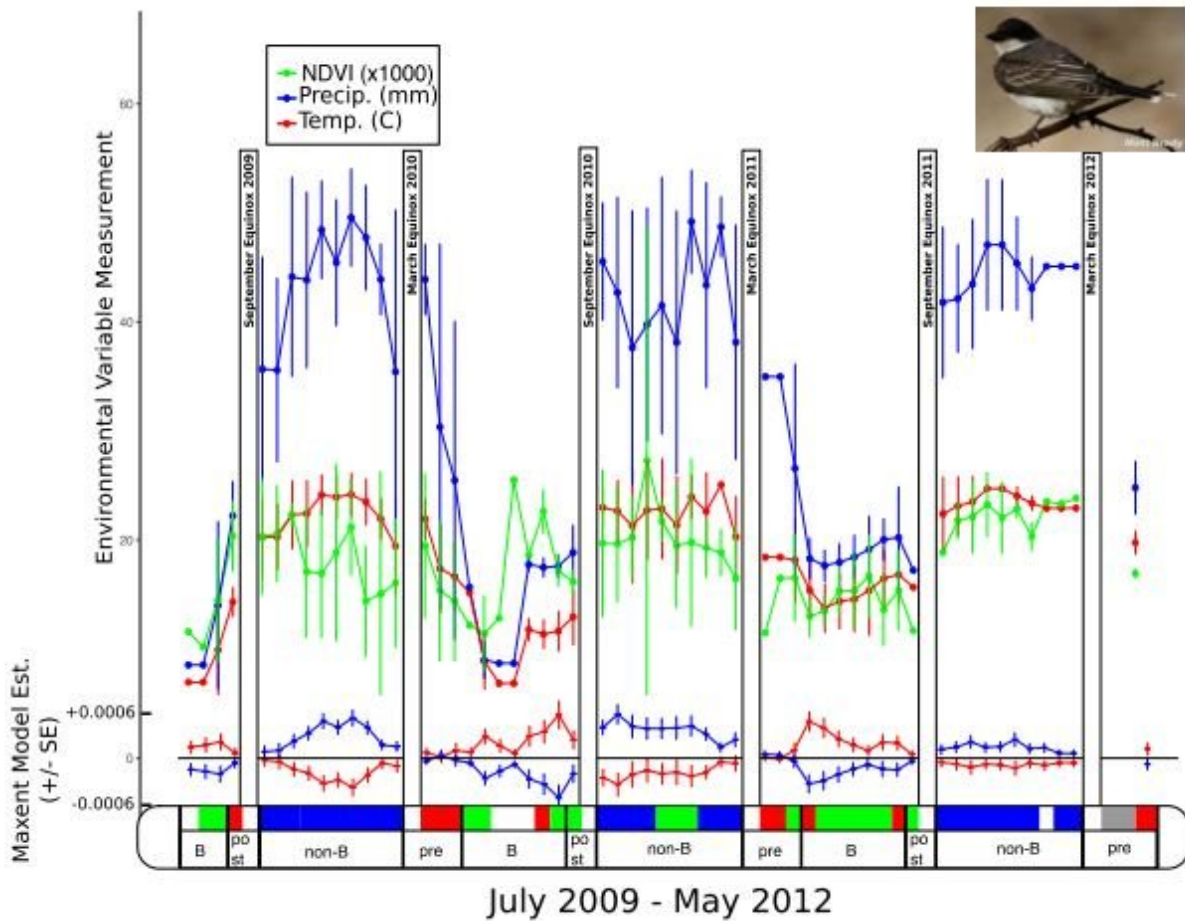


Rainy weather predicts bird distribution—but climate change could disrupt it

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Precipitation is the best predictor of Eastern Kingbirds' winter distribution.
Credit: M. MacPherson

Understanding what environmental cues birds use to time their annual migrations and decide where to settle is crucial for predicting how they'll be affected by a shifting climate. A new study from *The Auk: Ornithological Advances* shows that for two species of flycatcher, one of the key factors is rain—the more precipitation an area receives, the more likely the birds are to be there during the non-breeding season.

Tulane University's Maggie MacPherson and her colleagues combined field techniques with [species](#) distribution models to investigate which environmental factors drove the migrations of Eastern Kingbirds and Fork-tailed Flycatchers. Using geolocators, devices that record a bird's daily location based on day length, they could track where individuals of each species went. The two species share similar behavior and habitat requirements, but differ in their range and migration strategies, and these strategies were compared to determine the influence of temperature, precipitation, and primary productivity (the amount of "green" vegetation). Precipitation turned out to be one of the most important predictors of their distribution, particularly in the non-breeding season.

MacPherson comments, "Although we understand how climate change is expected to affect regional temperature regimes, changes in patterns of seasonal [precipitation](#) remains unclear. As the locations of both species were positively correlated with the highest rainfall across the landscape during their non-breeding seasons, our research emphasizes the need for a better understanding of how flexible they may be in adjusting locations under new rainfall regimes. More research is needed to better understand how migratory birds relying on current rainfall regimes could benefit from climate-conscious [conservation planning](#)."

"In the face of [climate change](#), having seasonal species distribution models like these is powerful for helping understand the biology of the species, and also for predicting how a population might change in size and geography in the future, or a species' flexibility to adjust its

migratory timing," adds Mississippi State University's Auriel Fournier, an expert on species distribution models who was not involved in the study. "All of those predictions are vital for conservation planning and decision making. The use of two related species with different life history traits is also exciting, as it makes the results more broadly applicable."

More information: "Follow the rain? Environmental drivers of Tyrannus flycatcher migration across the New World" *The Auk: Ornithological Advances* [DOI: 10.1650/AUK-17-209.1](https://doi.org/10.1650/AUK-17-209.1)

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