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No.17

Can't see the wood for the trees!
Understanding woodland
bird declines.

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This case study forms part of a collection that aims to highlight RSPB science from the last decade. We have chosen these studies as they demonstrate great science, and have had, or are likely to have, a major impact on conservation.

The first ten case studies originally featured as part of the report (shown above) about the RSPB Centre for Conservation Science.

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No.17

Understanding woodland bird declines.

The birds of broadleaved woodland are among some of our most rapidly declining species, even though woodland cover in Britain has increased from 5% to 13% in the past century. The tree species composition and management of woodland have also altered, leading to shifts in woodland structure that have been linked to population changes of some woodland birds. Understanding the causes of population declines is the first step in the process of finding out how best to help these species. Therefore with the help of partners, we have been researching the most rapidly declining woodland birds to inform their conservation.



Willow tit breeding habitat in Derbyshire (Paul Bellamy).

Willow tit is our fastest declining resident species, preferring wetter woods with younger trees where it nests in small dead trees or branches (Fig.A). This species has been lost from large areas of southern and eastern England which may be linked to woods in this region becoming drier and more mature. Although we do not yet fully understand the mechanisms causing the population decline, the clear preference for younger wetter woodland is allowing us to trial habitat management focused around a core remaining area for this species in the Midlands of England. Management is aimed at removing canopy trees to retain a young woodland structure and creating suitable deadwood for nesting within areas of wet woodland. We will be closely monitoring whether this management succeeds in increasing willow tits in the coming years.

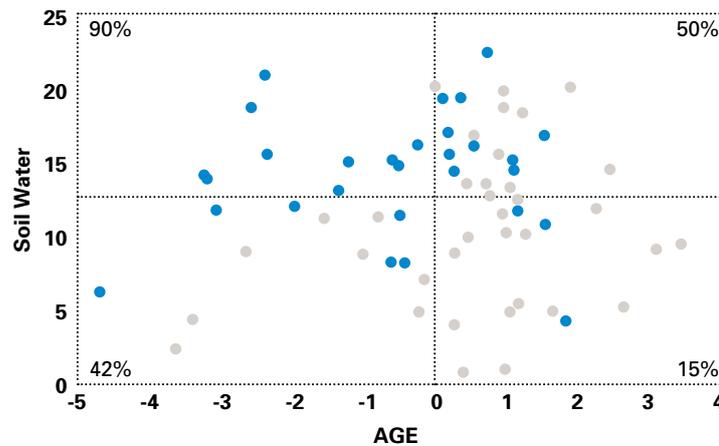


Fig. A. This figure shows how wetness and age structure affect whether woods are occupied by willow tits (blue symbols) or not (grey symbols). High values of soil water indicate wetter woods and lower values indicate drier woods. Higher values of AGE indicate woods with larger more mature trees and low values indicate younger and smaller trees. Most of the wet young woods were occupied by willow tits (90%) whereas few of the older drier woods were occupied (15%). Redrawn, with permission from the British Trust for Ornithology, from Figure 3 of Lewis et al. 2009. Bird Study 56: 326-337.

Lesser spotted woodpecker is a species associated with large mature woodlands and forages for insects on small branches in the tops of trees. Numbers declined by 73% between 1974 and 1999 and they are now too scarce to monitor regularly. This decline is thought to be due to low breeding success. They have an interesting breeding strategy in which females often leave the males to finish rearing the larger chicks on their own. In continental Europe, males increase the feeding visits to compensate for the lack of a female, but in our study area in the Wyre Forest, males failed to increase the number of foraging visits sufficiently, leading to chick starvation (Fig. B). With the help of volunteers, we are currently monitoring nests to identify whether poor breeding success is a problem in other areas, and in the near future we hope to look for ways to boost food supply at critical times.

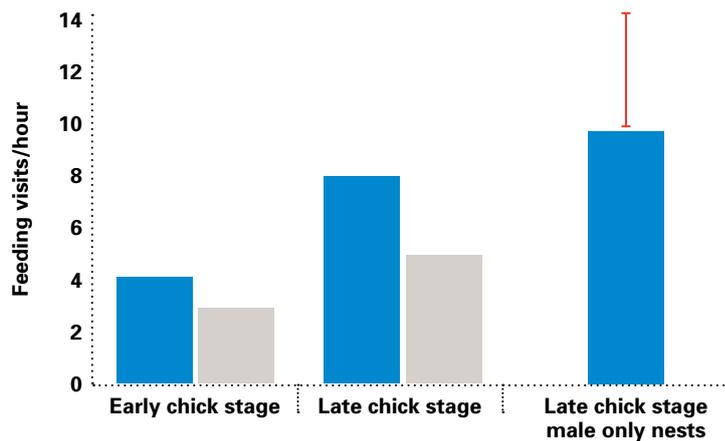


Fig. B. Contributions of male and female lesser spotted woodpeckers to feeding chicks in the nest. The first two examples show the feeding rates of males (blue bars) and females (grey bars) at nests where the pair are feeding small chicks and large chicks. The last example shows the feeding rates of males at nests with large chicks but no female present, the red line represents the rates needed to compensate for a lack of female. Redrawn, with permission from the British Trust for Ornithology, from Figure 2 of Charman et al. 2012. Bird Study 59: 255-265.



Female lesser spotted woodpecker at nest hole.



Researcher recording woodland structure in wood warbler breeding territories. (Andy Hay rspb-images.com)



Wood warbler in breeding habitat.
(Andy Hay rspb-images.com)

Wood warbler is one of our long-distance migrant species. During the breeding season it is found in mature woodland in the west of Britain, wintering in the northern edge of the humid forest zone in Africa. Populations in Wales, Devon and the New Forest, have been studied to identify possible causes of population decline during the breeding season. Results of this work have shown that in the Welsh population where numbers were stable, insect abundance, breeding success and nest predation has not changed significantly between 1984/85 and 2009-11, nor has the timing of insect abundance changed relative to the warbler's breeding season. Comparisons of breeding success between the three study areas found that nest predation was high for the declining population in the New Forest but not for the declining population in Devon which was similar to that in Wales. As we haven't yet found any evidence that population declines are caused by changes on the breeding grounds, our work is now concentrating on recording annual return rates from Africa, and investigating habitat use on their wintering grounds.

These species, along with other declining woodland birds like Marsh tit and Hawfinch, have shown patterns of loss from landscapes with lower woodland cover and are now mainly restricted to more wooded regions. The emergence of new tree diseases such as ash dieback and the increasing pressures from non native deer brings new threats to our woodlands. Understanding the impact these pressures have on woodlands and their associated biodiversity is also an important area of research for us.

Partners This work was conducted in partnership with British Trust for Ornithology, James Hutton Institute, Forestry Commission, Natural Resources Wales, Forest Research, Nottingham University, Natural England, Department for the Environment Food and Rural Affairs, Tony Davis and Ken Smith.



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I lead a small group researching causes of declines for priority woodland birds including hawfinches, willow tits and wood warbler. I also research major woodland processes which affect woodland composition and structure, and their impact on bird populations in partnership with other organisations. Our aim is to identify possible management or policy interventions that might recover populations of declining woodland birds, and to measure their effectiveness.

Recommended citation

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Ash woodland in East Anglia, an area likely to be affected by ash dieback.
(Paul Bellamy)

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