

Changes in climate and land cover affecting European migratory bird populations

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Swallows are a common sight across the UK. Every year, they make the long journey to South Africa from Europe. Credit: Philip Stephens

A new study led by the Department of Biosciences at Durham University, UK, is the first large-scale assessment of how recent changes in both climate and land cover have impacted populations of migrating birds.

Global declines in the numbers of individuals of many migratory species are thought to be caused by a combination of [climate](#) change and [habitat loss](#) on both their breeding and non-breeding grounds, as well as changes to areas they use to refuel whilst on migration. Understanding of which factors are key in causing recent declines, and in which areas changes are having most impact, remains poor.

Using data on the long-term population trends of 61 short- and 39 [long-distance](#) European breeding migratory [birds](#), the researchers related changes in climate and [land cover](#) across their breeding and non-breeding grounds over a 36-year period to their population trends.

The study showed that populations of migratory birds were most affected by changes in climate on the European grounds where they stopped to breed but, in the areas that they migrate to after the [breeding season](#), changes in land cover had the greater impact.

The combined effects of changes in climate and land cover account for approximately 40 percent of the variation in the population trends of migratory birds, which means that other factors, such as changes in habitat quality, probably also have a substantial impact on population changes.



Grasshopper warblers spend the summer breeding in Europe, but then migrate to sub-Saharan Africa for the winter. As their populations have declined hugely in recent decades they have been designated as a Red List Species in the UK.
Credit: Stephen Willis

Professor Stephen Willis, who led the study, said: "For years, people have suspected that climate and land cover changes are major drivers of population trends of [migratory birds](#)."

Here we show, for the first time that for long distance migrants moving between Europe and Africa, it is a combination of European climate change and African land cover change that are key to the population declines of many such species over recent decades.

"In the UK, we have seen major declines in many migratory bird species that come here to breed from their African wintering grounds. For example, the Turtle Dove has declined by 95% between 1992-2017, and the Nightingale has declined by 56% between 1995—2018."

Lead author, Dr. Christine Howard added: "The relatively minor role of recent climate changes on African non-breeding grounds for long distance migrants was surprising but probably reflects the less extreme climatic changes there compared to Europe.

"The fact that a lot of variation in [population](#) trends remain unexplained in our study suggests that other factors, such as agricultural intensification, are probably also impacting populations, along with changes at migratory stopping points, including hunting."

The researchers say that to stop the declines of European migrant birds, an integrated approach must consider all processes affecting them across the different grounds they inhabit throughout the year.

More information: Christine Howard et al, Disentangling the relative roles of climate and land cover change in driving the long-term population trends of European migratory birds, *Diversity and Distributions* (2020). [DOI: 10.1111/ddi.13144](https://doi.org/10.1111/ddi.13144)

Provided by Durham University

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