



Dangerous Drop in Sparrow Population

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House Sparrow. CREDIT: Ross McLeod

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Christmas may traditionally be a time of weight gain, when we pile on the pounds after indulging in mince pies and turkey. However, according to a new study published in the Royal Society journal *Biology Letters*, during the winter season sparrows don't build up the extra weight they need to survive, increasing their likelihood of starvation and contributing to the remarkable decline in their population.

The study, which is an outcome of a collaborative research project between the British Trust for Ornithology and the Universities of Glasgow, St Andrews and Oxford, explains why house sparrow numbers might have declined so rapidly in the last 30 years that they are now on the UK conservation red list. Since the 1970s the British breeding sparrow population has decreased by more than 12 million, a decline of more than 60%.

Dr Ross MacLeod from the University of Glasgow Department of Evolutionary & Environmental Biology Department explains:

"By using weight measurements from more than 10, 000 house sparrows, collected by the British Trust for Ornithology's bird ringing scheme over six years we have been able to analyse changes in fatness to investigate potential causes of this dramatic population decline. We have discovered that, unlike other species, sparrows don't build up extra weight needed in winter months, which would reduce starvation risk. Instead they stay thin, allowing them to flee predators more easily."

Dr Will Cresswell from the School of Biology at the University of St Andrews continues:

"This pattern makes sparrows even more vulnerable than other species to

environmental changes that reduce food supply, such as cleaner urban environments or agricultural intensification. The cause of the drastic drop in their population could therefore be the deterioration of the environment, as under normal conditions house sparrows have evolved ways that allow them to live alongside their natural predators."

The dramatic population decline has occurred in both rural and urban habitats across Western Europe so the fact that the reasons have not yet been identified has caused widespread concern. The reduced sparrow numbers in British farmland has been linked to a reduction in winter survival caused by reduced food supply. These reductions in food supply are associated with agricultural intensification that has led to the loss of seed-rich winter stubble and access to spilt grain.

However, not all birds living in farmland have declined and urban house sparrows have also declined, suggesting that a general reduced food supply in farmland is insufficient to explain the population declines. Thus it is probably the sparrows' high vulnerability to predators that prevent them from being able to compensate for unpredictable food supplies by increasing their fat reserves. Therefore they are probably much more likely to starve when food is scarce. This means that sparrows may act as an early indicator of general environmental deterioration.

Dr MacLeod adds:

"Improving our understanding of how different animals react to environmental change is vital to predicting the effects we humans will have, in the future, on our own environments and on the incredible variety of life we share these environments with."

The paper, "Mass-dependent predation risk as a mechanism for house sparrow declines?" by Ross MacLeod, Phil Barnett, Jacquie Clark and Will Cresswell, is published by the Royal Society's journal *Biology Letters*.

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NOTES TO EDITORS:

THE RESEARCHERS ARE AVAILABLE FOR INTERVIEW.

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