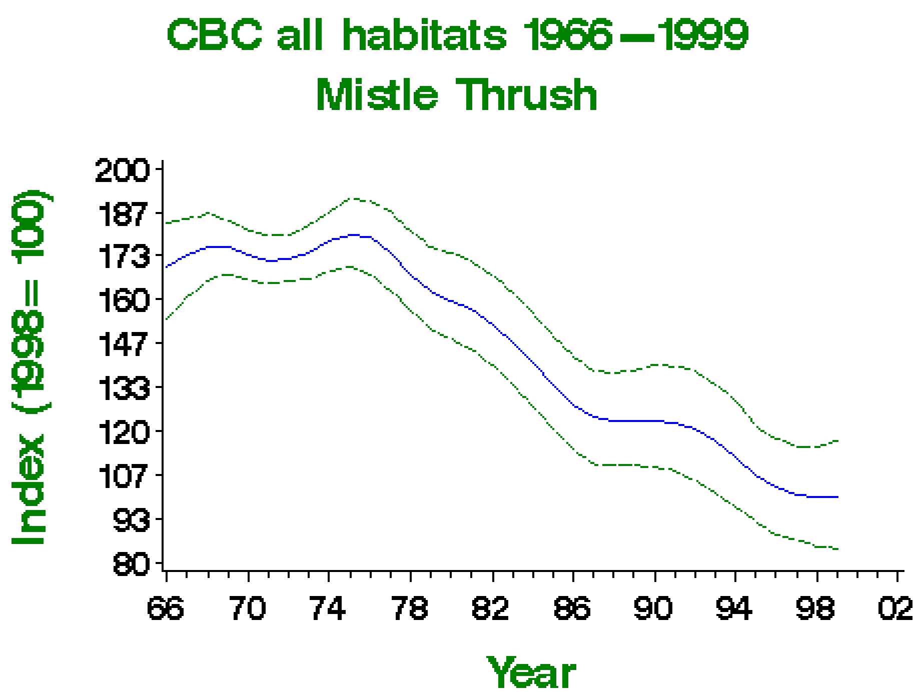


Table of population changes for Mistle Thrush

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	143	-43	-51	-33	>25	
	25	1973-1998	148	-43	-51	-35	>25	
	10	1988-1998	129	-19	-27	-11		
	5	1993-1998	128	-15	-21	-8		
CBC farmland	30	1968-1998	61	-59	-68	-50	>50	
	25	1973-1998	59	-56	-63	-47	>50	
	10	1988-1998	54	-22	-33	-9		

	5	1993-1998	53	-19	-29	-10			
CBC woodland	30	1968-1998	57	-22	-42	9			
	25	1973-1998	62	-26	-44	-2	>25		
	10	1988-1998	62	-13	-26	5			
	5	1993-1998	63	-10	-20	0			
BBS UK	5	1994-1999	907	-4	-12	4			
BBS England	5	1994-1999	743	-4	-12	5			
BBS Scotland	5	1994-1999	57	29	-9	83			
BBS Wales	5	1994-1999	70	14	-14	53			
BBS N.Ireland	5	1994-1999	32	-60	-77	-30	(>50)	Small sample	

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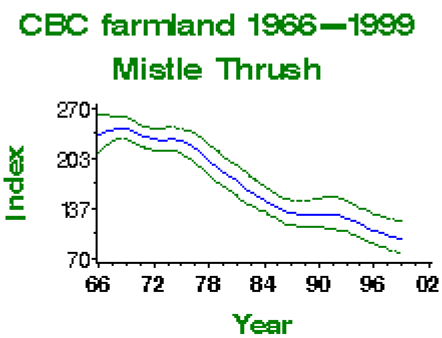
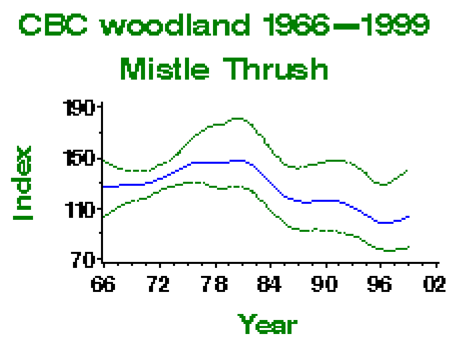
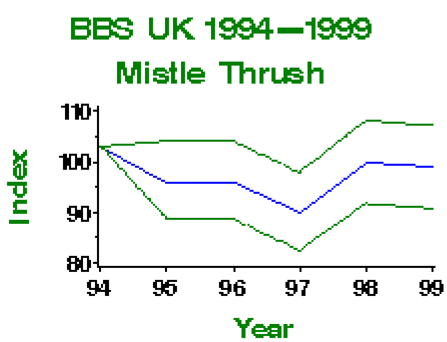
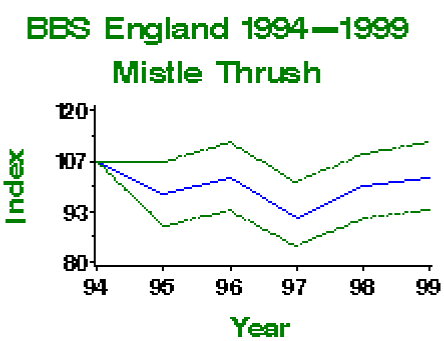
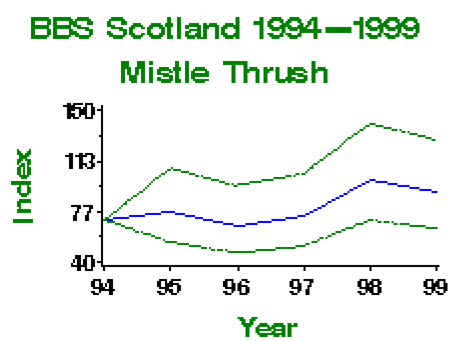
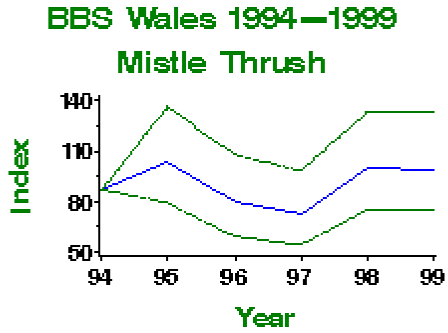












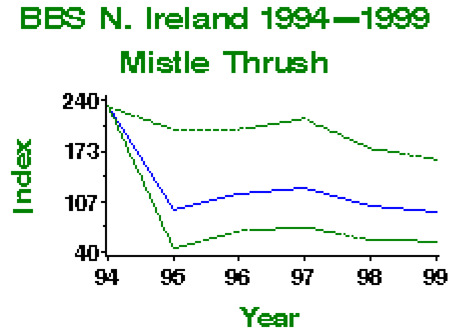
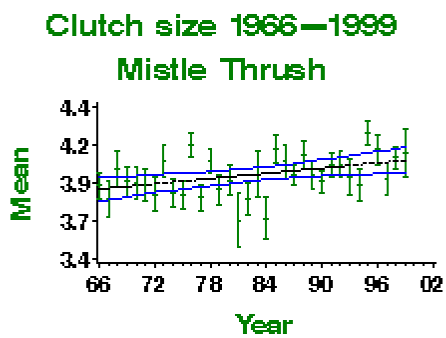
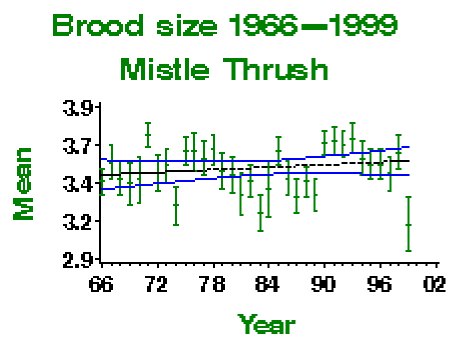
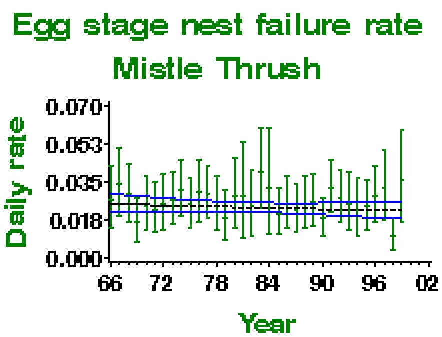


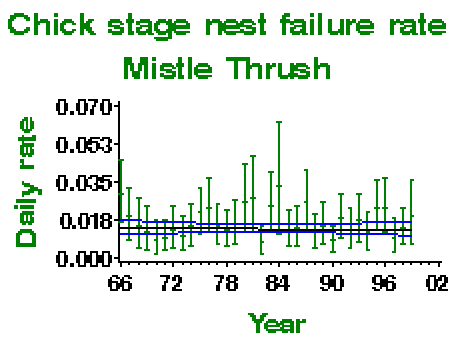
Table of productivity information for Mistle Thrush

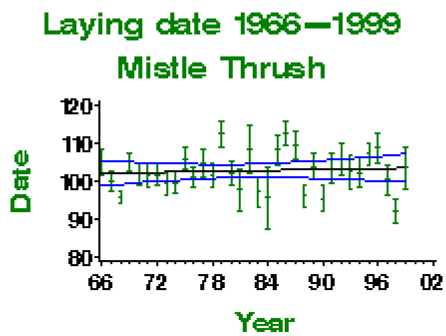
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	40	Linear increase	3.87 eggs	4.05 eggs	0.18 eggs	
Brood size	30	1968-1998	74	None				
Daily failure rate (eggs)	30	1968-1998	65	None				
Daily failure rate (chicks)	30	1968-1998	67	None				
Laying date	30	1968-1998	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 up to the 1988-1991 Atlas, reportedly due to habitat loss (Gibbons *et al.* 1993). CBC analysis cannot be conducted reliably because of a small sample size 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, demonstrated by a detailed analysis of the NRS dataset (Glue 1990).

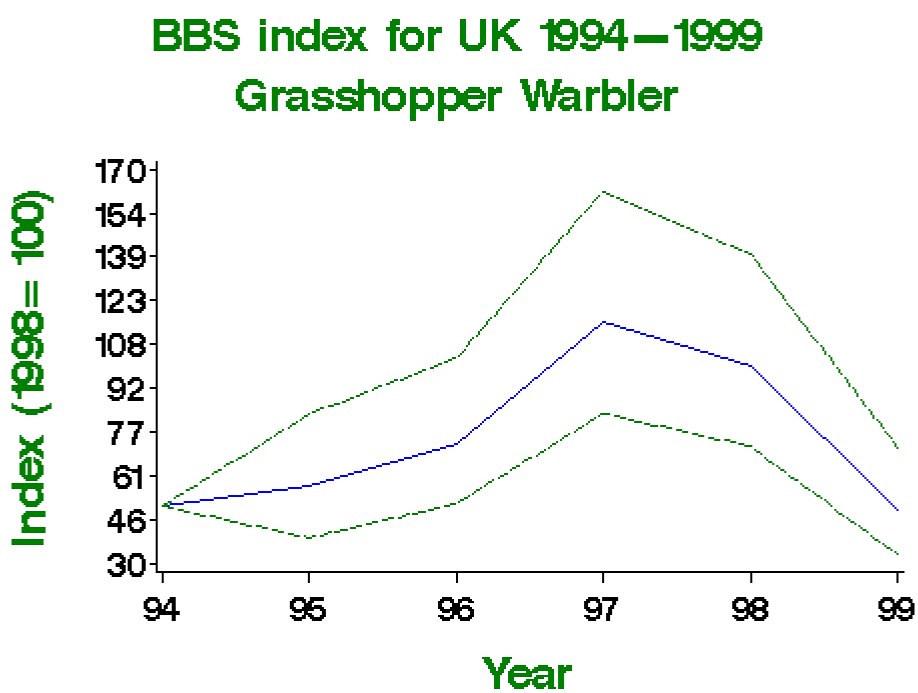


Table of population changes for Grasshopper Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	59	-3	-34	41		
BBS England	5	1994-1999	26	-2	-44	73		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 the CES and BBS, Sedge Warbler populations were not represented well by any UK monitoring scheme, but 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 six years. CES provides the best monitoring 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 (sub-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.

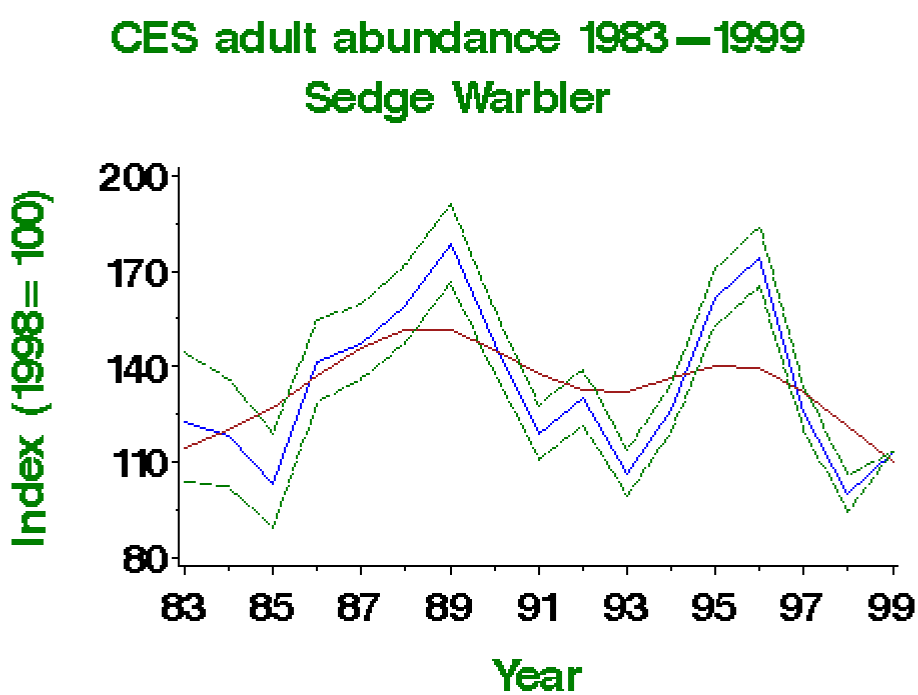
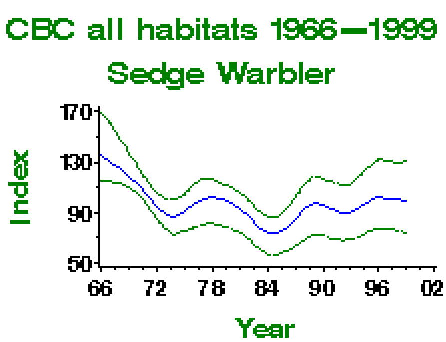


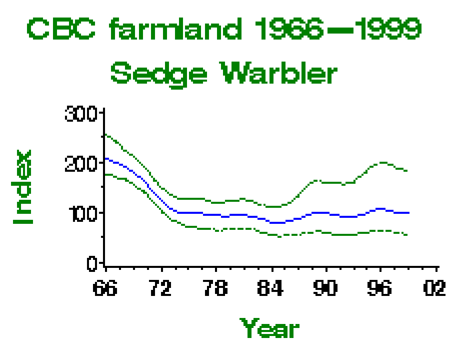
Table of population changes for Sedge Warbler

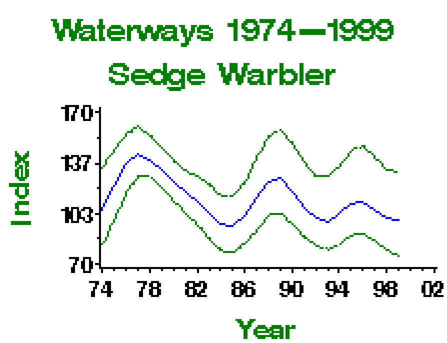
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	44	-20	-47	7		Unrepresentative
	25	1973-1998	43	13	-9	39		Unrepresentative
	10	1988-1998	39	8	-9	36		Unrepresentative
	5	1993-1998	42	11	0	24		Unrepresentative
CBC farmland	30	1968-1998	24	-48	-70	-5	>25	Unrepresentative

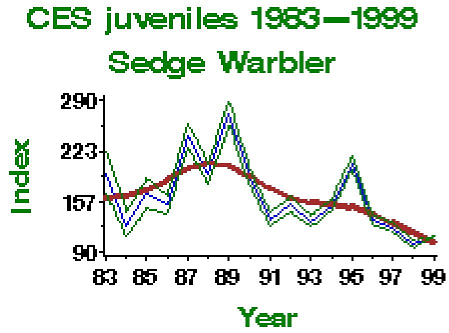
	25	1973-1998	22	-7	-39	58		Unrepresentative
	10	1988-1998	23	4	-18	38		Unrepresentative
	5	1993-1998	25	10	-11	32		Unrepresentative
WBS waterways	23	1975-1998	43	-18	-44	25		
	10	1988-1998	53	-20	-29	-5		
	5	1993-1998	58	2	-6	12		
CES adults	14	1984-1998	61	1	.	.		
	10	1988-1998	72	-20	.	.		
	5	1993-1998	81	-8	.	.		
CES juveniles	14	1984-1998	57	-30	.	.	[>25*]	
	10	1988-1998	68	-44	.	.	[>25*]	
	5	1993-1998	77	-26	.	.	[>25*]	
BBS UK	5	1994-1999	233	14	0	31		
BBS England	5	1994-1999	147	0	-16	18		
BBS Scotland	5	1994-1999	49	39	3	86		Small sample
BBS N.Ireland	5	1994-1999	20	-7	-42	50		Small sample

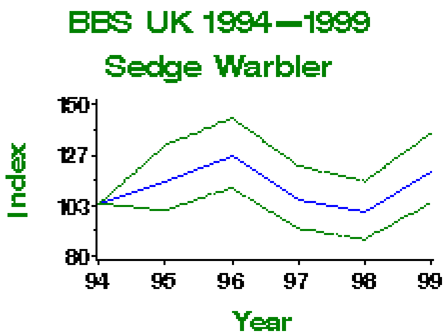
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

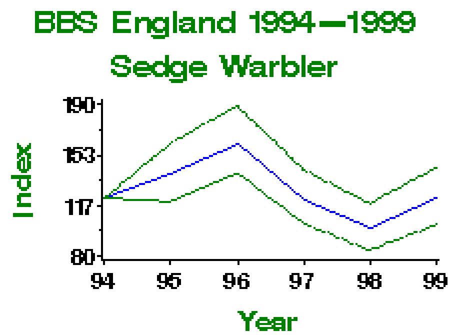


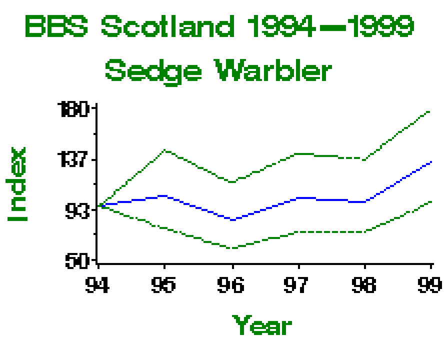












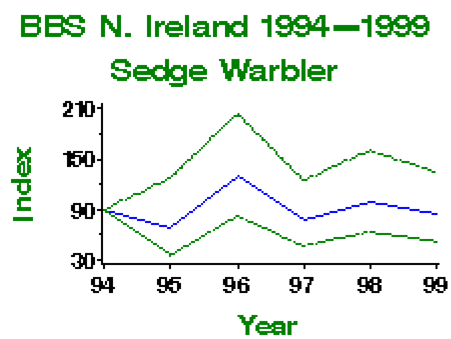
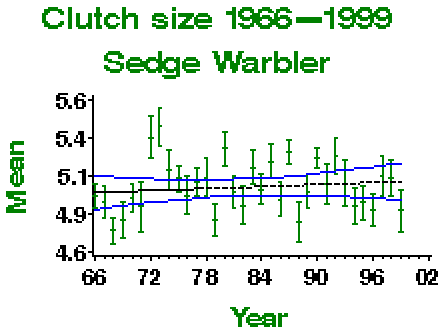
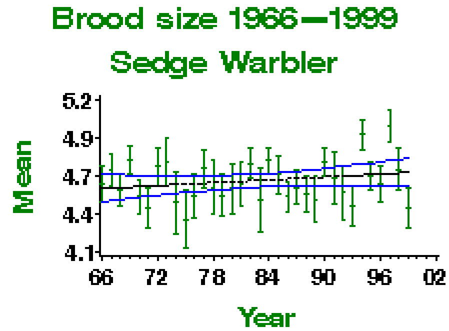
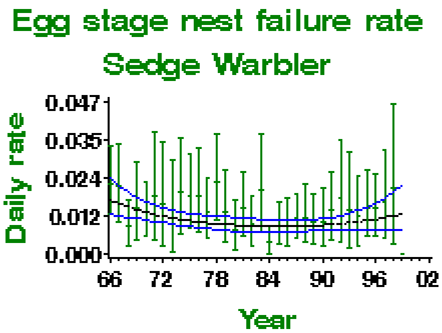


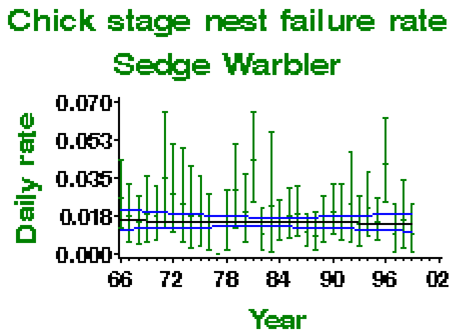
Table of productivity information

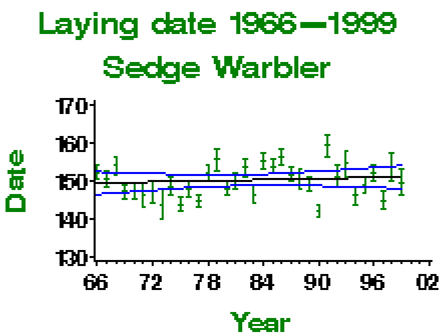
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	42	None				
Brood size	30	1968-1998	65	None				
Daily failure rate (eggs)	30	1968-1998	49	Curvilinear	0.0147 nests/day	0.0117 nests/day	-0.003 nests/day	
Daily failure rate (chicks)	30	1968-1998	55	None				
Laying date	30	1968-1998	56	None				
Percentage juveniles (CES)	14	1984-1998	66	Smoothed trend	164 productivity index	100 productivity index	-39%[>25]	
Percentage juveniles (CES)	10	1988-1998	77	Smoothed trend	151 productivity index	100 productivity index	-34% [>25*]	
Percentage juveniles (CES)	5	1993-1998	87	Smoothed trend	136 productivity index	100 productivity index	-27% [>25*]	

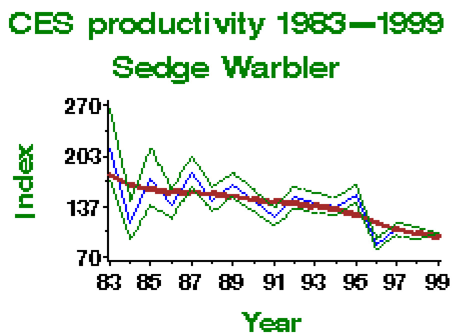

Clutch size 1966—1999
Sedge Warbler
Mean
5.6
5.4
5.1
4.9
4.6
66 72 78 84 90 96 02
Year


Brood size 1966—1999
Sedge Warbler
Mean
5.2
4.9
4.7
4.4
4.1
66 72 78 84 90 96 02
Year


Egg stage nest failure rate
Sedge Warbler
Daily rate
0.047
0.035
0.024
0.012
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Sedge Warbler
Daily rate
0.070
0.053
0.035
0.018
0.000
66 72 78 84 90 96 02
Year


Laying date 1966—1999
Sedge Warbler
Date
170
160
150
140
130
66 72 78 84 90 96 02
Year


CES productivity 1983—1999
Sedge Warbler
Index
270
203
137
70
83 85 87 89 91 93 95 97 99
Year

REED WARBLER *Acrocephalus scirpaceus*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group
Conservation Concern List

Long term trend

UK: Shallow decline over past 14 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 is likely to provide better coverage of the population and 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 19% to 13%) and a small improvement is apparent in CES productivity. The trend in laying date can be partially explained by recent climate change (Crick & Sparks 1999).

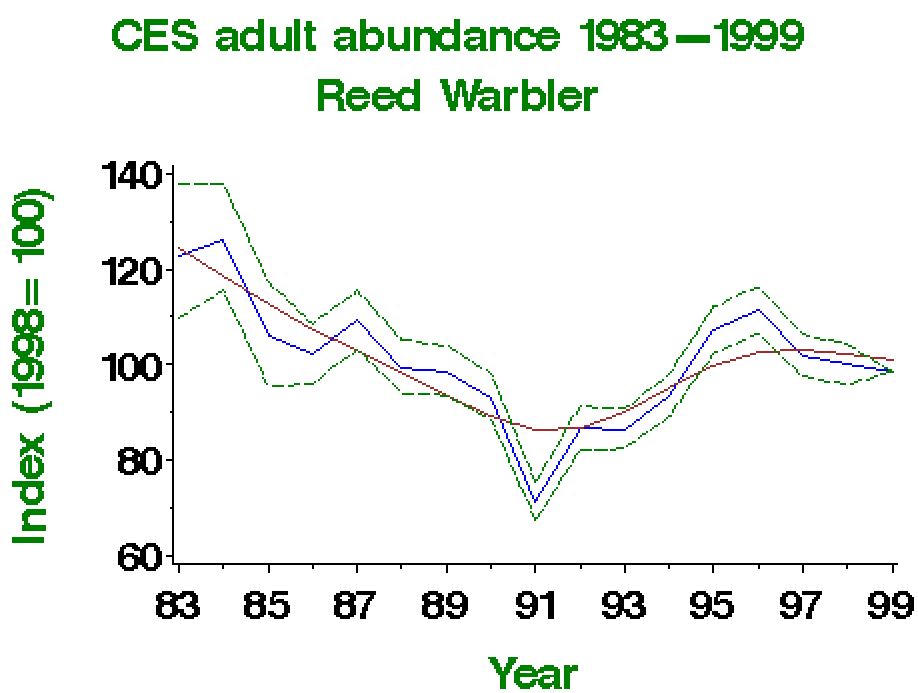
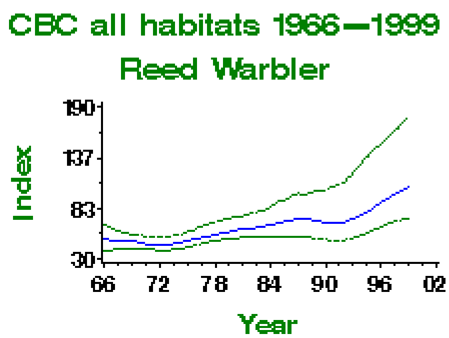


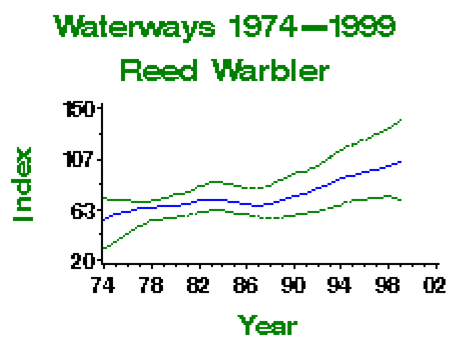
Table of population changes for Reed Warbler

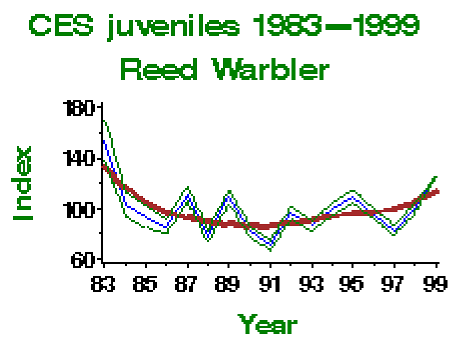
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	24	103	43	253		Unrepresentative?
	25	1973-1998	25	122	67	251		Unrepresentative?
	10	1988-1998	26	40	18	78		Unrepresentative?
	5	1993-1998	29	39	28	54		Unrepresentative?
WBS waterways	23	1975-1998	19	71	19	246		Small sample
	10	1988-1998	25	47	21	68		

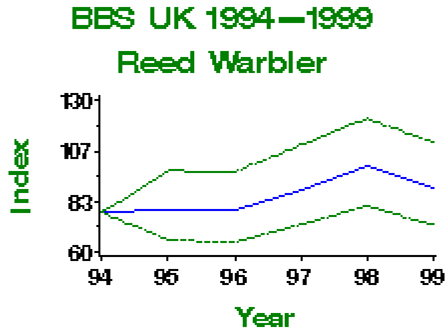
	5	1993-1998	29	16	-3	37		
CES adults	14	1984-1998	51	-14	.	.		
	10	1988-1998	59	4	.	.		
	5	1993-1998	66	14	.	.		
CES juveniles	14	1984-1998	52	-10	.	.		
	10	1988-1998	61	18	.	.		
	5	1993-1998	69	16	.	.		
BBS UK	5	1994-1999	82	15	-7	42		
BBS England	5	1994-1999	79	14	-8	41		

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









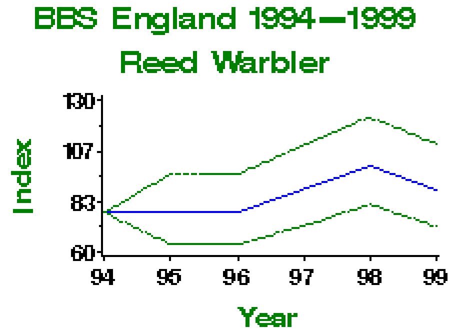
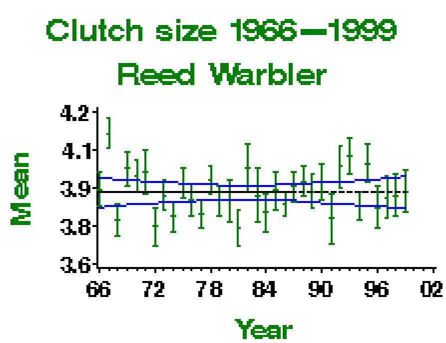
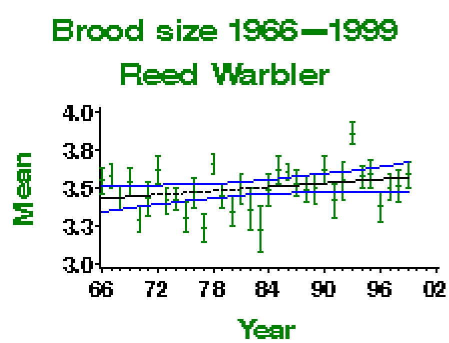
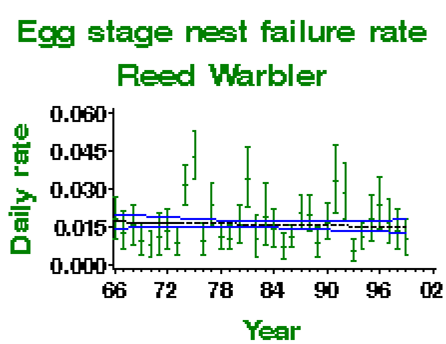


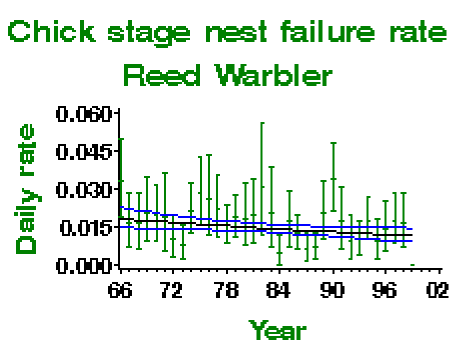
Table of productivity information for Reed Warbler

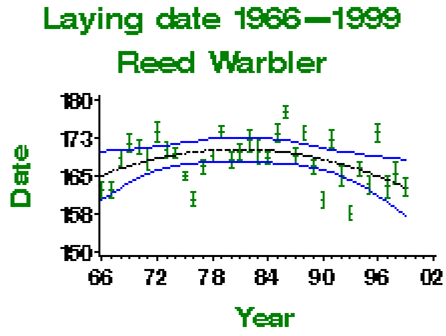
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	102	None				
Brood size	30	1968-1998	114	None				
Daily failure rate (eggs)	30	1968-1998	128	None				
Daily failure rate (chicks)	30	1968-1998	91	Linear decline	0.0177 nests/day	0.0117 nests/day	-0.006 nests/day	
Laying date	30	1968-1998	147	Curvilinear	day 166	day 164	-2 days	
Percentage juveniles (CES)	14	1984-1998	57	Smoothed trend	90 productivity index	100 productivity index	12%	
Percentage juveniles (CES)	10	1988-1998	67	Smoothed trend	91 productivity index	100 productivity index	9%	
Percentage juveniles (CES)	5	1993-1998	75	Smoothed trend	99 productivity index	100 productivity index	1%	

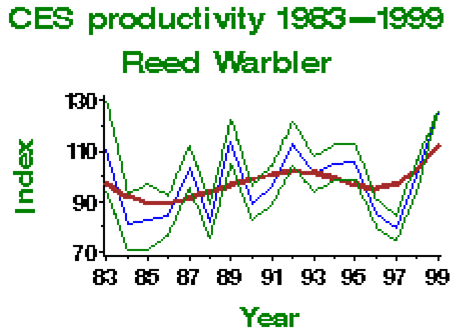









Laying date 1966—1999
Reed Warbler
Date
180
173
165
158
150
66 72 78 84 90 96 02
Year


CES productivity 1983—1999
Reed Warbler
Index
130
110
90
70
83 85 87 89 91 93 95 97 99
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 shown across all habitats and in both the CBC and the CES indices. The increase can also be seen to be continuing in the last six years' BBS results, but its cause remains 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).

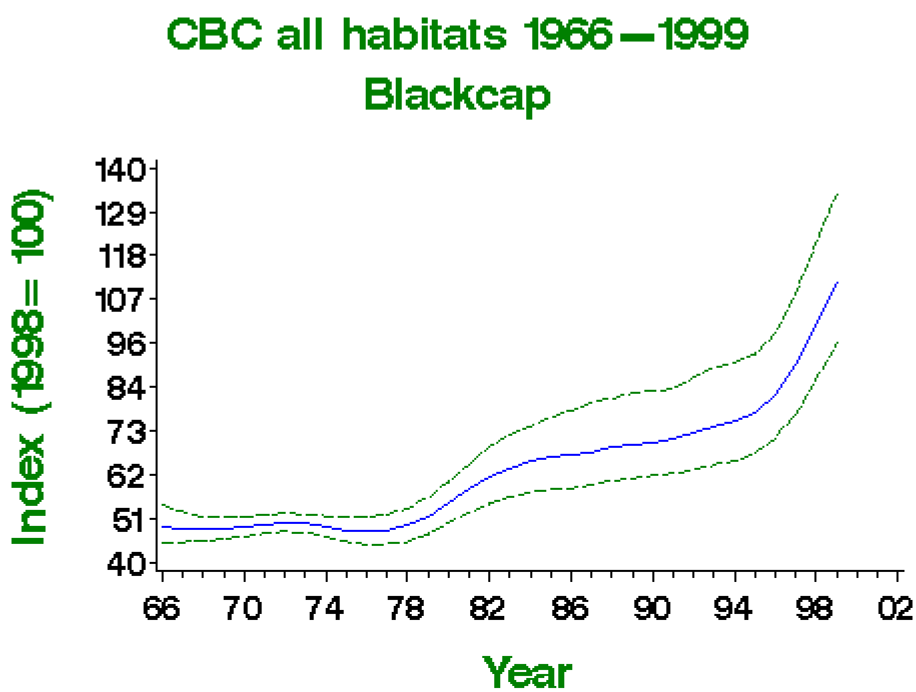
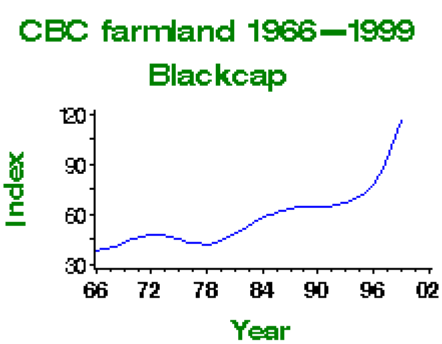


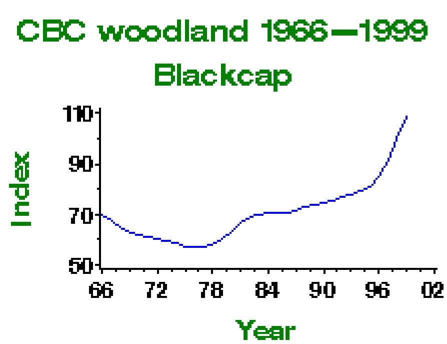
Table of population changes for Blackcap

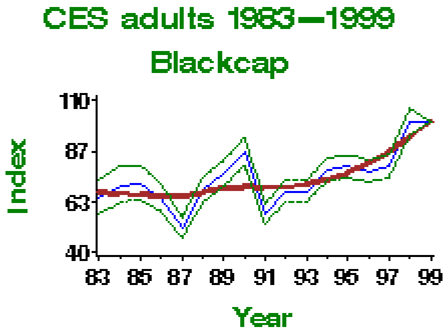
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	155	106	71	153		
	25	1973-1998	163	100	76	140		
	10	1988-1998	174	44	37	52		
	5	1993-1998	184	34	28	42		
CBC farmland	30	1968-1998	56	143	.	.		
	25	1973-1998	58	107	.	.		

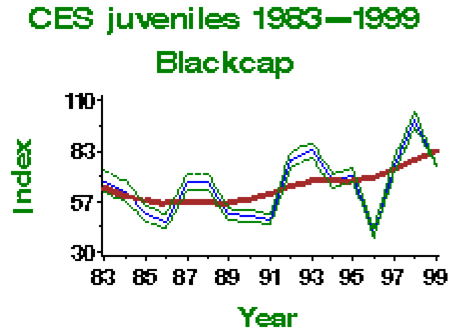
	10	1988-1998	67	55	.	.		
	5	1993-1998	69	48	.	.		
CBC woodland	30	1968-1998	71	54	.	.		
	25	1973-1998	77	67	.	.		
	10	1988-1998	86	38	.	.		
	5	1993-1998	92	28	.	.		
CES adults	14	1984-1998	83	39	.	.		
	10	1988-1998	95	38	.	.		
	5	1993-1998	104	31	.	.		
CES juveniles	14	1984-1998	84	32	.	.		
	10	1988-1998	96	40	.	.		
	5	1993-1998	107	16	.	.		
BBS UK	5	1994-1999	971	50	41	60		
BBS England	5	1994-1999	856	47	38	56		
BBS Scotland	5	1994-1999	26	92	25	196		Small sample
BBS Wales	5	1994-1999	76	59	25	102		

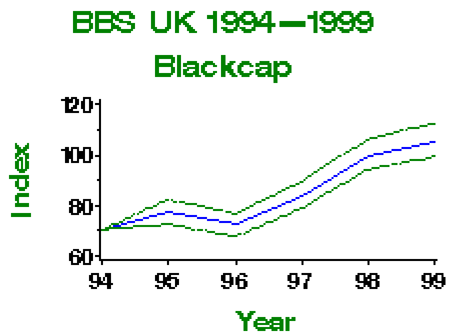
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

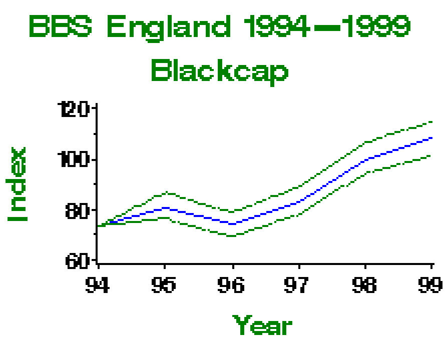












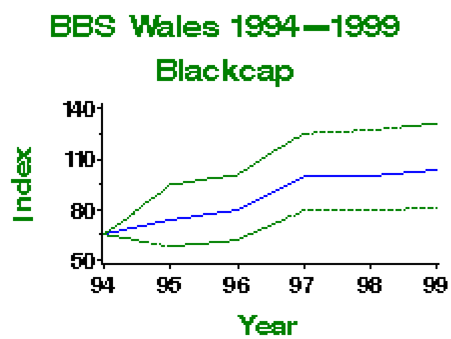
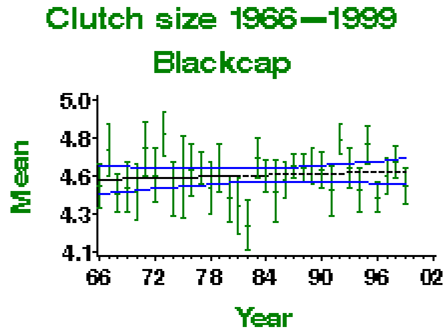
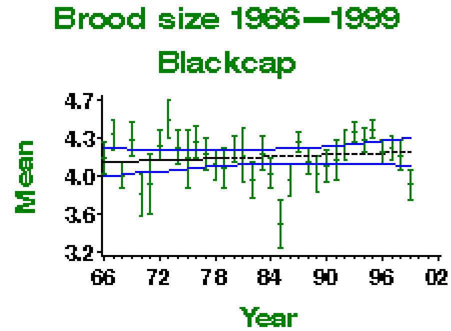
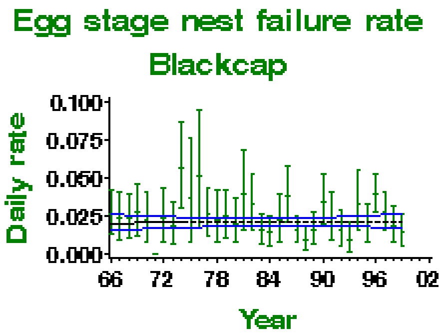


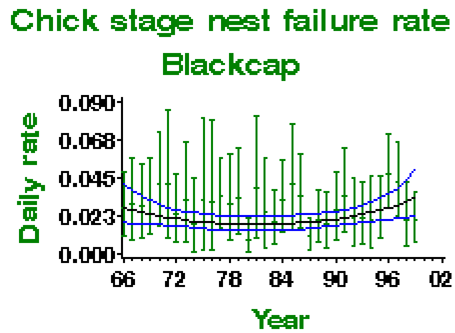
Table of productivity information

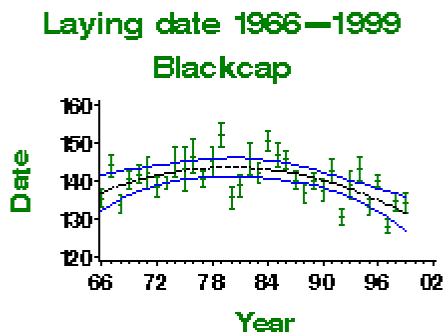
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	35	None				
Brood size	30	1968-1998	42	None				
Daily failure rate (eggs)	30	1968-1998	46	None				
Daily failure rate (chicks)	30	1968-1998	35	Curvilinear	0.0248 nests/day	0.0309 nests/day	0.0061 nests/day	
Laying date	30	1968-1998	36	Curvilinear	day 139	day 133	-6 days	
Percentage juveniles (CES)	14	1984-1998	91	Smoothed trend	109 productivity index	100 productivity index	-8%	
Percentage juveniles (CES)	10	1988-1998	103	Smoothed trend	105 productivity index	100 productivity index	-5%	
Percentage juveniles (CES)	5	1993-1998	113	Smoothed trend	117 productivity index	100 productivity index	-14%	

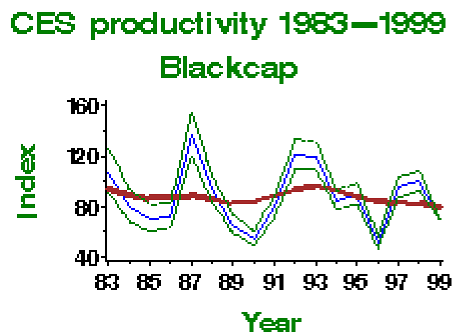












The report should be cited as: Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R. and Wernham, C.V. (2001) Breeding Birds in the Wider Countryside: their conservation status 2000. BTO Research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

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 sub-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 stability. Productivity measured by the CES shows a recent decline.

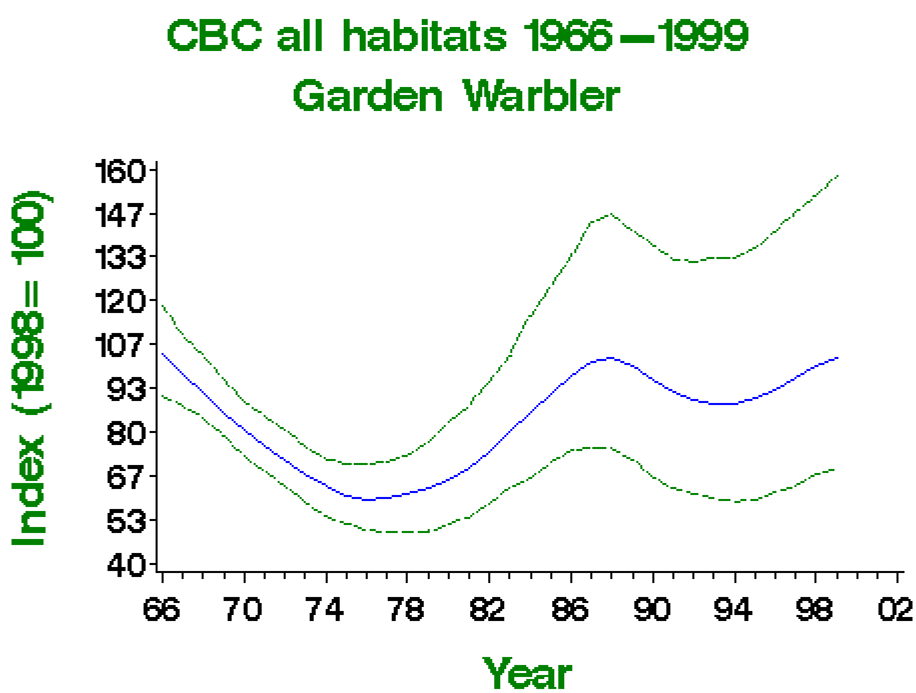
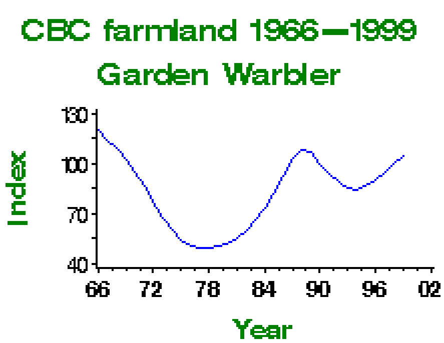


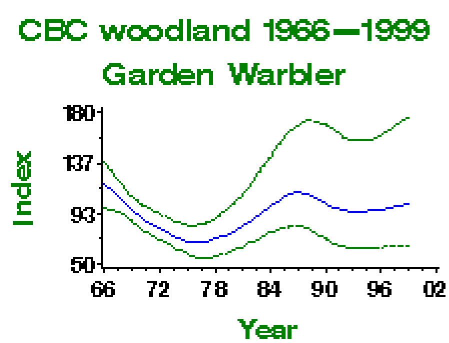
Table of population changes for Garden Warbler

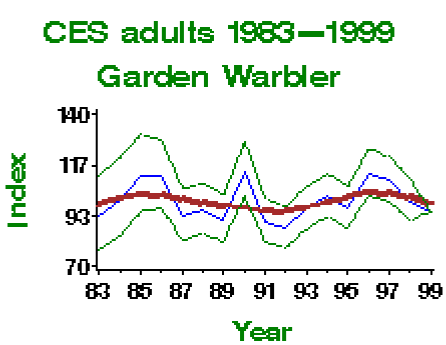
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	85	9	-28	81		
	25	1973-1998	87	49	3	130		
	10	1988-1998	93	-2	-17	12		
	5	1993-1998	99	13	2	25		
CBC farmland	30	1968-1998	27	-8	.	.		
	25	1973-1998	26	48	.	.		
		1988-						

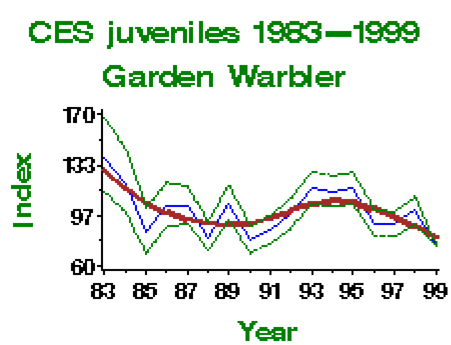
	10	1998	32	-7	.	.		
	5	1993-1998	35	18	.	.		
CBC woodland	30	1968-1998	44	-4	-41	69		
	25	1973-1998	47	32	-8	125		
	10	1988-1998	50	-10	-28	9		
	5	1993-1998	53	6	-9	20		
CES adults	14	1984-1998	66	1	.	.		
	10	1988-1998	76	3	.	.		
	5	1993-1998	82	5	.	.		
CES juveniles	14	1984-1998	64	-24	.	.		
	10	1988-1998	74	-2	.	.		
	5	1993-1998	81	-15	.	.		
BBS UK	5	1994-1999	364	13	0	28		
BBS England	5	1994-1999	298	9	-5	25		
BBS Wales	5	1994-1999	49	-8	-32	25		Small sample

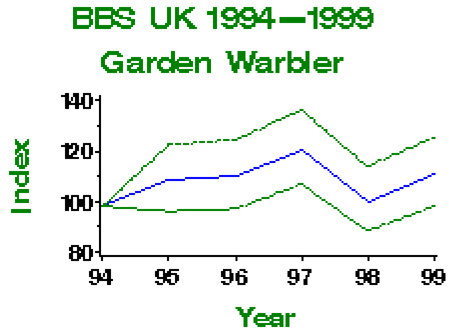
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

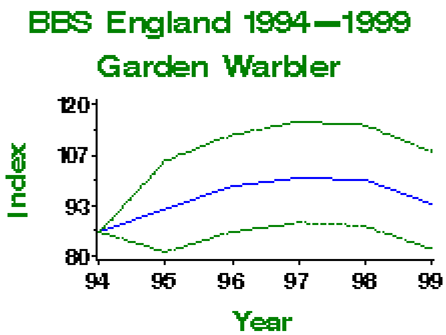












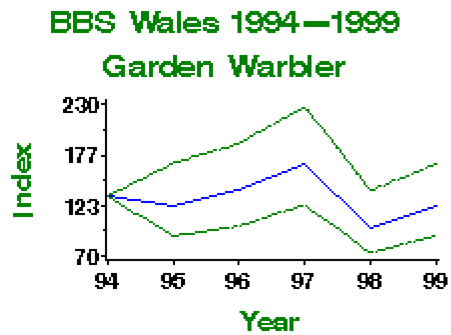
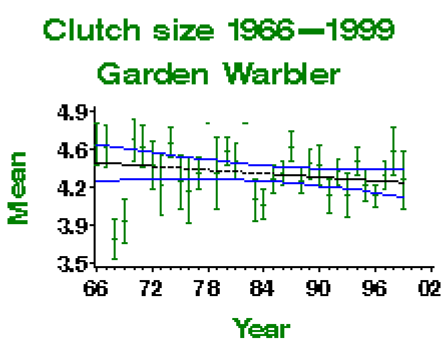
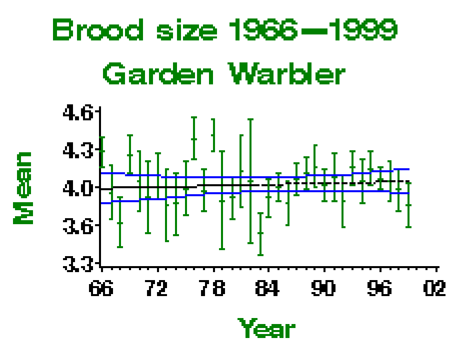
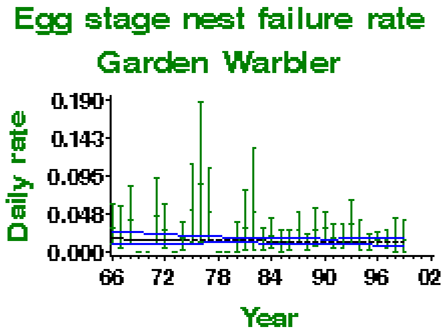


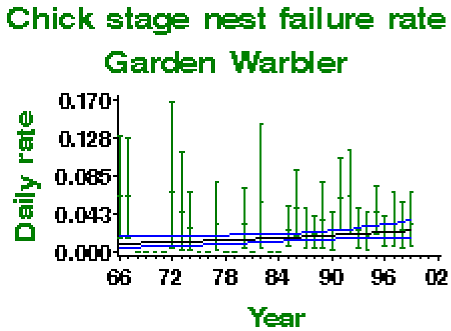
Table of productivity information

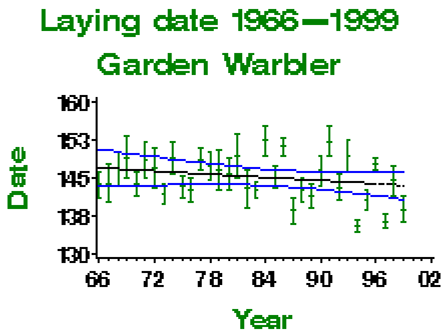
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	17	None				Small sample
Brood size	30	1968-1998	26	None				Small sample
Daily failure rate (eggs)	30	1968-1998	23	None				Small sample
Daily failure rate (chicks)	30	1968-1998	20	None				Small sample
Laying date	30	1968-1998	22	None				Small sample
Percentage juveniles (CES)	14	1984-1998	78	Smoothed trend	158 productivity index	100 productivity index	-37% [>25]	
Percentage juveniles (CES)	10	1988-1998	89	Smoothed trend	118 productivity index	100 productivity index	-15%	
Percentage juveniles (CES)	5	1993-1998	96	Smoothed trend	134 productivity index	100 productivity index	-25% [>25]	

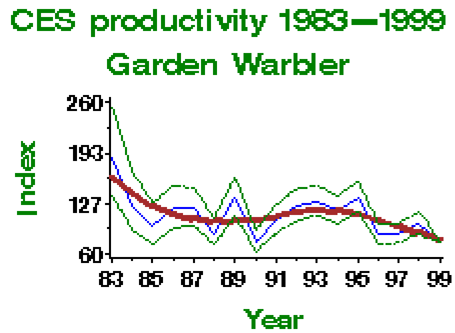





Egg stage nest failure rate
Garden Warbler
Daily rate
0.190
0.143
0.095
0.048
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Garden Warbler
Daily rate
0.170
0.128
0.085
0.043
0.000
66 72 78 84 90 96 02
Year


Laying date 1966—1999
Garden Warbler
Date
160
153
145
138
130
66 72 78 84 90 96 02
Year


CES productivity 1983—1999
Garden Warbler
Index
260
193
127
60
83 85 87 89 91 93 95 97 99
Year

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 moderate decline from then on 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. The causes of the decline warrant conservation concern and research action. Productivity on CES plots has declined recently.

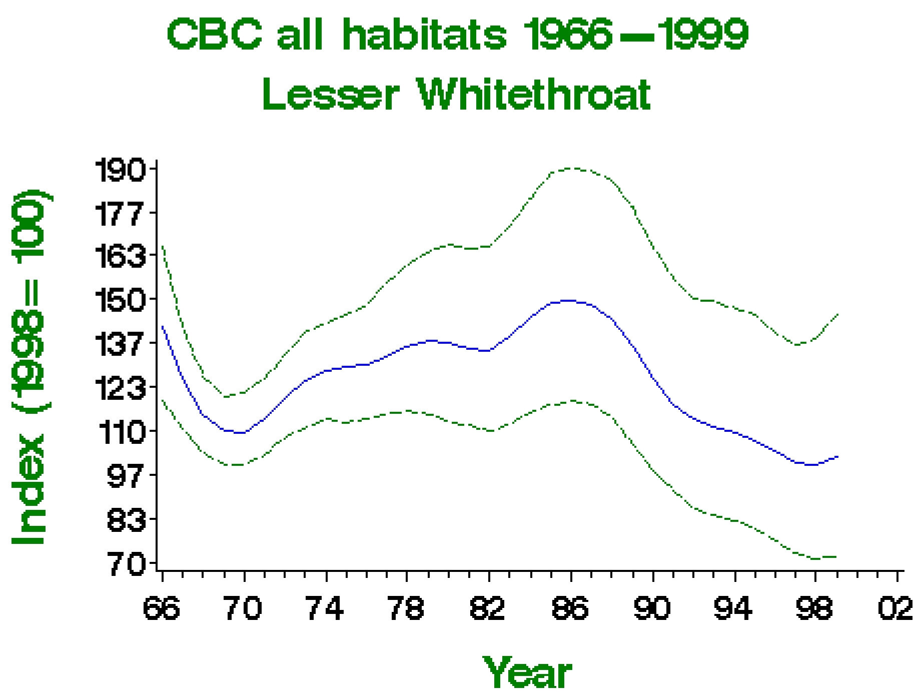
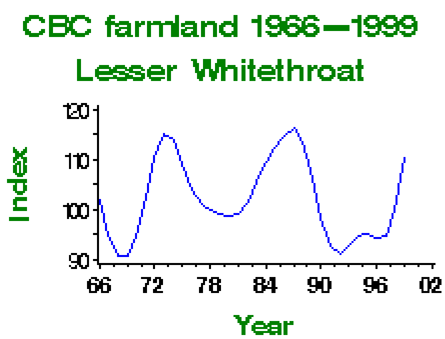


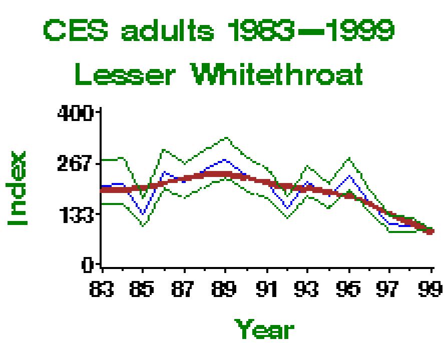
Table of population change for Lesser Whitethroat

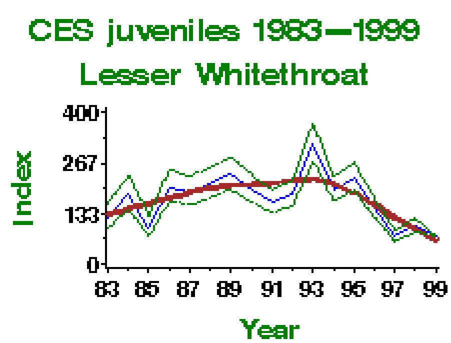
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	55	-13	-40	26		
	25	1973-1998	59	-20	-41	9		
	10	1988-1998	54	-31	-44	-18	>25	
	5	1993-1998	51	-10	-23	3		
CBC farmland	30	1968-1998	31	10	.	.		

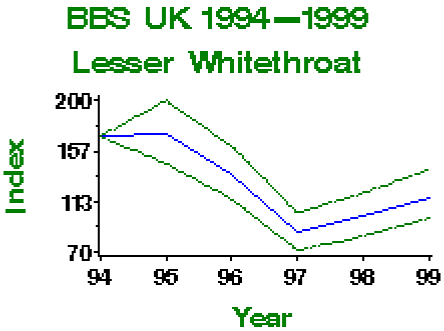
	25	1973-1998	32	-13	.	.		
	10	1988-1998	33	-12	.	.		
	5	1993-1998	31	8	.	.		
CES adults	14	1984-1998	44	-44	.	.	[>25*]	
	10	1988-1998	51	-53	.	.	[>50*]	
	5	1993-1998	52	-45	.	.	[>25*]	
CES juveniles	14	1984-1998	45	-37	.	.	[>25*]	
	10	1988-1998	52	-54	.	.	[>50*]	
	5	1993-1998	54	-59	.	.	[>50*]	
BBS UK	5	1994-1999	195	-31	-42	-17	(>25)	
BBS England	5	1994-1999	186	-31	-43	-17	(>25)	

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









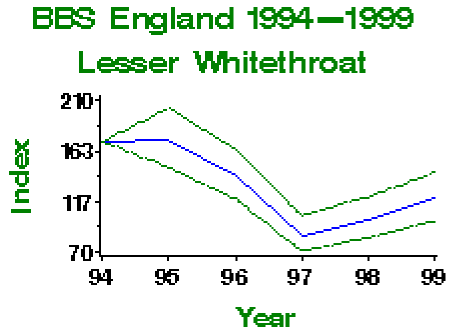


Table of productivity information for Lesser Whitethroat

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Percentage juveniles (CES)	14	1984-1998	57	Smoothed trend	98 productivity index	100 productivity index	2%	
Percentage juveniles (CES)	10	1988-1998	66	Smoothed trend	113 productivity index	100 productivity index	-11%	
Percentage juveniles (CES)	5	1993-1998	69	Smoothed trend	148 productivity index	100 productivity index	-33% [>25]	

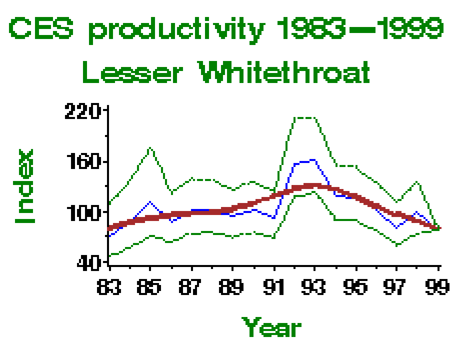
Insufficient data on clutch size available for this species

Insufficient data on brood size available for this species

Insufficient data on nest failure available for this species

Insufficient data on nestling failure available for this species

Insufficient data on laying date available for this species



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 drought in their wintering grounds (Winstanley *et al.* 1974) and have since remained stable, although there is some evidence of recovery in farmland. Inter-annual fluctuations in abundance are related to over-winter survival (Baillie & Peach 1992), like the major crash. 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 recent decline in average clutch size.

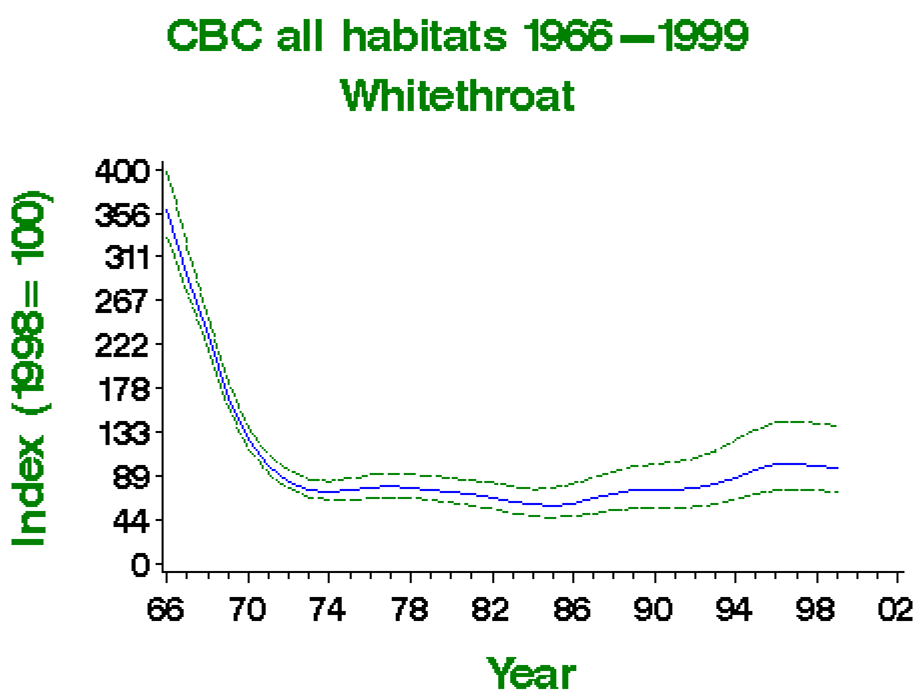
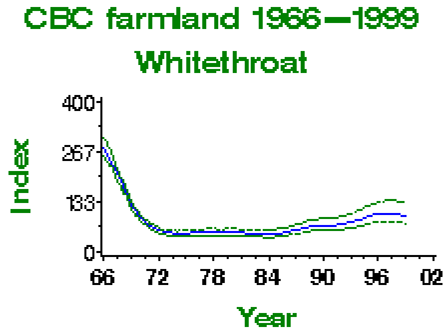


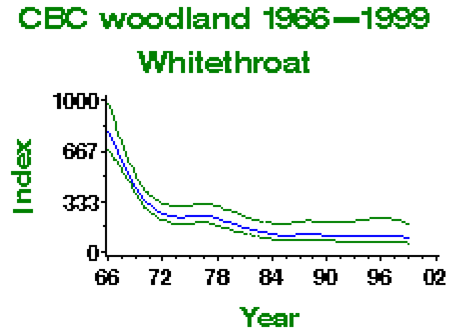
Table of population changes for Whitethroat

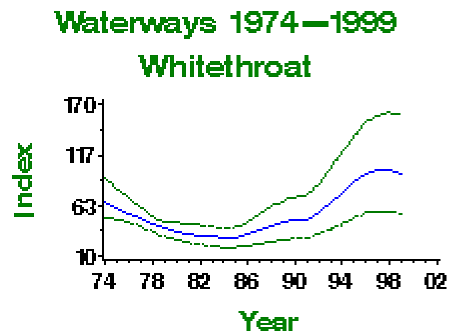
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	118	-57	-68	-39	>50	
	25	1973-1998	117	32	3	72		
	10	1988-1998	115	41	22	63		
	5	1993-1998	120	23	14	32		
CBC farmland	30	1968-1998	65	-43	-55	-24	>25	

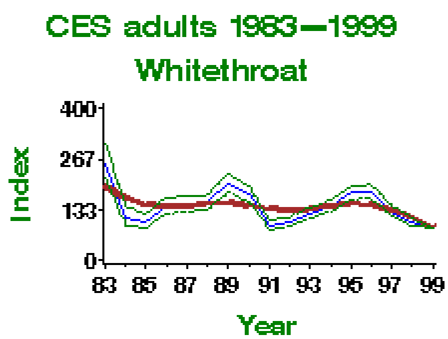
	25	1973-1998	63	100	58	152		
	10	1988-1998	70	59	34	83		
	5	1993-1998	73	28	17	43		
CBC woodland	30	1968-1998	29	-82	-89	-63	>50	
	25	1973-1998	29	-57	-70	-27	>50	
	10	1988-1998	28	-11	-32	12		
	5	1993-1998	31	1	-18	20		
WBS waterways	23	1975-1998	39	63	-19	197		
	10	1988-1998	52	139	69	226		
	5	1993-1998	62	51	35	72		
CES adults	14	1984-1998	56	-31	.	.	[>25]	
	10	1988-1998	68	-24	.	.		
	5	1993-1998	78	-16	.	.		
CES juveniles	14	1984-1998	60	-39	.	.	[>25]	
	10	1988-1998	71	-38	.	.	[>25*]	
	5	1993-1998	81	-32	.	.	[>25*]	
BBS UK	5	1994-1999	932	6	0	14		
BBS England	5	1994-1999	813	7	0	14		
BBS Scotland	5	1994-1999	53	3	-27	45		
BBS Wales	5	1994-1999	56	7	-18	38		

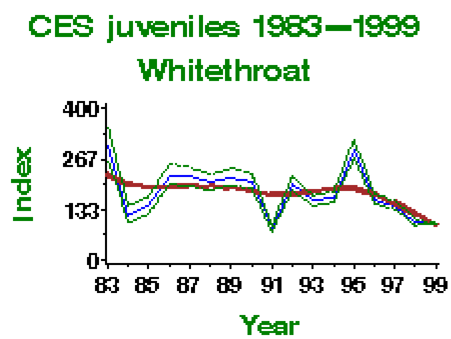
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

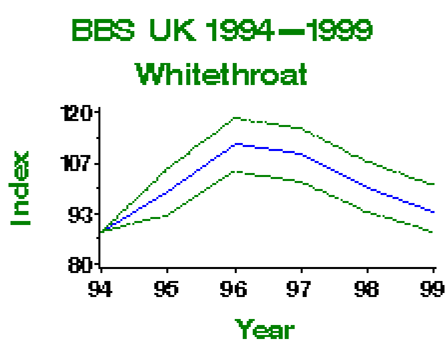


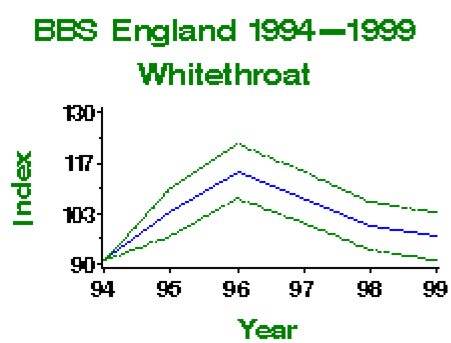


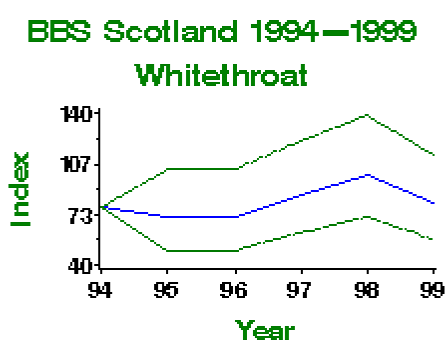












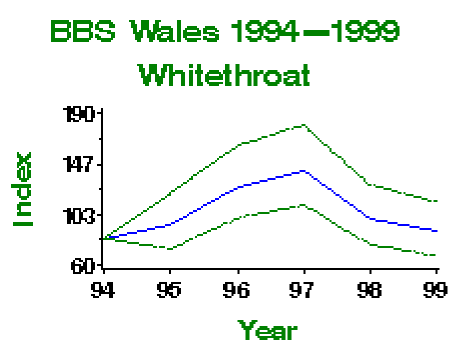
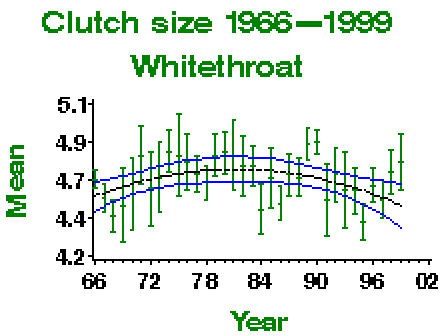
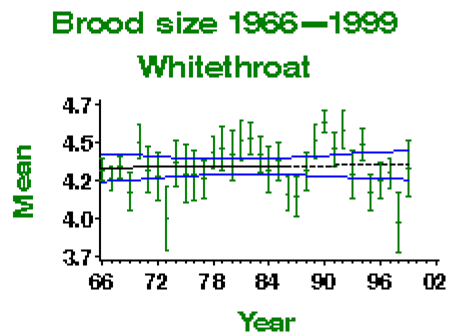


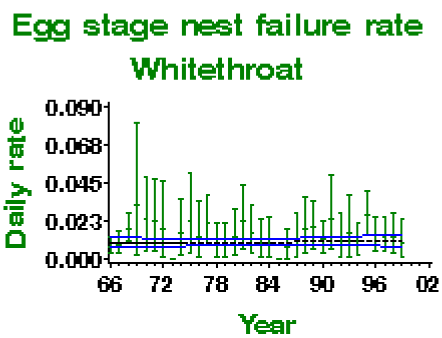
Table of productivity information for Whitethroat

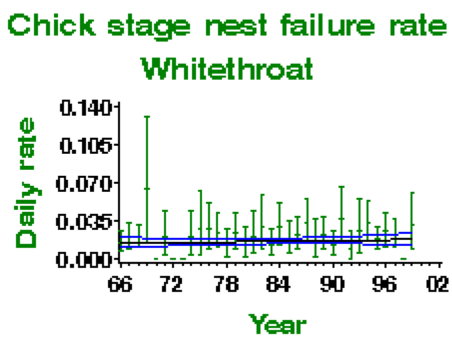
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment

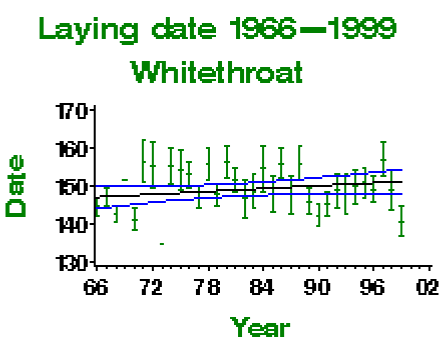
Clutch size	30	1968-1998	26	Curvilinear	4.59 eggs	4.53 eggs	-0.06 eggs	Small sample
Brood size	30	1968-1998	61	None				
Daily failure rate (eggs)	30	1968-1998	37	None				
Daily failure rate (chicks)	30	1968-1998	46	None				
Laying date	30	1968-1998	17	None				Small sample
Percentage juveniles (CES)	14	1984-1998	71	Smoothed trend	133 productivity index	100 productivity index	-25% [>25]	
Percentage juveniles (CES)	10	1988-1998	83	Smoothed trend	140 productivity index	100 productivity index	-28% [>25*]	
Percentage juveniles (CES)	5	1993-1998	94	Smoothed trend	140 productivity index	100 productivity index	-28% [>25*]	

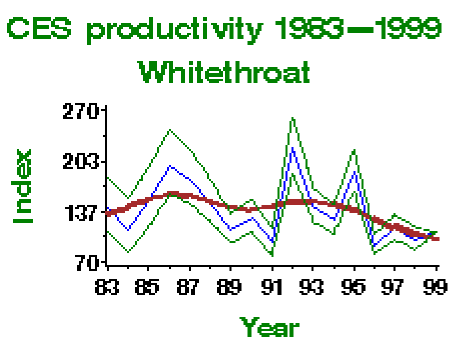












WOOD WARBLER *Phylloscopus sibilatrix*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Unknown

Status Summary

Wood Warblers have a western-biased distribution in Britain and were not monitored well before the inception of the BBS. Little change in range occurred between the two breeding atlas projects (Gibbons *et al.* 1993) and little change is apparent on the few CBC plots on which the species occurs (Crick *et al.* 1998). There have also been no significant trends in breeding performance. The BBS shows a significant decline since 1994 that should be monitored carefully to assess the need for conservation action.

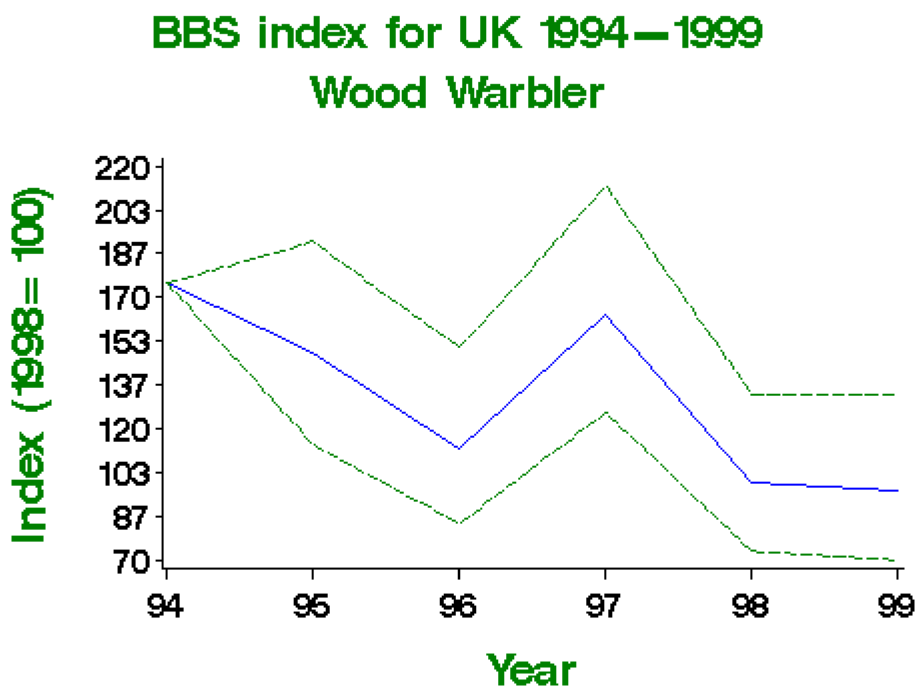


Table of population changes for Wood Warbler

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	58	-45	-60	-24	(>25)	
BBS England	5	1994-1999	27	-63	-77	-42	(>50)	Small sample

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

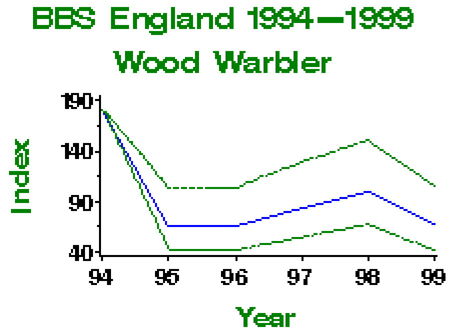
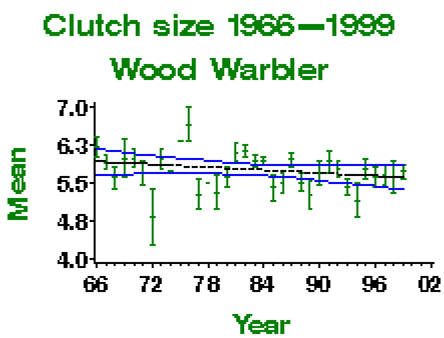
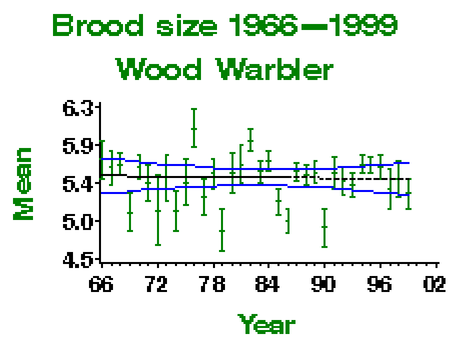
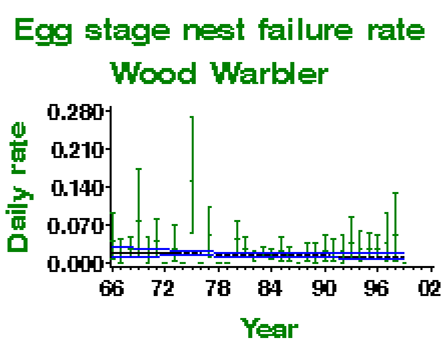


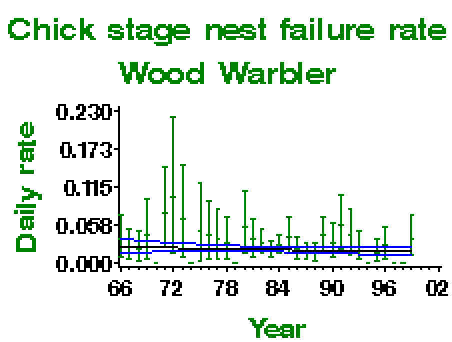
Table of productivity information

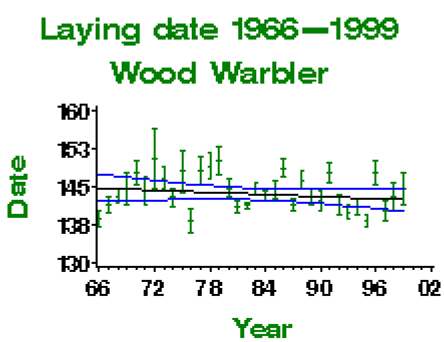
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	18	None				Small sample
Brood size	30	1968-1998	39	None				
Daily failure rate (eggs)	30	1968-1998	23	None				Small sample
Daily failure rate (chicks)	30	1968-1998	28	None				Small sample
Laying date	30	1968-1998	34	None				











Insufficient data on CES available for this species

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), subsequently remaining stable for a decade before recovering strongly from the mid-1980s onwards. This recovery can be seen in the CBC and CES. Climate change can partially explain the trend towards earlier laying (Crick & Sparks 1999). However, over-winter survival may be the critical driver of changes in abundance as it is for Whitethroat and Sedge Warbler.

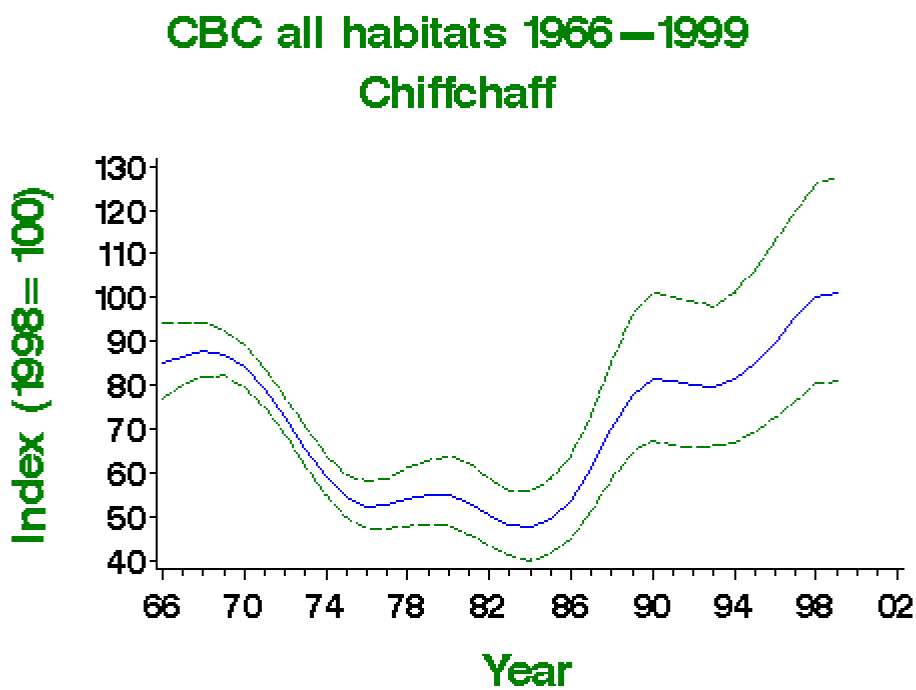
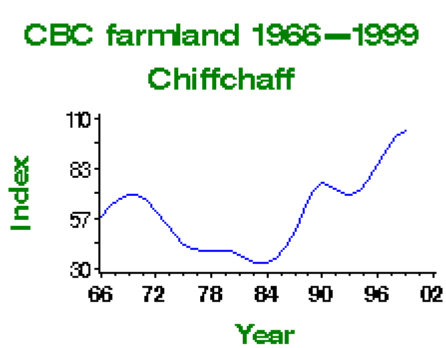


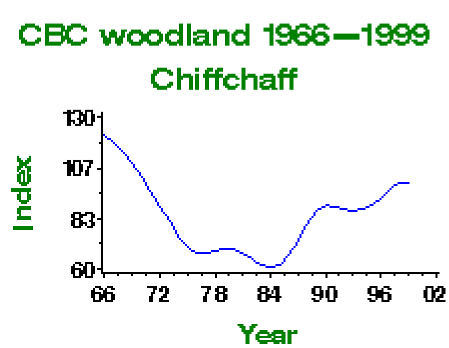
Table of population changes in Chiffchaff

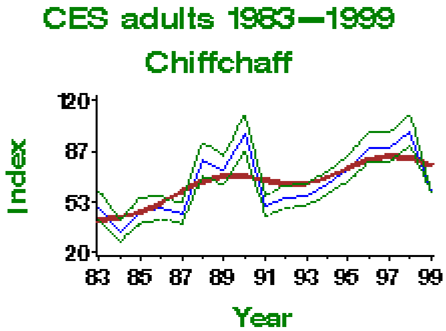
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	131	14	-9	46		
	25	1973-1998	135	52	25	88		
	10	1988-1998	151	43	28	61		
	5	1993-1998	163	25	17	35		
CBC farmland	30	1968-1998	43	49	.	.		
	25	1973-	42	86	.	.		

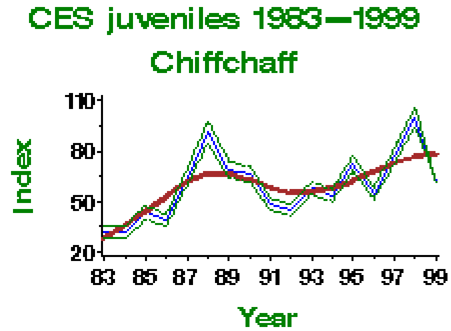
		1998						
	10	1988-1998	51	64	.	.		
	5	1993-1998	54	44	.	.		
CBC woodland	30	1968-1998	66	-12	.	.		
	25	1973-1998	71	22	.	.		
	10	1988-1998	83	24	.	.		
	5	1993-1998	90	16	.	.		
CES adults	14	1984-1998	62	92	.	.		
	10	1988-1998	72	25	.	.		
	5	1993-1998	81	26	.	.		
CES juveniles	14	1984-1998	73	115	.	.		
	10	1988-1998	85	15	.	.		
	5	1993-1998	97	37	.	.		
BBS UK	5	1994-1999	882	-7	-13	-1		
BBS England	5	1994-1999	753	-7	-13	-1		
BBS Wales	5	1994-1999	86	-15	-31	4		

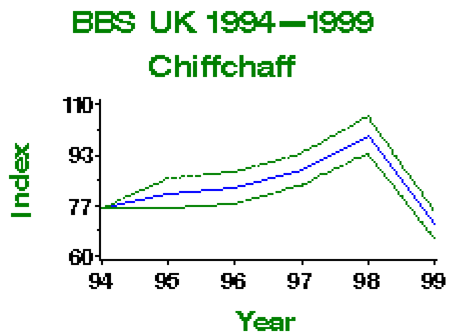
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

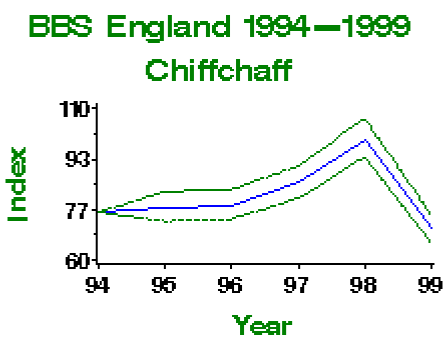












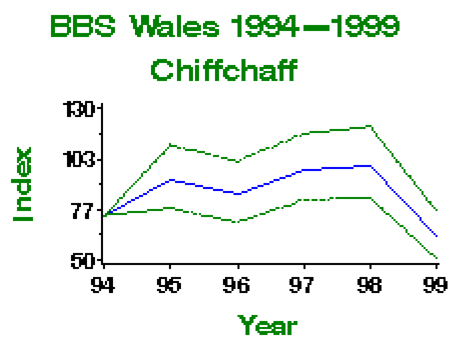
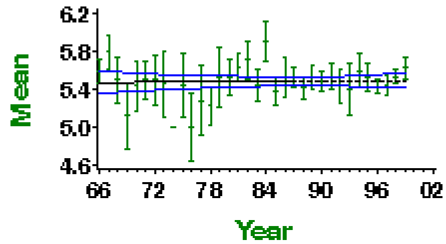


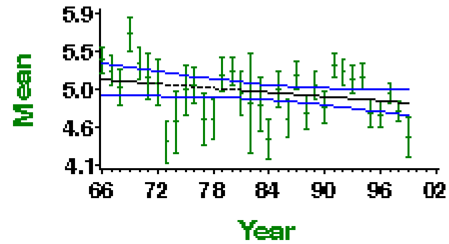
Table of productivity information for Chiffchaff

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	27	None				Small sample
Brood size	30	1968-1998	30	None				Small sample
Daily failure rate (eggs)	30	1968-1998	34	None				
Daily failure rate (chicks)	30	1968-1998	30	None				Small sample
Laying date	30	1968-1998	40	Curvilinear	day 135	day 123	-12 days	
Percentage juveniles (CES)	14	1984-1998	81	Smoothed trend	94 productivity index	100 productivity index	6%	
Percentage juveniles (CES)	10	1988-1998	95	Smoothed trend	118 productivity index	100 productivity index	-15%	
Percentage juveniles (CES)	5	1993-1998	105	Smoothed trend	96 productivity index	100 productivity index	4%	

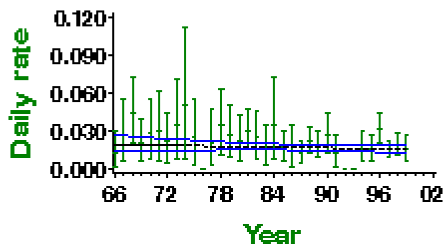
Clutch size 1966—1999
Chiffchaff



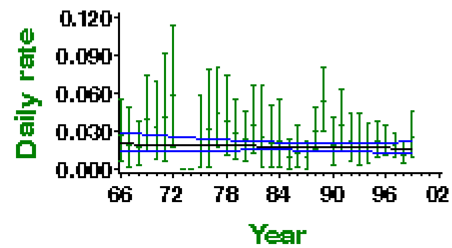
Brood size 1966—1999
Chiffchaff



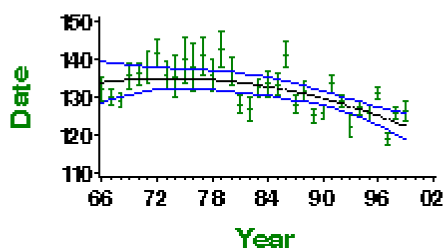
Egg stage nest failure rate
Chiffchaff



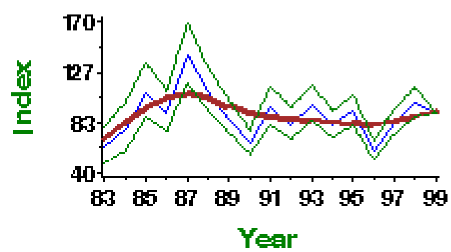
Chick stage nest failure rate
Chiffchaff



Laying date 1966—1999
Chiffchaff



CES productivity 1983—1999
Chiffchaff



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, but this decline occurred only in the south of the UK (Peach *et al.* 1995). The decline was driven by falling survival but Scottish populations were unaffected (Peach *et al.* 1995), and now, through the BBS, show evidence of further increases. 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 CES productivity and an increase in nest failure rates at the chick stage (14 days) from 18% to 27%. Laying dates have become earlier which can be explained by recent climate change (Crick & Sparks 1999).

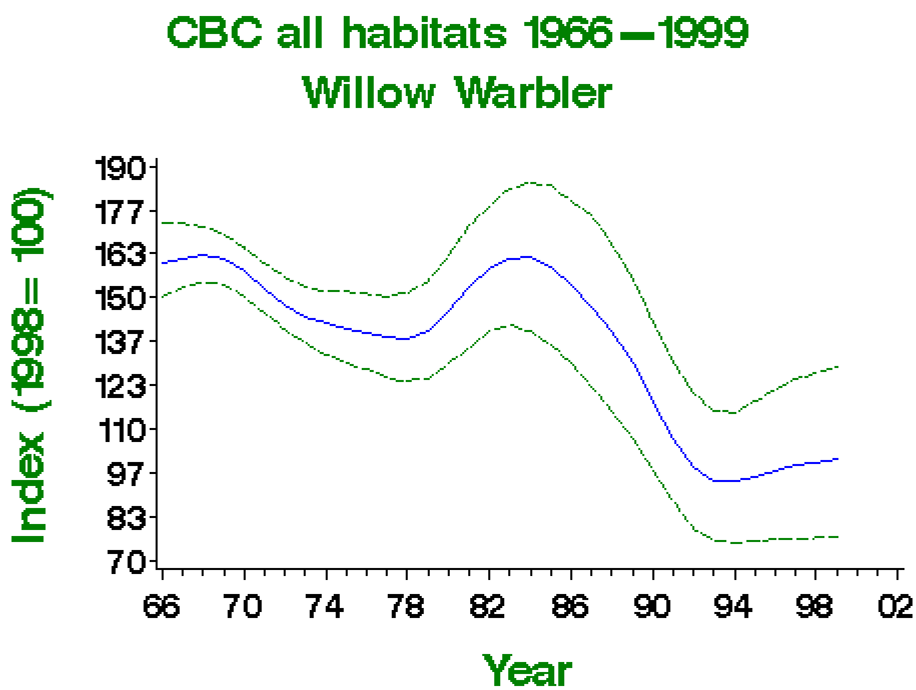
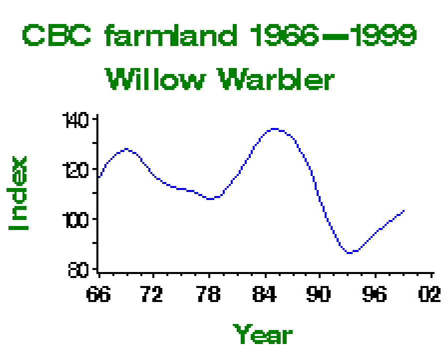


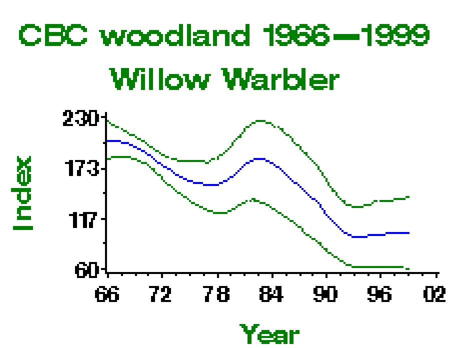
Table of population changes for Willow Warbler

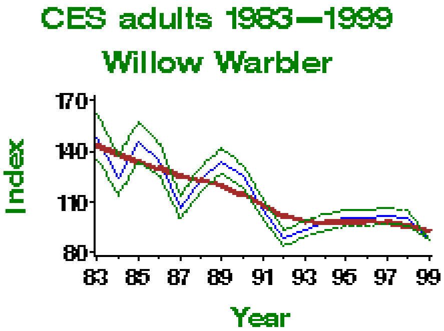
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	190	-39	-52	-21	>25	
	25	1973-1998	194	-31	-44	-14	>25	
	10	1988-1998	172	-28	-38	-19	>25	
	5	1993-1998	168	6	-3	14		
CBC		1968-						

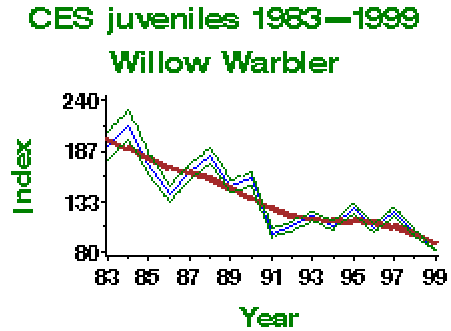
farmland	30	1998	78	-21	.	.		
	25	1973-1998	77	-12	.	.		
	10	1988-1998	75	-21	.	.		
	5	1993-1998	72	16	.	.		
CBC woodland	30	1968-1998	76	-50	-70	-29	>50	
	25	1973-1998	80	-41	-62	-21	>25	
	10	1988-1998	78	-30	-48	-18	>25	
	5	1993-1998	78	4	-14	16		
CES adults	14	1984-1998	90	-31	.	.	[>25*]	
	10	1988-1998	103	-22	.	.		
	5	1993-1998	110	-2	.	.		
CES juveniles	14	1984-1998	89	-48	.	.	[>25*]	
	10	1988-1998	102	-37	.	.	[>25*]	
	5	1993-1998	111	-13	.	.		
BBS UK	5	1994-1999	1201	14	9	19		
BBS England	5	1994-1999	852	-3	-8	2		
BBS Scotland	5	1994-1999	176	43	26	62		
BBS Wales	5	1994-1999	122	-4	-15	8		
BBS N.Ireland	5	1994-1999	46	68	19	138		Small sample

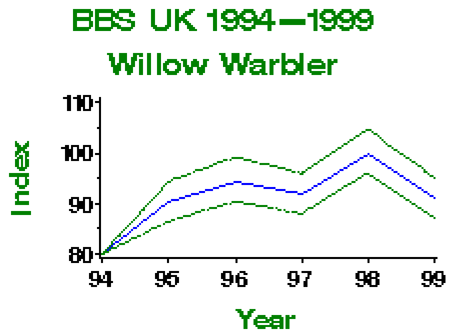
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

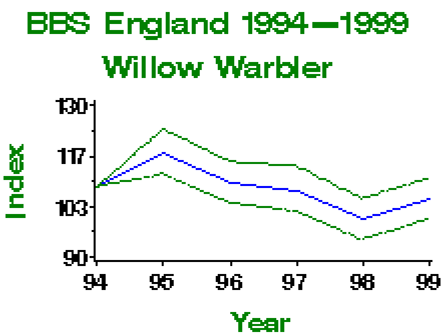


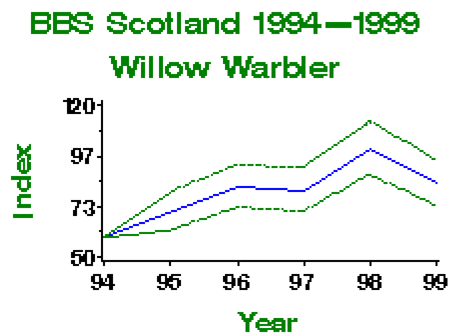


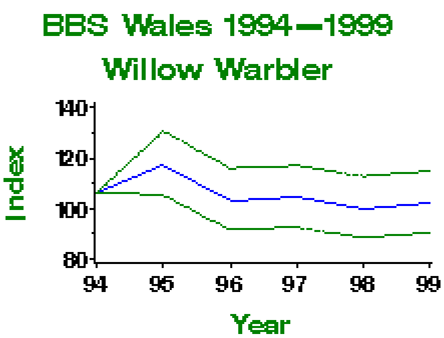












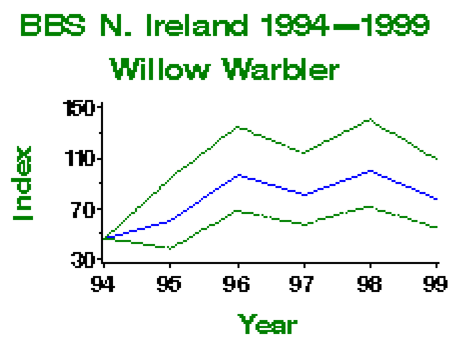
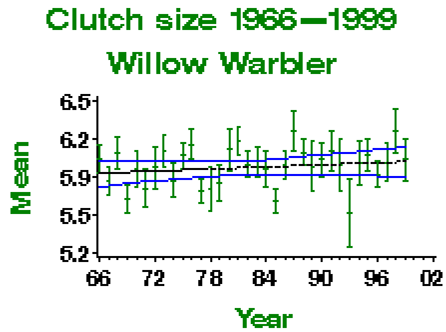
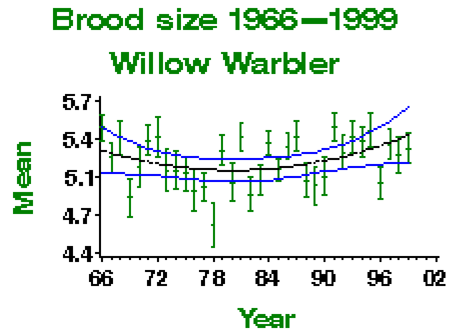


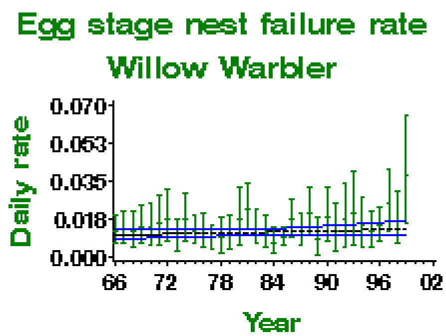
Table of productivity information for Willow Warbler

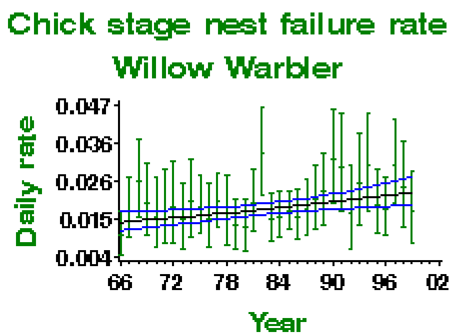
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	54	None				
Brood size	30	1968-1998	142	Curvilinear	5.24 chicks	5.38 chicks	0.14 chicks	
Daily failure rate (eggs)	30	1968-1998	74	None				
Daily failure rate (chicks)	30	1968-1998	131	Linear increase	0.0143 nests/day	0.022 nests/day	0.0077 nests/day	
Laying date	30	1968-1998	92	Linear decline	day 139	day 136	-3 days	
Percentage juveniles (CES)	14	1984-1998	96	Smoothed trend	156 productivity index	100 productivity index	-36%[>25*]	
					130	100		

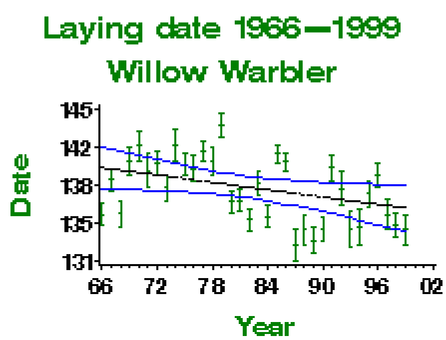
Percentage juveniles (CES)	10	1988-1998	109	Smoothed trend	productivity index	productivity index	-23%	
Percentage juveniles (CES)	5	1993-1998	117	Smoothed trend	119 productivity index	100 productivity index	-16%	

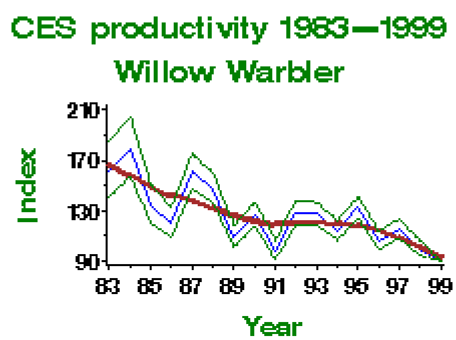












GOLDCREST *Regulus regulus*

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 expected of a series of damped oscillations leading to population stability after an earlier perturbation in abundance, so the trend could be driven entirely by the species' internal population dynamics. Recent trends show stability or a shallow increase.

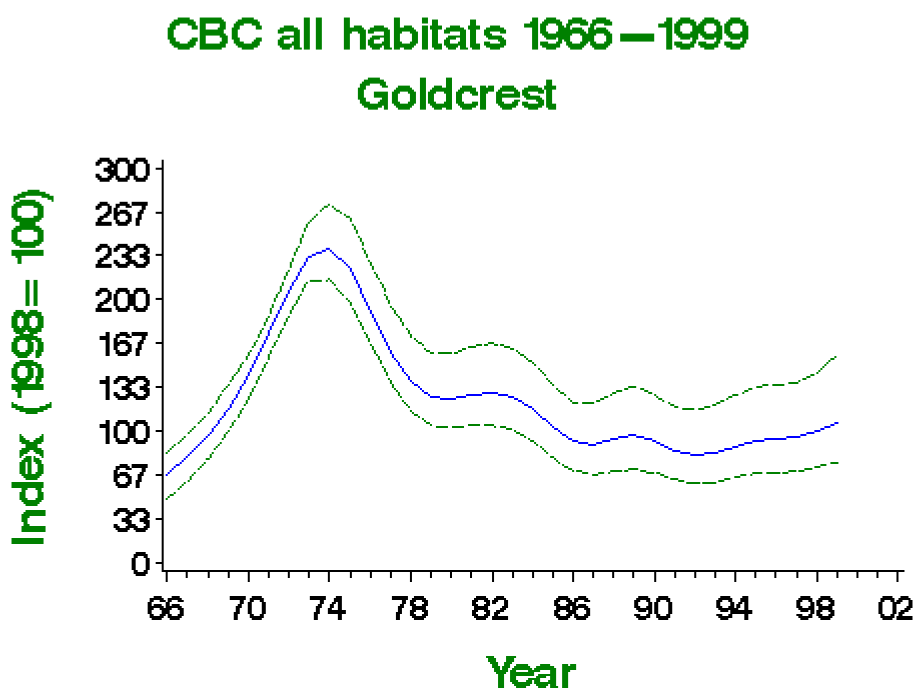
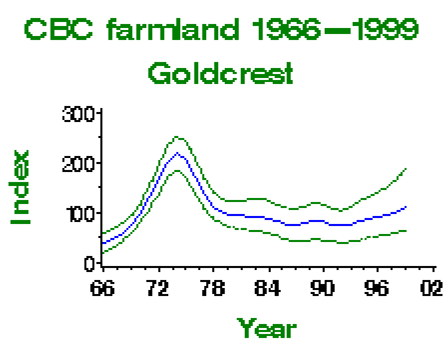


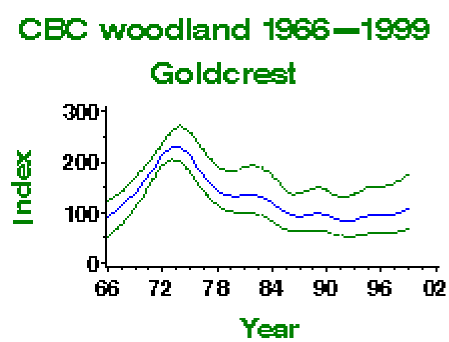
Table of population changes for Goldcrest

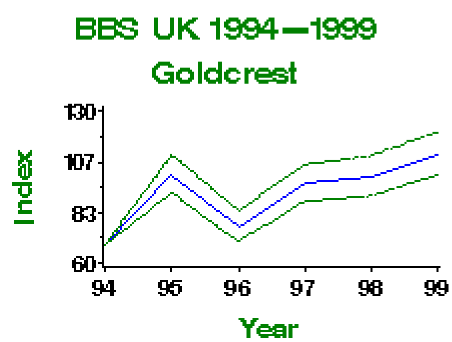
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	95	3	-33	70		
	25	1973-1998	99	-57	-68	-40	>50	
	10	1988-1998	86	7	-8	26		
	5	1993-1998	93	19	8	32		
CBC farmland	30	1968-1998	27	68	-10	209		

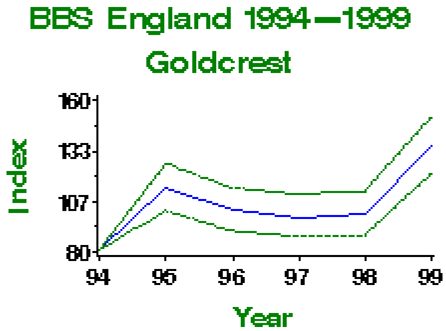
	25	1973-1998	27	-50	-68	-22	>50	
	10	1988-1998	22	26	-7	86		
	5	1993-1998	23	31	2	82		
CBC woodland	30	1968-1998	53	-18	-53	59		
	25	1973-1998	56	-57	-73	-32	>50	
	10	1988-1998	57	5	-14	31		
	5	1993-1998	62	19	7	37		
BBS UK	5	1994-1999	490	61	47	76		
BBS England	5	1994-1999	329	67	49	86		
BBS Scotland	5	1994-1999	69	87	40	149		
BBS Wales	5	1994-1999	61	25	1	55		
BBS N.Ireland	5	1994-1999	26	98	4	279		Small sample

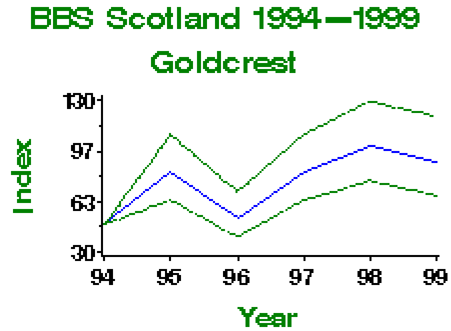
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

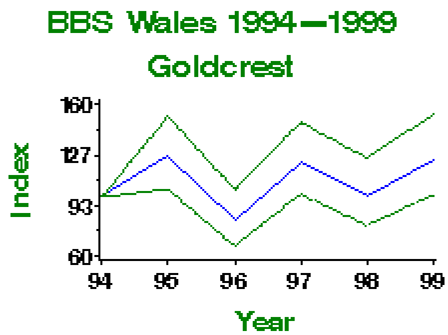


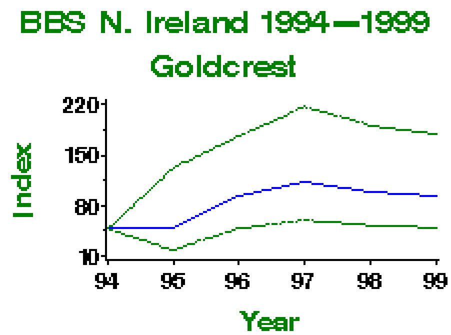












Productivity information is not currently available for this species

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 tends to have improved and demographic modelling shows that changes 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.), which could have been caused by deteriorating woodland habitats or by conditions on the wintering grounds or along migration routes (Vanhinsbergh *et al.* 2001).

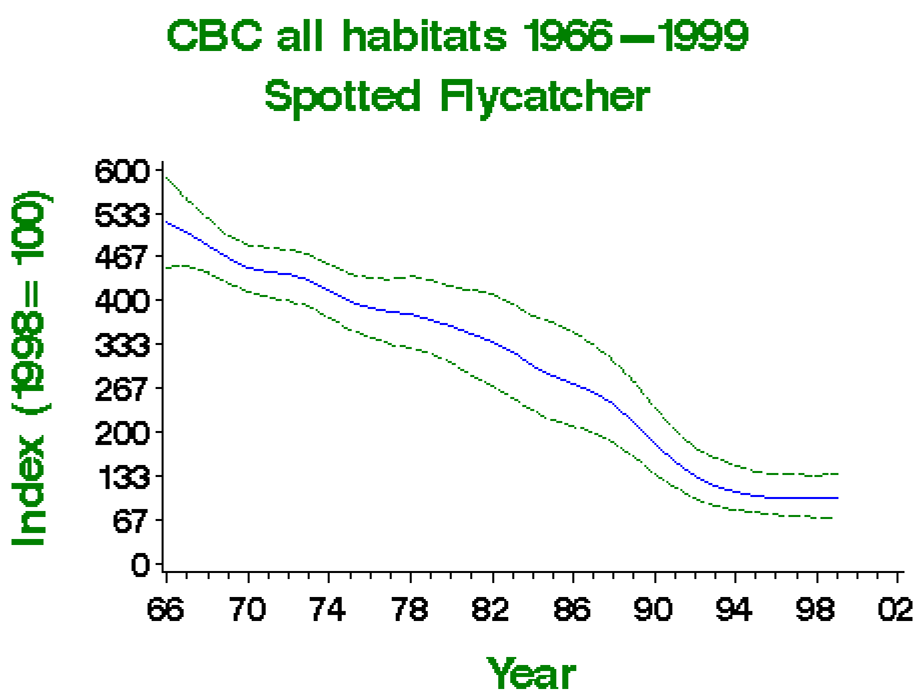
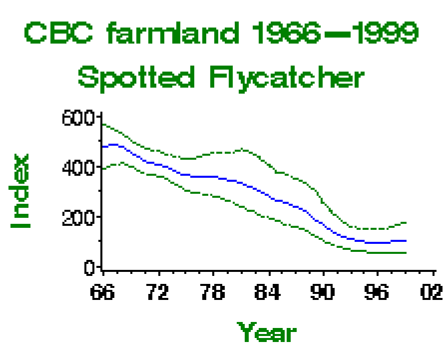


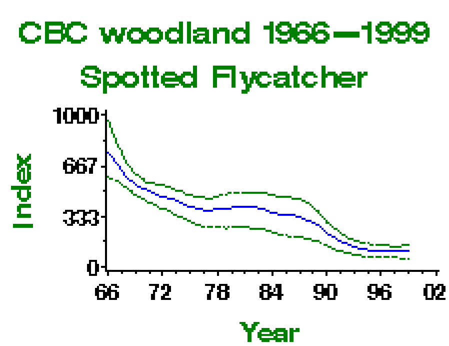
Table of population changes for Spotted Flycatcher

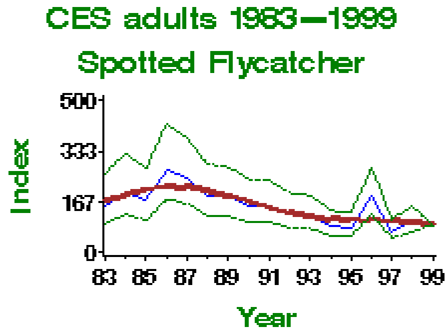
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	70	-79	-86	-72	>50	
	25	1973-1998	69	-77	-83	-69	>50	
	10	1988-1998	48	-59	-67	-48	>50	
	5	1993-1998	39	-16	-30	-2		
CBC farmland	30	1968-1998	34	-79	-88	-67	>50	

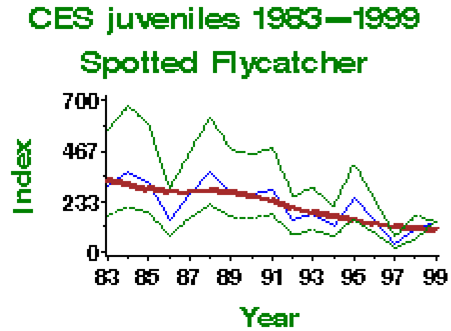
	25	1973-1998	32	-75	-86	-60	>50	
	10	1988-1998	24	-55	-67	-42	>50	
	5	1993-1998	19	-6	-32	18		Small sample
CBC woodland	30	1968-1998	23	-83	-91	-76	>50	
	25	1973-1998	23	-77	-86	-69	>50	
	10	1988-1998	19	-67	-76	-58	>50	Small sample
	5	1993-1998	16	-23	-40	-4		Small sample
CES adults	14	1984-1998	18	-49	.	.	[>25]	Small sample
	10	1988-1998	19	-53	.	.	[>50]	Small sample
	5	1993-1998	18	-18	.	.		Small sample
CES juveniles	14	1984-1998	13	-66	.	.	[>50*]	Small sample
	10	1988-1998	14	-62	.	.	[>50*]	Small sample
	5	1993-1998	12	-41	.	.	[>25]	Small sample
BBS UK	5	1994-1999	194	-11	-25	6		
BBS England	5	1994-1999	143	-24	-38	-7		
BBS Wales	5	1994-1999	20	11	-37	97		Small sample

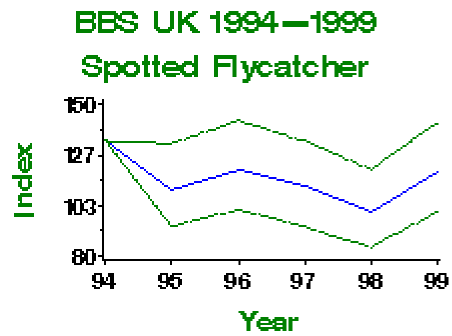
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

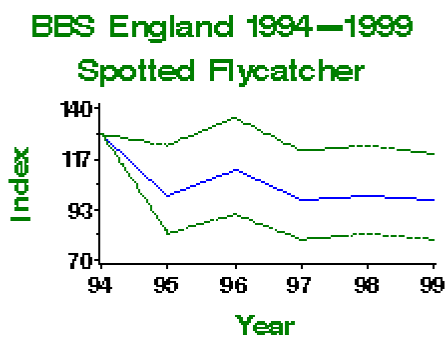












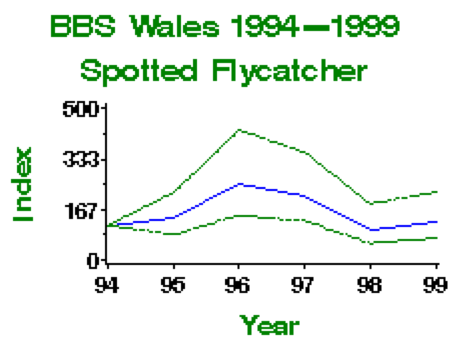
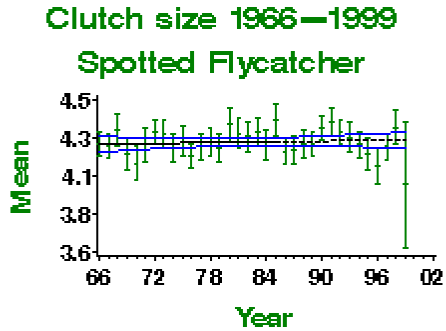
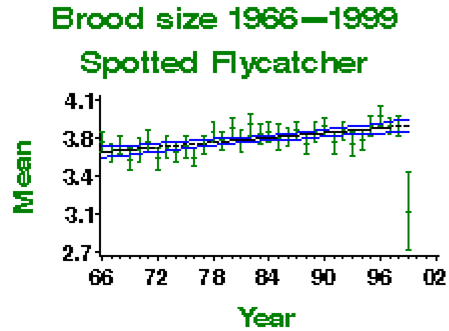
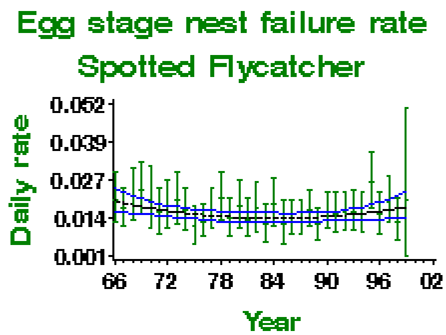


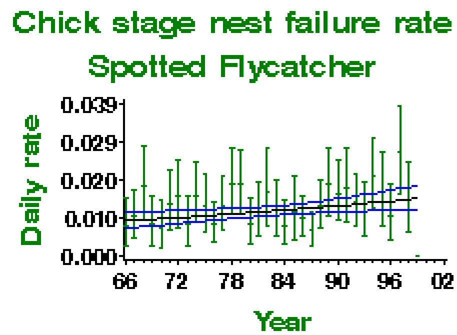
Table of productivity information for Spotted Flycatcher

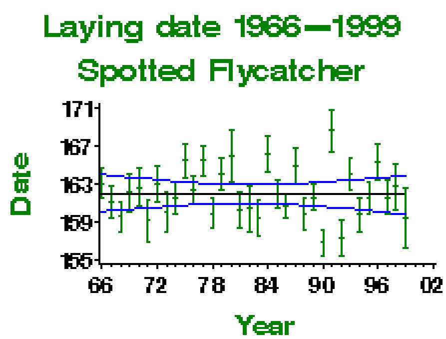
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	85	None				
Brood size	30	1968-1998	137	Linear increase	3.64 chicks	3.86 chicks	0.22 chicks	
Daily failure rate (eggs)	30	1968-1998	127	Curvilinear	0.0181 nests/day	0.0169 nests/day	-0.0012 nests/day	
Daily failure rate (chicks)	30	1968-1998	113	Linear increase	0.0093 nests/day	0.0145 nests/day	0.0052 nests/day	
Laying date	30	1968-1998	76	None				
Percentage juveniles (CES)	14	1984-1998	25	Smoothed trend	165 productivity index	100 productivity index	-39%[>25]	
Percentage juveniles (CES)	10	1988-1998	26	Smoothed trend	107 productivity index	100 productivity index	-6%	
Percentage juveniles (CES)	5	1993-1998	24	Smoothed trend	162 productivity index	100 productivity index	-38%[>25]	

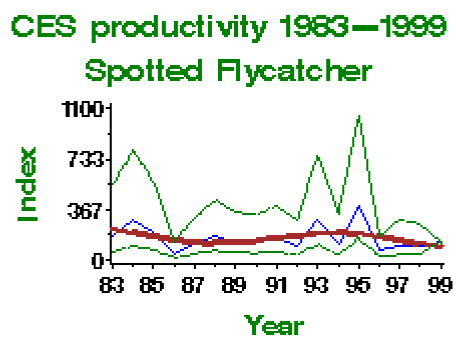

Clutch size 1966–1999
Spotted Flycatcher
Mean
4.5
4.3
4.1
3.8
3.6
66 72 78 84 90 96 02
Year


Brood size 1966–1999
Spotted Flycatcher
Mean
4.1
3.8
3.4
3.1
2.7
66 72 78 84 90 96 02
Year


Egg stage nest failure rate
Spotted Flycatcher
Daily rate
0.052
0.039
0.027
0.014
0.001
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Spotted Flycatcher
Daily rate
0.039
0.029
0.020
0.010
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–1999
Spotted Flycatcher
Date
171
167
163
159
155
66 72 78 84 90 96 02
Year


CES productivity 1983–1999
Spotted Flycatcher
Index
1100
733
367
0
83 85 87 89 91 93 95 97 99
Year

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 1998-1991 breeding atlas revealed a small expansion in range (Gibbons *et al.* 1993).

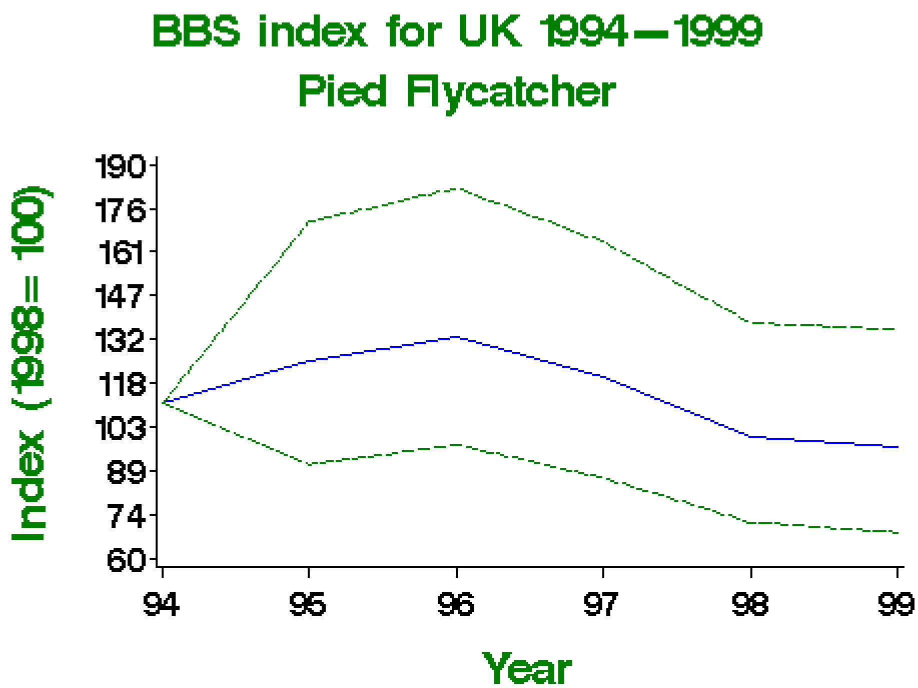


Table of population changes for Pied Flycatcher

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	42	-13	-38	22		Small sample
BBS Wales	5	1994-1999	24	-16	-47	32		Small sample

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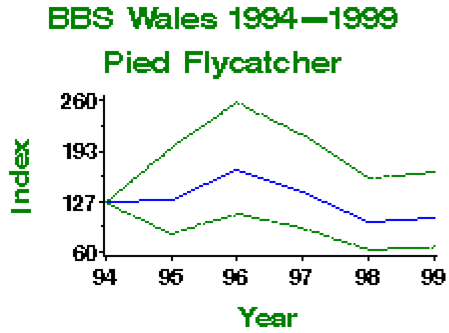

Productivity information is not currently available for this species

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 85%, have accompanied the recent increase and the trend towards earlier laying can be explained by recent climate change (Crick & Sparks 1999).

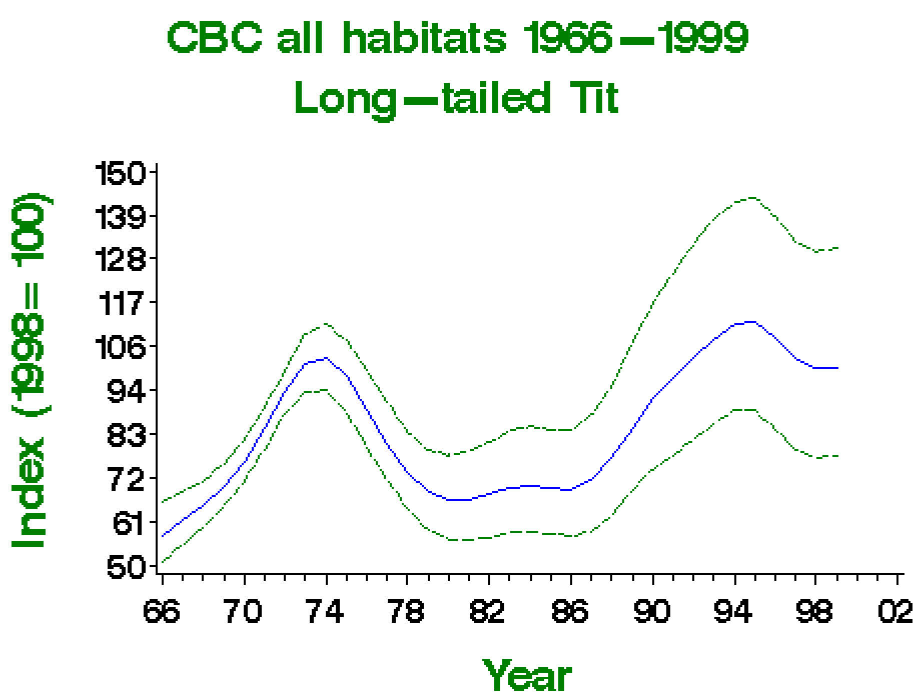

Table of population changes for Long-tailed Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	129	53	13	111		
	25	1973-1998	137	-1	-21	22		
	10	1988-1998	147	29	17	44		
	5	1993-1998	159	-7	-13	-2		
CBC farmland	30	1968-1998	46	86	.	.		
	25	1973-1998	48	11	.	.		
		1988-						

	10	1998	56	44	.	.		
	5	1993-1998	59	-4	.	.		
CBC woodland	30	1968-1998	61	-10	-39	53		
	25	1973-1998	66	-32	-50	-6	>25	
	10	1988-1998	76	13	-1	26		
	5	1993-1998	83	-10	-17	-3		
CES adults	14	1984-1998	72	31	.	.		
	10	1988-1998	86	23	.	.		
	5	1993-1998	96	0	.	.		
CES juveniles	14	1984-1998	64	15	.	.		
	10	1988-1998	77	40	.	.		
	5	1993-1998	89	-6	.	.		
BBS UK	5	1994-1999	587	15	3	29		
BBS England	5	1994-1999	517	3	-8	15		
BBS Wales	5	1994-1999	43	36	-17	120		Small sample

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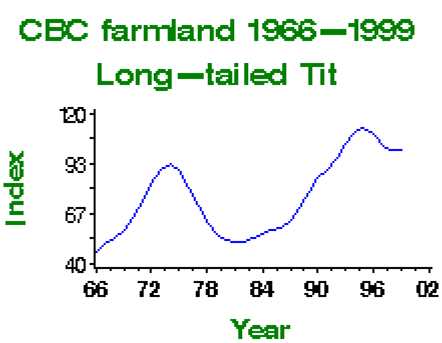
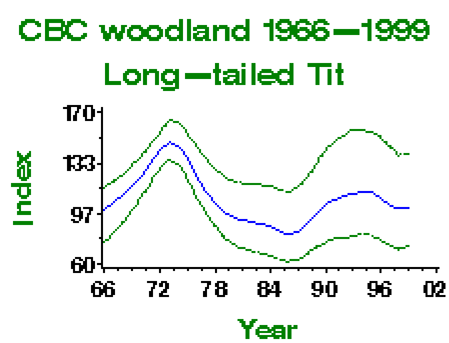
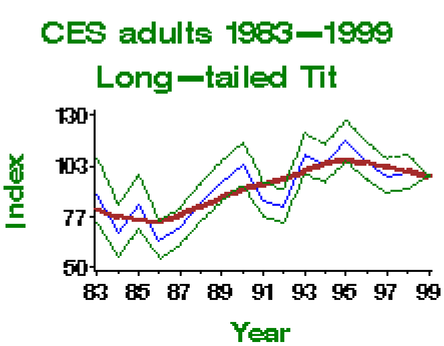
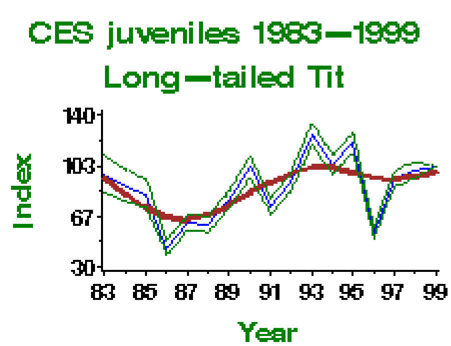
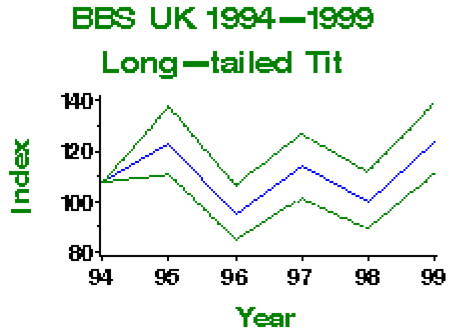
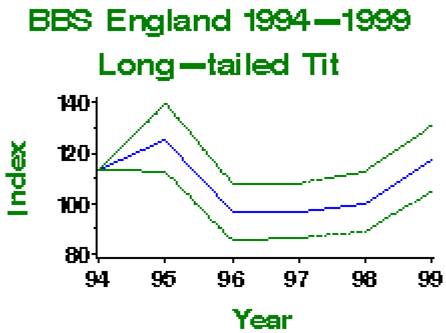












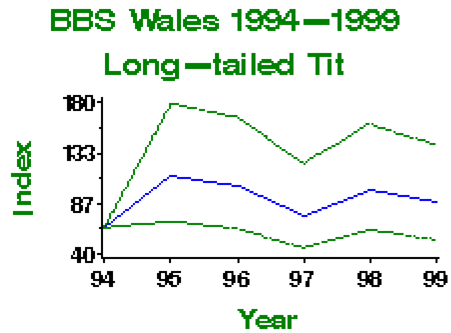
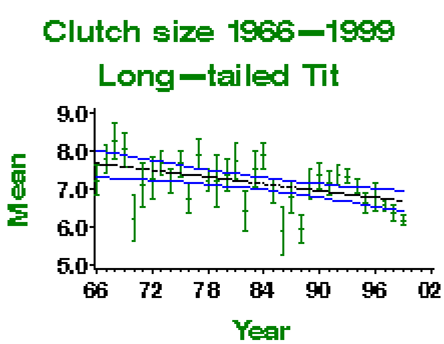
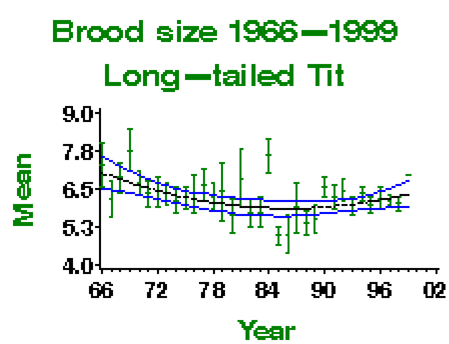
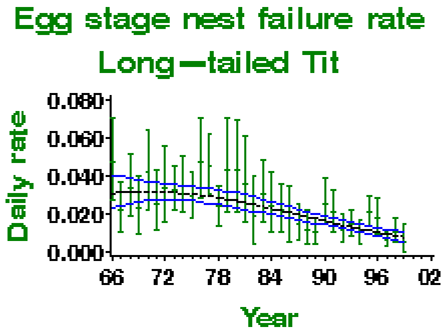


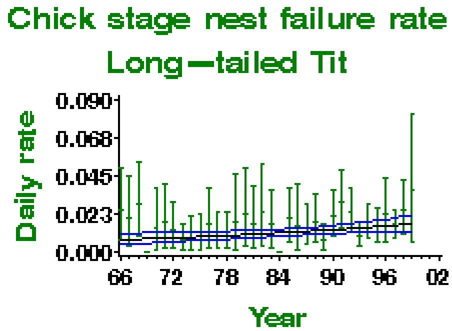
Table of productivity information for Long-tailed Tit

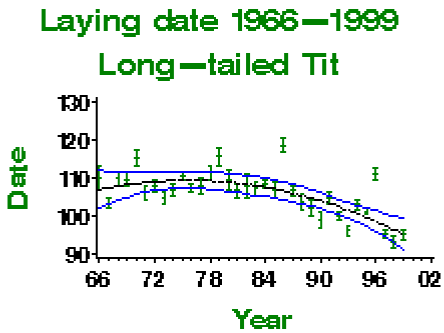
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	31	Linear decline	7.62 eggs	6.72 eggs	-0.9 eggs	
Brood size	30	1968-1998	26	Curvilinear	6.84 chicks	6.27 chicks	-0.57 chicks	Small sample
Daily failure rate (eggs)	30	1968-1998	49	Curvilinear	0.0316 nests/day	0.0085 nests/day	-0.0231 nests/day	
Daily failure rate (chicks)	30	1968-1998	34	Linear increase	0.0074 nests/day	0.0159 nests/day	0.0085 nests/day	
Laying date	30	1968-1998	41	Curvilinear	day 108	day 96	-12 days	
Percentage juveniles (CES)	14	1984-1998	78	Smoothed trend	99 productivity index	100 productivity index	1%	
Percentage juveniles (CES)	10	1988-1998	92	Smoothed trend	84 productivity index	100 productivity index	19%	
Percentage juveniles (CES)	5	1993-1998	103	Smoothed trend	104 productivity index	100 productivity index	-4%	

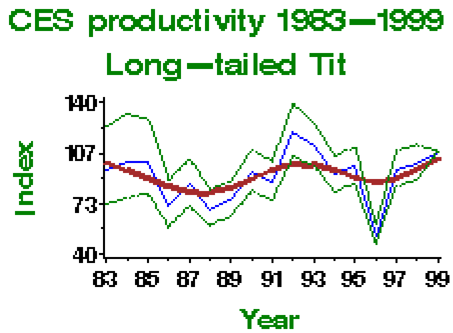





Egg stage nest failure rate
Long–tailed Tit
Daily rate
0.080
0.060
0.040
0.020
0.000
66 72 78 84 90 96 02
Year


Chick stage nest failure rate
Long–tailed Tit
Daily rate
0.090
0.068
0.045
0.023
0.000
66 72 78 84 90 96 02
Year


Laying date 1966–1999
Long–tailed Tit
Date
130
120
110
100
90
66 72 78 84 90 96 02
Year


CES productivity 1983–1999
Long–tailed Tit
Index
140
107
73
40
83 85 87 89 91 93 95 97 99
Year

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 4%). Detailed demographic work at the BTO 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 through grazing and reductions in dead wood availability could have contributed to the decline (Vanhinsbergh *et al.* 2001).

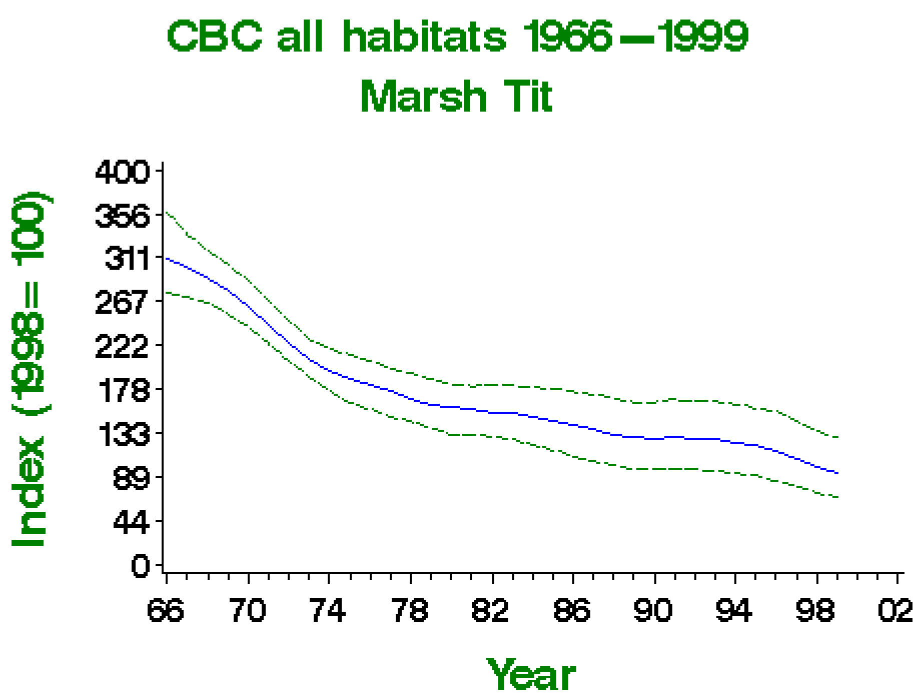


Table of population changes for Marsh Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	55	-66	-76	-53	>50	
	25	1973-1998	55	-52	-64	-36	>50	
	10	1988-1998	53	-25	-38	-2		
	5	1993-1998	54	-21	-34	-6		

CBC woodland	30	1968-1998	39	-65	-77	-50	>50	
	25	1973-1998	40	-54	-68	-41	>50	
	10	1988-1998	43	-25	-39	-9		
	5	1993-1998	45	-22	-36	-9		
BBS UK	5	1994-1999	115	23	-3	56		
BBS England	5	1994-1999	103	12	-12	43		

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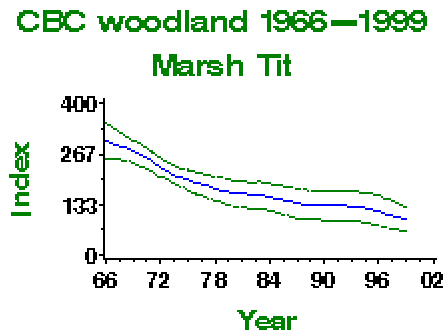
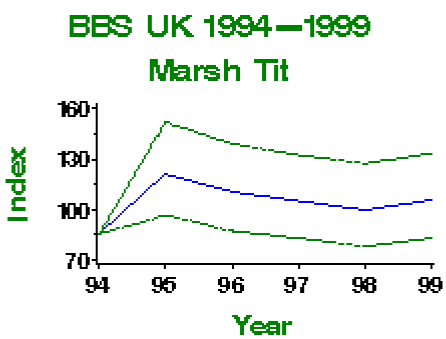




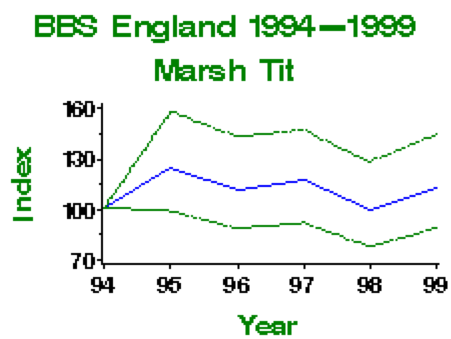
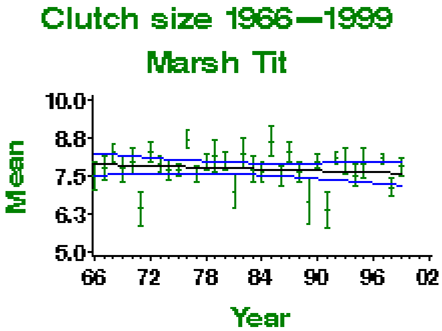
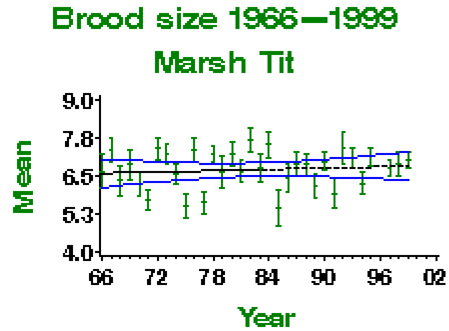
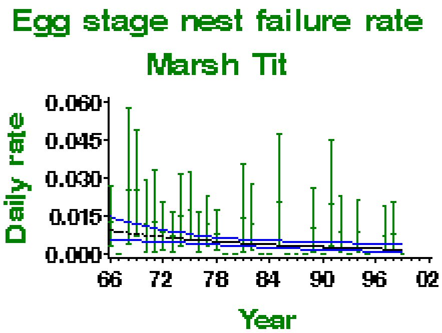


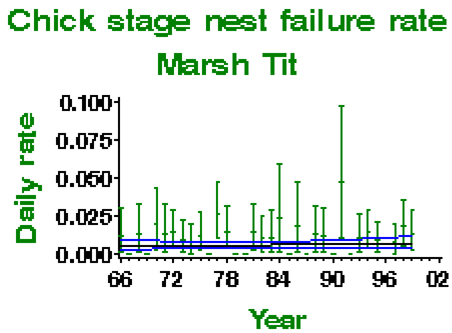
Table of productivity information for Marsh Tit

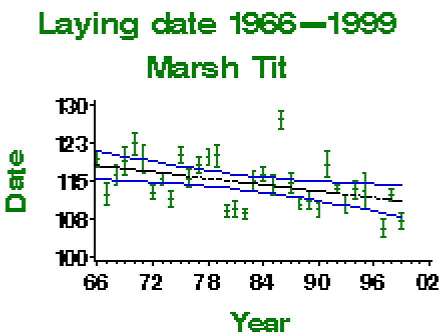
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	13	None				Small sample
Brood size	30	1968-1998	22	None				Small sample
Daily failure rate (eggs)	30	1968-1998	19	Linear decline	0.0082 nests/day	0.0018 nests/day	-0.0064 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	19	None				Small sample
Laying date	30	1968-1998	14	Linear decline	day 118	day 111	-7 days	Small 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 pause through the later 1980s is replicated in the abundance trend from constant-effort ringing. The decline is unlikely to be due to nest predation and has only occurred in woodland and farmland, not in the species' preferred, wet, habitats (G.M. Siriwardena, unpubl.). Candidate causes for the decline include reductions in the availability of dead wood, woodland drainage and drying and reductions in woodland shrub layer density (Vanhinsbergh *et al.* 2001).

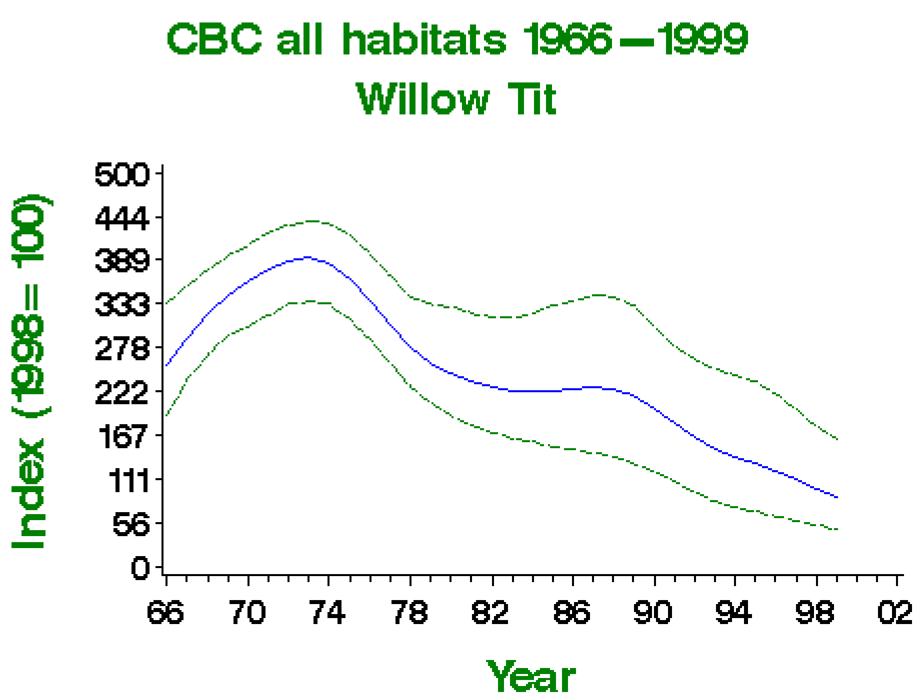


Table of population changes for Willow Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	32	-69	-82	-46	>50	
	25	1973-1998	31	-75	-86	-57	>50	
	10	1988-1998	20	-56	-69	-38	>50	Small sample
	5	1993-1998	18	-33	-45	-17	>25	Small sample
CES adults	14	1984-1998	25	-36	.	.	[>25]	

	10	1988-1998	29	-44	.	.	[>25]	
	5	1993-1998	29	-31	.	.	[>25]	
CES juveniles	14	1984-1998	35	-19	.	.		
	10	1988-1998	40	-40	.	.	[>25]	
	5	1993-1998	40	-27	.	.	[>25]	
BBS UK	5	1994-1999	60	-42	-58	-18	(>25)	
BBS England	5	1994-1999	53	-40	-57	-15	(>25)	

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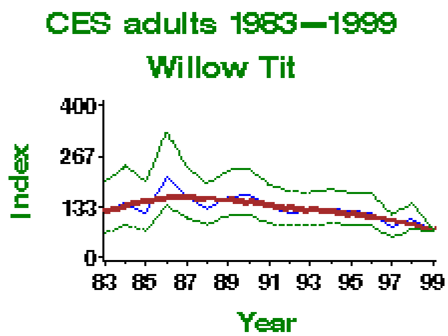
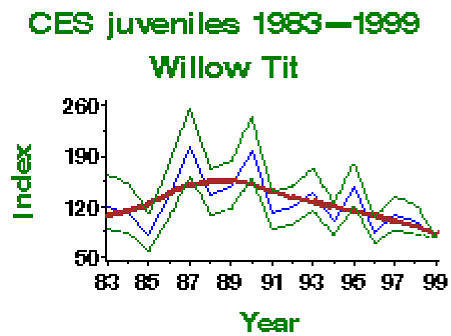
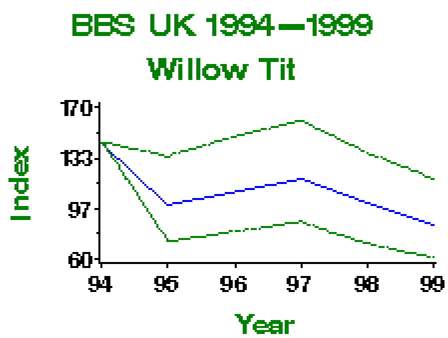






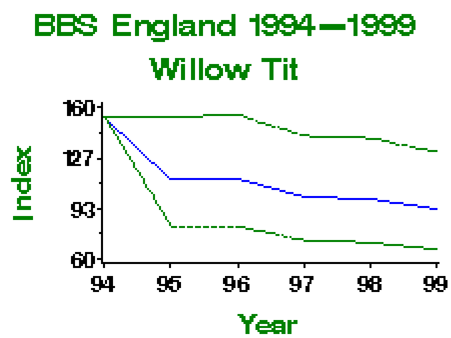


Table of productivity information for Willow Tit

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Percentage juveniles (CES)	14	1984-1998	40	Smoothed trend	105 productivity index	100 productivity index	-5%	
Percentage juveniles (CES)	10	1988-1998	44	Smoothed trend	101 productivity index	100 productivity index	-1%	
Percentage juveniles (CES)	5	1993-1998	44	Smoothed trend	99 productivity index	100 productivity index	1%	

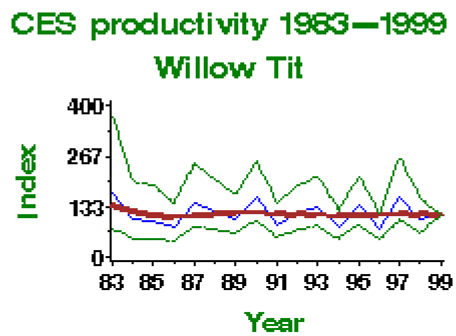
Insufficient data on clutch size available for this species

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 that have varied geographically across the UK. These patterns suggest that the influences on UK Coal Tit abundance have been complex.

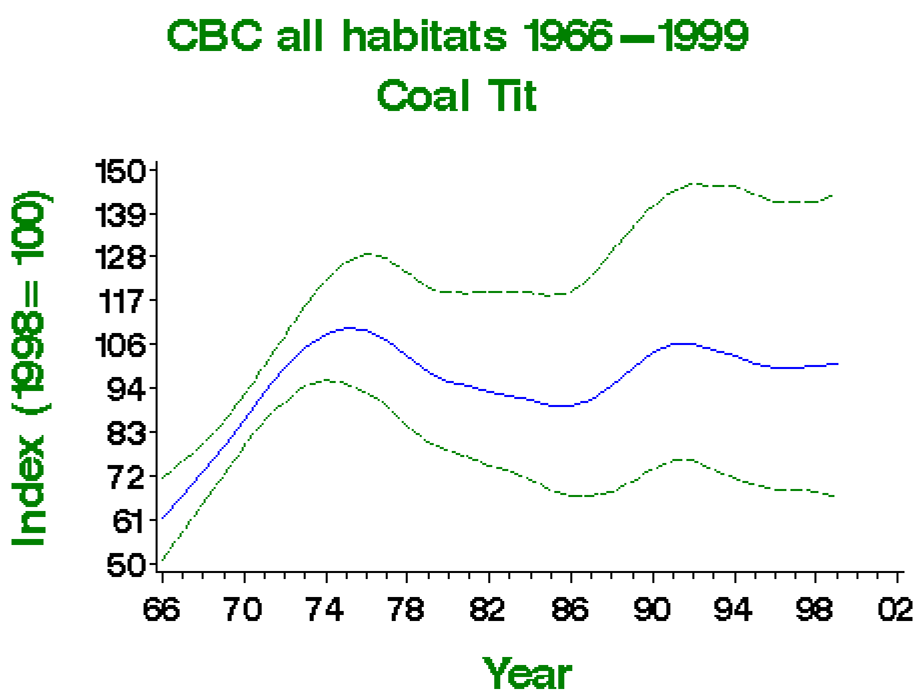


Table of population changes for Coal Tit

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	113	36	-14	112		
	25	1973-1998	118	-5	-34	31		
	10	1988-1998	112	5	-8	18		
	5	1993-1998	116	-4	-13	4		
CBC farmland	30	1968-1998	27	169	.	.		
	25	1973-1998	27	51	.	.		
		1988-						

	10	1998	24	29	.	.		
	5	1993-1998	22	1	.	.		
CBC woodland	30	1968-1998	69	10	.	.		
	25	1973-1998	75	-17	.	.		
	10	1988-1998	81	1	.	.		
	5	1993-1998	85	-6	.	.		
BBS UK	5	1994-1999	510	2	-7	13		
BBS England	5	1994-1999	328	8	-3	21		
BBS Scotland	5	1994-1999	97	-10	-29	14		
BBS Wales	5	1994-1999	50	2	-24	38		Small sample
BBS N.Ireland	5	1994-1999	34	66	-10	206		Small sample

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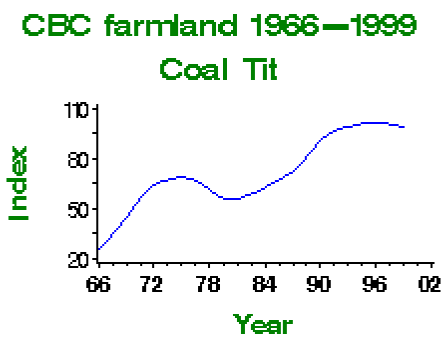
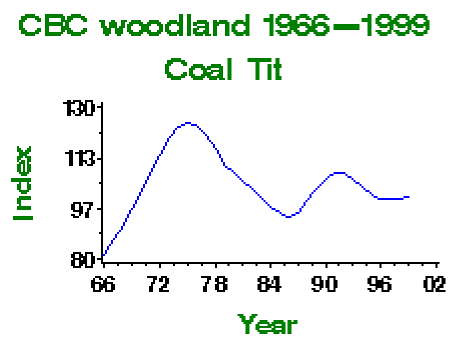
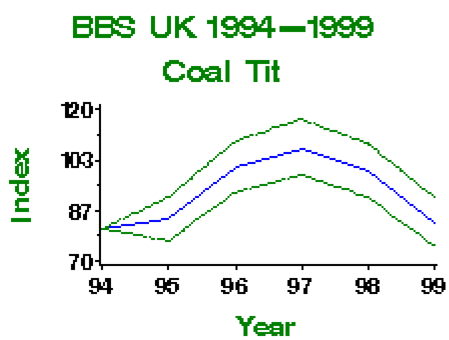
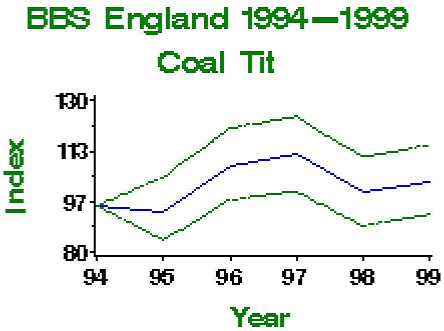
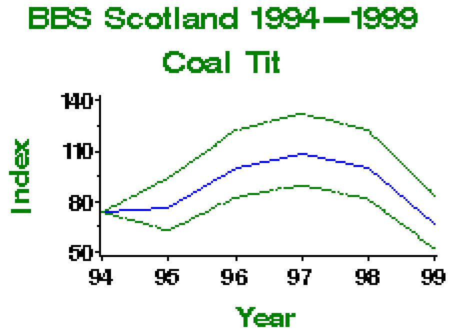
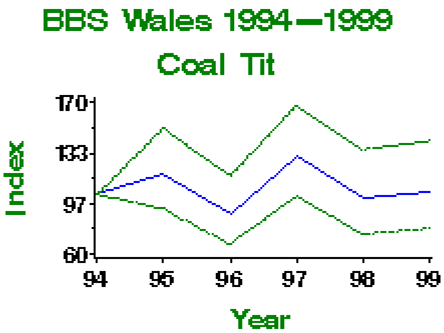


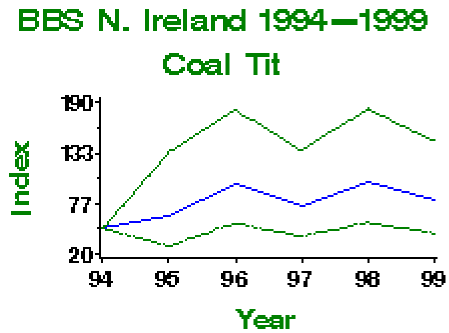












Productivity information is not currently available for this species

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 but no clear trend. Winter food provision by humans and access to nest boxes that are safe from 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%.)

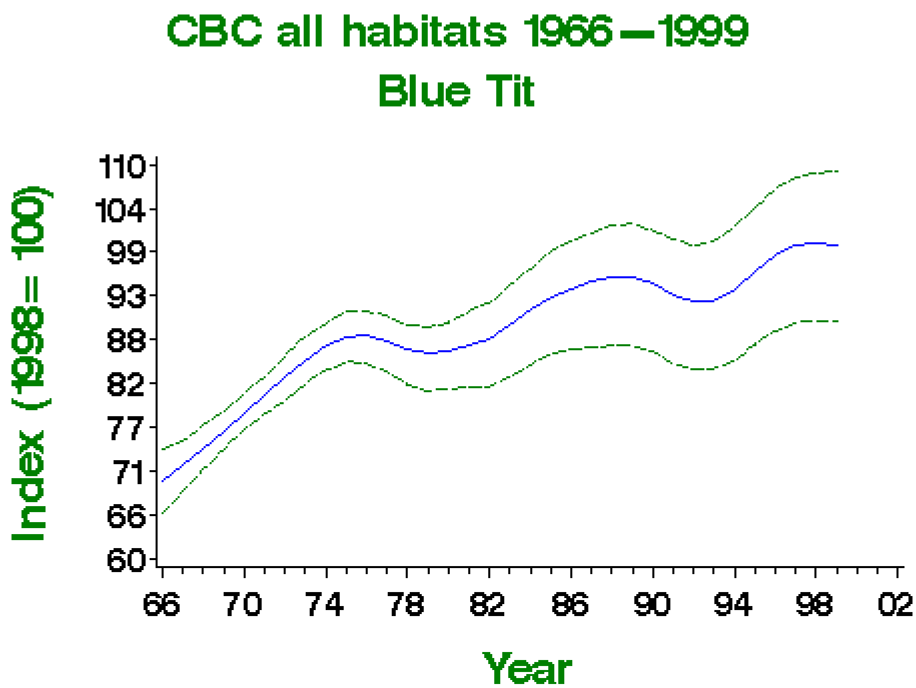
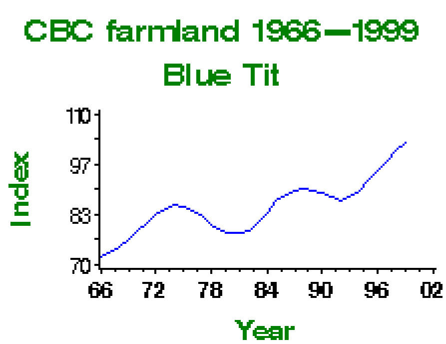


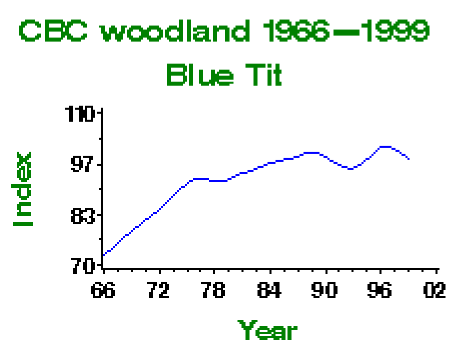
Table of population changes for Blue Tit

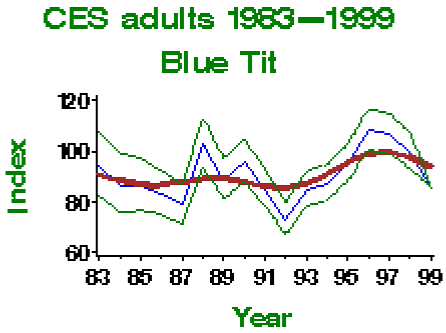
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	216	35	21	48		
	25	1973-1998	222	17	8	27		
	10	1988-1998	211	4	0	8		
	5	1993-1998	220	8	5	11		
CBC farmland	30	1968-1998	93	33	.	.		

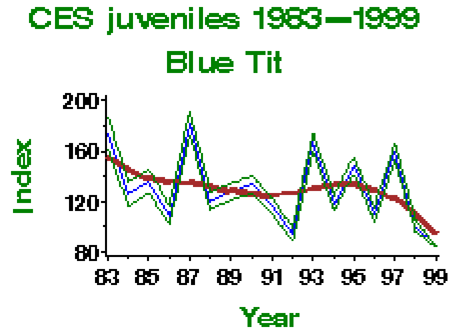
	25	1973-1998	93	18	.	.		
	10	1988-1998	93	11	.	.		
	5	1993-1998	94	14	.	.		
CBC woodland	30	1968-1998	84	30	.	.		
	25	1973-1998	90	15	.	.		
	10	1988-1998	97	0	.	.		
	5	1993-1998	103	5	.	.		
CES adults	14	1984-1998	93	11	.	.		
	10	1988-1998	106	10	.	.		
	5	1993-1998	115	12	.	.		
CES juveniles	14	1984-1998	92	-24	.	.		
	10	1988-1998	105	-17	.	.		
	5	1993-1998	114	-16	.	.		
BBS UK	5	1994-1999	1613	7	3	11		
BBS England	5	1994-1999	1324	5	1	9		
BBS Scotland	5	1994-1999	118	9	-9	29		
BBS Wales	5	1994-1999	120	11	-3	28		
BBS N.Ireland	5	1994-1999	44	35	-5	90		Small sample

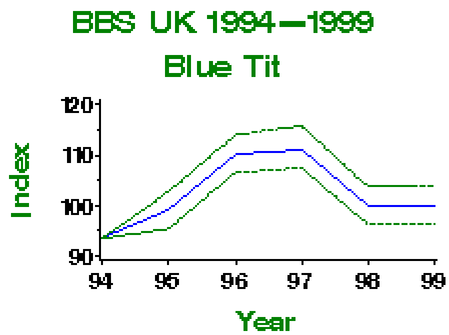
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

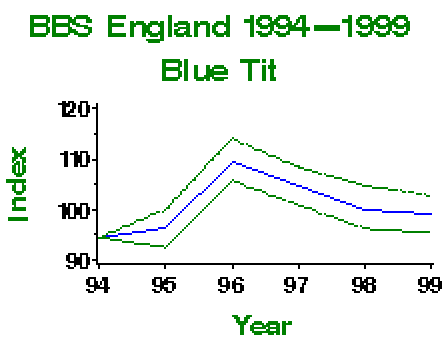


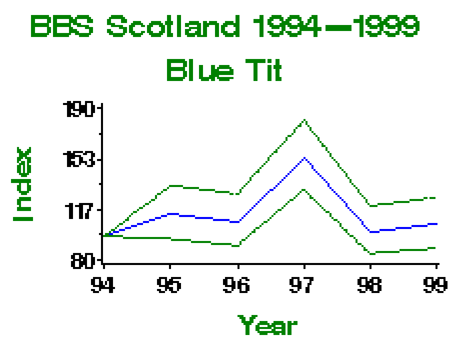


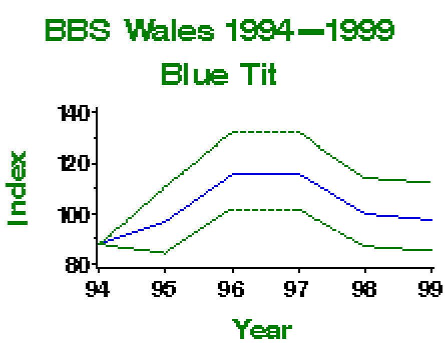












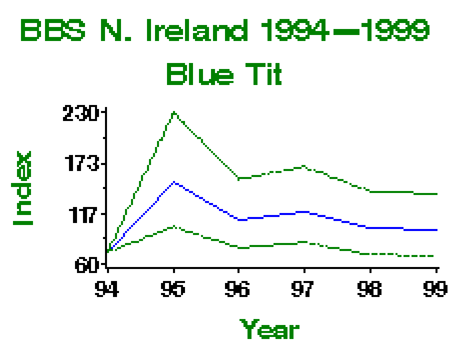
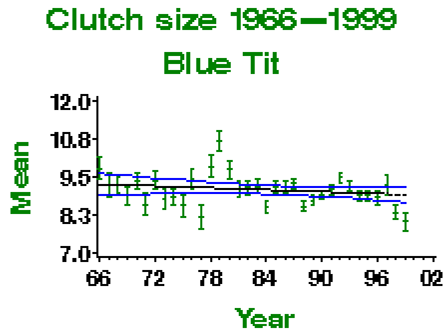
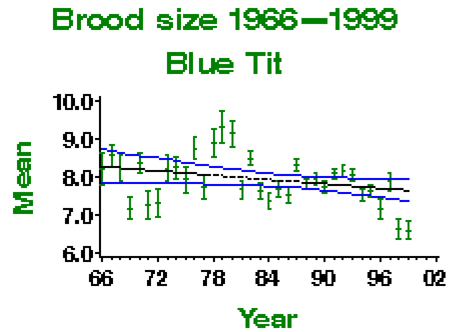


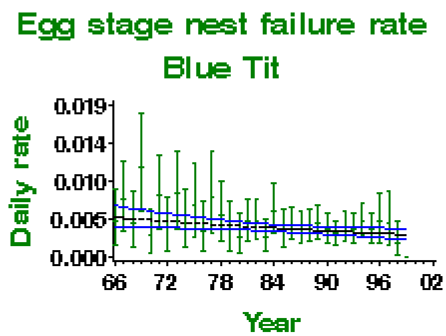
Table of productivity information for Blue Tit

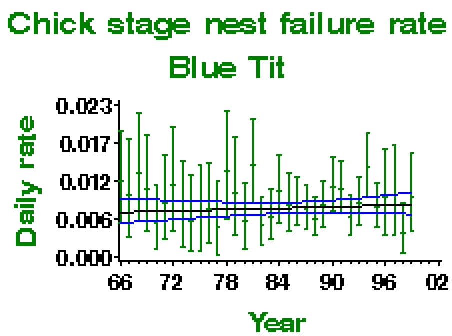
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	86	None				
Brood size	30	1968-1998	137	None				
Daily failure rate (eggs)	30	1968-1998	138	Linear decline	0.0048 nests/day	0.0029 nests/day	-0.0019 nests/day	
Daily failure rate (chicks)	30	1968-1998	118	None				
Laying date	30	1968-1998	120	None				
Percentage juveniles (CES)	14	1984-1998	96	Smoothed trend	164 productivity index	100 productivity index	-39%[>25*]	
					147	100		

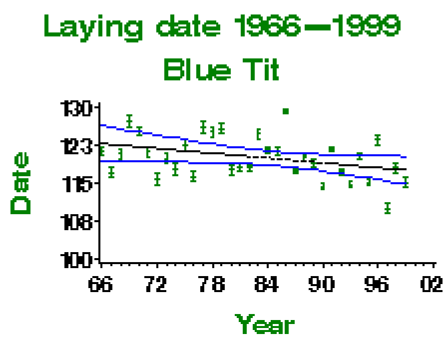
Percentage juveniles (CES)	10	1988-1998	110	Smoothed trend	productivity index	productivity index	-32%[>25*]	
Percentage juveniles (CES)	5	1993-1998	118	Smoothed trend	135 productivity index	100 productivity index	-26%[>25*]	

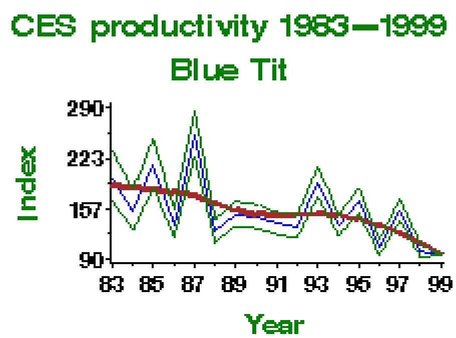












GREAT TIT *Parus major*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group Conservation Concern List

Long term trend

UK: Moderate increase

Status Summary

Great Tits have increased since the 1960s with two brief periods of stability or shallow decline breaking up the steady upward trajectory. The BBS suggests that the increase is continuing, especially in England. A positive effect of increasing winter food provision by humans 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).

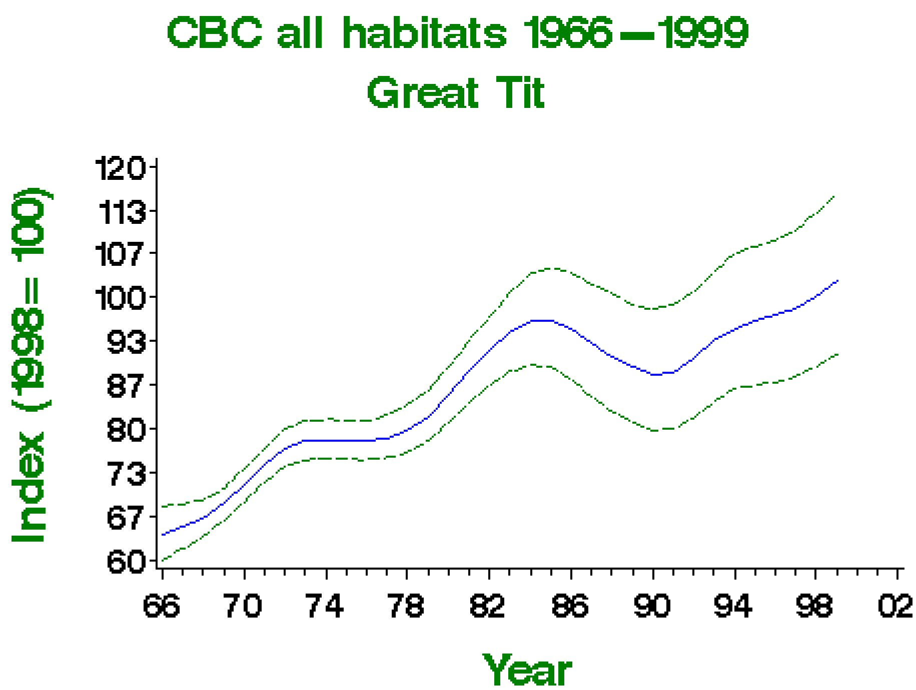
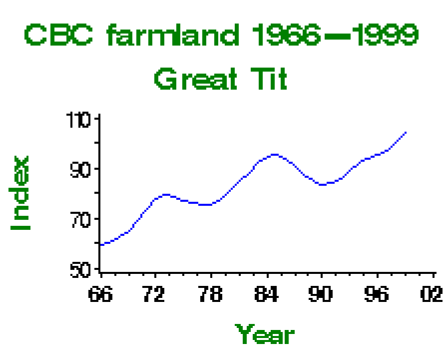


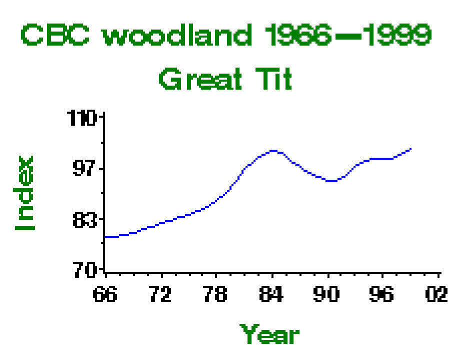
Table of population changes for Great Tit

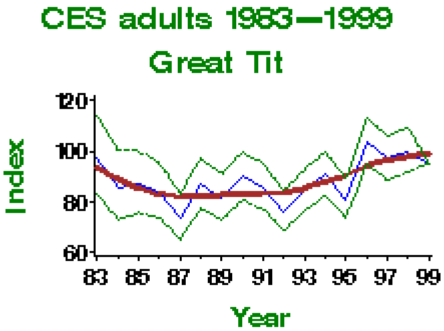
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	210	50	34	69		
	25	1973-1998	217	28	15	41		
	10	1988-1998	208	10	5	16		
	5	1993-1998	215	7	4	11		
CBC farmland	30	1968-1998	89	61	.	.		
	25	1973-	89	27	.	.		

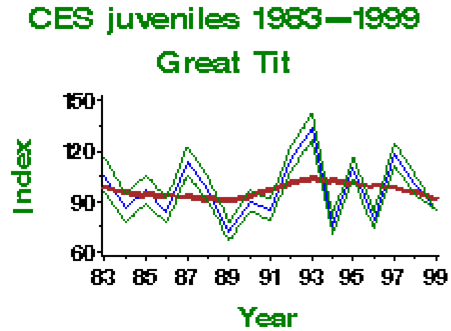
		1998						
	10	1988-1998	90	14	.	.		
	5	1993-1998	89	12	.	.		
CBC woodland	30	1968-1998	85	27	.	.		
	25	1973-1998	90	21	.	.		
	10	1988-1998	96	5	.	.		
	5	1993-1998	102	3	.	.		
CES adults	14	1984-1998	86	10	.	.		
	10	1988-1998	98	19	.	.		
	5	1993-1998	107	15	.	.		
CES juveniles	14	1984-1998	87	0	.	.		
	10	1988-1998	100	5	.	.		
	5	1993-1998	110	-8	.	.		
BBS UK	5	1994-1999	1460	12	7	18		
BBS England	5	1994-1999	1201	9	3	14		
BBS Scotland	5	1994-1999	102	31	4	64		
BBS Wales	5	1994-1999	112	21	1	44		
BBS N.Ireland	5	1994-1999	36	60	2	153		Small sample

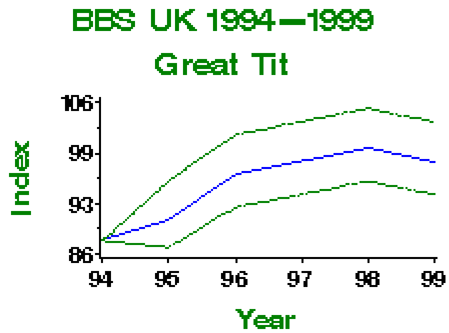
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

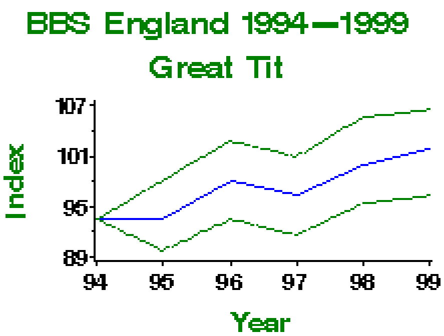


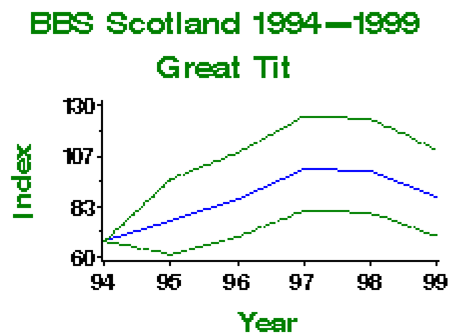


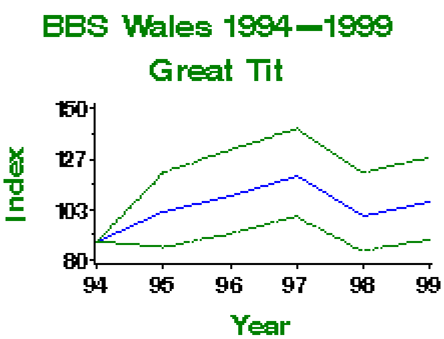












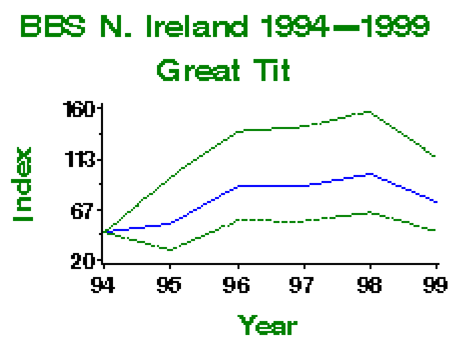
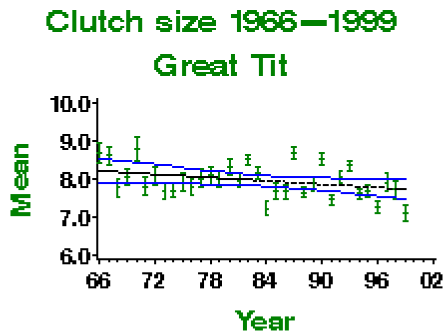
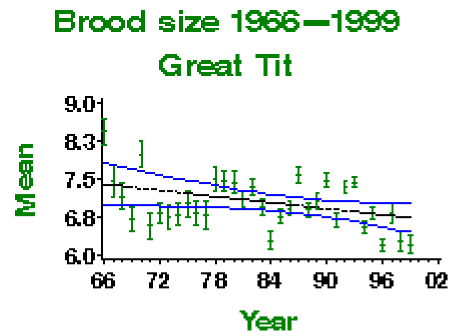


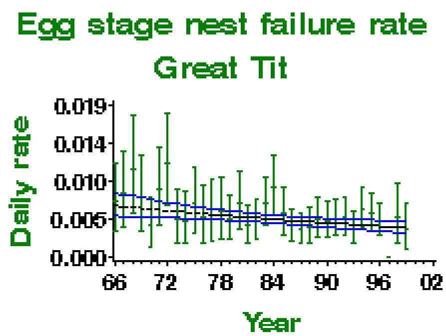
Table of productivity information for Great Tit

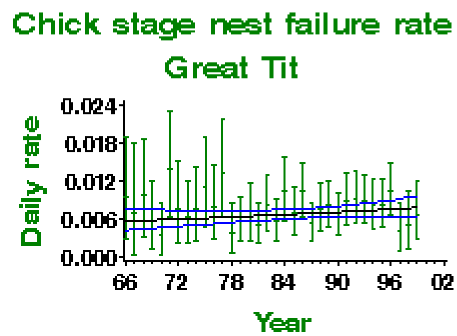
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	95	None				
Brood size	30	1968-1998	163	Linear decline	7.36 chicks	6.75 chicks	-0.61 chicks	
Daily failure rate (eggs)	30	1968-1998	156	Linear decline	0.0062 nests/day	0.0037 nests/day	-0.0025 nests/day	
Daily failure rate (chicks)	30	1968-1998	129	None				
Laying date	30	1968-1998	118	None				
Percentage juveniles (CES)	14	1984-1998	94	Smoothed trend	119 productivity index	100 productivity index	-16%	
					120	100		

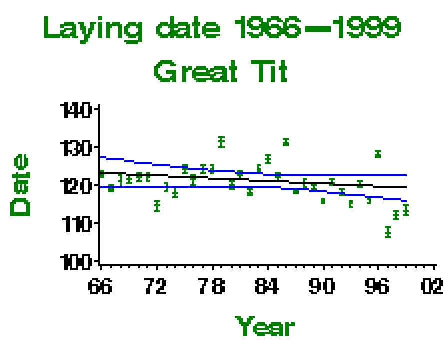
Percentage juveniles (CES)	10	1988-1998	107	Smoothed trend	productivity index	productivity index	-16%	
Percentage juveniles (CES)	5	1993-1998	117	Smoothed trend	121 productivity index	100 productivity index	-17%	

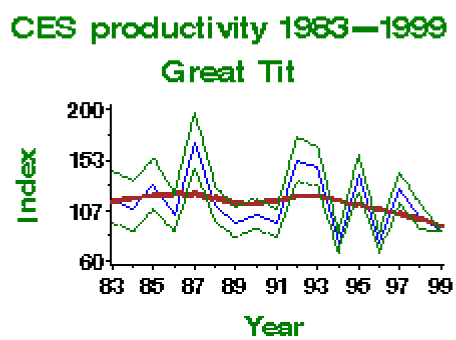












NUTHATCH *Sitta europaea*

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. The increase has been accompanied by a northward expansion in range (Gibbons *et al.* 1993) and has been associated a large increase in brood size and a trend towards earlier laying, the latter perhaps as a result of climate change (Crick *et al.* 1997).

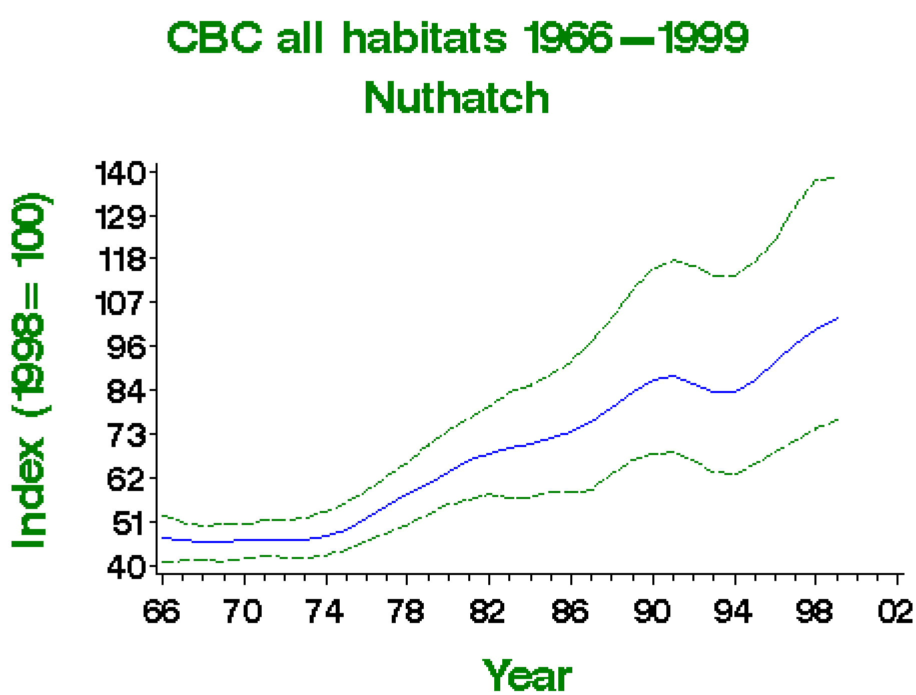
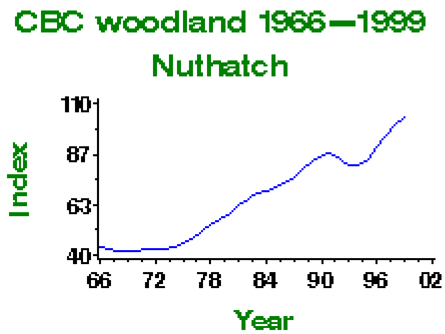


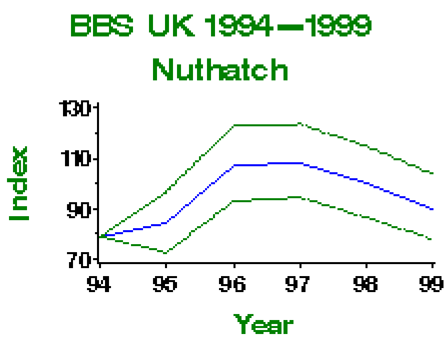
Table of population changes for Nuthatch

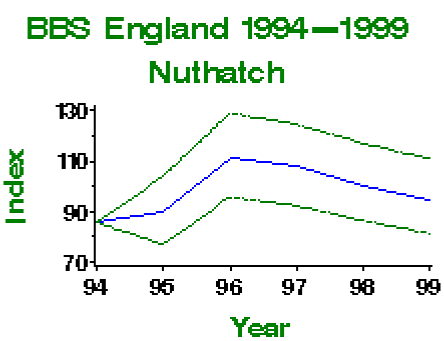
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	64	116	53	191		
	25	1973-1998	69	114	64	179		
	10	1988-1998	77	25	13	41		
	5	1993-1998	82	19	8	30		
CBC woodland	30	1968-1998	43	139	.	.		
	25	1973-1998	47	133	.	.		
		1988-						

	10	1998	56	25	.	.		
	5	1993-1998	61	22	.	.		
BBS UK	5	1994-1999	270	14	-1	32		
BBS England	5	1994-1999	223	11	-5	30		
BBS Wales	5	1994-1999	47	26	-13	82		Small sample

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







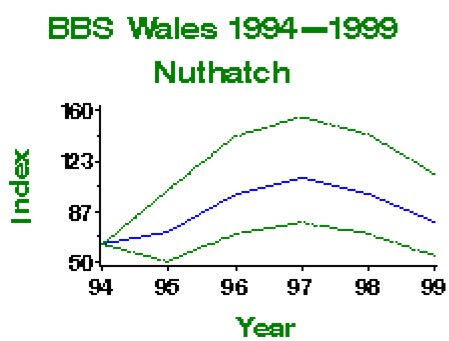
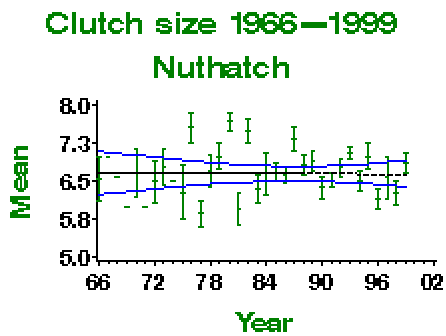
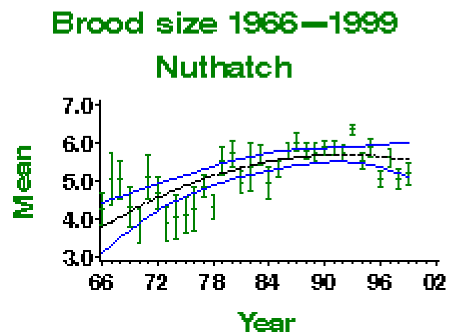
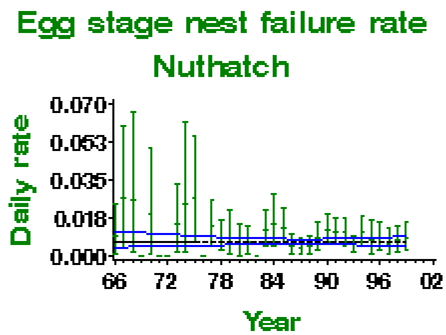


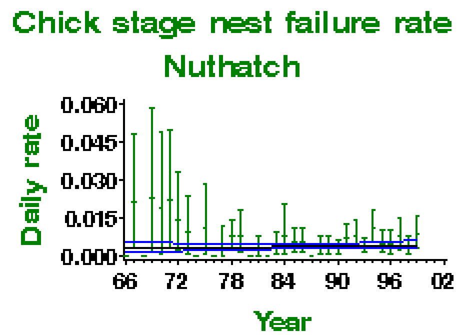
Table of productivity information for Nuthatch

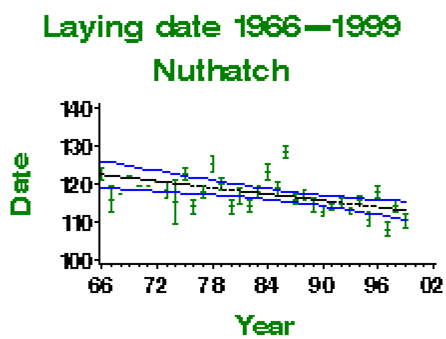
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	23	None				Small sample
Brood size	30	1968-1998	54	Curvilinear	4.06 chicks	5.61 chicks	1.55 chicks	
Daily failure rate (eggs)	30	1968-1998	42	None				
Daily failure rate (chicks)	30	1968-1998	45	None				
Laying date	30	1968-1998	25	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 CES productivity shows no trend over time, there has been a significant fall in the nest failure rates at the egg stage (18 days, comprising 14 days incubation + 4 days laying) from 31% to 12%.

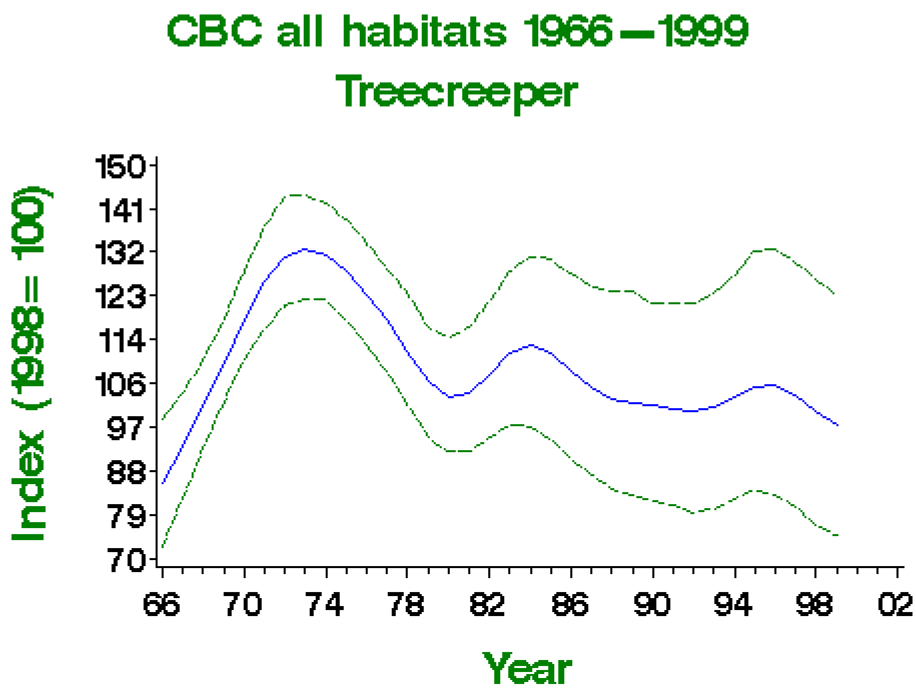
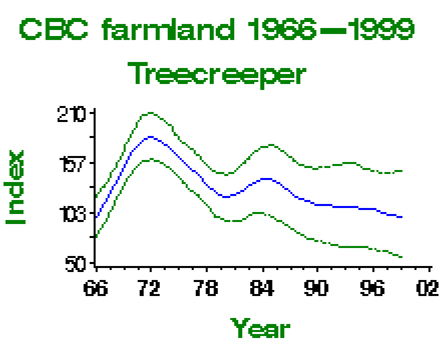


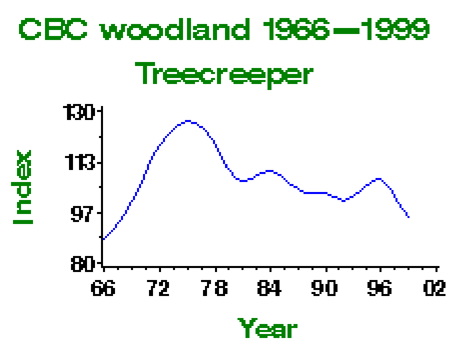
Table of population changes for Treecreeper

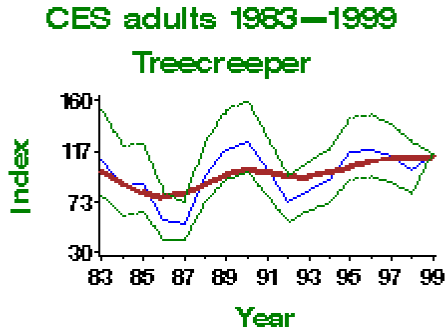
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	101	-1	-22	27		
	25	1973-1998	105	-25	-40	-9		
	10	1988-1998	103	-2	-15	8		
	5	1993-1998	105	-1	-10	7		
CBC farmland	30	1968-1998	30	-25	-55	9		

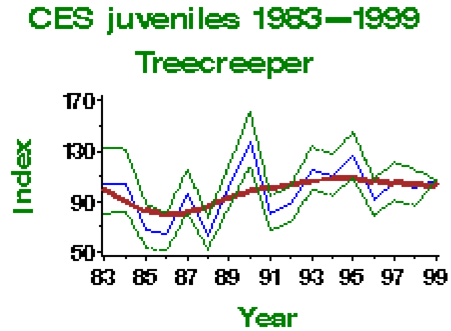
	25	1973-1998	30	-44	-66	-22	>25	
	10	1988-1998	25	-16	-43	18		
	5	1993-1998	25	-8	-34	21		
CBC woodland	30	1968-1998	57	5	.	.		
	25	1973-1998	62	-19	.	.		
	10	1988-1998	69	-3	.	.		
	5	1993-1998	72	-2	.	.		
CES adults	14	1984-1998	37	25	.	.		
	10	1988-1998	44	25	.	.		
	5	1993-1998	46	16	.	.		
CES juveniles	14	1984-1998	56	15	.	.		
	10	1988-1998	66	20	.	.		
	5	1993-1998	73	-2	.	.		
BBS UK	5	1994-1999	260	41	21	65		
BBS England	5	1994-1999	195	19	0	42		
BBS Scotland	5	1994-1999	27	86	11	210		Small sample
BBS Wales	5	1994-1999	33	75	11	178		Small sample

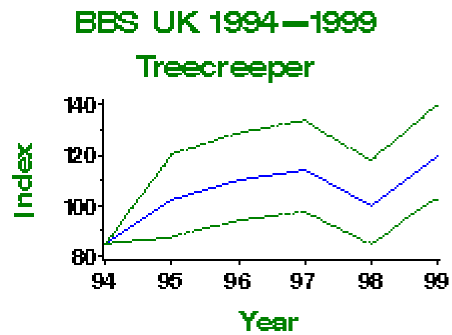
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

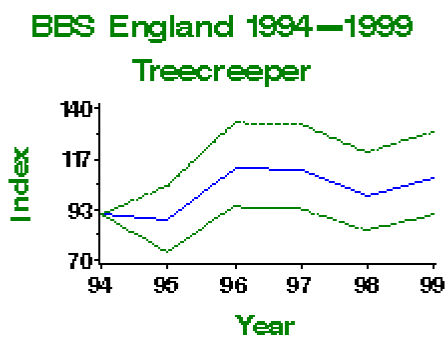












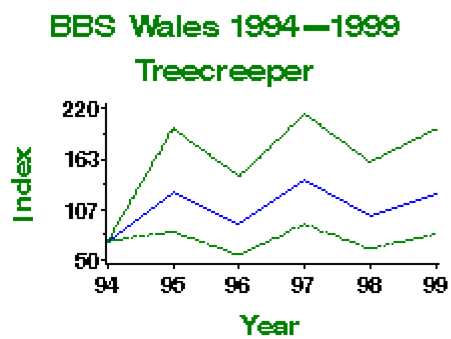
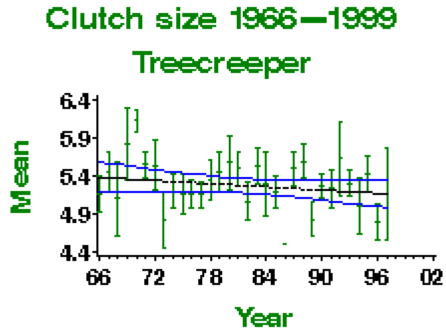
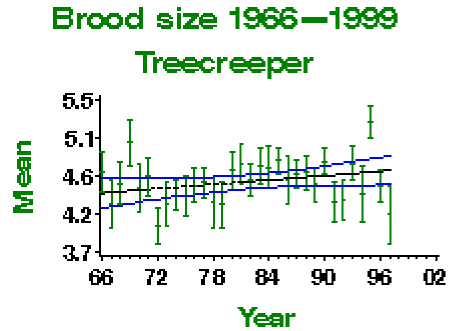
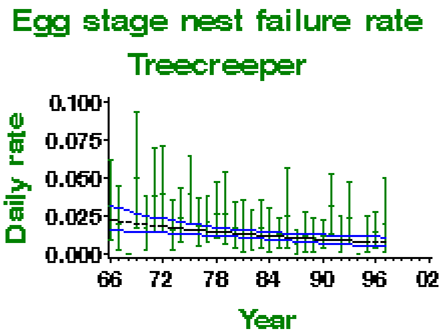


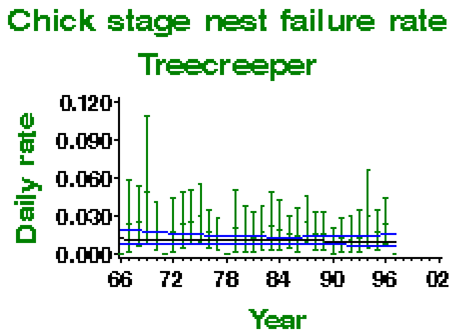
Table of productivity information for Treecreeper

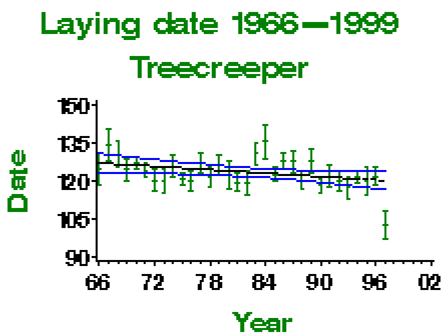
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	14	None				Small sample
Brood size	30	1968-1998	31	None				
Daily failure rate (eggs)	30	1968-1998	25	Linear decline	0.0206 nests/day	0.0071 nests/day	-0.0135 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	25	None				Small sample
Laying date	30	1968-1998	14	Linear decline	day 127	day 120	-7 days	Small sample
Percentage juveniles (CES)	14	1984-1998	63	Smoothed trend	112 productivity index	100 productivity index	-11%	
Percentage juveniles (CES)	10	1988-1998	74	Smoothed trend	124 productivity index	100 productivity index	-19%	
Percentage juveniles (CES)	5	1993-1998	80	Smoothed trend	128 productivity index	100 productivity index	-22%	

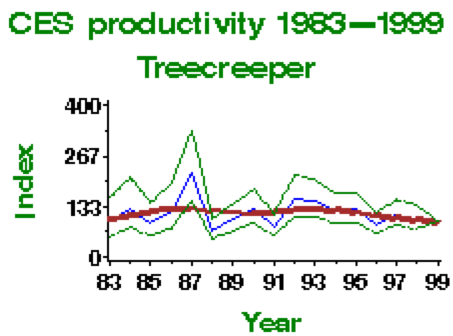

Clutch size 1966–1999
Treecreeper
Mean
6.4
5.9
5.4
4.9
4.4
66 72 78 84 90 96 02
Year


Brood size 1966–1999
Treecreeper
Mean
5.5
5.1
4.6
4.2
3.7
66 72 78 84 90 96 02
Year


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


Laying date 1966–1999
Treecreeper
Date
150
135
120
105
90
66 72 78 84 90 96 02
Year


CES productivity 1983–1999
Treecreeper
Index
400
267
133
0
83 85 87 89 91 93 95 97 99
Year

JAY *Garrulus glandarius*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

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

Status Summary

The UK Jay population remained stable in the species' preferred woodland habitat until the late 1980s, after which a decline may have begun, following an earlier decline on farmland CBC plots (Gregory & Marchant 1996). The BBS also suggests that a shallow decline may be in progress. 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 39% and it would be interesting to investigate the causes of this drop.

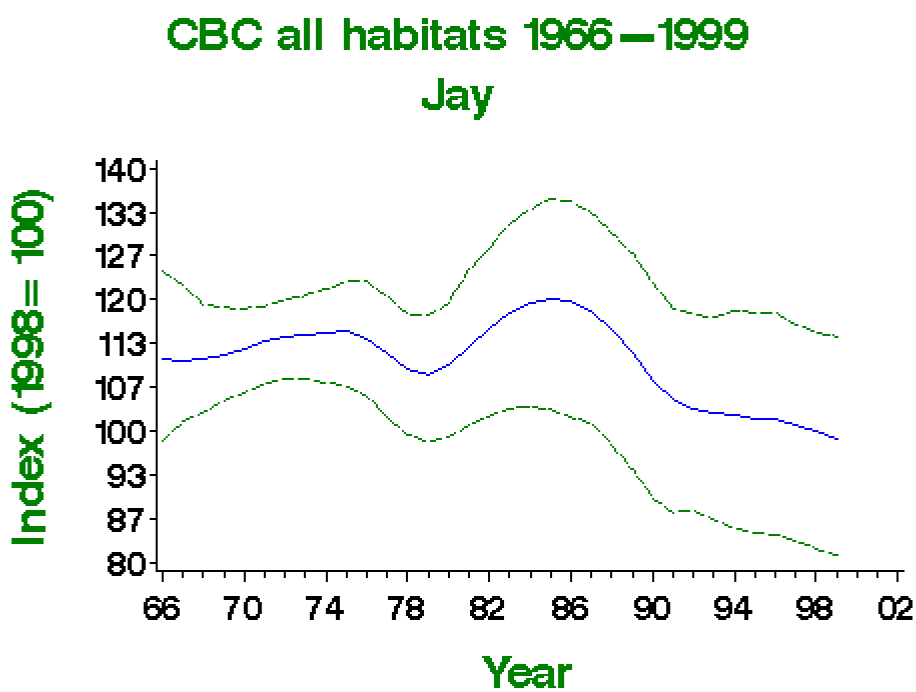
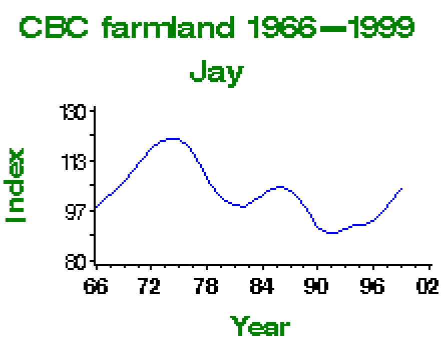


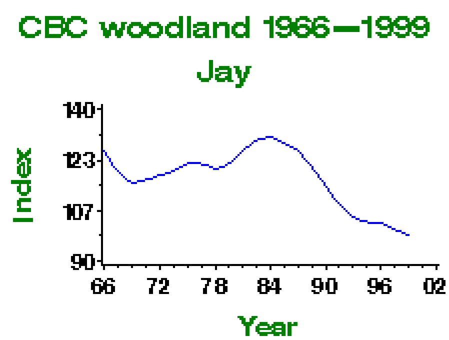
Table of population changes for Jay

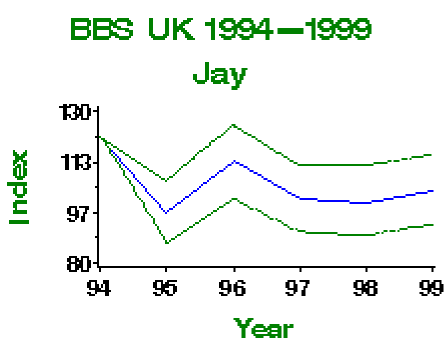
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	112	-10	-27	7		
	25	1973-1998	118	-13	-27	0		
	10	1988-1998	115	-13	-22	-5		
	5	1993-1998	118	-3	-10	3		
CBC farmland	30	1968-1998	30	-3	.	.		
	25	1973-	31	-16	.	.		

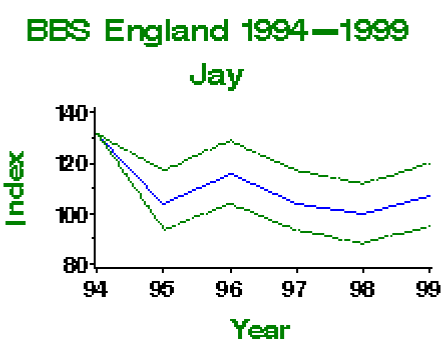
		1998						
	10	1988-1998	32	-1	.	.		
	5	1993-1998	32	10	.	.		
CBC woodland	30	1968-1998	64	-15	.	.		
	25	1973-1998	69	-16	.	.		
	10	1988-1998	72	-19	.	.		
	5	1993-1998	75	-4	.	.		
BBS UK	5	1994-1999	480	-15	-24	-5		
BBS England	5	1994-1999	421	-19	-28	-9		
BBS Wales	5	1994-1999	46	-3	-33	41		Small sample

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









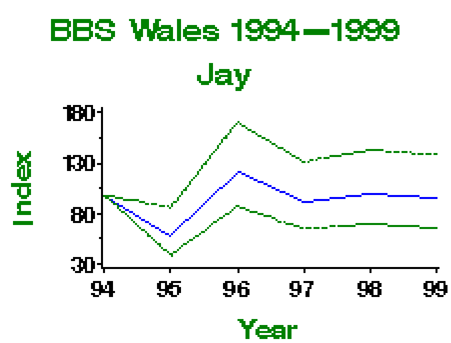
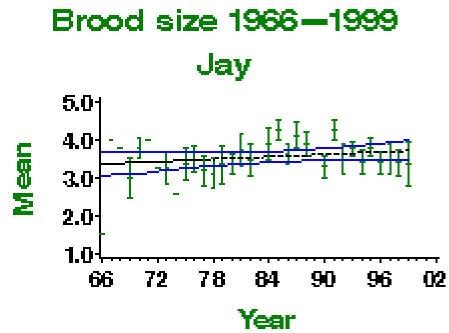
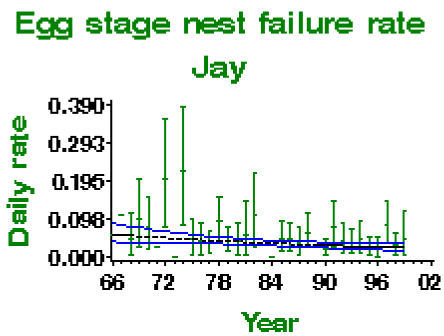


Table of productivity information for Jay

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Brood size	30	1968-1998	12	None				Small sample
Daily failure rate (eggs)	30	1968-1998	11	Linear decline	0.0542 nests/day	0.0234 nests/day	-0.0308 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, a stabilisation apparent in both CBC and BBS indices (Gregory & Marchant 1996). The trend has been associated with increases in breeding performance and earlier laying, as with other corvids, and probably reflects the benefits of a generalist strategy under changing environmental conditions. The decline in nest failure rates has been substantial, for the egg stage (21 days, comprising 17 days incubation + 4 days laying) failure rates have fallen from 45% to 9%, and for 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 14%, and is likely to be the result of reductions in gamekeeping activity. The trend in laying date can be partially explained by recent climate change (Crick & Sparks 1999). This adaptability has allowed a spread into urban and suburban habitats. Reduced control activities by gamekeepers may also have helped Magpies (Marchant *et al.* 1990).

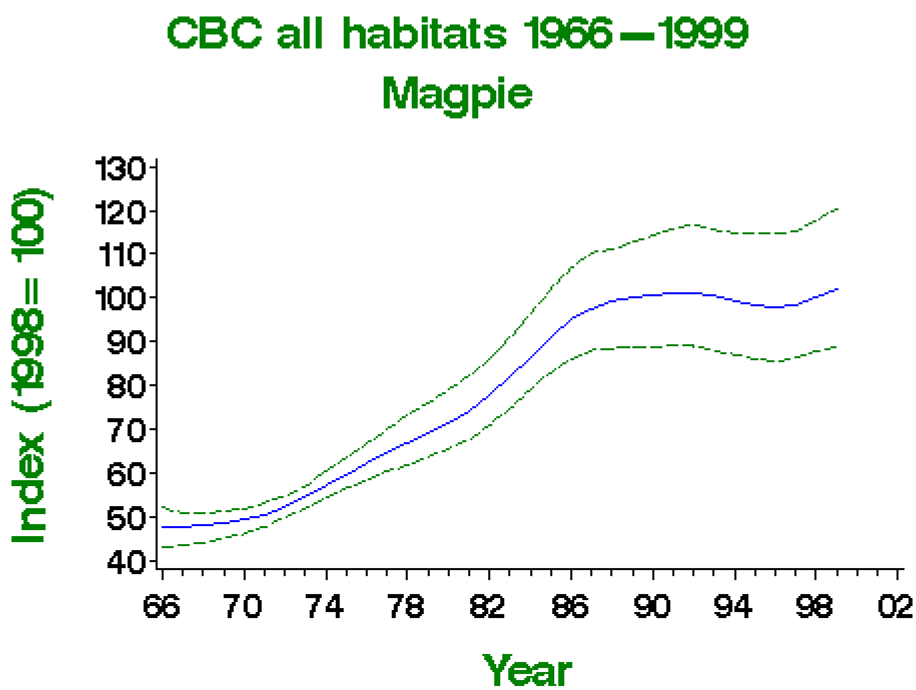
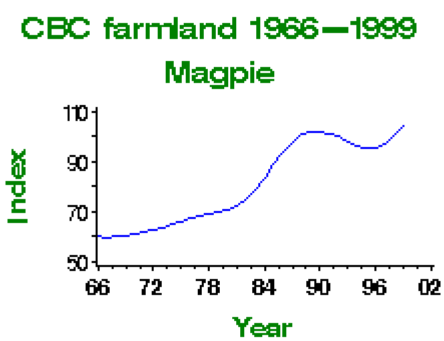


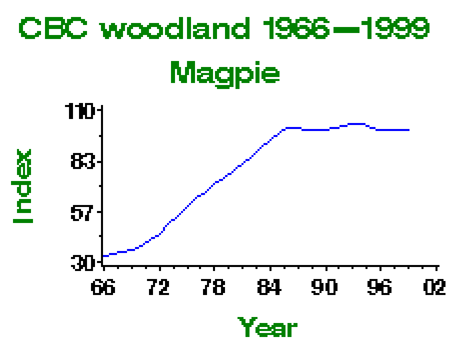
Table of population changes for Magpie

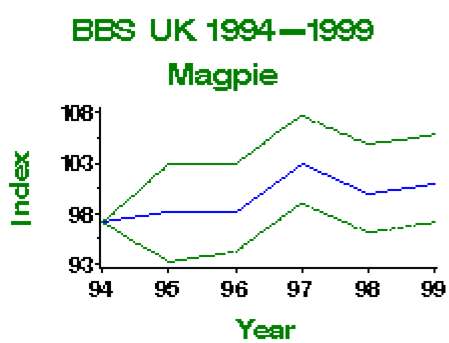
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	157	107	74	154		
	25	1973-1998	167	83	61	114		
	10	1988-1998	161	1	-8	7		
	5	1993-1998	162	-1	-6	4		

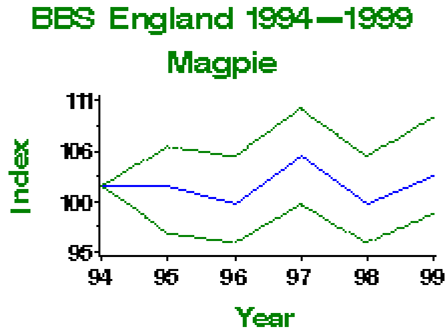
CBC farmland	30	1968-1998	71	67	.	.		
	25	1973-1998	74	57	.	.		
	10	1988-1998	77	-1	.	.		
	5	1993-1998	75	2	.	.		
CBC woodland	30	1968-1998	56	186	.	.		
	25	1973-1998	63	102	.	.		
	10	1988-1998	68	0	.	.		
	5	1993-1998	70	-3	.	.		
BBS UK	5	1994-1999	1335	4	0	9		
BBS England	5	1994-1999	1131	1	-3	7		
BBS Scotland	5	1994-1999	31	19	-16	69		Small sample
BBS Wales	5	1994-1999	116	16	-1	36		
BBS N.Ireland	5	1994-1999	49	9	-16	43		Small sample

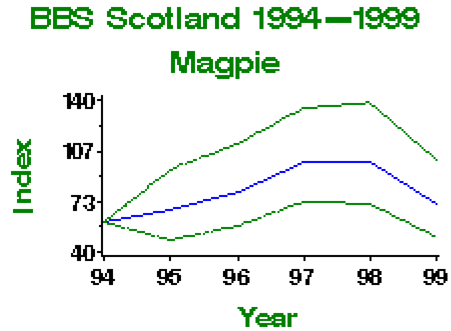
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

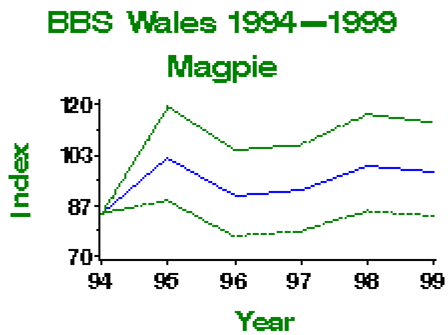












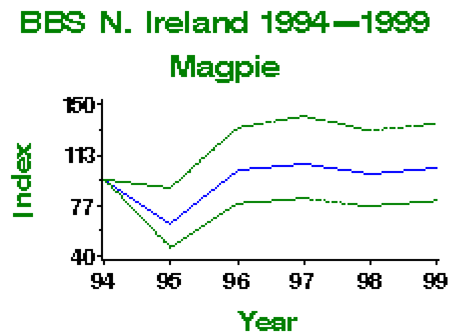
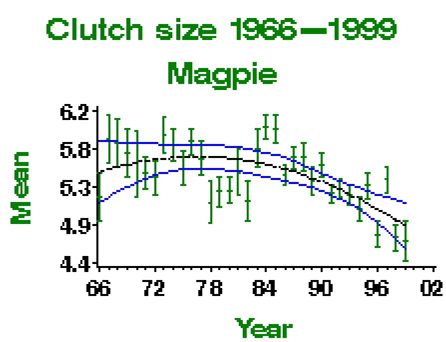
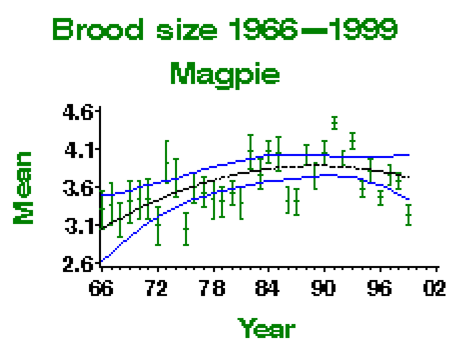
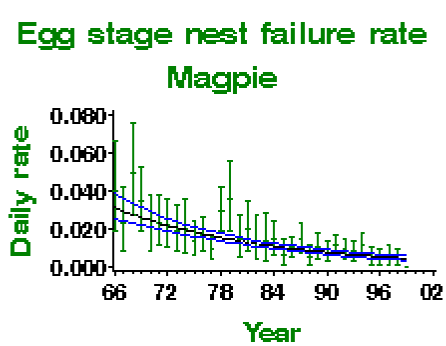


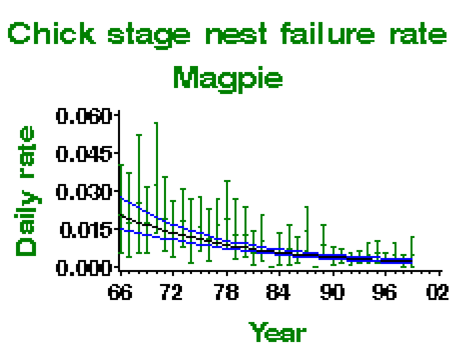
Table of productivity information for Magpie

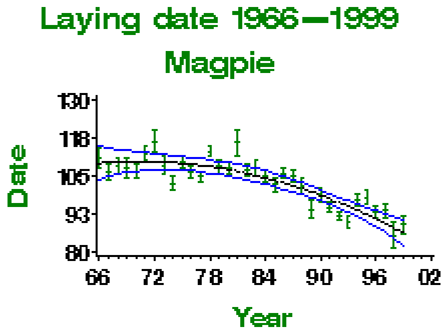
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	52	Curvilinear	5.55 eggs	4.91 eggs	-0.64 eggs	
Brood size	30	1968-1998	88	Curvilinear	3.19 chicks	3.77 chicks	0.58 chicks	
Daily failure rate (eggs)	30	1968-1998	59	Linear decline	0.0278 nests/day	0.0047 nests/day	-0.0231 nests/day	
Daily failure rate (chicks)	30	1968-1998	57	Linear decline	0.0177 nests/day	0.0021 nests/day	-0.0156 nests/day	
Laying date	30	1968-1998	40	Curvilinear	day 110	day 88	-22 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 tend to have increased since the 1960s (Gregory & Marchant 1996), an increase that the BBS suggests to be 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: for the egg stage (21 days, comprising 17 days incubation + 4 days laying) failure rate fell from 16% to 5%, and for the chick stage (30 days) they fell from 31% to 11%. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen from 42% to 16%. Typically in this species, the younger chicks of a brood perish quickly if food becomes limited, therefore the larger brood size (and probably the higher fledging success) is likely to be due to improved success at provisioning by parents (Henderson & Hart 1993).

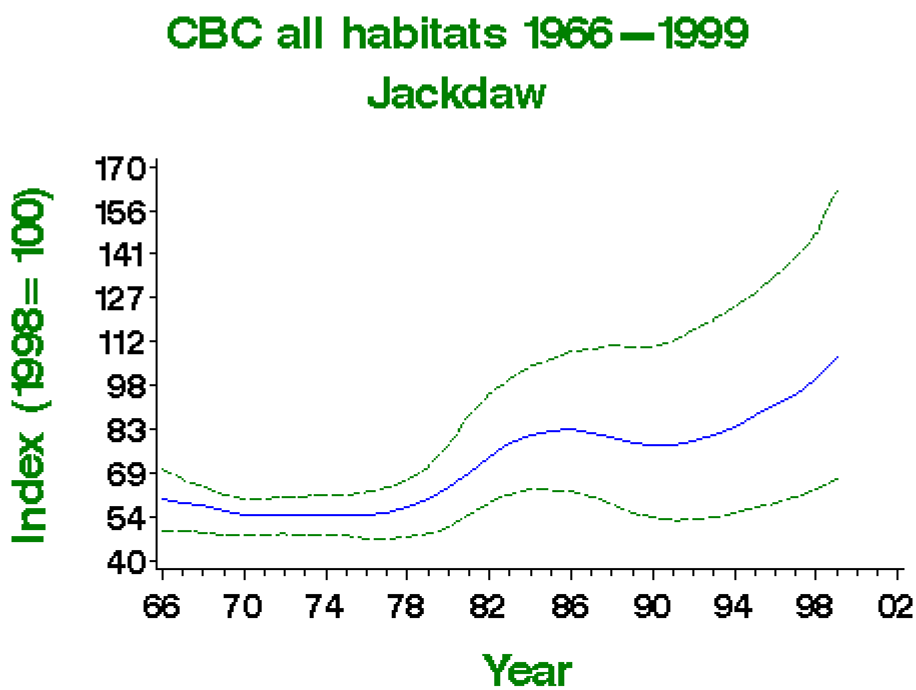
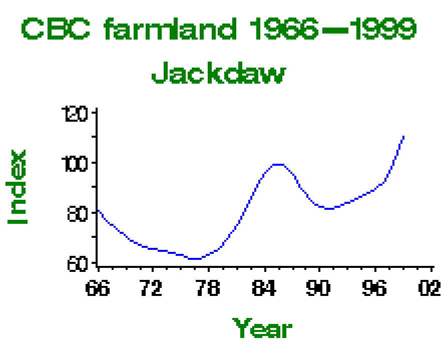


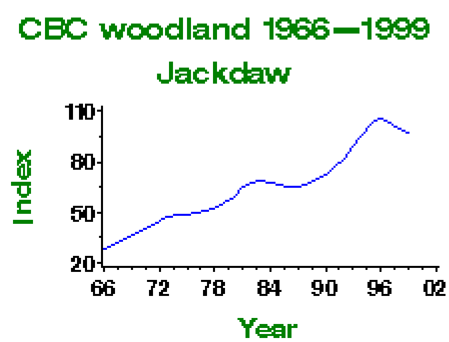
Table of population changes for Jackdaw

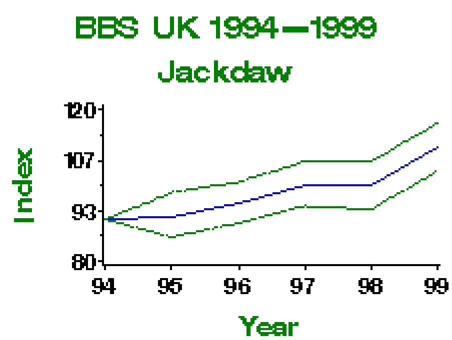
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	76	72	15	153		
	25	1973-1998	80	81	19	168		
	10	1988-1998	84	24	0	45		
	5	1993-1998	81	23	8	41		

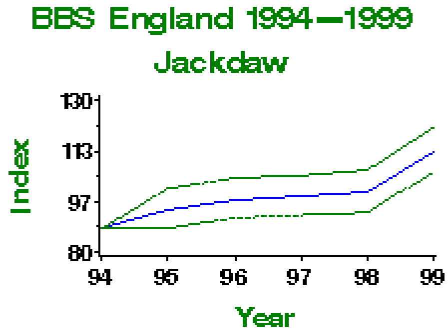
CBC farmland	30	1968-1998	40	36	.	.		
	25	1973-1998	41	55	.	.		
	10	1988-1998	45	12	.	.		
	5	1993-1998	43	20	.	.		
CBC woodland	30	1968-1998	25	199	.	.		
	25	1973-1998	27	113	.	.		
	10	1988-1998	31	50	.	.		
	5	1993-1998	30	13	.	.		
BBS UK	5	1994-1999	1120	21	14	28		
BBS England	5	1994-1999	889	29	21	38		
BBS Scotland	5	1994-1999	90	4	-17	30		
BBS Wales	5	1994-1999	94	19	-3	46		
BBS N.Ireland	5	1994-1999	42	-7	-35	32		Small sample

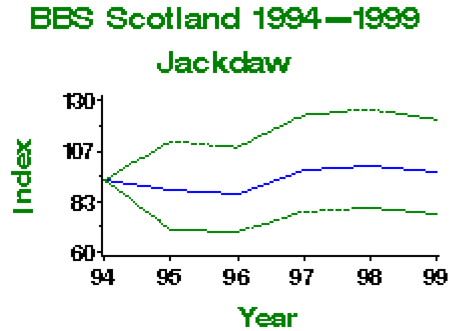
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

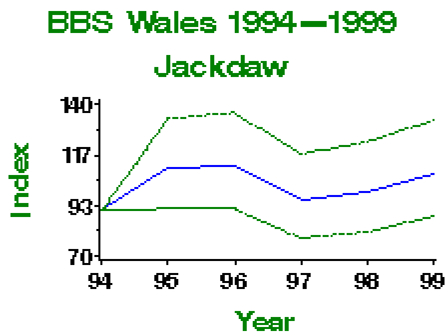












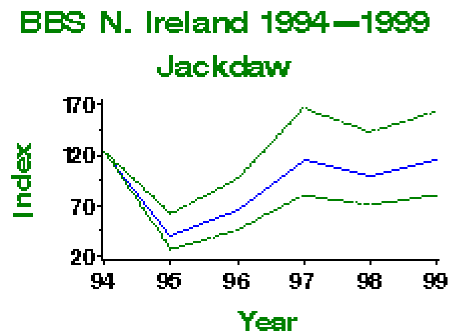
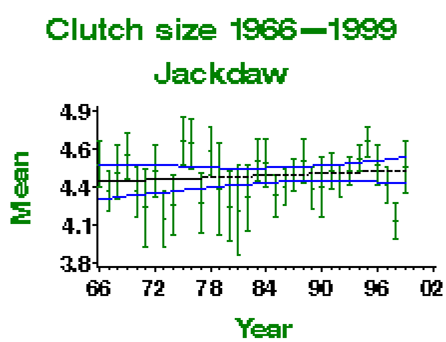
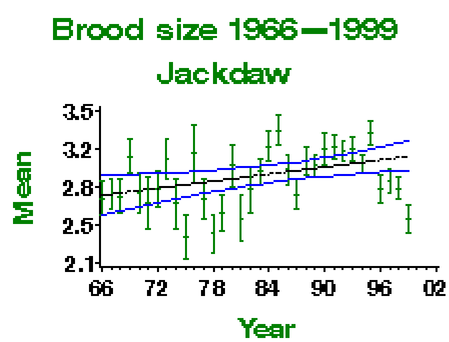
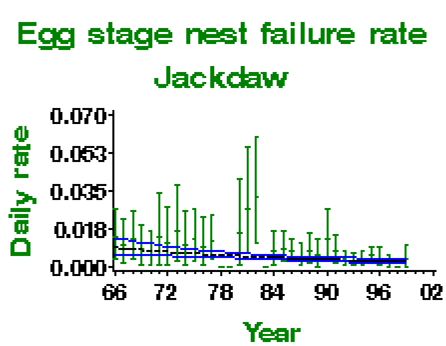


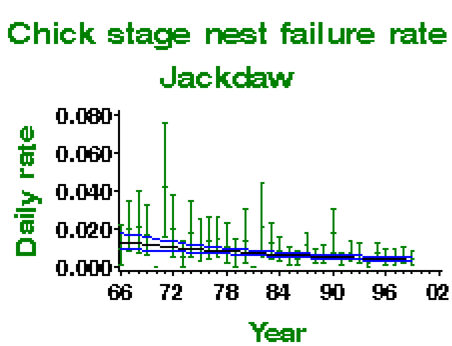
Table of productivity information for Jackdaw

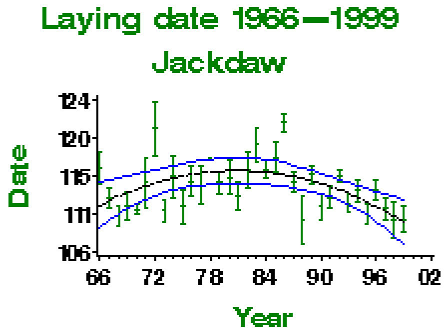
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	40	None				
Brood size	30	1968-1998	75	Linear increase	2.75 chicks	3.08 chicks	0.33 chicks	
Daily failure rate (eggs)	30	1968-1998	48	Linear decline	0.0081 nests/day	0.0024 nests/day	-0.0057 nests/day	
Daily failure rate (chicks)	30	1968-1998	45	Linear decline	0.0121 nests/day	0.0037 nests/day	-0.0084 nests/day	
Laying date	30	1968-1998	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: Shallow 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 indicated an increase of 40% between 1975 and 1996 (Marchant & Gregory 1999). The increase has been associated with general improvements in nesting success and probably reflects the species' adaptability in the face of agricultural change.

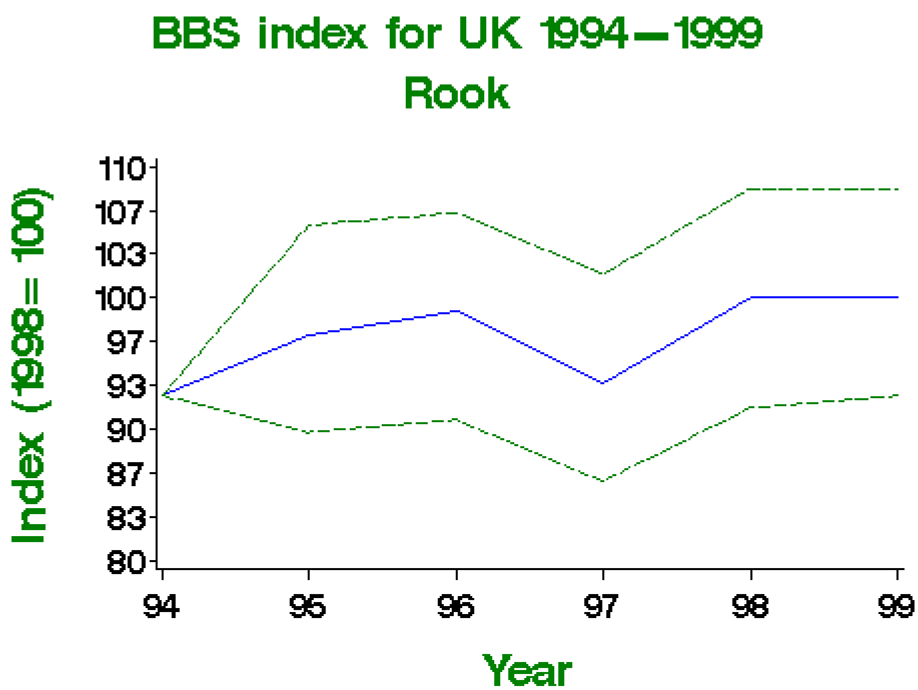


Table of population changes for Rook

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	971	8	0	17		
BBS England	5	1994-1999	770	4	-5	13		
BBS Scotland	5	1994-1999	98	-6	-29	23		
BBS Wales	5	1994-1999	58	1	-32	51		
BBS N.Ireland	5	1994-1999	42	107	42	201		Small sample

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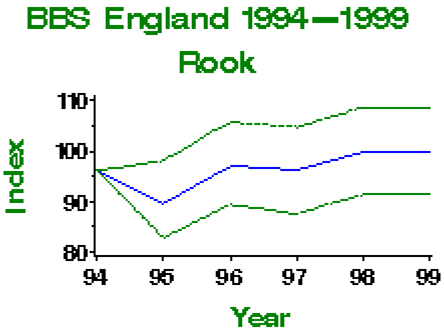
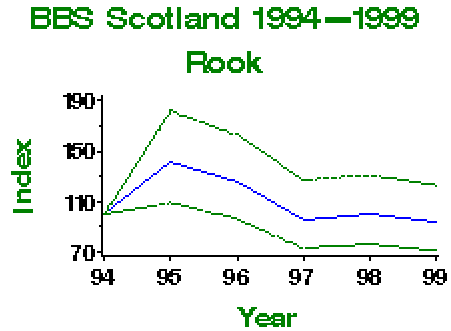
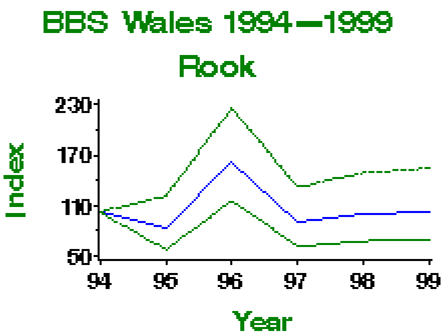






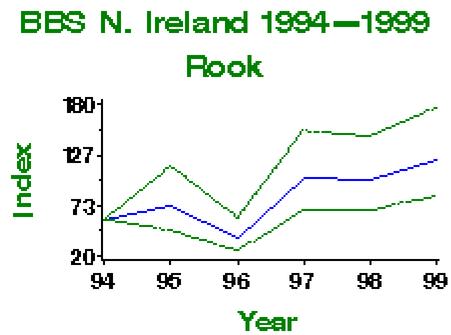
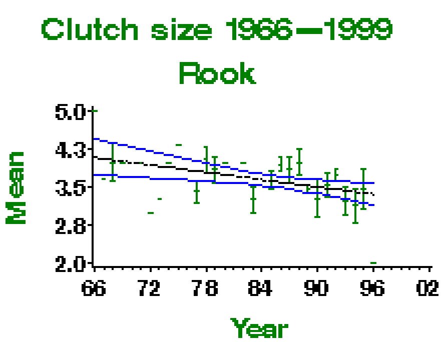
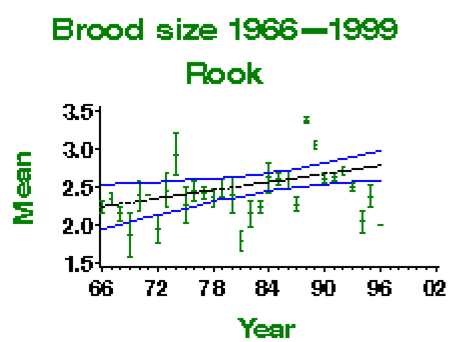
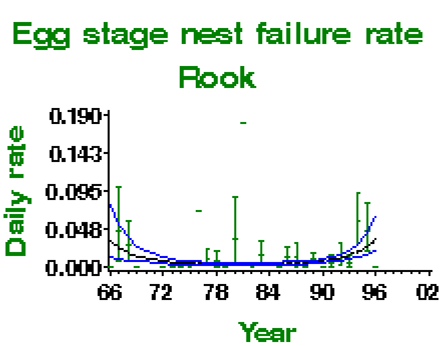


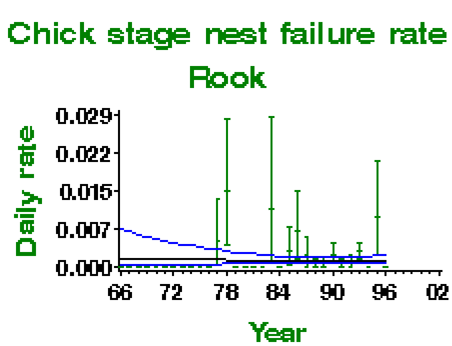
Table of productivity information for Rook

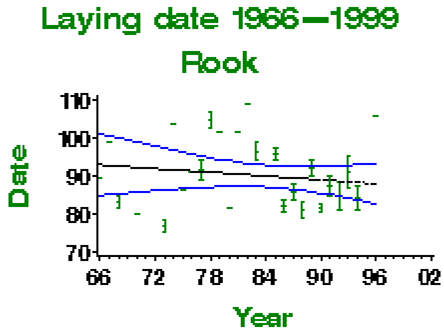
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	12	Linear decline	4.05 eggs	3.32 eggs	-0.73 eggs	Small sample
Brood size	30	1968-1998	98	Linear increase	2.28 chicks	2.82 chicks	0.54 chicks	
Daily failure rate (eggs)	30	1968-1998	39	Curvilinear	0.0175 nests/day	0.0683 nests/day	0.0508 nests/day	
Daily failure rate (chicks)	30	1968-1998	60	None				
Laying date	30	1968-1998	12	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 the BBS indicates that the increase is continuing. The 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).

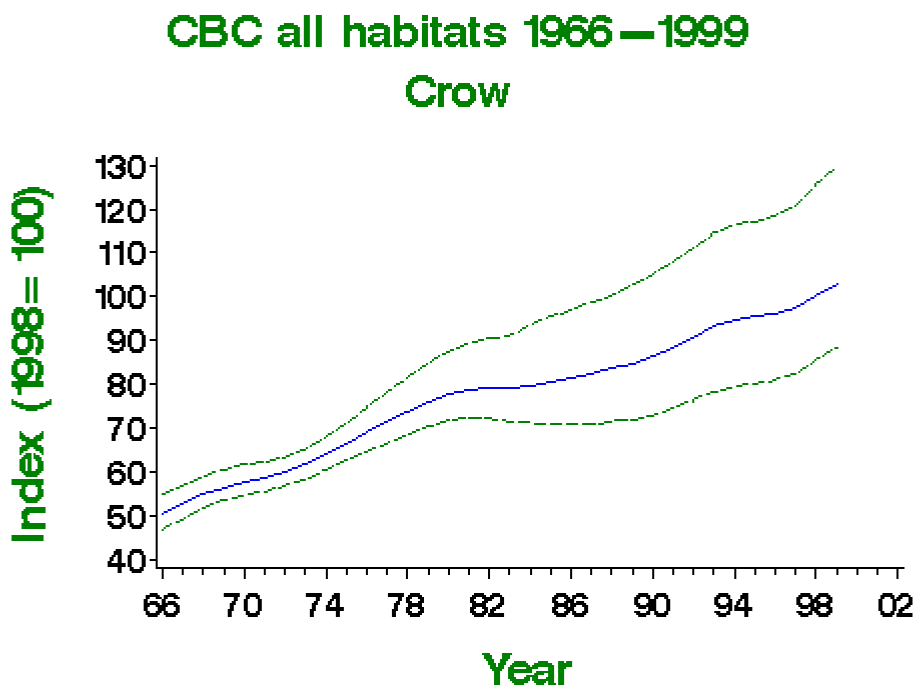


Table of population changes for Crow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	167	82	53	129		
	25	1973-1998	175	61	39	99		
	10	1988-1998	167	19	14	31		
	5	1993-1998	172	7	3	16		
CBC farmland	30	1968-1998	77	65	.	.		
	25	1973-1998	77	45	.	.		

	10	1988-1998	77	14	.	.		
	5	1993-1998	76	4	.	.		
CBC woodland	30	1968-1998	59	73	.	.		
	25	1973-1998	65	56	.	.		
	10	1988-1998	72	32	.	.		
	5	1993-1998	77	13	.	.		
BBS UK	5	1994-1999	1639	12	7	18		
BBS England	5	1994-1999	1345	17	11	23		
BBS Scotland	5	1994-1999	147	2	-15	23		
BBS Wales	5	1994-1999	137	7	-8	25		
BBS N.Ireland	5	1994-1999	43	81	19	177		Small sample

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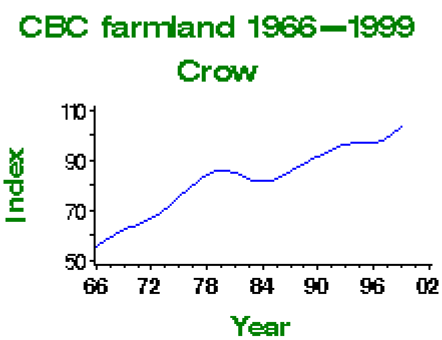

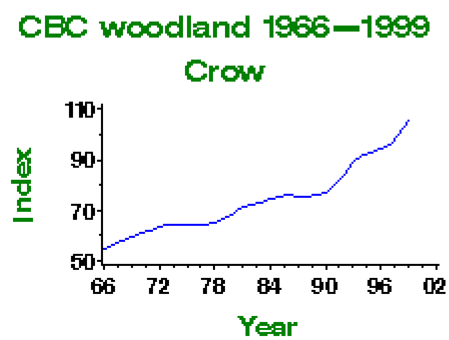

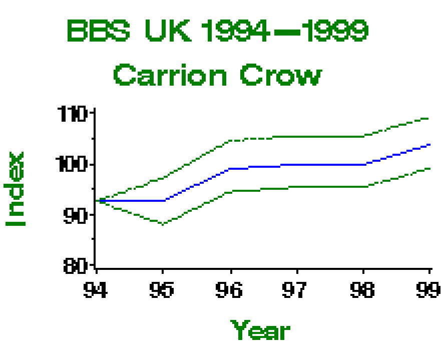

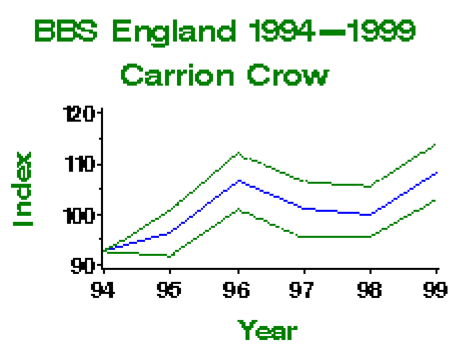

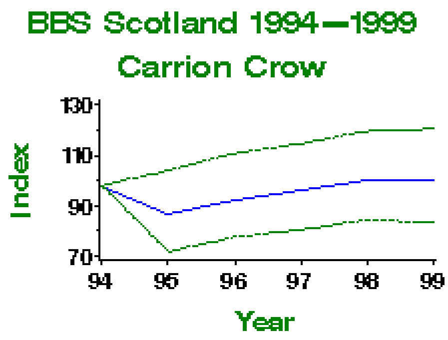

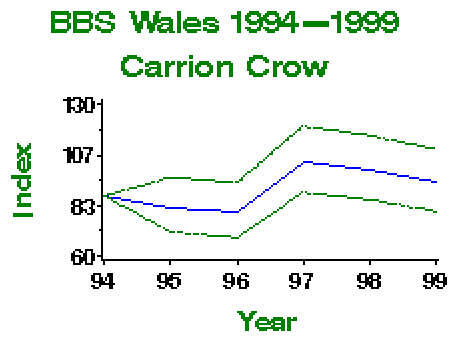

Productivity information is not currently available for this species

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, but breeding performance went through a trough in the 1980s in terms of brood size and egg nest losses.

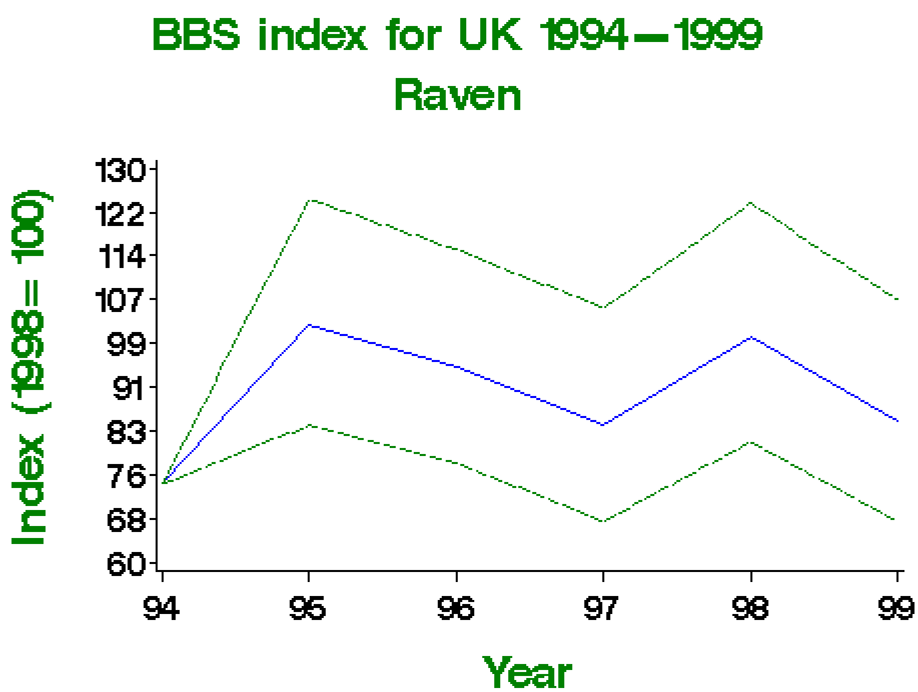

Table of population changes for Raven

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	150	15	-9	44		
BBS England	5	1994-1999	41	22	-19	83		Small sample
BBS Scotland	5	1994-1999	40	19	-26	91		Small sample
BBS Wales	5	1994-1999	56	-8	-35	30		

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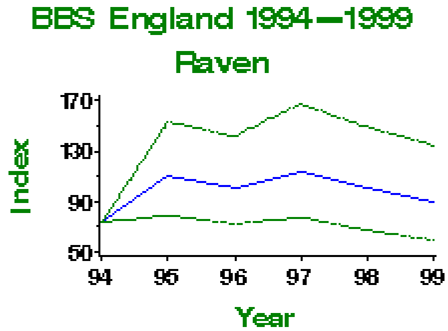
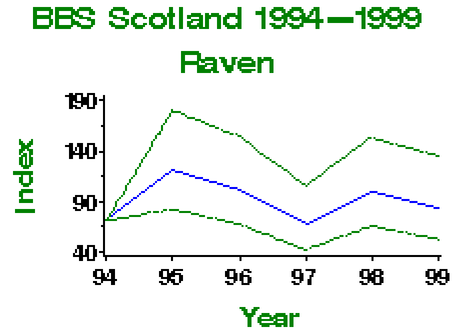




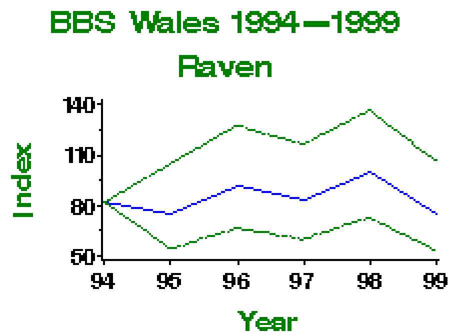
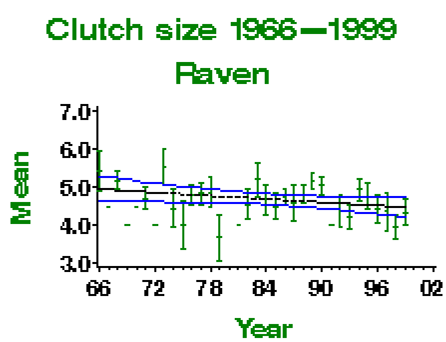
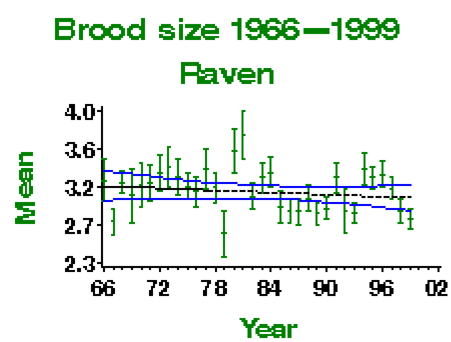
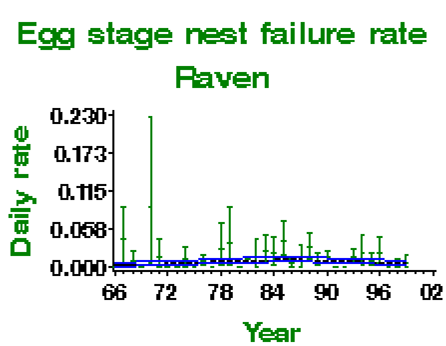


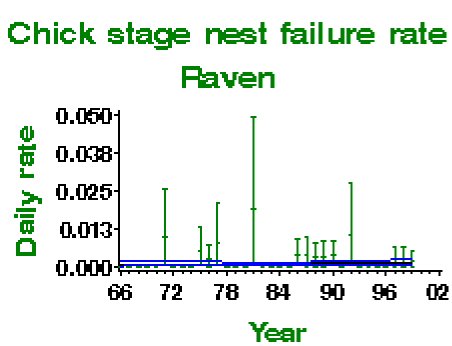
Table of productivity information for Raven

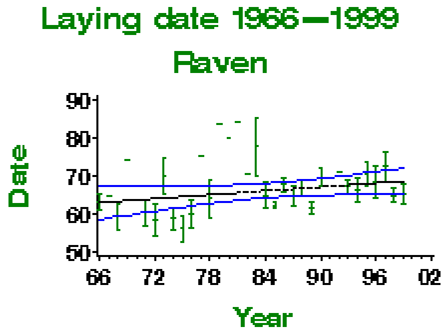
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	12	None				Small sample
Brood size	30	1968-1998	54	None				
Daily failure rate (eggs)	30	1968-1998	19	Curvilinear	0.0024 nests/day	0.0049 nests/day	0.0025 nests/day	Small sample
Daily failure rate (chicks)	30	1968-1998	24	None				Small sample
Laying date	30	1968-1998	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 Northern Ireland. Strong improvements in breeding performance have occurred, indicating that survival may have been more important in driving the decline. In addition to increases in average brood size, declines in nest failure rates have been large: for the egg stage (17 days, comprising 13 days incubation + 4 days laying) failure rate fell from 18% to 7%, and for the chick stage (21 days) they fell from 12% to 6%. Overall, from egg-laying to fledging, the proportion of nests that fail has fallen from 28% to 13%. Loss of the species' preferred feeding habitat, permanent pasture, has been cited as a possible cause of the decline (Gibbons *et al.* 1993).

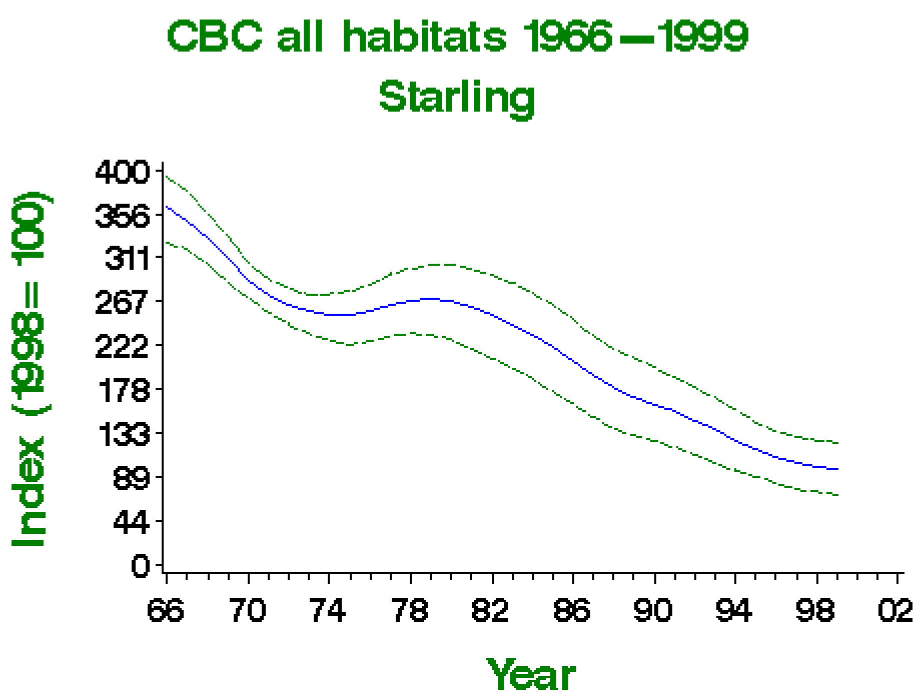
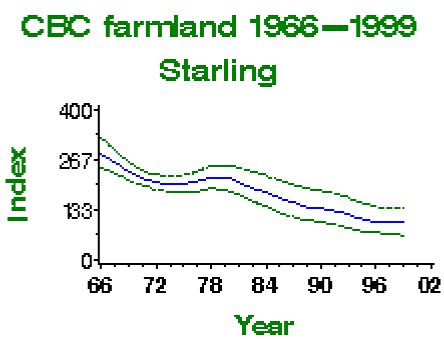


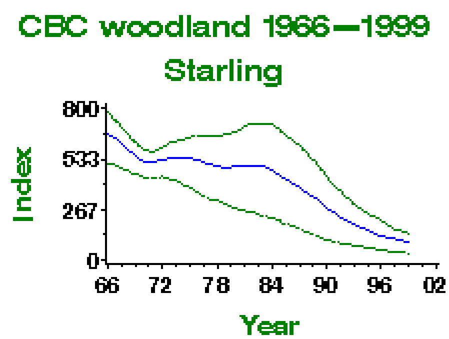
Table of population changes for Starling

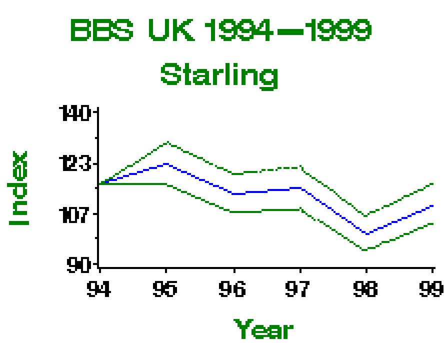
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	127	-70	-78	-61	>50	
	25	1973-1998	129	-61	-70	-51	>50	
	10	1988-1998	105	-45	-55	-35	>25	
	5	1993-1998	98	-27	-34	-19	>25	

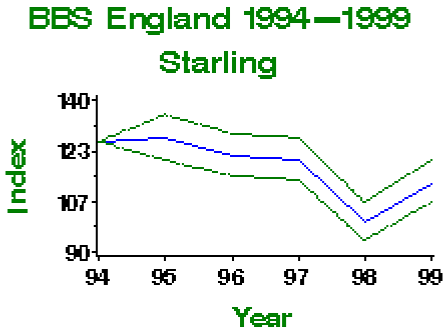
CBC farmland	30	1968-1998	66	-60	-73	-47	>50		
	25	1973-1998	66	-51	-65	-34	>50		
	10	1988-1998	64	-30	-44	-18	>25		
	5	1993-1998	60	-17	-28	-9			
CBC woodland	30	1968-1998	37	-83	-94	-70	>50		
	25	1973-1998	38	-81	-92	-72	>50		
	10	1988-1998	27	-71	-82	-60	>50		
	5	1993-1998	24	-47	-61	-36	>25		
BBS UK	5	1994-1999	1420	-6	-11	0			
BBS England	5	1994-1999	1182	-11	-16	-5			
BBS Scotland	5	1994-1999	117	22	-3	54			
BBS Wales	5	1994-1999	70	-41	-56	-21	(>25)		
BBS N.Ireland	5	1994-1999	43	31	-15	101		Small sample	

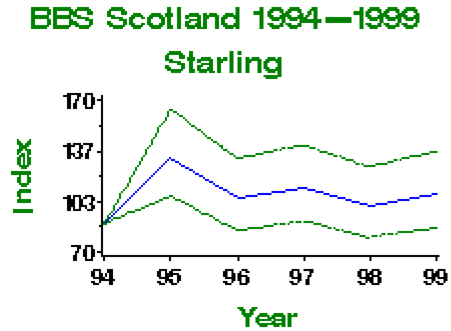
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

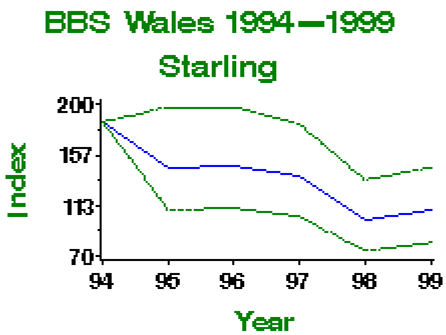












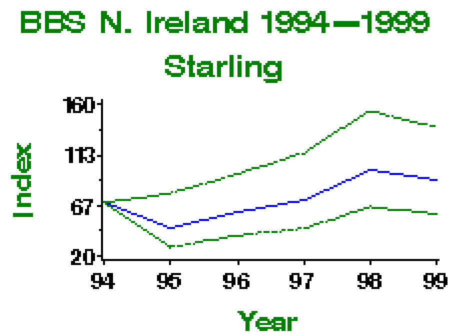
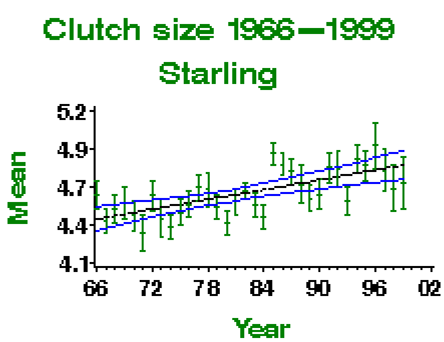
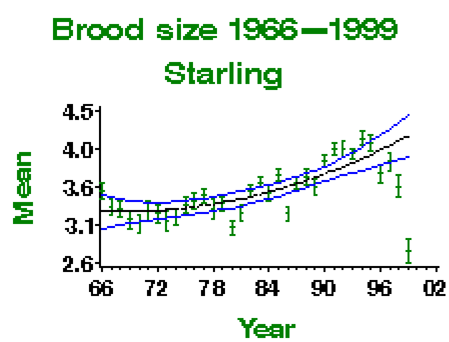
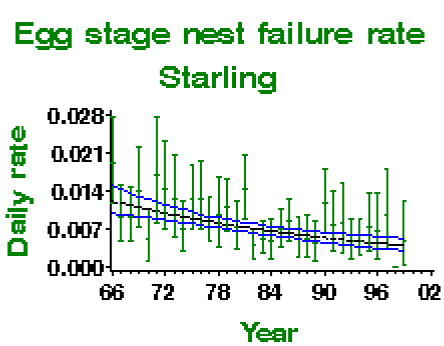


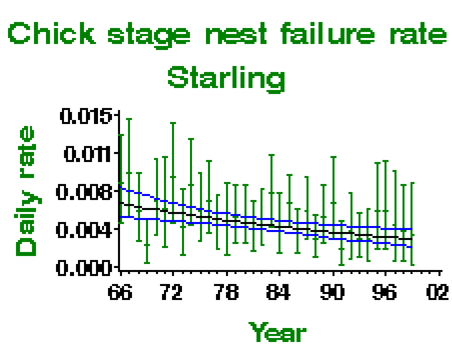
Table of productivity information for Starling

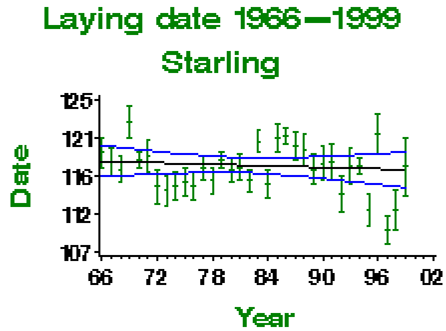
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	86	Linear increase	4.44 eggs	4.8 eggs	0.36 eggs	
Brood size	30	1968-1998	222	Curvilinear	3.24 chicks	4.13 chicks	0.89 chicks	
Daily failure rate (eggs)	30	1968-1998	131	Linear decline	0.0114 nests/day	0.0041 nests/day	-0.0073 nests/day	
Daily failure rate (chicks)	30	1968-1998	156	Linear decline	0.0059 nests/day	0.0028 nests/day	-0.0031 nests/day	
Laying date	30	1968-1998	95	None				











Insufficient data on CES available for this species

HOUSE SPARROW *Passer domesticus*

Conservation Listings

Unlisted/Green
Biodiversity Steering Group: Unlisted

Long term trend

UK: Rapid decline over last 25 years

Status Summary

House Sparrow was not monitored well by the CBC before the mid-1970s and, being colonial and a human commensal, is not ideally suited to the CBC's methods. However, the trend shown by the CBC is very similar to that shown by the BTO's Garden Bird Feeding Survey (Glue 1994) and is supported by 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 include reductions in spilt grain, increases in cat predation and the use of toxic additives in unleaded petrol.

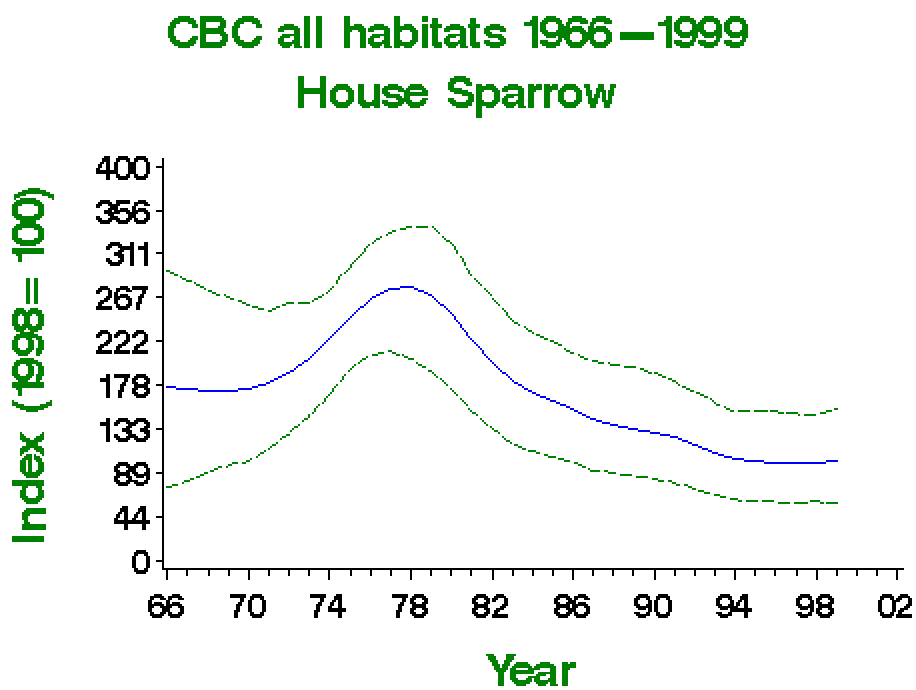
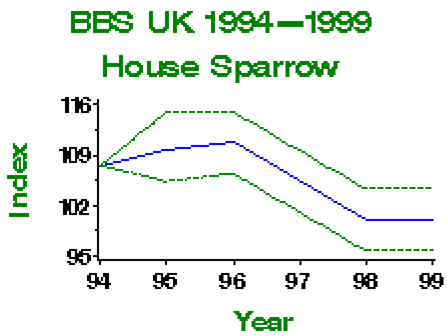


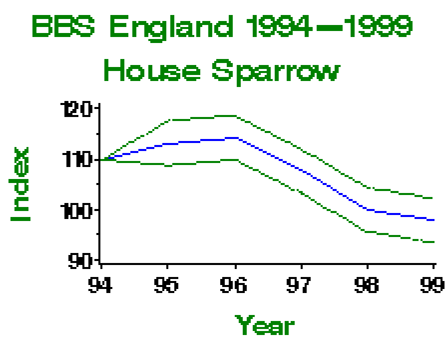
Table of population changes for House Sparrow

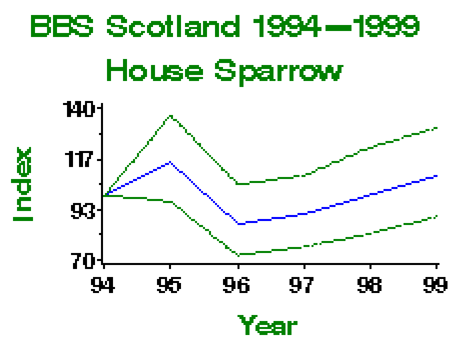
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	41	-42	-80	28		
	25	1973-1998	48	-51	-76	-29	>50	
	10	1988-1998	65	-28	-47	-6	>25	
	5	1993-1998	65	-10	-21	2		
BBS UK	5	1994-1999	1187	-7	-11	-3		

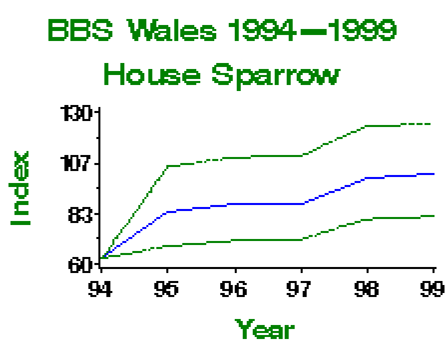
BBS England	5	1994-1999	1002	-11	-15	-7		
BBS Scotland	5	1994-1999	72	9	-10	31		
BBS Wales	5	1994-1999	79	62	31	100		
BBS N.Ireland	5	1994-1999	28	-47	-68	-12	(>25)	Small sample

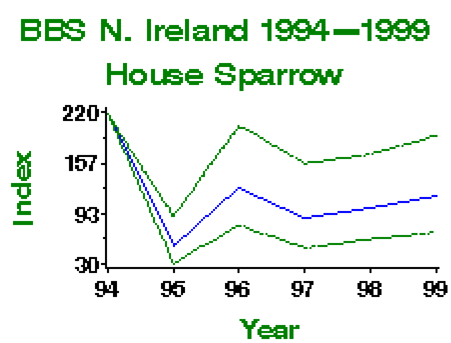
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB











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 the BBS confirms. Clear range contractions have also occurred (Gibbons *et al.* 1993). Breeding performance has improved, suggesting that it has not driven the decline, for example failure rates at the egg stage (16 days, comprising 12 days incubation + 4 days laying) fell from 10% to 5%. 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.

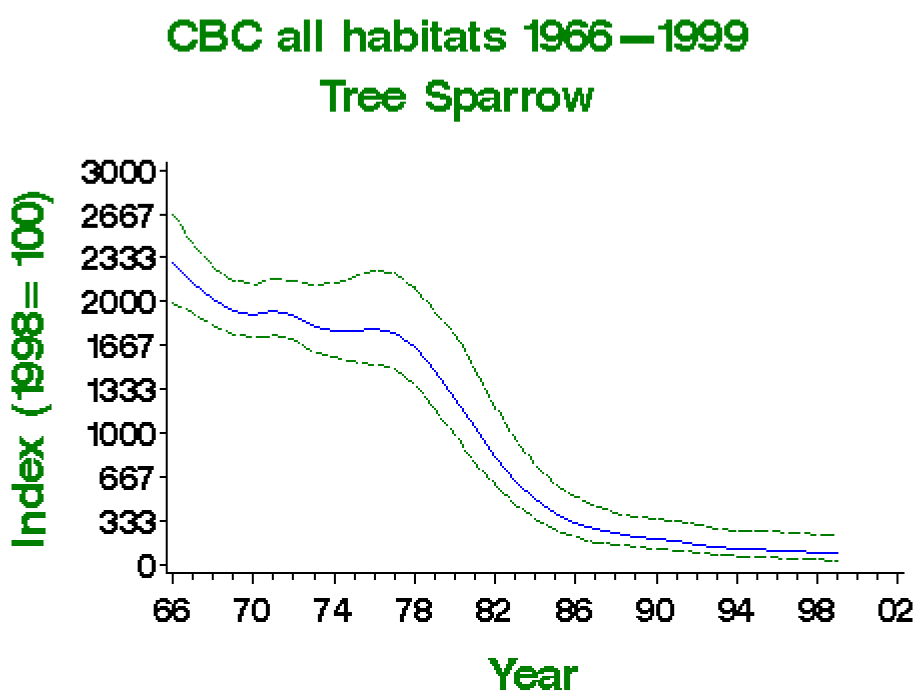
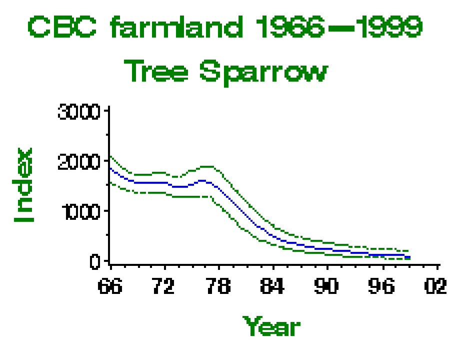


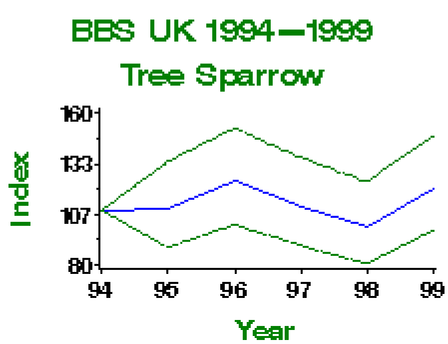
Table of population changes for Tree Sparrow

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	60	-95	-98	-88	>50	
	25	1973-1998	55	-94	-98	-87	>50	
	10	1988-1998	22	-58	-80	-27	>50	
	5	1993-1998	15	-30	-54	-6	>25	Small sample

CBC farmland	30	1968-1998	40	-94	-98	-86	>50	
	25	1973-1998	35	-93	-97	-86	>50	
	10	1988-1998	17	-63	-84	-38	>50	Small sample
	5	1993-1998	12	-36	-64	-6	>25	Small sample
BBS UK	5	1994-1999	132	11	-10	36		
BBS England	5	1994-1999	112	9	-12	36		

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





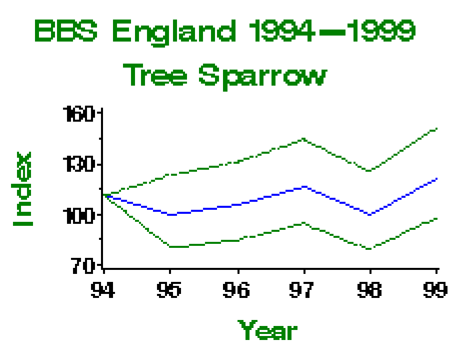
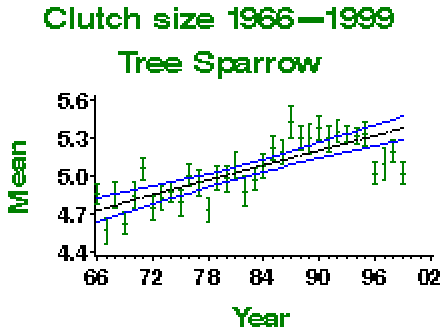
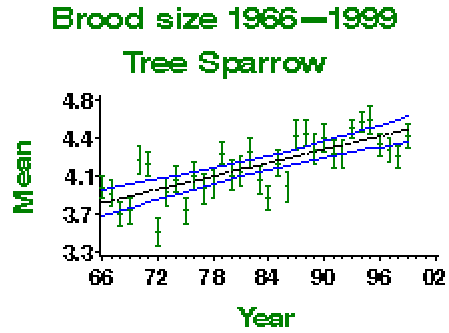
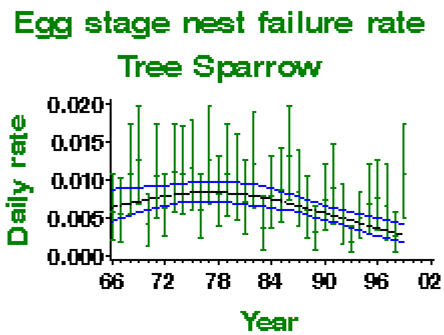


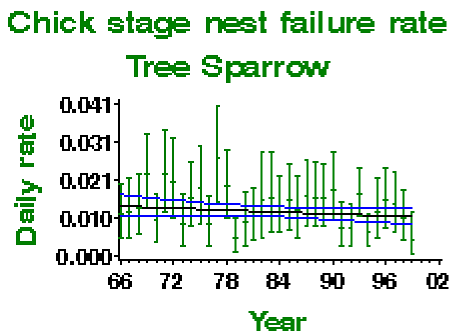
Table of productivity information for Tree Sparrow

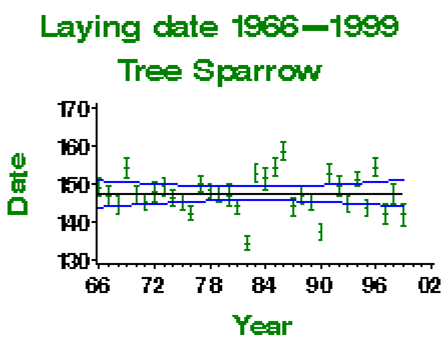
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	93	Linear increase	4.77 eggs	5.36 eggs	0.59 eggs	
Brood size	30	1968-1998	104	Linear increase	3.83 chicks	4.49 chicks	0.66 chicks	
Daily failure rate (eggs)	30	1968-1998	122	Curvilinear	0.0069 nests/day	0.003 nests/day	-0.0039 nests/day	
Daily failure rate (chicks)	30	1968-1998	88	None				
Laying date	30	1968-1998	106	None				











Insufficient data on CES 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)

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 since a similar pattern is shown by each of the CBC, CES and BBS indices. The stabilisation 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 improvements in breeding performance during the population increase (declines in egg-stage nest failure rates and increased brood sizes). Trends in laying date can 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.

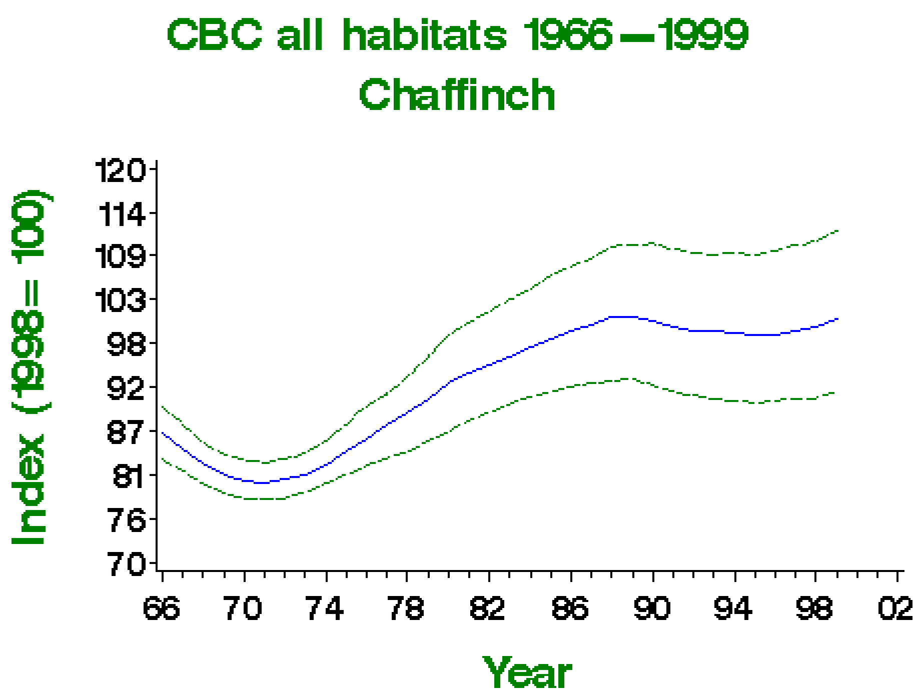
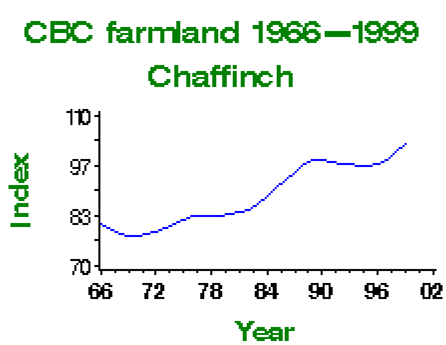


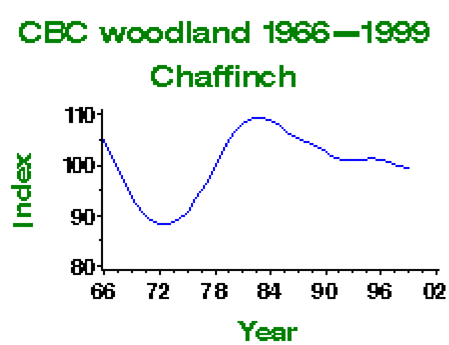
Table of population changes for Chaffinch

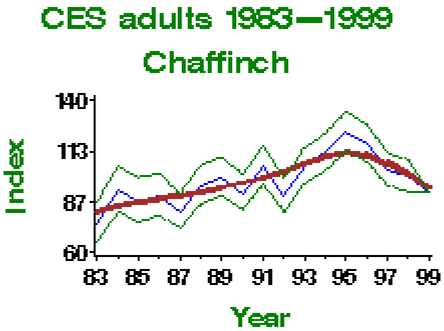
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	216	21	9	36		
	25	1973-1998	223	23	13	34		
	10	1988-1998	212	-1	-5	4		
	5	1993-1998	220	1	-3	4		

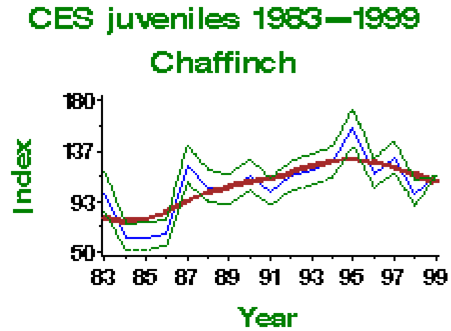
CBC farmland	30	1968-1998	94	27	.	.		
	25	1973-1998	94	25	.	.		
	10	1988-1998	94	3	.	.		
	5	1993-1998	95	3	.	.		
CBC woodland	30	1968-1998	85	3	.	.		
	25	1973-1998	90	13	.	.		
	10	1988-1998	97	-5	.	.		
	5	1993-1998	102	-1	.	.		
CES adults	14	1984-1998	76	20	.	.		
	10	1988-1998	86	10	.	.		
	5	1993-1998	95	-5	.	.		
CES juveniles	14	1984-1998	54	52	.	.		
	10	1988-1998	63	15	.	.		
	5	1993-1998	71	-6	.	.		
BBS UK	5	1994-1999	1730	3	0	6		
BBS England	5	1994-1999	1342	3	0	6		
BBS Scotland	5	1994-1999	192	1	-8	11		
BBS Wales	5	1994-1999	134	-14	-23	-3		
BBS N.Ireland	5	1994-1999	53	64	20	123		

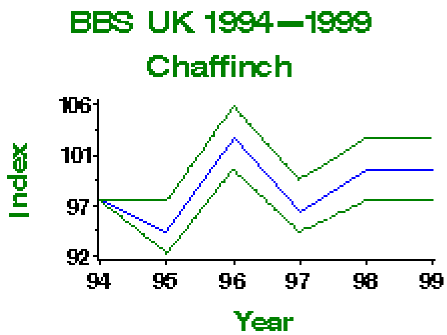
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

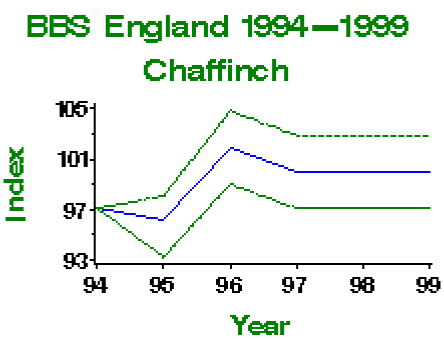


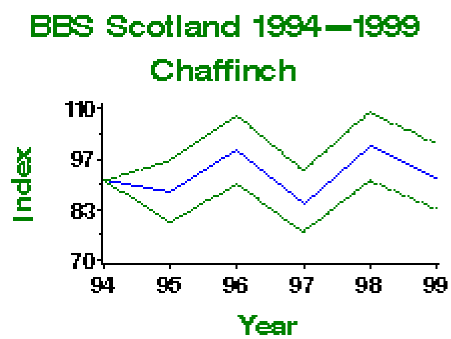


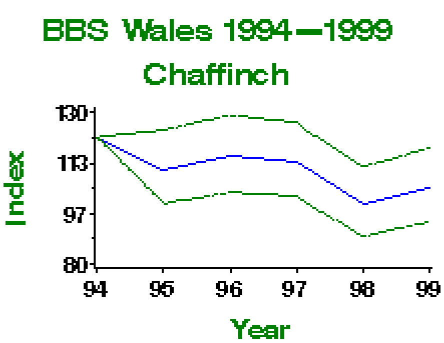












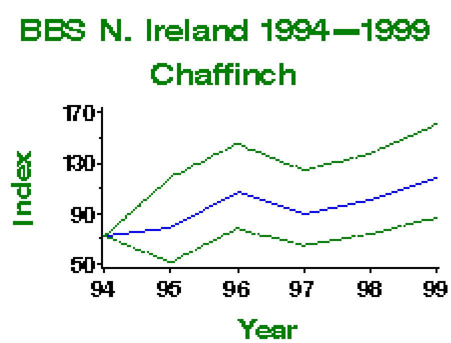
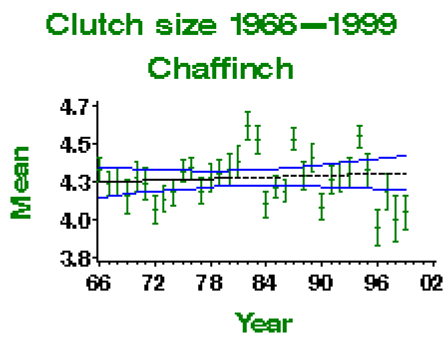
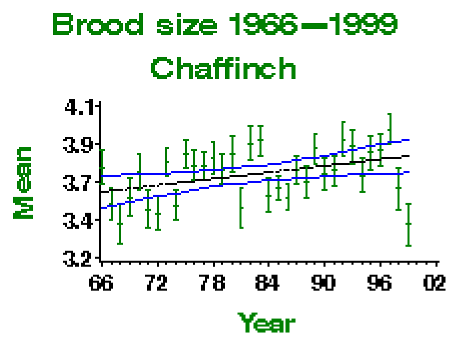


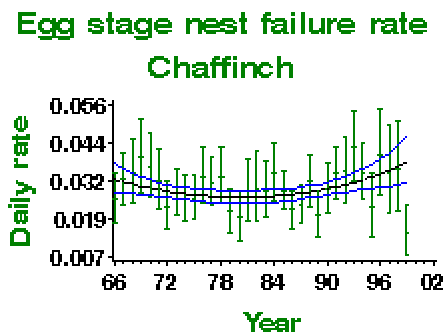
Table of productivity information for Chaffinch

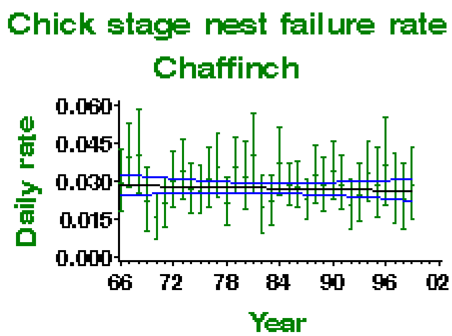
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	89	None				
Brood size	30	1968-1998	143	Linear increase	3.61 chicks	3.8 chicks	0.19 chicks	
Daily failure rate (eggs)	30	1968-1998	170	Curvilinear	0.0307 nests/day	0.0362 nests/day	0.0055 nests/day	
Daily failure rate (chicks)	30	1968-1998	118	None				
Laying date	30	1968-1998	115	Curvilinear	day 129	day 121	-8 days	
Percentage juveniles (CES)	14	1984-1998	80	Smoothed trend	106 productivity index	100 productivity index	-6%	
					112	100		

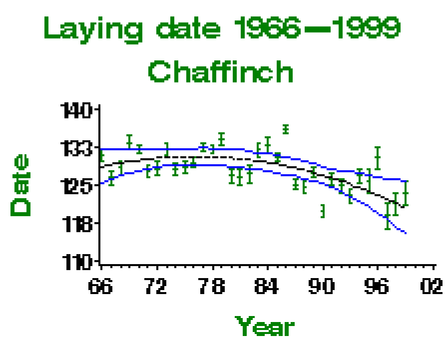
Percentage juveniles (CES)	10	1988-1998	92	Smoothed trend	productivity index	productivity index	-11%	
Percentage juveniles (CES)	5	1993-1998	101	Smoothed trend	104 productivity index	100 productivity index	-4%	

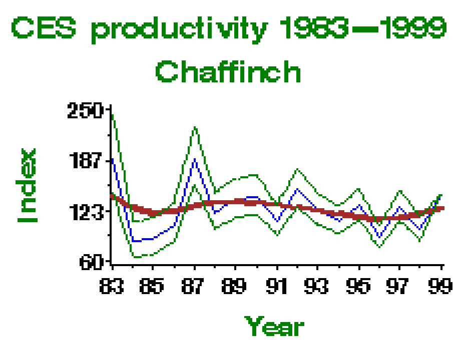












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GREENFINCH *Carduelis chloris*

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 in the 1990s, which have occurred despite recent declines in productivity (from the CES). The latter should be monitored because they could presage a future population decline. The trend towards earlier laying can be explained by recent climate change (Crick & Sparks 1999).

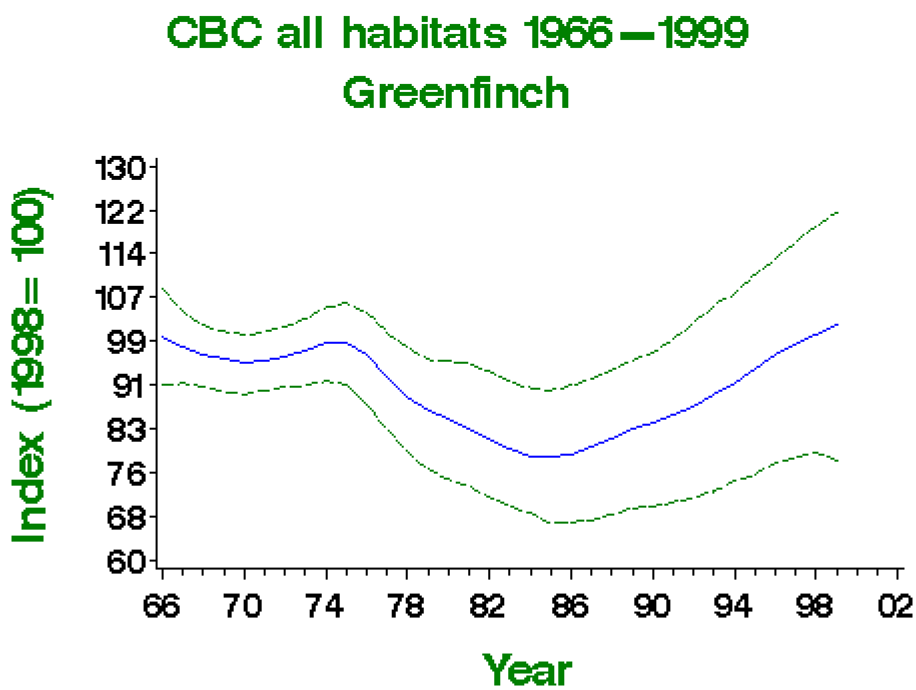
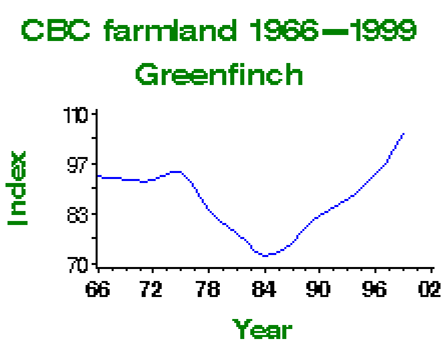


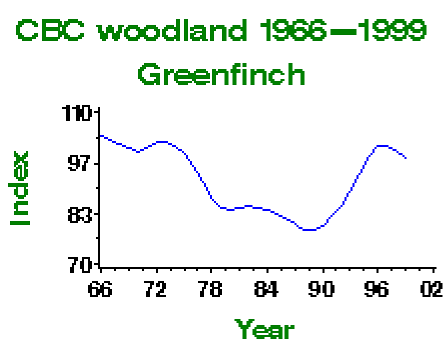
Table of population changes for Greenfinch

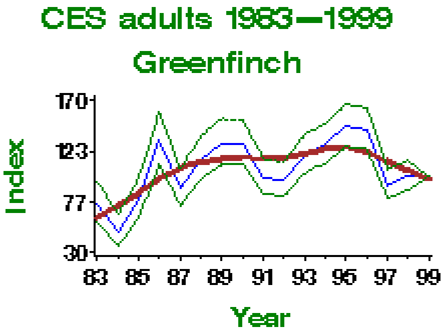
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	143	4	-21	27		
	25	1973-1998	145	3	-17	20		
	10	1988-1998	128	22	4	38		
	5	1993-1998	131	12	0	23		
CBC farmland	30	1968-1998	76	8	.	.		
	25	1973-	75	7	.	.		

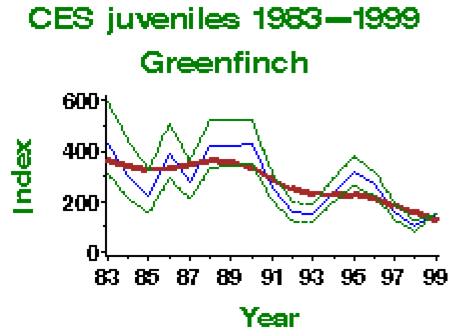
		1998						
	10	1988-1998	75	27	.	.		
	5	1993-1998	76	15	.	.		
CBC woodland	30	1968-1998	36	-2	.	.		
	25	1973-1998	38	-2	.	.		
	10	1988-1998	36	26	.	.		
	5	1993-1998	37	12	.	.		
CES adults	14	1984-1998	41	45	.	.		
	10	1988-1998	46	-7	.	.		
	5	1993-1998	52	-13	.	.		
CES juveniles	14	1984-1998	23	-54	.	.	[>50*]	
	10	1988-1998	27	-57	.	.	[>50*]	
	5	1993-1998	30	-33	.	.	[>25]	
BBS UK	5	1994-1999	1227	20	13	27		
BBS England	5	1994-1999	1045	17	11	24		
BBS Scotland	5	1994-1999	79	30	0	68		
BBS Wales	5	1994-1999	70	23	-4	57		
BBS N.Ireland	5	1994-1999	24	83	-12	280		Small sample

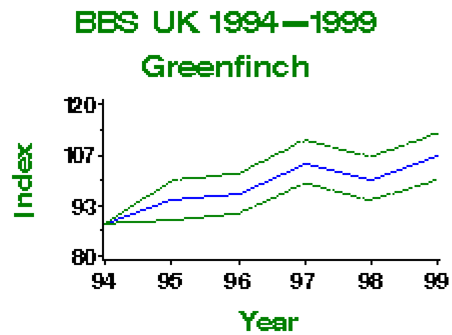
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

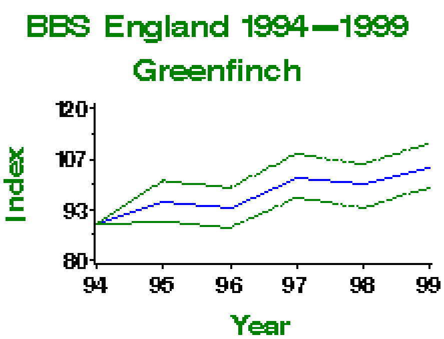


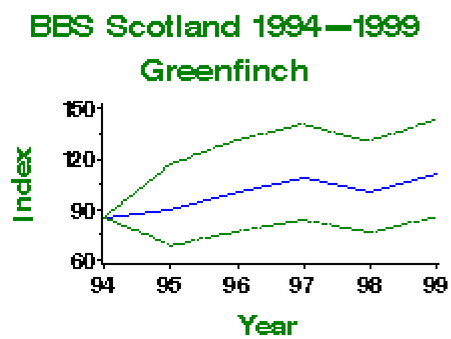


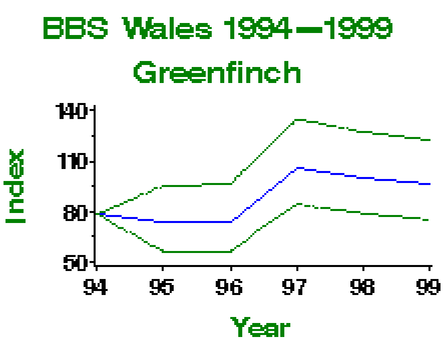












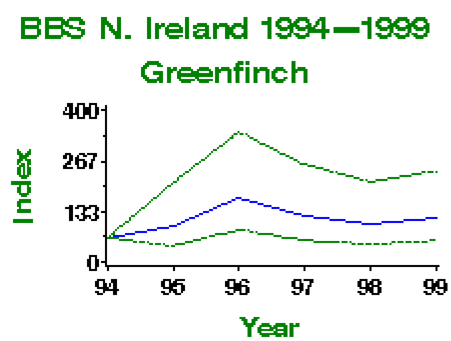
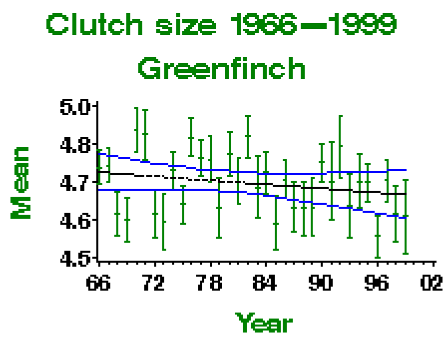
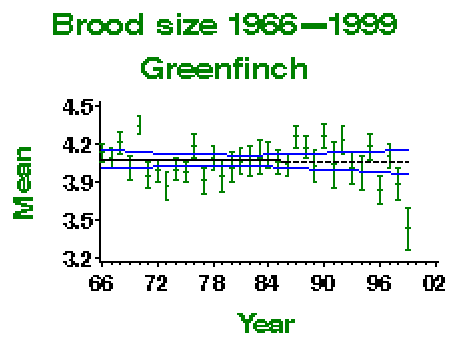


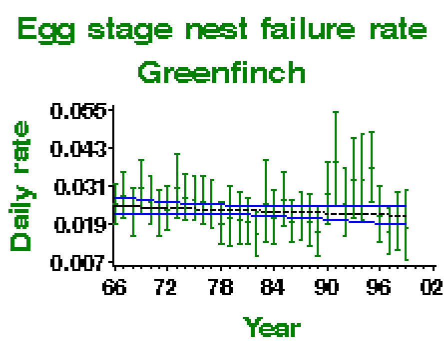
Table of productivity information for Greenfinch

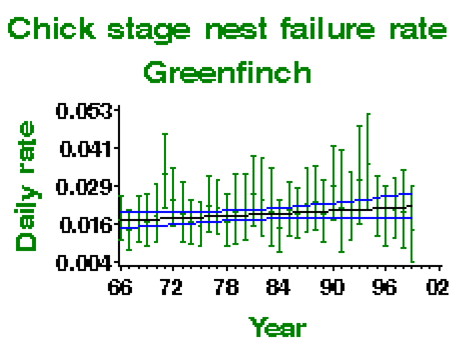
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	97	None				
Brood size	30	1968-1998	116	None				
Daily failure rate (eggs)	30	1968-1998	134	None				
Daily failure rate (chicks)	30	1968-1998	100	None				
Laying date	30	1968-1998	99	Linear decline	day 145	day 134	-11 days	
Percentage juveniles (CES)	14	1984-1998	45	Smoothed trend	279 productivity index	100 productivity index	-64% [>50*]	
					215	100		

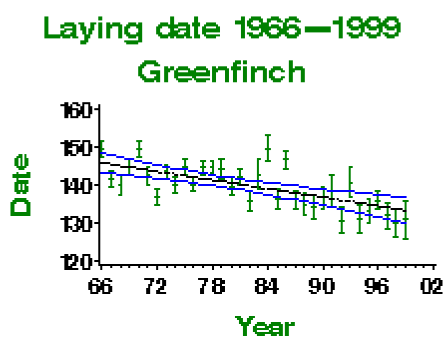
Percentage juveniles (CES)	10	1988-1998	52	Smoothed trend	productivity index	productivity index	-54% [>50*]	
Percentage juveniles (CES)	5	1993-1998	57	Smoothed trend	142 productivity index	100 productivity index	-29% [>25]	

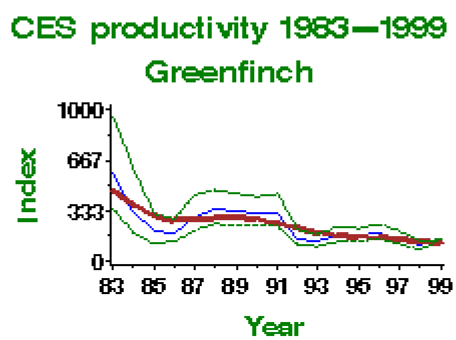












GOLDFINCH *Carduelis carduelis*

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 preceded and followed by significant population increases. These population changes are explained almost entirely by changes in annual survival and are likely to have been caused by agricultural intensification reducing the availability of weed seed or environmental change or hunting pressure in the Franco-Iberian wintering grounds of the migrant majority of the population (Siriwardena *et al.* 1999). No clear trends have occurred in breeding performance.

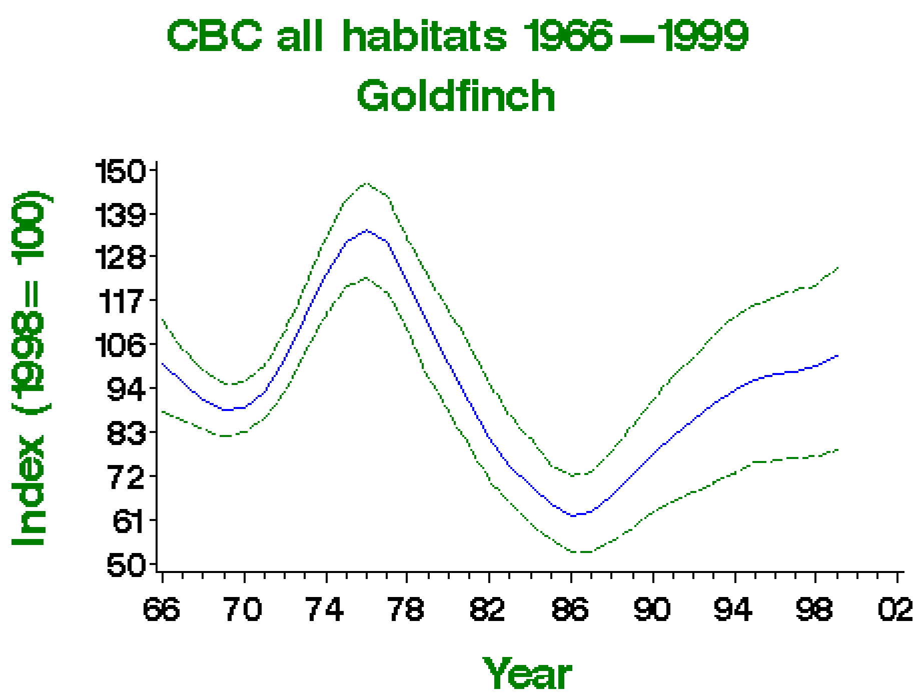


Table of population changes for Goldfinch

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	96	9	-14	36		
	25	1973-1998	99	-11	-28	5		
	10	1988-1998	91	49	30	66		
	5	1993-1998	97	11	-1	24		
CBC farmland	30	1968-1998	60	19	.	.		

	25	1973-1998	61	-5	.	.		
	10	1988-1998	65	59	.	.		
	5	1993-1998	71	14	.	.		
CES adults	14	1984-1998	30	20	.	.		
	10	1988-1998	36	7	.	.		
	5	1993-1998	41	-3	.	.		
CES juveniles	14	1984-1998	18	-28	.	.	[>25*]	Small sample
	10	1988-1998	21	2	.	.		
	5	1993-1998	24	32	.	.		
BBS UK	5	1994-1999	962	1	-6	9		
BBS England	5	1994-1999	809	-4	-12	4		
BBS Scotland	5	1994-1999	55	1	-31	47		
BBS Wales	5	1994-1999	78	57	20	105		

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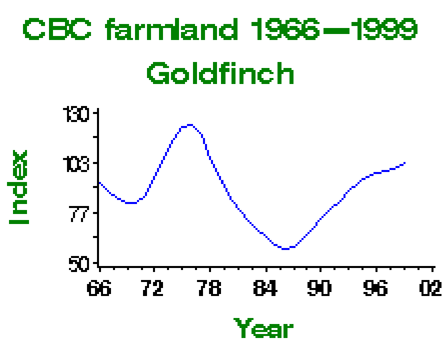
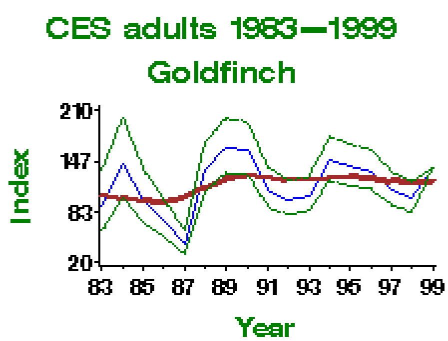
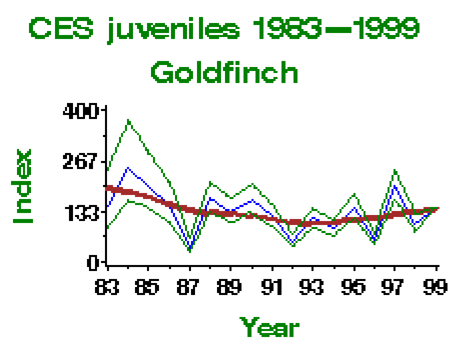
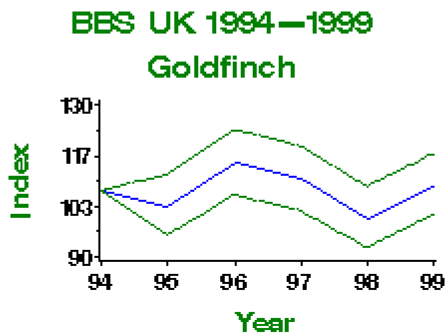
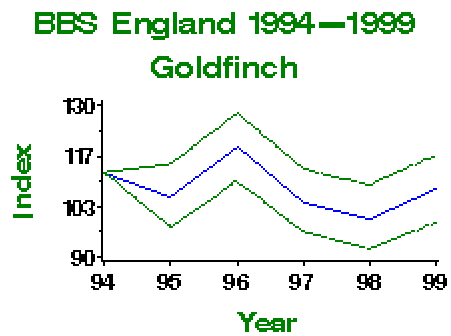
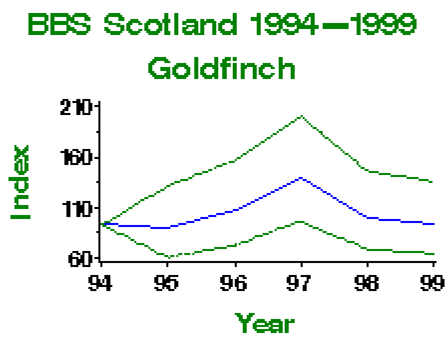












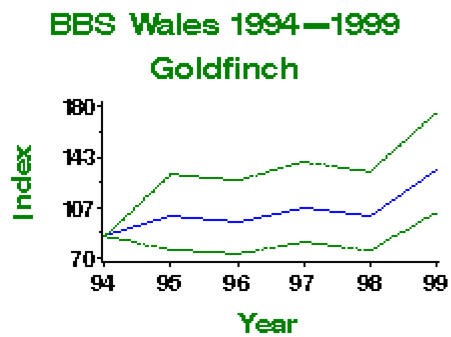
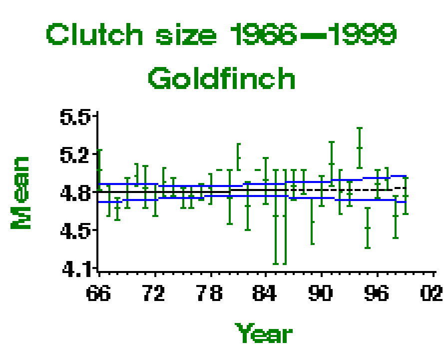
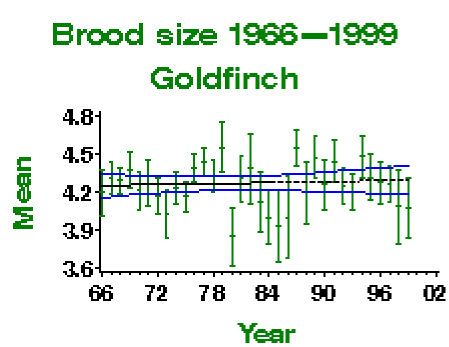
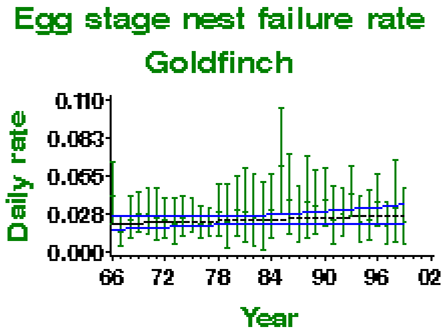


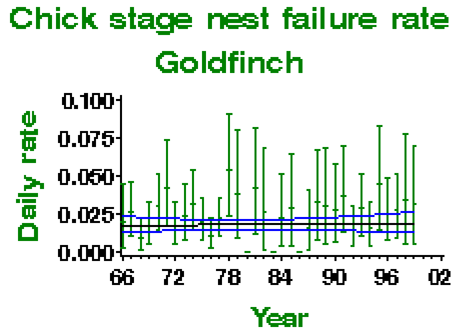
Table of productivity information for Goldfinch

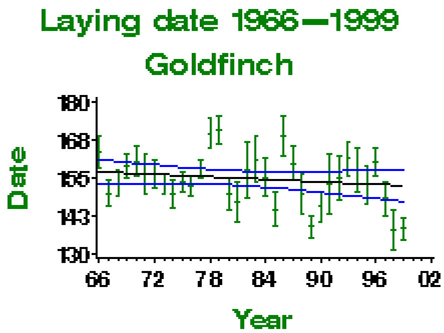
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	19	None				Small sample
Brood size	30	1968-1998	33	None				
Daily failure rate (eggs)	30	1968-1998	34	None				
Daily failure rate (chicks)	30	1968-1998	28	None				Small sample
Laying date	30	1968-1998	22	None				Small sample
Percentage juveniles (CES)	14	1984-1998	35	Smoothed trend	108 productivity index	100 productivity index	-7%	
Percentage juveniles (CES)	10	1988-1998	41	Smoothed trend	100 productivity index	100 productivity index	0%	
Percentage juveniles (CES)	5	1993-1998	47	Smoothed trend	63 productivity index	100 productivity index	59%	

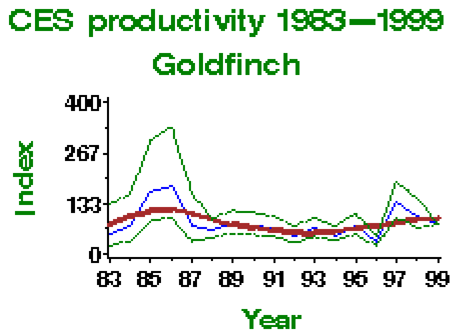












The report should be cited as: Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R. and Wernham, C.V. (2001) Breeding Birds in the Wider Countryside: their conservation status 2000. BTO Research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

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 1988-1991 Atlas found considerable expansion of the breeding range into southern Britain (Gibbons *et al.* 1993), but the reasons for this spread are unclear. The BBS shows a fluctuating population in recent years, but with no net change.

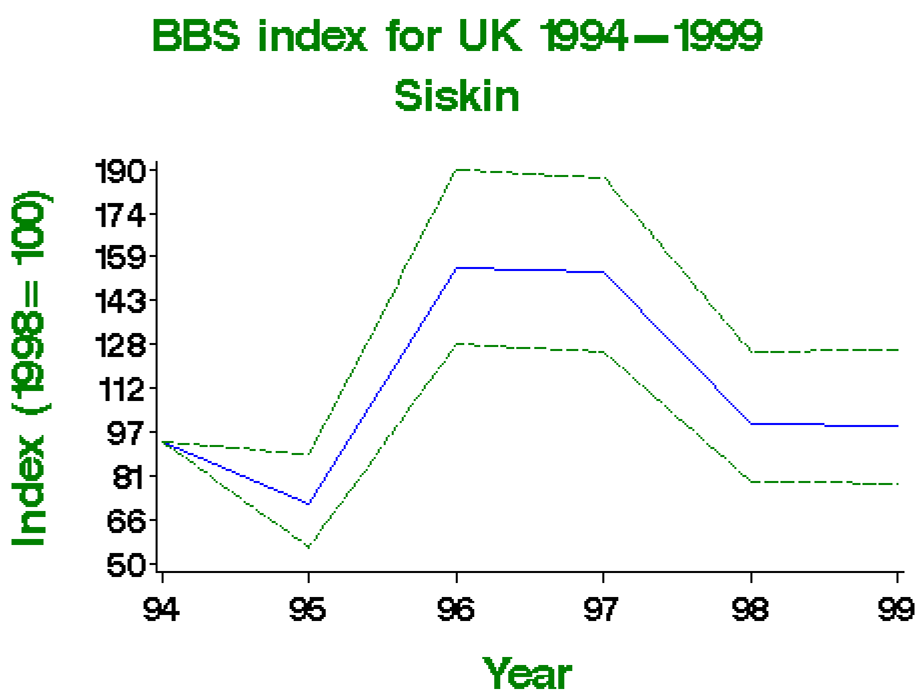
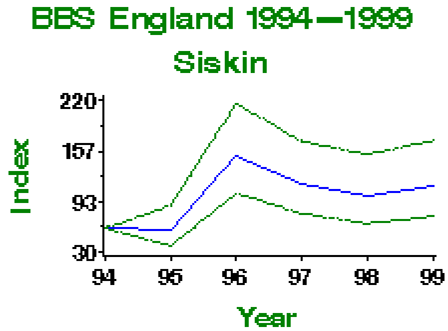
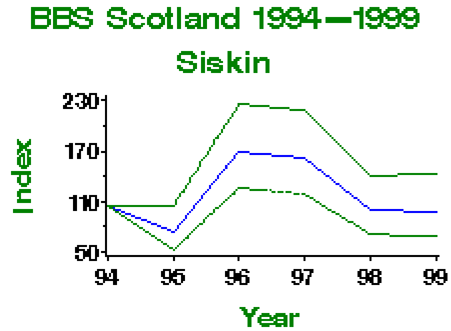


Table of population changes for Siskin

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
BBS UK	5	1994-1999	111	6	-16	35		
BBS England	5	1994-1999	31	90	26	187		Small sample
BBS Scotland	5	1994-1999	58	-6	-35	37		

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, especially 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 (Siriwardena *et al.* 1999, 2000b). Over the last 30 years, failure rates at the egg stage have risen (16 days, comprising 12 days incubation + 4 days laying) from 25% to 36%, and at the chick stage (14 days) from 19% 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, and likely causes include reductions in hedgerow quality and therefore in nest cover from predation.

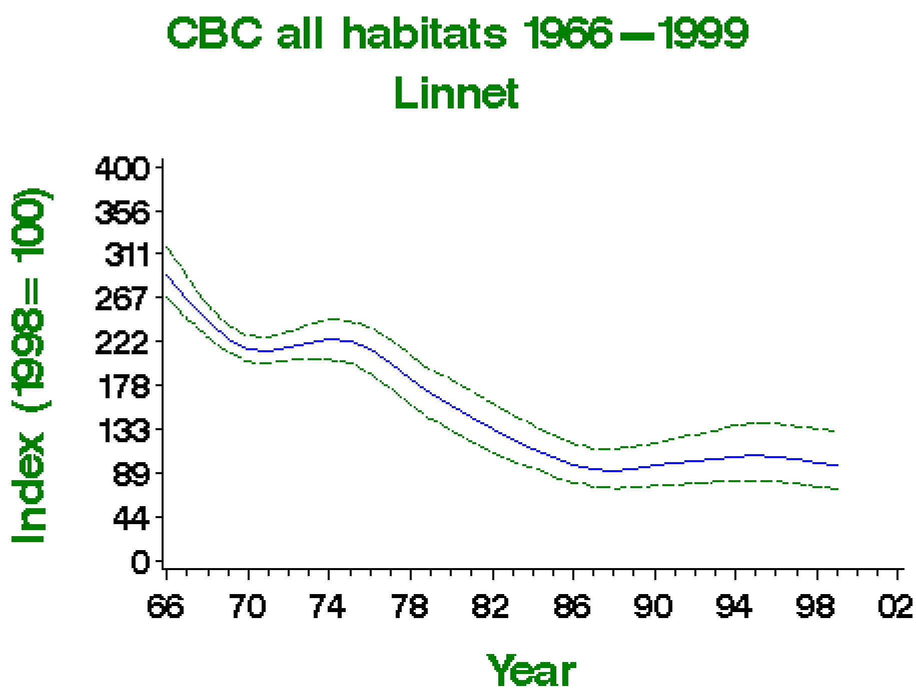
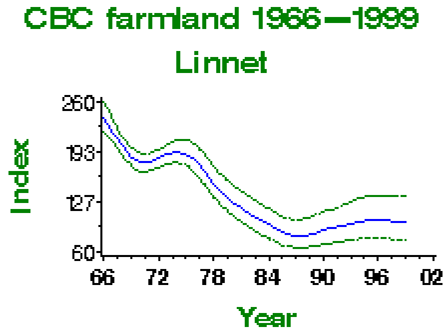


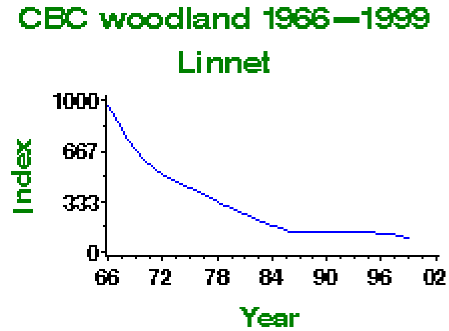
Table of population changes for Linnet

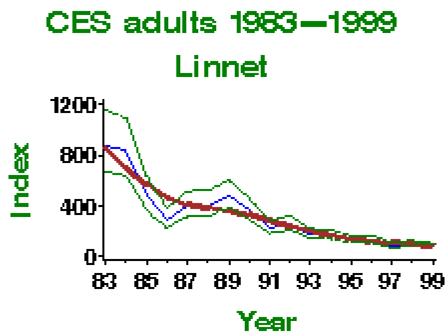
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	123	-59	-69	-45	>50	
	25	1973-1998	124	-55	-65	-43	>50	
	10	1988-1998	105	9	-8	27		

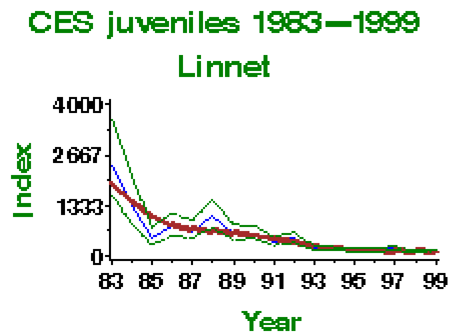
	5	1993-1998	110	-4	-13	6		
CBC farmland	30	1968-1998	74	-50	-62	-32	>25	
	25	1973-1998	73	-47	-58	-31	>25	
	10	1988-1998	75	22	1	49		
	5	1993-1998	80	2	-10	15		
CBC woodland	30	1968-1998	21	-87	.	.	>50	
	25	1973-1998	21	-79	.	.	>50	
	10	1988-1998	18	-23	.	.		Small sample
	5	1993-1998	18	-21	.	.		Small sample
CES adults	14	1984-1998	21	-87	.	.	[>50*]	
	10	1988-1998	25	-76	.	.	[>50*]	
	5	1993-1998	26	-53	.	.	[>50*]	
CES juveniles	14	1984-1998	14	-91	.	.	[>50*]	Small sample
	10	1988-1998	16	-81	.	.	[>50*]	Small sample
	5	1993-1998	16	-55	.	.	[>50*]	Small sample
BBS UK	5	1994-1999	982	-14	-20	-7		
BBS England	5	1994-1999	812	-19	-25	-13		
BBS Scotland	5	1994-1999	75	1	-24	35		
BBS Wales	5	1994-1999	68	17	-13	56		
BBS N.Ireland	5	1994-1999	21	-10	-52	71		Small sample

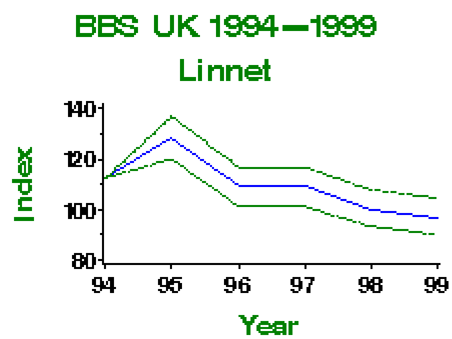
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

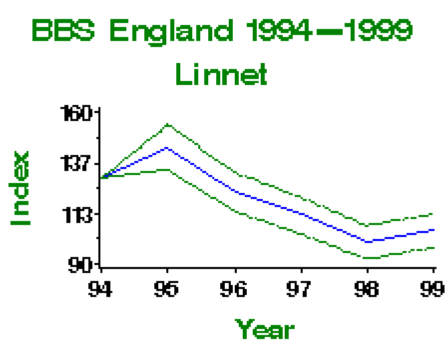


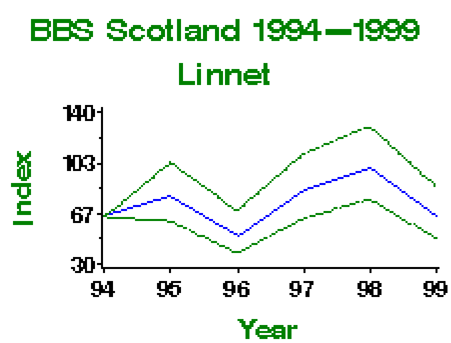


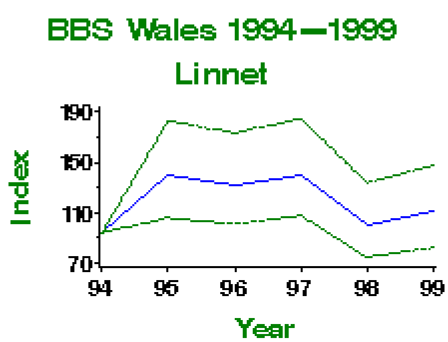












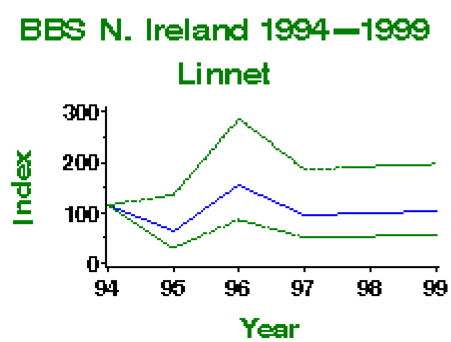
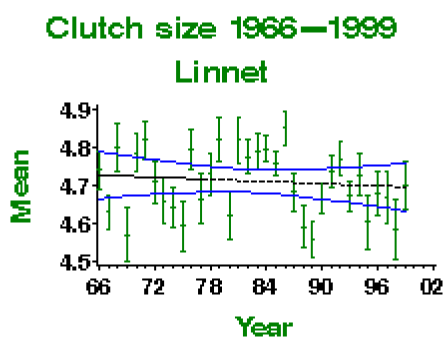
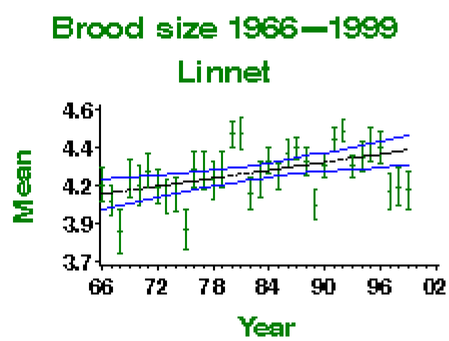


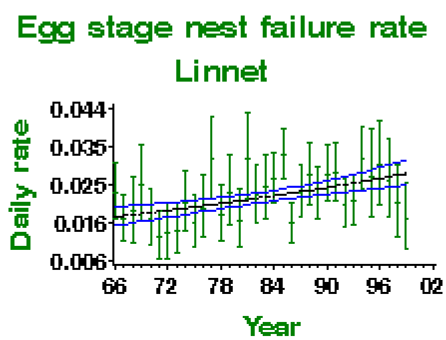
Table of productivity information for Linnet

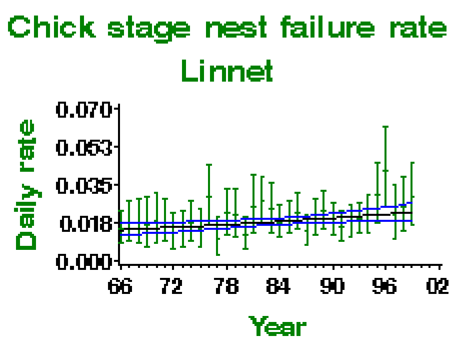
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment

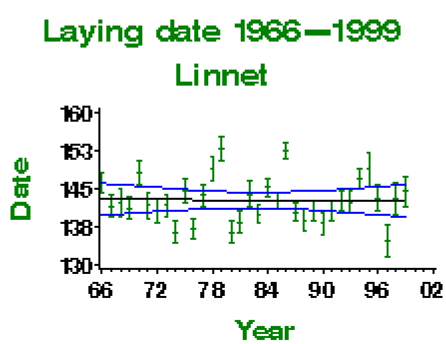
Clutch size	30	1968-1998	113	None				
Brood size	30	1968-1998	127	Linear increase	4.12 chicks	4.36 chicks	0.24 chicks	
Daily failure rate (eggs)	30	1968-1998	160	Linear increase	0.0175 nests/day	0.0275 nests/day	0.01 nests/day	
Daily failure rate (chicks)	30	1968-1998	113	Linear increase	0.0146 nests/day	0.022 nests/day	0.0074 nests/day	
Laying date	30	1968-1998	117	None				
Percentage juveniles (CES)	14	1984-1998	24	Smoothed trend	230 productivity index	100 productivity index	-56%[>50]	
Percentage juveniles (CES)	10	1988-1998	28	Smoothed trend	196 productivity index	100 productivity index	-49%[>25*]	
Percentage juveniles (CES)	5	1993-1998	29	Smoothed trend	106 productivity index	100 productivity index	-6%	

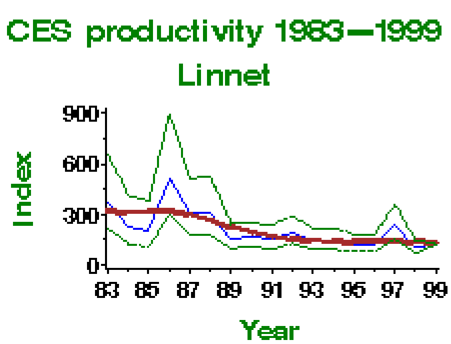












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LESSER REDPOLL *Carduelis cabaret*

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 show rapid declines, 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. The CES shows a moderate decline in productivity over the past 14 years and there is evidence that survival was lower during the population decline (Siriwardena *et al.* 1998a).

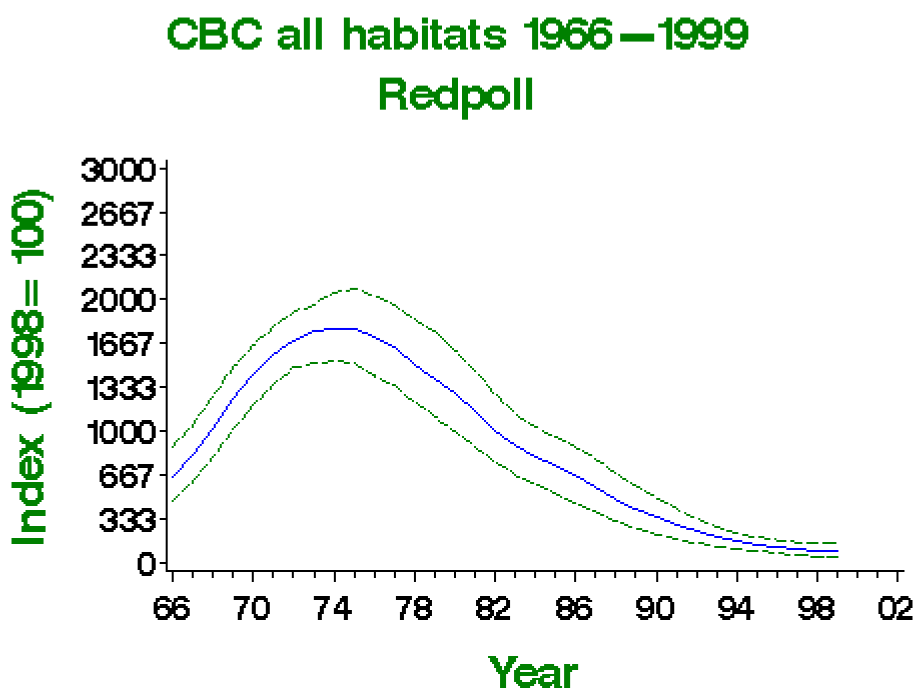
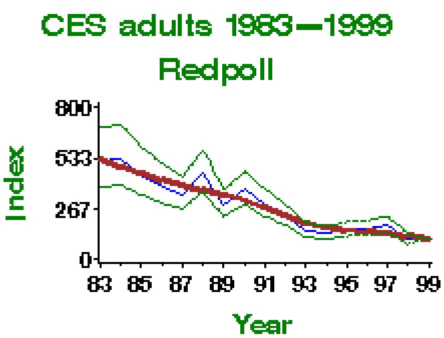


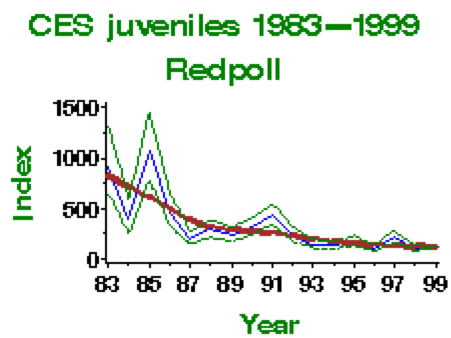
Table of population changes for Lesser Redpoll

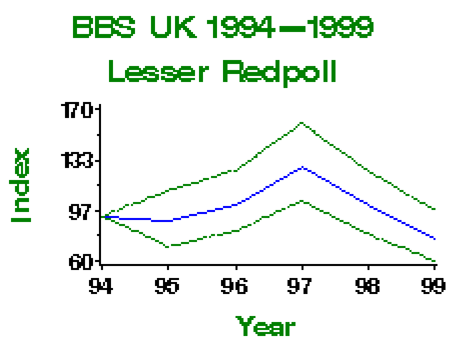
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	43	-90	-95	-84	>50	Unrepresentative?
	25	1973-1998	42	-94	-97	-91	>50	Unrepresentative?
	10	1988-1998	15	-80	-89	-68	>50	Unrepresentative? small sample
	5	1993-1998	11	-49	-70	-17	>25	Unrepresentative? small sample
CES adults	14	1984-1998	20	-75	.	.	[>50*]	Small sample
		1988-						

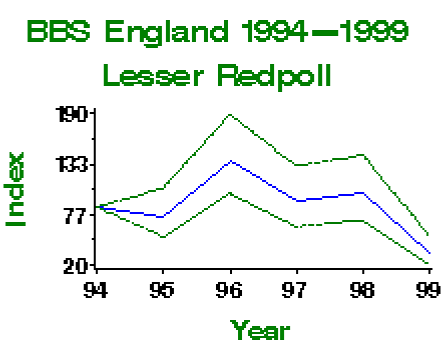
	10	1998	22	-67	.	.	[>50*]	
	5	1993-1998	20	-37	.	.	[>25]	Small sample
CES juveniles	14	1984-1998	11	-82	.	.	[>50*]	Small sample
	10	1988-1998	12	-61	.	.	[>50*]	Small sample
	5	1993-1998	12	-37	.	.	[>25]	Small sample
BBS UK	5	1994-1999	118	-18	-35	5		
BBS England	5	1994-1999	47	-60	-75	-37	(>50)	Small sample
BBS Scotland	5	1994-1999	38	-9	-40	38		Small sample

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









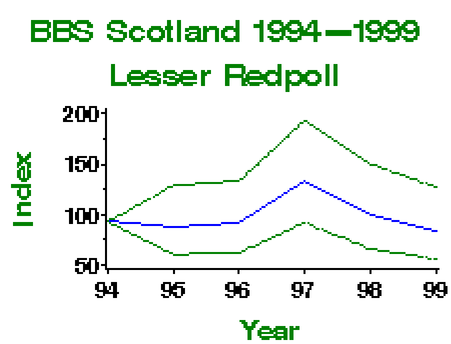


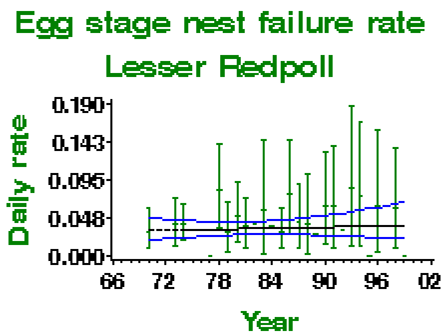
Table of productivity information for Lesser Redpoll

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Daily failure rate (eggs)	30	1968-1998	11	None				Small sample
Laying date	30	1968-	13	None				Small

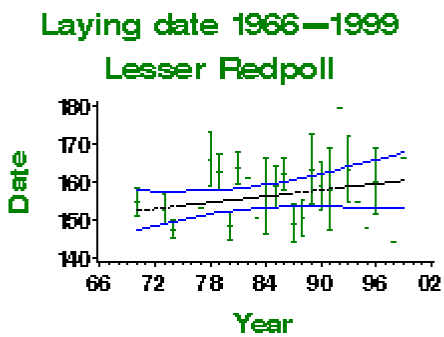
		1998						sample
Percentage juveniles (CES)	14	1984-1998	22	Smoothed trend	175 productivity index	100 productivity index	-43% [>25]	
Percentage juveniles (CES)	10	1988-1998	24	Smoothed trend	109 productivity index	100 productivity index	-8%	
Percentage juveniles (CES)	5	1993-1998	21	Smoothed trend	102 productivity index	100 productivity index	-2%	

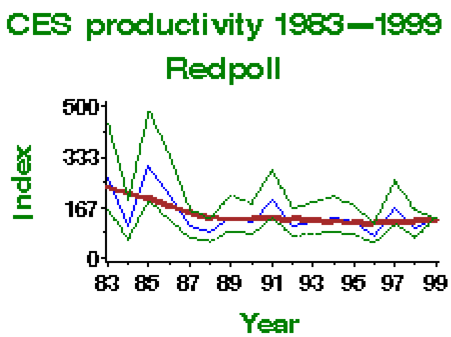
Insufficient data on clutch size available for this species

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 suggest that the decline is continuing, at least in southern Britain, but the demographic mechanism remains unclear (Siriwardena *et al.* 1999, 2000b); however, agricultural intensification is suspected to have played a part. CES productivity has increased over the last decade, and nest failure rates at the chick stage (15 days) have declined from 38% down to 21%.

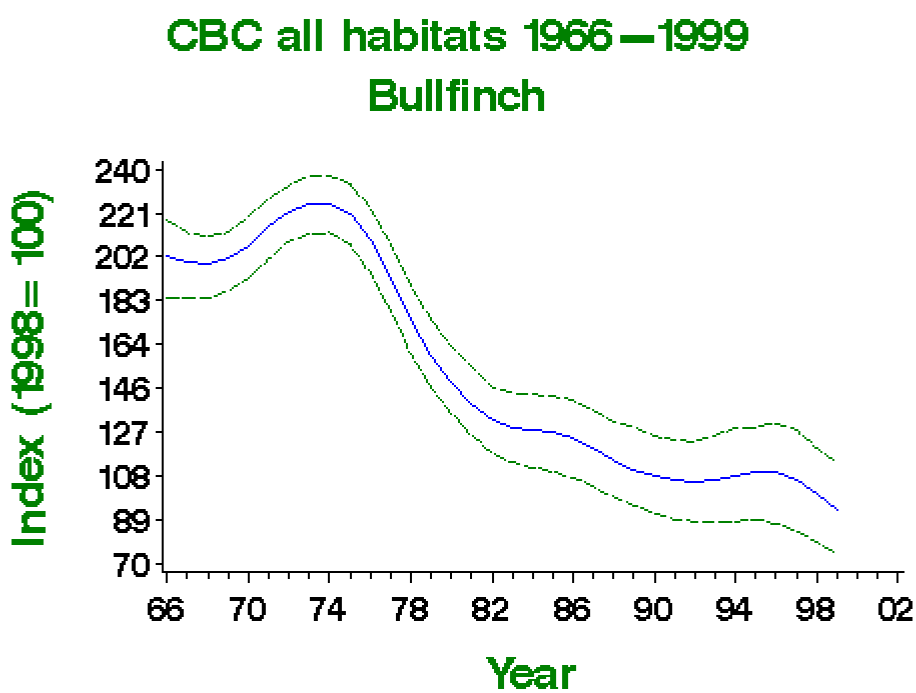
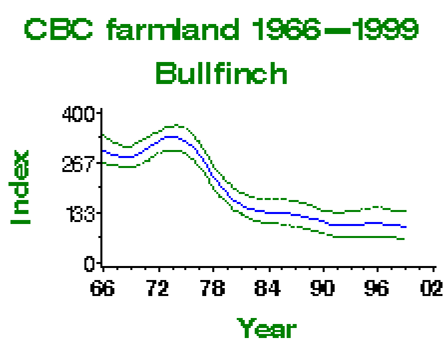


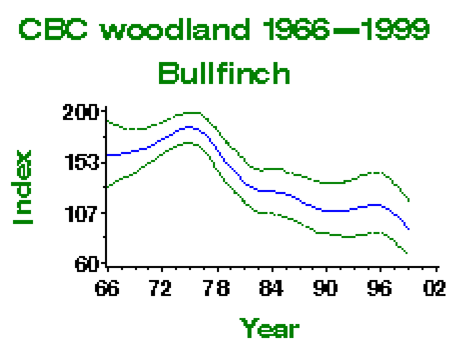
Table of population changes for Bullfinch

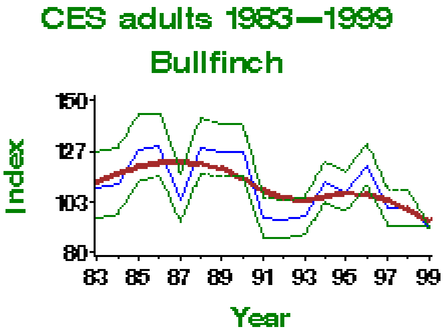
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	137	-50	-59	-40	>25	
	25	1973-1998	140	-56	-64	-48	>50	
	10	1988-1998	117	-13	-22	-5		
	5	1993-1998	121	-6	-14	1		
CBC farmland	30	1968-1998	49	-64	-76	-51	>50	

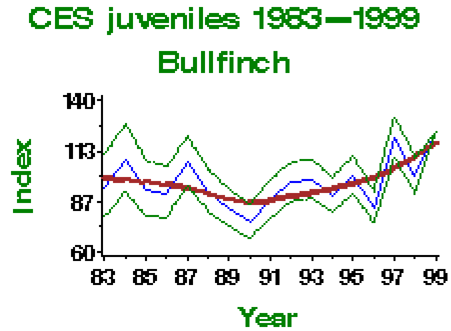
	25	1973-1998	48	-70	-79	-59	>50	
	10	1988-1998	40	-18	-34	2		
	5	1993-1998	40	-1	-16	19		
CBC woodland	30	1968-1998	59	-38	-52	-22	>25	
	25	1973-1998	63	-44	-59	-30	>25	
	10	1988-1998	61	-11	-24	1		
	5	1993-1998	64	-8	-17	-1		
CES adults	14	1984-1998	81	-14	.	.		
	10	1988-1998	92	-18	.	.		
	5	1993-1998	97	-4	.	.		
CES juveniles	14	1984-1998	63	12	.	.		
	10	1988-1998	71	22	.	.		
	5	1993-1998	76	21	.	.		
BBS UK	5	1994-1999	432	-28	-37	-19	(>25)	
BBS England	5	1994-1999	340	-28	-38	-18	(>25)	
BBS Scotland	5	1994-1999	29	73	-3	208		Small sample
BBS Wales	5	1994-1999	43	-50	-66	-26	(>50)	Small sample

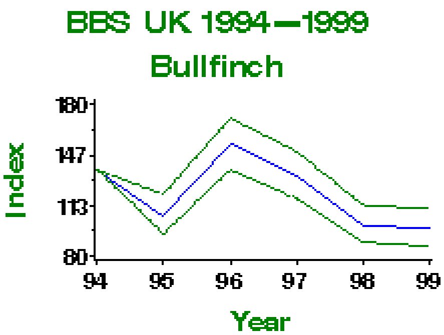
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

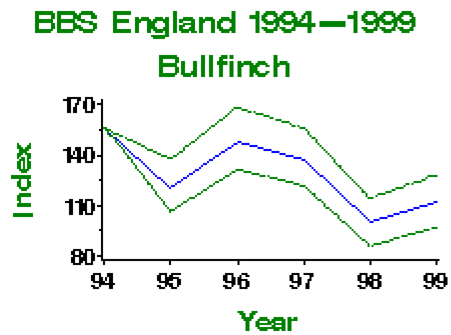


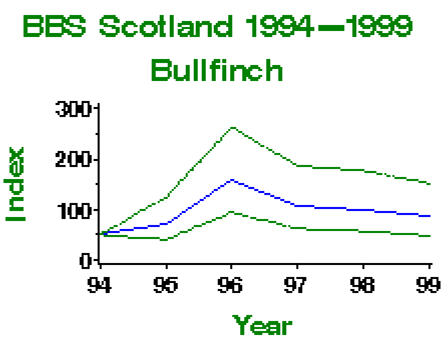












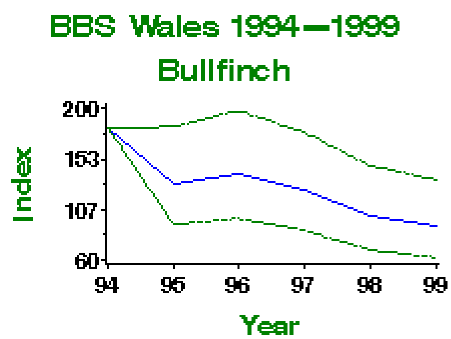
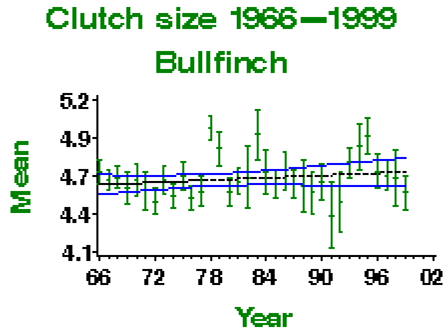
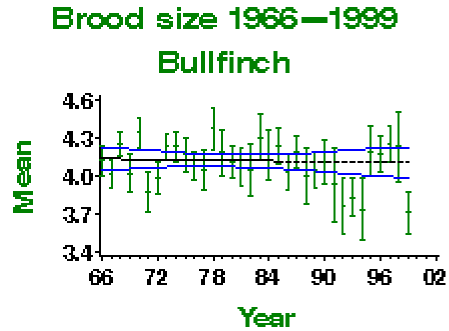
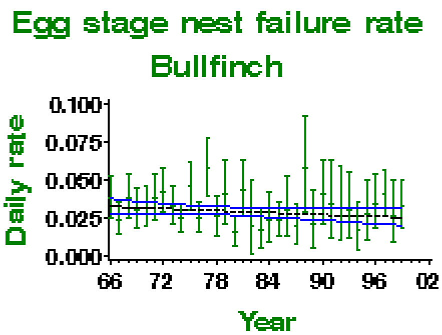


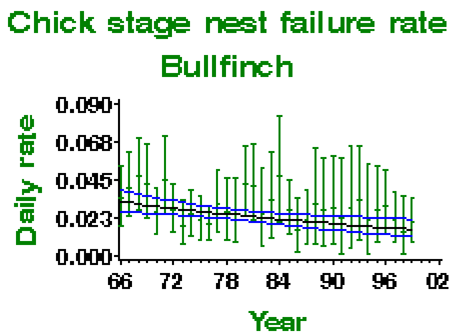
Table of productivity information for Bullfinch

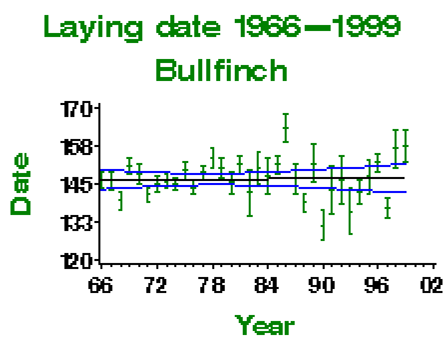
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	36	None				
Brood size	30	1968-1998	39	None				
Daily failure rate (eggs)	30	1968-1998	52	None				
Daily failure rate (chicks)	30	1968-1998	35	Linear decline	0.0309 nests/day	0.016 nests/day	-0.0149 nests/day	
Laying date	30	1968-1998	34	None				
Percentage juveniles (CES)	14	1984-1998	85	Smoothed trend	88 productivity index	100 productivity index	13%	
Percentage juveniles (CES)	10	1988-1998	96	Smoothed trend	69 productivity index	100 productivity index	45%	
Percentage juveniles (CES)	5	1993-1998	101	Smoothed trend	81 productivity index	100 productivity index	24%	

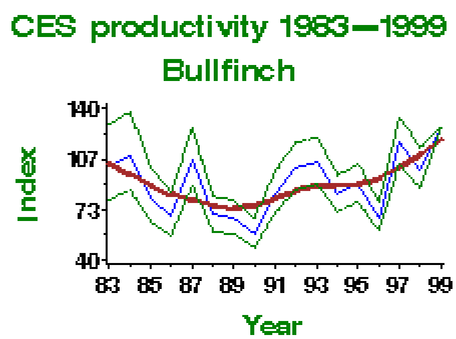












The report should be cited as: Baillie, S.R., Crick, H.Q.P., Balmer, D.E., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R. and Wernham, C.V. (2001) Breeding Birds in the Wider Countryside: their conservation status 2000. BTO Research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

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 (perhaps sink) habitat before they were apparent in the preferred farmland habitats. Yellowhammer breeding performance has tended to increase and there is some evidence that survival rates have been lower during the period of decline (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 38%, and at the chick stage (12 days) from 45% to 38%. Overall the failure rates from egg laying to fledging fell from 75% to 62%; these values are relatively high, probably because later season nests, which tend to be more successful (Kyrkos 1997), are probably under-represented in the NRS dataset - such a factor is unlikely to affect overall trends. Reductions in winter seed food availability as a result of agricultural intensification (for example, the loss of winter stubbles and declining weed densities) are widely believed to have contributed to the decline.

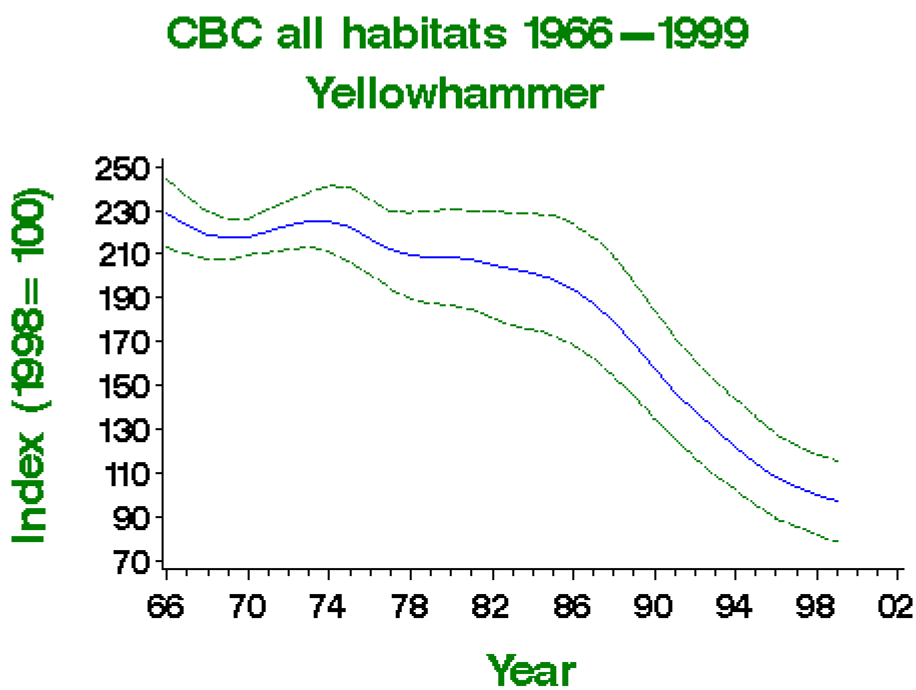
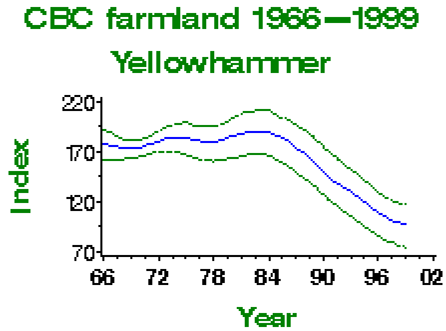


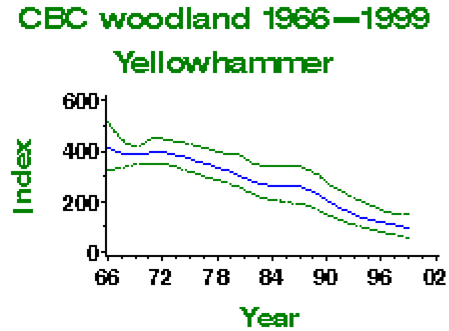
Table of population changes for Yellowhammer

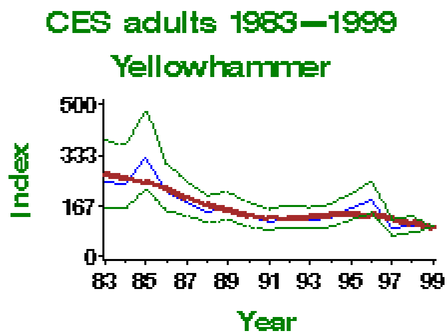
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	133	-54	-63	-45	>50	

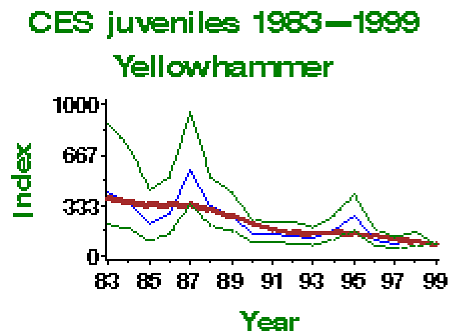
	25	1973-1998	134	-56	-63	-47	>50	
	10	1988-1998	111	-44	-51	-39	>25	
	5	1993-1998	105	-23	-30	-18		
CBC farmland	30	1968-1998	75	-42	-55	-29	>25	
	25	1973-1998	73	-45	-56	-36	>25	
	10	1988-1998	69	-40	-48	-32	>25	
	5	1993-1998	66	-23	-28	-16		
CBC woodland	30	1968-1998	34	-74	-85	-59	>50	
	25	1973-1998	35	-74	-84	-61	>50	
	10	1988-1998	28	-60	-76	-44	>50	
	5	1993-1998	25	-34	-56	-11	>25	
CES adults	14	1984-1998	23	-58	.	.	[>50*]	
	10	1988-1998	25	-35	.	.	[>25]	
	5	1993-1998	23	-15	.	.		
CES juveniles	14	1984-1998	12	-73	.	.	[>50*]	Small sample
	10	1988-1998	13	-69	.	.	[>50*]	Small sample
	5	1993-1998	12	-35	.	.	[>25]	Small sample
BBS UK	5	1994-1999	982	-16	-20	-11		
BBS England	5	1994-1999	853	-15	-20	-11		
BBS Scotland	5	1994-1999	86	-13	-28	6		
BBS Wales	5	1994-1999	35	-31	-52	-2	(>25)	Small sample

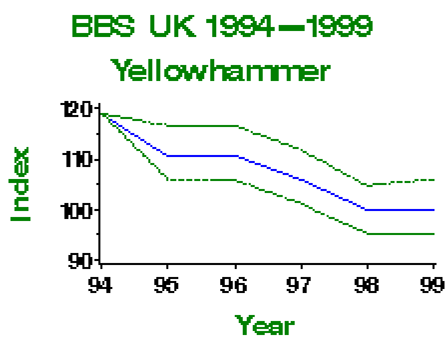
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

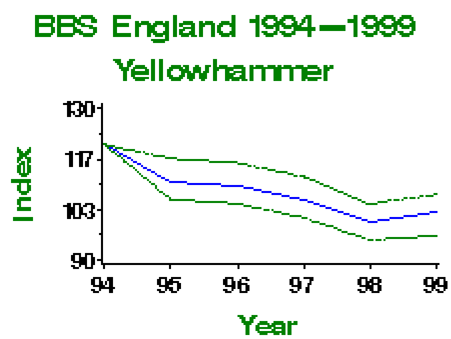


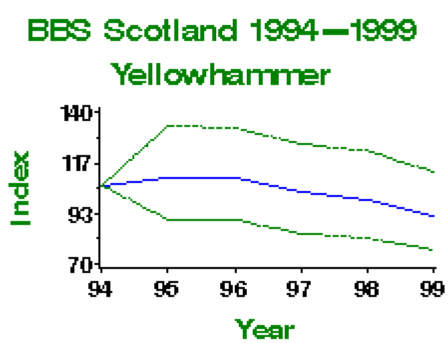












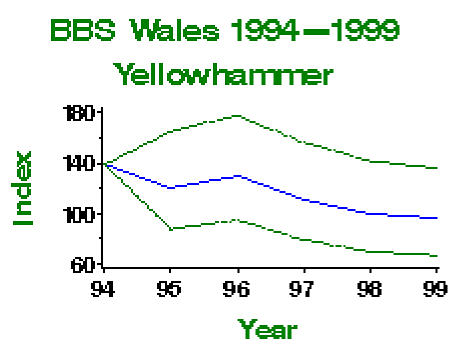
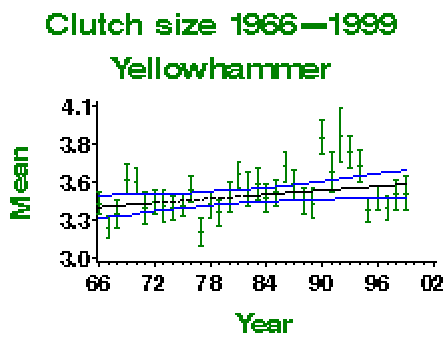
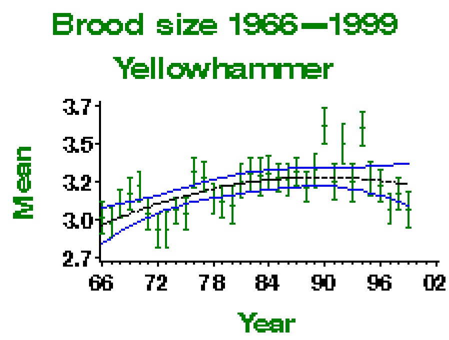


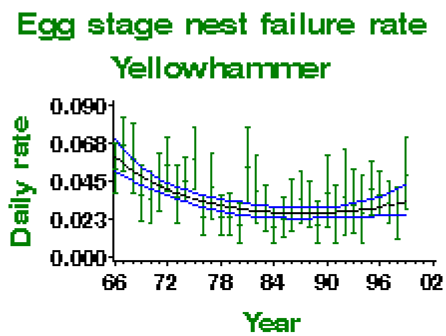
Table of productivity information for Yellowhammer

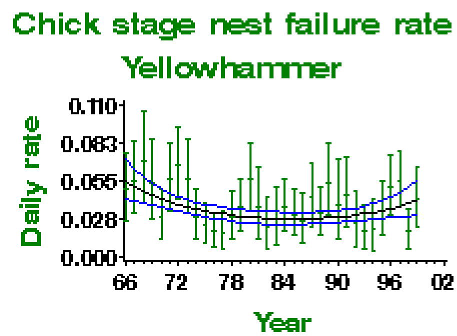
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	44	Linear increase	3.38 eggs	3.53 eggs	0.15 eggs	
Brood size	30	1968-1998	69	Curvilinear	2.96 chicks	3.19 chicks	0.23 chicks	
Daily failure rate (eggs)	30	1968-1998	66	Curvilinear	0.0517 nests/day	0.0317 nests/day	-0.02 nests/day	
Daily failure rate (chicks)	30	1968-1998	51	Curvilinear	0.0479 nests/day	0.0385 nests/day	-0.0094 nests/day	
Laying date	30	1968-1998	26	None				Small sample
Percentage juveniles (CES)	14	1984-1998	26	Smoothed trend	113 productivity index	100 productivity index	-11%	
					194	100		

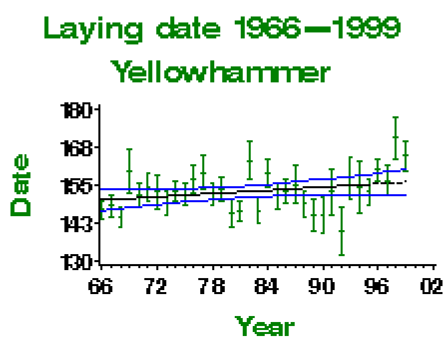
Percentage juveniles (CES)	10	1988-1998	28	Smoothed trend	productivity index	productivity index	-49%[>25]	
Percentage juveniles (CES)	5	1993-1998	26	Smoothed trend	88 productivity index	100 productivity index	14%	

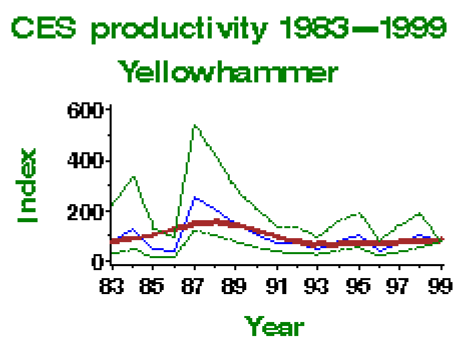












REED BUNTING *Emberiza schoeniclus*

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. The CES suggests that the decline has continued and that it is coupled with falling productivity, but the BBS indicates a more stable population during the 1990s, like the WBS and CBC. Detailed demographic analyses suggest that the decline was driven by low 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%.

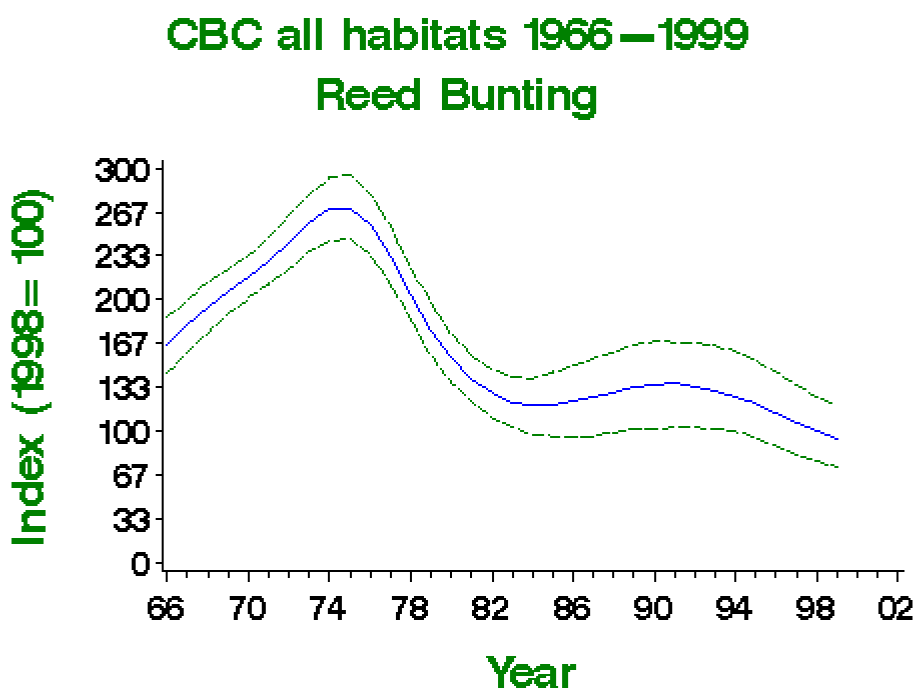
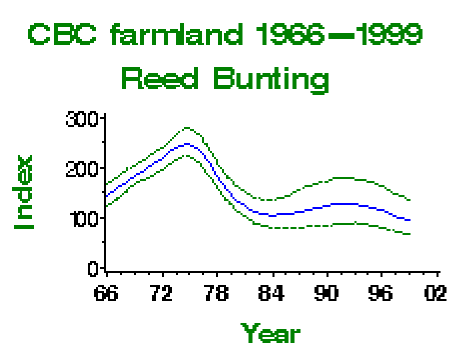


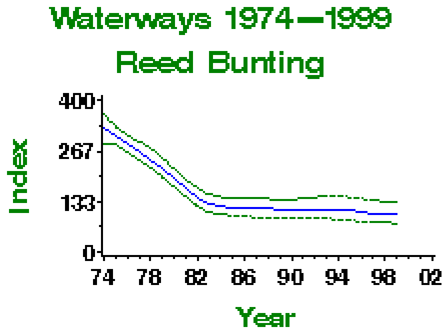
Table of population changes for Reed Bunting

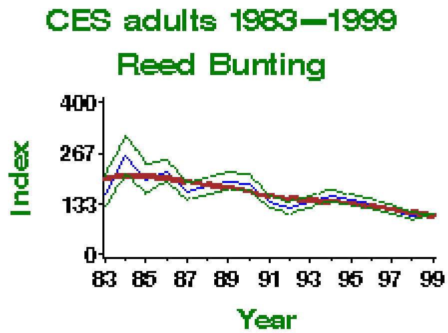
Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	85	-49	-60	-35	>25	
	25	1973-1998	84	-61	-70	-53	>50	
	10	1988-1998	59	-23	-34	-10		
		1993-						

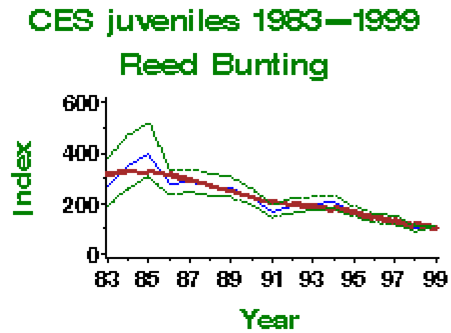
	5	1998	61	-24	-30	-17		
CBC farmland	30	1968-1998	52	-42	-59	-18	>25	
	25	1973-1998	50	-57	-68	-42	>50	
	10	1988-1998	41	-13	-27	3		
	5	1993-1998	41	-21	-30	-13		
WBS waterways	23	1975-1998	53	-68	-76	-56	>50	
	10	1988-1998	59	-12	-26	5		
	5	1993-1998	63	-11	-18	-3		
CES adults	14	1984-1998	58	-47	.	.	[>25*]	
	10	1988-1998	66	-41	.	.	[>25*]	
	5	1993-1998	76	-23	.	.		
CES juveniles	14	1984-1998	41	-65	.	.	[>50*]	
	10	1988-1998	47	-57	.	.	[>50*]	
	5	1993-1998	53	-38	.	.	[>25*]	
BBS UK	5	1994-1999	322	5	-7	18		
BBS England	5	1994-1999	247	-16	-26	-4		
BBS Scotland	5	1994-1999	39	40	-3	102		Small sample
BBS N.Ireland	5	1994-1999	20	38	-8	109		Small sample

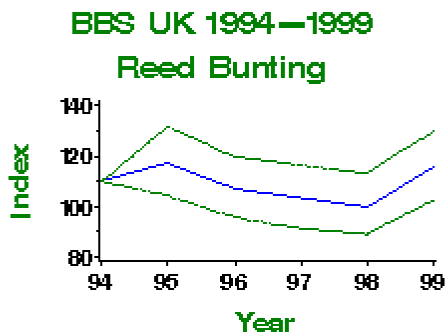
The Breeding Bird Survey is jointly funded by BTO, JNCC and RSPB

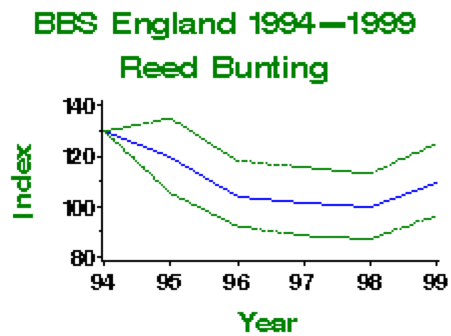


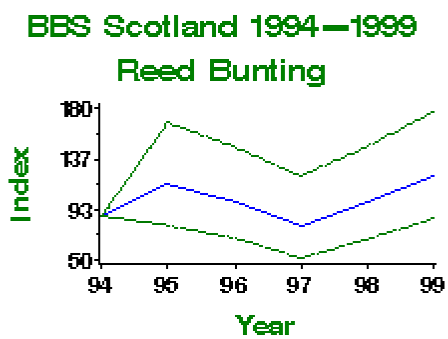












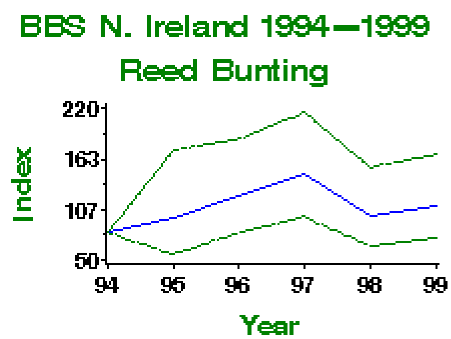
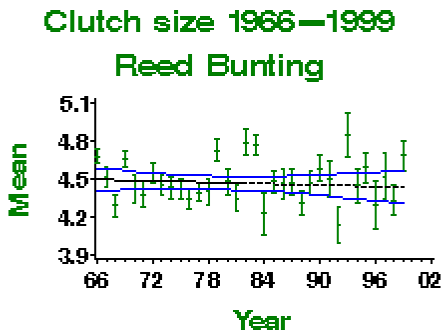
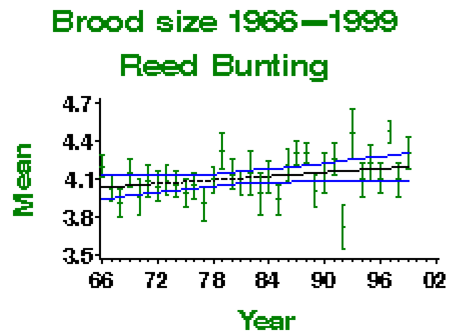


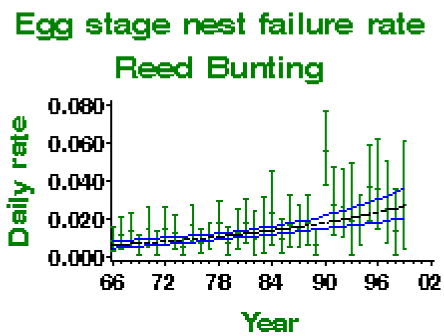
Table of productivity information for Reed Bunting

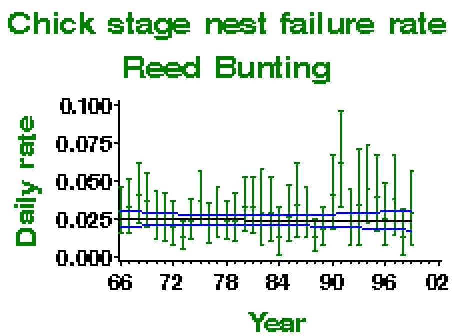
Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	49	None				
Brood size	30	1968-1998	67	None				
Daily failure rate (eggs)	30	1968-1998	57	Linear increase	0.0067 nests/day	0.0257 nests/day	0.019 nests/day	
Daily failure rate (chicks)	30	1968-1998	56	None				
Laying date	30	1968-1998	55	None				
Percentage juveniles (CES)	14	1984-1998	60	Smoothed trend	136 productivity index	100 productivity index	-26%[>25]	
					150	100		

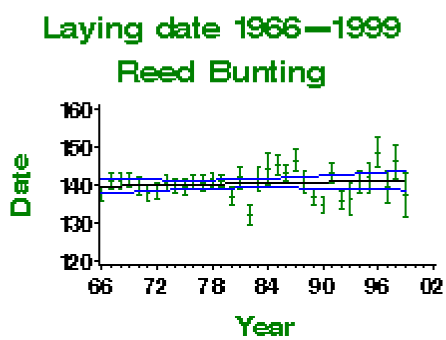
Percentage juveniles (CES)	10	1988-1998	69	Smoothed trend	productivity index	productivity index	-33% [>25*]	
Percentage juveniles (CES)	5	1993-1998	80	Smoothed trend	132 productivity index	100 productivity index	-24%	

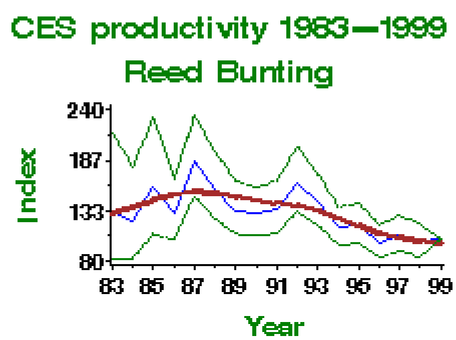












CORN BUNTING *Miliaria calandra*

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 rapidly from around 1973 to around 1986, 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 time (Crick 1997), and the best hypothesis as to the demographic mechanism behind the decline is probably that survival rates have fallen, but ring-recovery sample sizes do not permit this to be tested (Siriwardena *et al.* 1998b, 2000b). The decline is probably a result of the deleterious effects of agricultural intensification on seed availability in winter (Donald 1997).

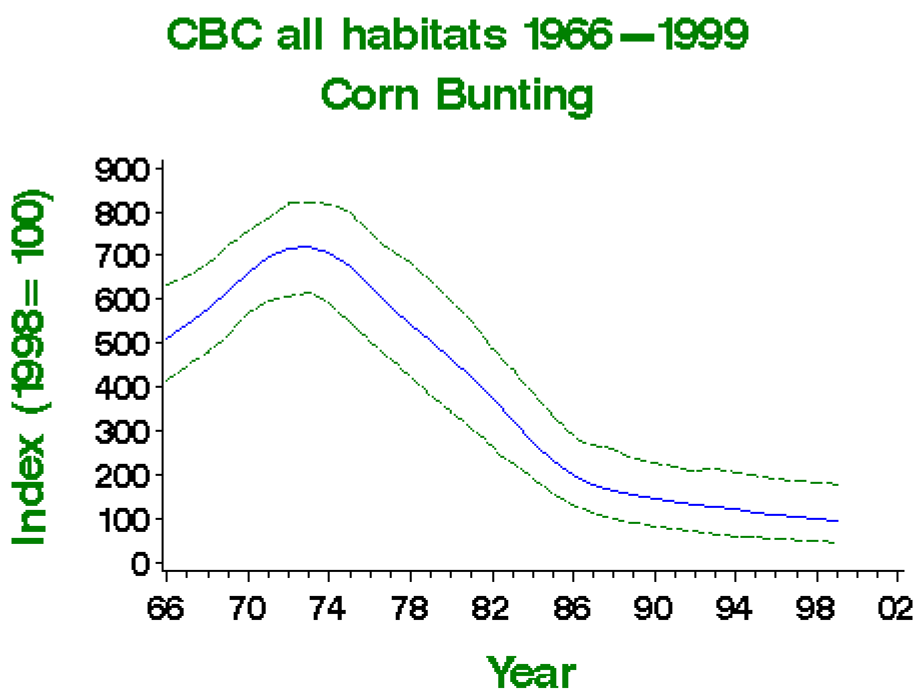
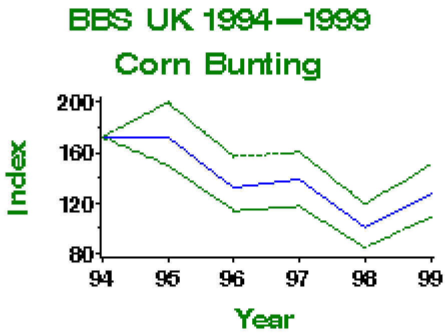


Table of population changes for Corn Bunting

Source	Period (yrs)	Years	Plots (n)	Change (%)	Lower limit	Upper limit	Alert	Comment
CBC all habitats	30	1968-1998	24	-83	-91	-68	>50	
	25	1973-1998	22	-86	-93	-75	>50	
	10	1988-1998	15	-38	-63	7		Small sample
	5	1993-1998	15	-22	-41	19		Small sample
BBS UK	5	1994-1999	148	-26	-37	-13	(>25)	

BBS England	5	1994-1999	141	-22	-34	-8		

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



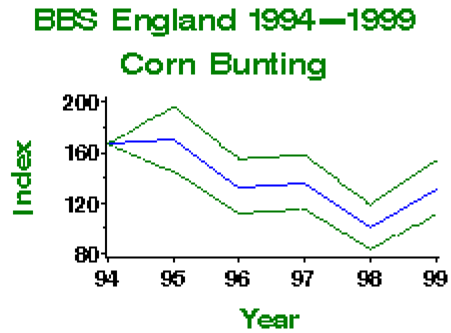
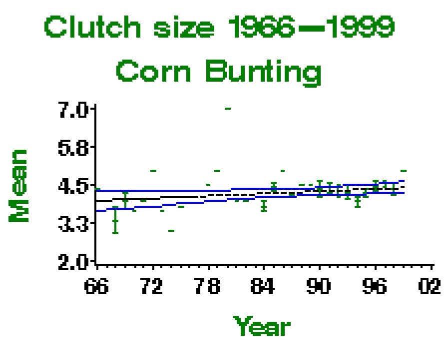
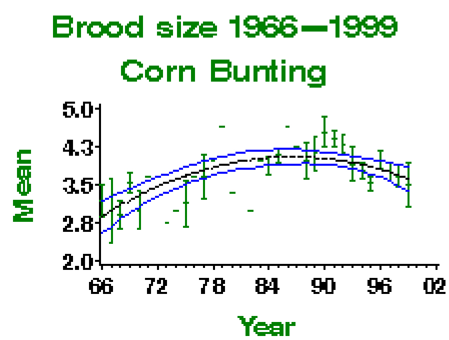
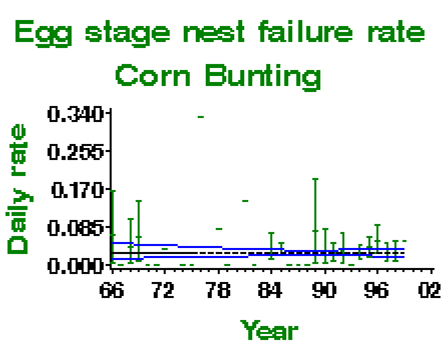


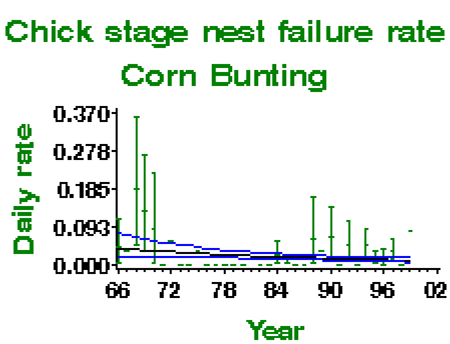
Table of productivity information for Corn Bunting

Variable	Period (yrs)	Years	Mean annual sample	Trend	Predicted in first year	Predicted in last year	Change	Comment
Clutch size	30	1968-1998	10	None				Small sample
Brood size	30	1968-1998	12	Curvilinear	3.09 chicks	3.7 chicks	0.61 chicks	Small sample
Daily failure rate (eggs)	30	1968-1998	13	None				Small sample
Daily failure rate (chicks)	30	1968-1998	12	Linear decline	0.0367 nests/day	0.0109 nests/day	-0.0258 nests/day	Small sample
Laying date	30	1968-1998	15	Linear decline	day 181	day 165	-16 days	Small sample

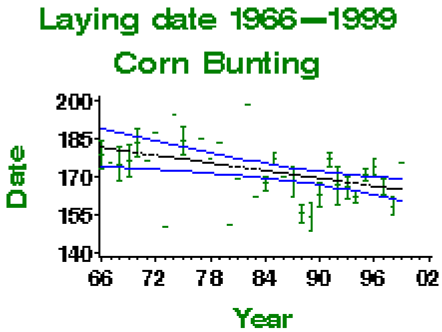








Insufficient data on CES available for this species



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)

Images: Moorhen, by Edmund Fellowes / BTO; Lapwing, by Sarah Kelman / BTO

Breeding Birds in the Wider Countryside: their conservation status 2000

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., Bashford, R.I., Beaven, L.P., Freeman, S.N., Marchant, J.H., Noble, D.G., Raven, M.J., Siriwardena, G.M., Thewlis, R & Wernham, C.V. 2000. Breeding Birds in the Wider Countryside: their conservation status XXXX. *BTO Research Report* **252**, BTO, Thetford, UK.

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