

# Repeat Woodland Bird Survey

## Title

Repeat Woodland Bird Survey 2003-2004

## Description and Summary of Results

In recent years, there has been growing concern about declines in populations of woodland birds in the UK. The UK Government's Wildbird Populations Framework Indicator for woodland birds fell by 20% between 1976 and 2001 and a number of woodland breeding species were added to the red and amber lists of *Birds of Conservation Concern*. These declines were detected from a combination of the BTO Common Birds Census (CBC) (1966-2000) and the BTO/JNCC/ RSPB Breeding Bird Survey (BBS) (1994 onwards).

The Repeat Woodland Bird Survey (RWBS) was designed to provide specific information on regional changes in woodland bird populations and assess the reliability of the combined CBC/BBS trends at the national scale. Surveys (using identical methods to the originals) were conducted in broad-leaved or mixed woodland sites that had been surveyed either as CBC plots in the 1960s to 1980s or as part of an extensive survey of woodland bird populations undertaken by the RSPB in the mid-1980s. Population changes were estimated separately for the two datasets.

National population changes between the 1980s and 2003-2004 found six significant declines and three significant increases in the RSPB dataset and eight declines and 13 increases in the BTO dataset -- the difference probably attributable to the differences in the structure of the two datasets. The two datasets agreed closely, with only seven of 34 species showing changes that differed in sign between the two, only one significantly so. Eight species showed large declines (>25%) in both data sets, and eleven large increases (> 25%).

Comparison of the national change estimates between the 1980s and 2003-2004 from this survey with equivalent estimates from the CBC/BBS for all habitats shows that the level of agreement between these two surveys varied between species, although there was closer agreement between this survey's results and the most recent trends derived from the BBS alone. There was also broad agreement in the pattern of changes detected within each of the two datasets at the regional level.

Specifically all long-distance migrants declined whilst medium-distance migrants increased. Also, rare and specialist woodland species fared less well than common and generalist species.

## Methods of Data Capture

Two sets of sites were surveyed for the project in 2003 and/or 2004: 1) 153 sites originally surveyed as part of the BTO's CBC scheme during at least one of three historical time

periods (1965-1972, 1973-1980 and 1981-1988) using territory mapping; 2) 253 sites originally surveyed by the RSPB in one year between 1982 and 1988 using point counts. Of the 153 CBC sites, 127 were re-surveyed in both 2003 and 2004; the rest in one year only. Historical data were available for most sites for multiple years. If more than one year was available from each period two years were chosen at random for inclusion in the study. The same territory mapping methods were used as for the original CBC surveys except that four visits were made to each site, rather than the 8-10 of the original. Visit 1 was made by 16 April, Visit 2 by 8 May, Visit 3 by 29 May and Visit 4 by 15 June in each year. To ensure comparability the census maps for the selected historical years were also re-interpreted, using the four visits that most closely matched the time of the visits on the resurvey and using the same criteria for assessing territory clusters as used to analyse the new data. Full details of the criteria used can be found in the research report noted below. Most of the 253 RSPB sites were resurveyed in just one of the years of this survey, although around 20% in each region (56 in total) were surveyed in both to provide information on interannual variation. In most cases, ten random points were surveyed per site but there was some variation. Two visits were made to each point, the first before 7 May, and the second 8 May to 15 June -- roughly corresponding with the historical survey but, where possible, was up to a week earlier to account for changes in phenology since the 1980s. All bird counts were carried out in the morning, starting within one hour of dawn and completed by midday. The order in which the points were visited was reversed for the second visit. On arrival at the point, observers waited 5 minutes then started counting all individuals seen or heard for 5 minutes. Birds were recorded in two distance categories although the distance bands were not used in subsequent analyses.

### **Purpose of Data Capture**

To resurvey woodland sites which had been surveyed originally in one or more periods from the 1960s to the 1980s. This aimed to provide estimates of numbers specifically to compare with long-term monitoring figures derived from the Common Birds Census and Breeding Bird Survey.

### **Geographic Coverage**

Broad-leaved and mixed (at least 20% broad-leaved) woodland sites which had been surveyed previously by BTO or RSPB. The BTO sites were Common Birds Census sites so were biased towards the south and east of England. The RSPB point-count sites were more geographically spread although for both surveys there were sites all over Britain.

### **Temporal Coverage**

The new survey work was done in the breeding seasons of 2003 and 2004 but the survey relied on many data collected on the same sites from the 1960s to 1990.

**Other Interested parties**

The survey was funded by Defra, the Forestry Commission, English Nature (now Natural England), the Royal Society for the Protection of Birds, the Woodland Trust and BTO itself.

**Organiser(s)**

Chris Hewson

**Current Staff Contact**

archives@bto.org

**Publications**

The main report of the survey is:

Hewson, C.M., Amar, A., Lindsell, J.A., Thewlis, R.M., Butler, S., Smith, K. & Fuller, R.J. 2007. Recent changes in bird populations in British broadleaved woodlands. *Ibis* 149 (Supp. 2) 14-28.

A more detailed report is available as:

Amar, A., Hewson, C.M., Thewlis, R.M., Smith, K.W., Fuller, R.J., Lindsell, J.A., Conway, G., Butler, S. & MacDonald, M.A. 2006. What's happening to our woodland birds? Long-term changes in the populations of woodland birds. *BTO Research Report 169 & RSPB Research Report 19*. BTO, Thetford and RSPB, Sandy.

**Available from NBN?**

No.

**Computer data -- location****Computer data -- outline contents****Computer data -- description of contents****Information held in BTO Archives****Notes on Access and Use**

## Other information needed

### Notes on Survey Design

The BTO data from the new survey were not completely independent of the data used to calculate the original CBC trends but by re-visiting the same sites for which historical information was available, and by stratifying site selection across regions, the potential problems of site turnover and regional bias in the original CBC were largely overcome. The BTO survey sites represented a non-random sample of potential woodland sites within Britain. The RSPB sites contrasted in a number of characteristics and provided a complementary data set. In particular, the RSPB sites were generally within larger blocks of woodland situated in less human-dominated landscapes and provided better coverage of northern and western parts of Britain. The combined data set thus provided wider and more representative geographical coverage of Britain than did the CBC.

More sites had been surveyed historically than could be covered by the re-survey. Selection of sites from those available was undertaken on the basis of: geographical location; the area of the woodland block within which each site was located; and in the case of the BTO survey sites, the historical periods for which data were available. Selection was carried out to give the best possible geographical coverage and wood area distribution across the RSPB and BTO survey sites taken together and therefore the distribution of the two sets of sites was largely complementary.

The sites originally surveyed by the RSPB were clustered into a number of broad localities, eg Forest of Dean, New Forest and the Welsh Marches. Re-survey sites were selected from each of these. The final selection of BTO survey sites was made from a pool of 249 sites, which had been selected based on: woodland type -- pure coniferous woods were excluded; the availability of data from the historical periods -- maps for at least 1 and preferably 2 years in at least one of the historical survey periods had to be available; and species composition during historical surveys -- plots had to contain at least one of the following species, to ensure adequate representation of species thought to have declined on the basis of CBC trends: Willow Tit *Poecile montanus*, Marsh Tit *P. palustris*, Tree Pipit *Anthus trivialis*, Spotted Flycatcher *Muscicapa striata*, Lesser Spotted Woodpecker *Dendrocopos minor*, Dunnock *Prunella modularis*, Willow Warbler *Phylloscopus trochilus*, Lesser Redpoll *Carduelis cabaret*, Hawfinch *Coccothraustes coccothraustes* and Common Bullfinch *Pyrrhula pyrrhula*. (In practice, the species criterion was rarely decisive as virtually all plots had historical records of at least one of the key species.)

All potential re-survey sites were categorized by region, and the area of the block of contiguous woodland in which they were embedded was calculated using the digitized GIS layer of the Forestry Commission's National Inventory of Trees and Woodland. Sites were assigned to one of the following size classes of woodland blocks: <20ha, 20-50ha, 50-100ha, 100-500ha and >500ha. In the case of the BTO sites, a further classification was used for woods of less than 10ha that were embedded in a farmland matrix to allow a sample of small farm woods to be included.

Within each region and size class, sites were randomly selected from each RSPB locality and from the overall BTO pool. The BTO selection was then checked to ensure that each

historical survey period was covered by an adequate sample, and that at least 20 small farm woods had been incorporated. Substitutions were made from the original pool until these criteria were satisfied. Following this initial selection, the combined RSPB and BTO selection was then overlaid onto a 100-km grid and substitutions were made from the remaining pool, where possible, to ensure as even coverage as possible at this spatial scale.

In total, 253 woods were selected from the pool of RSPB survey sites and 153 from the BTO pool. The BTO selection included 22 small farm woods. In total, 127 sites were chosen from the BTO selection to be surveyed in both years, with priority being given to those sites with the greatest number of years of historical data available.

Details of the characteristics and representativeness of the sites used are given in the Research Report. The distribution of sites across regions was very similar to the distribution of broad-leaved woodlands. The survey sites oversampled woods of > 100ha and under-sampled those <20ha. However, as these discrepancies are based on the number of woods falling into each size class rather than the area of woodland contributed by each, it is likely that the survey's sites were in fact a more representative sample of woodland by area than these apparent biases suggest. Secondly, as each site included must have been at the very least 15 years old, by definition, new woodlands were not represented in the sample. The size distributions of woodland blocks containing re-survey sites were similar for the BTO and the RSPB selections, although a greater proportion of BTO sites fell in woods of <20ha and a greater proportion of RSPB sites fell in those of 100-500ha. Woodland blocks containing BTO sites also tended to be surrounded by more human-altered landscapes (eg arable/horticultural land, improved grassland, urban/suburban areas) than those containing RSPB sites.

Differences in the geographical distributions meant the RSPB survey sites provided better coverage than the BTO ones of the ranges of species associated with deciduous oak *Quercus* woodlands along the Atlantic seaboard of Britain (eg Pied Flycatcher *Ficedula hypoleuca*, Common Redstart *Phoenicurus phoenicurus* and Wood Warbler *Phylloscopus sibilatrix*). Therefore, the population changes for these species derived from the RSPB data set are likely to be more reliable.

### **Specific Issues for Analysis**