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Flexible nesting times can help birds cope with climate change

Birds' ability to alter spring nesting times as temperatures rise could help safeguard their long-term survival in changing climates, research suggests.

A study of British woodland birds shows that they use spring temperatures to decide when conditions are ideal for egg-laying, helping to ensure chicks get the best possible start in life.

The timing of egg-laying is crucial, as it affects how much food is available to chicks after they hatch, scientists say. Chicks need to hatch at a time when their main sources of food are plentiful – hatching outside of this period reduces their chances of survival.

For more than fifty years, birdwatchers have recorded the first egg-laying dates of British birds and submitted them to the British Trust for Ornithology.

Researchers at the University of Edinburgh and the British Trust for Ornithology combined 100,000 observations of laying date for blue tits, great tits, chaffinches and pied flycatchers with daily temperature records covering the same period.

They found that all four species are able to alter their egg-laying times in response to spring temperatures and that this flexibility may enable the birds to continue to lay at the optimum time as climate changes. When spring temperatures were low, birds delayed egg-laying by several days. Warmer weather caused them to begin nesting earlier in the year, the team says.

The birds appear to be well equipped to cope with seasonal temperature changes brought about by climate change, researchers say. Even if spring temperatures rise rapidly in coming years, the species' ability to adjust their nesting times should help them survive, they add.

The team caution that their conclusions are sensitive to how the spring temperature cue is defined, and further research is needed to make more accurate predictions about how birds may adapt to climate change.

The study, published in the journal *Global Change Biology*, received funding from The Royal Society, Natural Environment Research Council and the Joint Nature Conservation Committee (on behalf of the statutory nature conservation bodies).

Ranked among the top universities in the world

Dr Ally Phillimore, of the University of Edinburgh's School of Biological Sciences, said: "We know that birds use spring temperatures to adjust the timing of egg-laying, and the big question is whether this flexibility will allow birds to lay at the right time under future warmer conditions. For these four woodland species we suggest this flexibility in the timing of egg-laying does an excellent job of tracking variation in optimum timing."

Dr David Leech, Head of the British Trust for Ornithology's Nest Record Scheme, added: "This research would simply not be possible without the dedication and enthusiasm of the hundreds of volunteer recorders who spend each season monitoring nests to create a globally unparalleled dataset detailing long-term changes in the breeding success of over 100 bird species."

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