

New research unveils bird migration strategies

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Using weather surveillance radar and citizen-science data, researchers are learning how migratory birds return to their breeding grounds in North America each spring with near-pinpoint accuracy. The research focuses on the Central Flyway that runs north-south through the middle of North America—an aerial superhighway carrying billions of birds northward each spring.

The new study in the journal *Ecology Letters* is the work of researchers from the University of Oklahoma, University of Oxford, University of Massachusetts, and the Cornell Lab of Ornithology. Their results confirm core predictions of migration theory at an unprecedented national scale:

- Body size predicts variation in flight strategies across latitudes.
- Larger-bodied species fly faster and compensate more to prevent being pushed off course by cross winds
- Migrants travelling northward earlier in the spring increasingly compensate for wind drift at higher latitudes.
- Migrants appear to shift their behaviors through their journey, homing in on their end destination as they approach.

"Radar studies have always been limited by their inability to discern species or even groups of species that are flying at night," says lead author Kyle Horton. "We know from [radar](#) that massive numbers of migrants are taking to flight each year, but we don't know if those measures are dominated by songbirds or waterfowl. Our study fills that

gap by integrating [radar data](#) with species-based observations from [citizen scientists](#), via eBird. We're able to reveal behaviors we have never been able to investigate before."

"The merger of these two huge datasets, totaling millions of observations from [radar sensors](#) and citizen scientists, is an exciting advance," says co-author Benjamin Van Doren of the University of Oxford. "Citizen scientists are the eyes and ears on the ground that radars don't have—countless new opportunities arise when we bring the two together."

"This integration of information at a regional scale provides new insight into conditions that govern behavior of intercontinental-scale migration systems," says co-author Jeffrey Kelly of the University of Oklahoma.

More information: Kyle G. Horton et al, Navigating north: how body mass and winds shape avian flight behaviours across a North American migratory flyway, *Ecology Letters* (2018). [DOI: 10.1111/ele.12971](https://doi.org/10.1111/ele.12971)

Provided by Cornell University

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