



For immediate use

Are predators to blame for songbird declines?

In the biggest ever analysis of songbirds and their predators, published today in the *Journal of Applied Ecology*, scientists look at the role of predators in the decline of species such as Bullfinch and Yellowhammer. Whilst a small number of associations may suggest significant negative effects between predator and prey species, for the majority of the songbird species examined there is no evidence that increases in common avian predators or Grey Squirrels are associated with large-scale population declines.

This research by Stuart Newson (BTO), Eric Rexstad (University of St Andrews), Stephen Baillie (BTO), Stephen Buckland (University of St Andrews) and Nicholas Aebischer (Game and Wildlife Conservation Trust) is published as "*Population changes of avian predators and grey squirrels in England: is there evidence for an impact on avian prey populations?*" the British Ecological Society's *Journal of Applied Ecology*.

By combining detailed bird observations at over 200 sites in the period 1967-2000 with those of over 2,000 volunteers surveying sites during the period 1995-2005, the authors have been able to take forward the debate about songbirds and predators. This research, led by scientists from the British Trust for Ornithology and funded by SongBird Survival, uses information made available by partners in the Breeding Bird Survey (BTO, RSPB and JNCC).

Although it is widely accepted that, in some situations, predators of nests, chicks and full grown birds do affect the abundance of avian prey species, until now the evidence that such effects are widespread amongst songbirds has been weak, having been based on a relatively small number of studies.

In this paper, the authors look at how prey and predator numbers have changed over nearly forty years, to see if there are associations between trends for particular prey species and their predators. This is the most sophisticated, long-term and large-scale analysis of its kind ever undertaken. It examines the effects of three avian predators of juvenile and adult birds (Buzzard, Sparrowhawk and Kestrel) and of four avian and one mammalian nest predators (Great Spotted Woodpecker, Magpie, Jay, Carrion Crow and Grey Squirrel). Grey Squirrel data were only available for the period 1995-2005.

This robust study found that:

- For 22 of the 29 potential prey species examined there was no statistically significant link between the increase of predator numbers and the decline of prey numbers. Thus, for the majority of prey species examined, the study provides no evidence that population changes have resulted from changes in predator numbers.

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- Amongst the seven species in which there were significant negative effects of particular predators, the relationships that are most worthy of further investigation are associations between the increase in the number of Sparrowhawks during the period 1967- 2000 and declines in the abundances of Bullfinches, Tree Sparrows and Reed Buntings. These associations may help to identify priorities for future work on the effects of predation on songbird populations, in as much as they relate to the suite of prey species considered here.
- Across the suite of prey species covered, predator effects were negative for three species; Sparrowhawk, Kestrel and Grey Squirrel. This suggests that studies of predation by Sparrowhawks, Kestrels and perhaps also Grey Squirrel should be priorities for future work.
- There were a large number of positive associations between predators and prey, suggesting that predator numbers have largely increased as the amount of prey has increased. This is particularly the case for native avian nest predators (Great Spotted Woodpecker, Magpie, Jay and Carrion Crow). Although this largely exonerates these predators, as driving declines in the numbers of songbird species at a national level, it does not preclude individual predators having local effects.

[Dr Stuart Newson, Lead author, Senior Research Ecologist](#) at BTO said: *“At the heart of this piece of work, is a shared concern about the decline of species such as Bullfinch and Yellowhammer. For the majority of the songbird species we examined, there was no evidence that increases in common avian predators and Grey Squirrels are associated with large-scale population declines. However, by looking at changes in predators and prey at a very large number of sites, we have identified some predator/prey relationships that may be usefully studied further. This research relies upon a huge amount of information that has been collected by thousands of BTO volunteers over a period of forty years.”*

[Clive Sherwood, Chairman of SongBird Survival](#) said: *“This is the first major project that we have funded and we are pleased to have worked on it with the BTO. It will take the debate forward and clarifies some priorities for future research.”*

This is a high quality study based on unique long-term and large-scale datasets. Despite the limitations noted below (notes to editors) this robust study found that, for the majority of the songbird species examined, there is no evidence that increases in common avian predators and grey squirrels are associated with large-scale depression of prey abundance or population declines. It is also clear that, for the majority of declining species with unfavourable conservation status population, declines appear to be due to factors other than predation.

Other studies have suggested that over the period of this study, songbird population changes have been influenced by a range of other factors, most notably changes in farmland and woodland management.

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Notes for Editors

1. **Full details of paper:** Newson, S.E., Rexstad, E.A., Baillie, S.R., Buckland, S.T. & Aebischer, N.J. (2010). Population changes of avian predators and grey squirrels in England: is there evidence for an impact on avian prey populations? the British Ecological Society's *Journal of Applied Ecology* 47, 244-252 doi: 10.1111/j.1365-2664.2010.01771.x and published online. To view an abstract of the paper visit <http://www3.interscience.wiley.com/journal/117972213/home>. A pdf of the full paper is available on request from the BTO at press@bto.org.
2. **This study provides an analysis of datasets covering the whole of England.** It is entirely possible that predators do affect the abundance of songbirds at different spatial scales and at a minority of locations. Such effects would not have been detected by this analysis.
3. **The paper uses 34 years of Common Birds Census (CBC) data (1967-2000) and 11 years of Breeding Bird Survey (BBS) data (1995-2005) from sites spread across the whole of England.** These data sets included counts from about 200 CBC plots and 2000 BBS squares in each year of these two surveys. BBS data were collected as part of the BTO/RSPB/JNCC partnership.
4. **The CBC data show much stronger evidence of predator effects than does the BBS.** This is to be expected due to the longer duration of the time series, coupled with the fact that over the 34 years covered by the CBC many predators showed marked variations in abundance over time and in different areas.
5. **Where large numbers of tests are carried out in an analysis of this kind,** some apparently statistically significant results will arise by chance, even where there is no underlying causal relationship. Thus while such an analysis is extremely useful for looking at the overall weight of evidence for predation effects, considerable care must be taken not to over-interpret results for individual species.
6. **Whilst a correlative study such as this cannot prove causation,** if predation was a major factor contributing to national declines in songbird species we would expect to find the strongest evidence for negative effects of predation amongst declining species. However, for both the BBS and the CBC analyses we did not find a higher proportion of negative effects amongst declining species. Indeed, within the CBC data we found the opposite for nest predators – there were significantly fewer negative effects amongst declining species than amongst stable or increasing ones.
7. **This study should not be used to draw strong inferences about the effects of predation** on individual songbird species, or to conclude that there are no circumstances in which songbird abundance is influenced by predation. Rather it could be used as a focus for future research to look at issues such as changes in nesting success and adult survival in relations to predator abundance.

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