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CHANGING FORTUNES OF WOODLAND BIRDS

RICHARD THEWLIS AND CHRIS HEWSON
British Trust for Ornithology
The National Centre for Ornithology
The Nunnery, Thetford
Norfolk, IP24 2PU, United Kingdom

Richard Thewlis and *Chris Hewson* of the BTO and Arjun Amar of the RSPB report on the findings of the Repeat Woodland Bird Survey.

CAMBIO DE SUERTE PARA LAS AVES DE BOSQUE
Richard Thewlis y *Chris Hewson* del BTO y Arjun Amar del RSBP informan sobre los resultados del Conteo Repetido de Aves de Bosque.

Regular readers of BTO News will have become aware of the concerns over the downward population trends of some of our woodland birds. Against this background the Repeat Woodland Bird Survey (RWBS) was undertaken between 2002 and 2005. This was a major joint project carried out by the BTO and the RSPB with additional funding from Defra, Natural England, Forestry Commission and the Woodland Trust.

THE BACKGROUND

Our knowledge of long-term woodland bird trends stems largely from the Common Birds Census (CBC), the forerunner of the BTO/JNCC/RSPB Breeding Bird Survey (BBS). The CBC was a visionary monitoring scheme set up in the early 1960s that has proved immensely valuable in providing long-term trend information on bird numbers, although its geographic coverage was biased towards southern Britain. A major aim of RWBS was, therefore, to investigate whether the CBC trends for woodland birds were representative of Britain as a whole. Other aims were to assess regional variations in population changes; to assess gross habitat changes in woodland plots over the last two decades; to collect data on factors that may help to explain the changes in woodland bird numbers; and to examine these data in relation to the major hypotheses proposed for the causes of woodland bird declines (these were outlined in *BTO News* 253, 5–7).

THE METHODS USED

The RWBS involved re-surveys of birds in 2003 and 2004 at more than 400 woodland sites for which data were available from the 1960s, 1970s and 1980s. The BTO surveys at 153 sites were all based on the territory mapping methodology used for the CBC. The RSPB covered 253 sites that had originally been surveyed in the 1980s using point counts. Although using two methods made the analyses more complicated, the BTO and RSPB data sets were complementary, giving wide geographic coverage of England, Wales and Scotland. Data on habitat structure, deer browsing impacts and Grey Squirrel drey numbers were also collected for all plots using standardised methods.

The surveys were carried out for the BTO by contract staff and volunteers using a fourvisit mapping method (instead of the CBC eight or more) to maximise the number of plots that could be covered. The subsequent analyses involved re-interpreting the original CBC maps to make them comparable with the new survey data. The important point is that the data from all the years (historical and contemporary) were compared against each other in a standardised way — this method is not designed to give population estimates for sites but to indicate changes in numbers on sites.

THE FINDINGS — WINNERS AND LOSERS

The results are summarised in Table 1. Of 34 species with sufficient data to permit analysis, eight showed large national declines (>25%) according to both BTO and RSPB data sets between the 1980s and 2003/04. Additionally, Hawfinch showed a large decline based on the data from the RSPB survey sites and a moderate (<25%) decline according to the BTO results, although the latter was based on a small number of territories. Of the 34 species, 11 showed large national increases (>25%) in both data sets (with at least one being significant) for this same period.

EFFECTIVENESS OF THE NATIONAL MONITORING SCHEMES

Comparing declines detected by the national monitoring schemes (combined CBC/BBS) with RWBS estimates showed differing results. The large declines for seven species (Lesser Spotted Woodpecker, Lesser Redpoll, Spotted Flycatcher, Tree Pipit, Willow Tit, Willow Warbler and Wood Warbler) were all confirmed by the RWBS, whereas the national declines of three species (Bullfinch, Marsh Tit and Mistle Thrush) were not supported by the RWBS data. Conversely, the declines detected by the RWBS for Garden Warbler, Pied Flycatcher and Redstart had not been reported by the national monitoring schemes. Most of the increases measured by the national monitoring schemes were confirmed by the RWBS (e.g. for Blackcap and Chiffchaff and several resident passerines) but the large increases detected by the RWBS for Coal Tit, Goldcrest, Great Tit and Treecreeper had not been previously reported.

Overall, more species breeding in woodland have increased than decreased but patterns of population change differ across groups of

TABLE 1. Percentage population changes between the 1980s and 2003/04.

Species	BTO	RSPB	CBC/BBS
Chiffchaff	**154.8**	**190.7**	**198.1**
Goldcrest	*138.3*	87.5	2.4
Long-tailed Tit	**130.8**	12.7	**61.5**
Siskin	107.6	28.4	n/a
Green Woodpecker	**80.7**	**269.3**	**125.4**
Nuthatch	**78.7**	9.8	**58.3**
Coal Tit	**74.0**	48.7	11.7
Gr Sp Woodpecker	**69.8**	*123.1*	**79.4**
Robin	**63.5**	71.3	**51.4**
Blackcap	**57.2**	79.8	**68.1**
Wren	**56.5**	91.0	**47.0**
Treecreeper	**51.5**	95.1	–15.3
Great Tit	**51.2**	31.8	21.2
Blue Tit	**30.8**	32.5	13.0
Chaffinch	**25.9**	–5.5	9.2
Blackbird	15.8	64.3	5.0
Song Thrush	15.7	52.2	–0.6
Bullfinch	10.7	–2.0	**–20.3**
Redstart	7.7	–54.4	12.5
Jackdaw	6.9	–19.0	24.0
Dunnock	–5.8	13.0	8.0
Mistle Thrush	–12.5	8.8	**–21.1**
Hawfinch	–17.4	**–73.5**	n/a
Jay	**–19.9**	–26.8	**–17.0**
Pied Flycatcher	–24.6	–20.1	n/a
Garden Warbler	**–25.6**	–39.4	–10.9
Marsh Tit	*–27.0*	26.5	–22.8
L Sp Woodpecker	–43.6	–58.9	n/a
Wood Warbler	**–64.0**	**–55.0**	n/a
Tree Pipit	**–69.7**	**–85.4**	**–81.2**
Spotted Flycatcher	**–70.4**	–36.3	**–75.8**
Willow Warbler	**–74.2**	**–68.8**	**–63.0**
Willow Tit	**–77.5**	**–72.1**	**–76.2**
Lesser Redpoll	**–88.9**	–58.7	**–94.4**

Comparison of national population changes between the 1980s and 2003/04 as derived from BTO data, RSPB data and the combined CBC/BBS population trend for all habitats. Species are listed in order of their change according to BTO RWBS data.

Species in red showed population declines of greater than 25% from both BTO and RSPB surveys. Species in green showed population increases greater than 25% from both BTO and RSPB surveys.

Changes shown in bold were significant at P<0.05 and changes in italics were significant at P<0.1.

species. All long-distance migrants have declined whereas the two medium-distance migrants, Blackcap and Chiffchaff, have increased strongly. Common species (such as Blue Tit and Great Spotted Woodpecker) appear to have fared better than scarcer species (such as Willow Tit and Lesser Spotted Woodpecker). The regional patterns of change are complex. Both Garden Warbler and Willow Warbler have increased in Scotland but declined elsewhere, and both Blackcap and Chiffchaff appear to be increasing less in the south and east. However, both the BTO and RSPB data sets show a striking increase of Spotted Flycatchers in the southwest of England against very large declines elsewhere.

ENVIRONMENTAL EFFECTS

Changes in bird numbers between the 1980s and 2003/04 were examined in relation to the wide range of environmental variables measured in 2003/04, thus comparing bird changes with a single snapshot of the current state of individual woods. Numerous complex relationships were identified between changes in birds and environmental variables; the relationships for 18 declining species indicated that, based on the data available, changes in woodland structure (especially a loss of vegetation cover up to 2 m) were the most likely cause for many of the bird declines. Additionally, Hawfinch and Lesser Spotted Woodpecker both decreased more heavily in woods with relatively high numbers of Grey Squirrel dreys but there was no other evidence that squirrel drey density was a significant factor.

SUMMARY

By making use of the large quantities of data collected in the 1980s and earlier, this project has been a powerful exploration of woodland bird changes and their possible causes. It is important to recognise that the sites covered by the RWBS are not a random sample of woods but they are probably broadly representative of broadleaved and mixed woodland, with the exception that the number of smaller woods covered is less than their prevalence. Potential biases that this may have introduced are discussed in the report.

The RWBS has confirmed the trends in woodland birds detected by national monitoring schemes and provided a valuable focus on the most likely hypotheses or combinations of hypotheses for the declines of a number of species, as well as highlighting the hypotheses that are not supported by these data. It appears that long-distance migrants may be under particular pressure, possibly as a consequence of problems in their winter range or on migration, although they may be experiencing problems on their breeding grounds. Other strong hypotheses emerging from these analyses are that several declining bird species have been affected by changes in woodland structure, possibly arising from changes in the age structure of woodland stands, changes in woodland management (especially a reduction in active management) and increasing deer grazing and browsing pressure.

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FURTHER READING

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. A re-survey of*

breeding bird populations of broadleaved and mixed woodlands in 2003/04 to examine changes since the 1960s, 1970s and 1980s and test these changes against a range of hypotheses for their causes. BTO Research Report: 169; RSPB Research Report: 19.

This report and the executive summary can be downloaded by visiting:www.forestry.gov.uk/woodlandbirdsurvey