

Routes of migratory birds follow today's peaks in resources

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Cuculus canorus is in the air with the transmitter on its back. Credit: Palle Sørensen

Movement of migratory birds is closely linked to seasonal availability of resources. The birds locate the areas with the most resources across

continents. Researchers from the Center for Macroecology, Evolution and Climate, University of Copenhagen, have tracked three long-distance migratory birds. By comparing their migration routes to climate projections, the scientists show that finding food may become a challenge to the birds by the end of this century.

Migratory birds need to schedule their annual trips properly in order to reach areas with sufficient food resources during wintering.

A new paper published today in *Science Advances* shows that common cuckoos, red-backed shrikes and thrush nightingale closely follow the complex seasonal vegetation changes occurring within their non-breeding grounds in sub-Saharan Africa. Bird [migration](#) researcher and first author Professor Kasper Thorup from the University of Copenhagen says, "We show that all three birds cross continents to match highest levels of resource supply. The bird's migration program guides them to areas where [food availability](#) has been high in the past. So what is interesting now is the bird's ability to adjust their migration patterns to match future changes in food availability."

In total, 38 individual birds were tracked to establish the [migration routes](#). The common cuckoo was tracked using satellite tracking, while the smaller red-backed shrikes and thrush nightingale were tracked using light loggers. Thorup explains, "All three species have complex migration routes covering large parts of Europe and Africa with many stops along their way. Mapping their routes has only been possible using the newest available technology from satellite telemetry in cuckoos to small tags that log light-levels in red-backed shrikes and thrush nightingales."

The study shows that the migration pattern in cuckoos matched high levels of green vegetation, whereas migration matched local vegetation peaks for red-backed shrikes and nightingales. Both green vegetation and

vegetation peaks are presumably related to abundant food availability.



Red-backed shrikes (*Lanius collurio*) on a branch. Credit: Per Ekberg

The scientist compared the observed migration route to projections of food availability for 2080. This showed a mismatch between seasonal resources and the birds' expected presence. Co-author Professor Carsten Rahbek from Center for Macroecology, Evolution and Climate says, "We believe that birds' innate programmes to guide them over long distances must be adapted to the long-term average of food availability. Our results suggest that by the end of this century, climate change and

other impacts on the food source like land use changes could negatively influence the birds' chances to find sufficient food."

More information: Resource tracking within and across continents in long-distance bird migrants, *Science Advances*, [DOI: 10.1126/sciadv.1601360](https://doi.org/10.1126/sciadv.1601360)

Provided by University of Copenhagen

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