

Environmental conditions may impact bird migration

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Wind conditions during spring migration may be a predictor of apparent annual survival and the timing of breeding in yellow warblers, according to results published May 14, 2014, in the open access journal *PLOS ONE* by Anna Drake from Simon Fraser University, Canada and colleagues.

Migratory birds play a critical role in the ecosystem, pollinating plants, dispersing seeds, and consuming insects and small mammals. Yellow warblers breed in western Canada and overwinter in Mexico, making them difficult to study during all stages of their annual cycle. Scientists used data collected from 380 birds over seven [breeding](#) seasons to examine how [climatic conditions](#) during the winter migratory and breeding season influenced survival and reproduction. They found that of the climatic models tested, [wind speeds](#) on migration best predicted apparent annual adult survival, male arrival date at the breeding site, female egg laying, and annual productivity.

Higher westerly wind speeds during migration may be associated with lower apparent annual survival in this study because they reflect storm events that increase the risk of in-flight mortality. High wind speeds that oppose the direction of spring movement may also require birds to use more energy, requiring more stops for food and ultimately delaying arrival at the breeding location. Migration conditions appear to impact both annual survival and the timing of breeding, which in turn strongly predicts annual productivity within this population of migratory birds..

Anna Drake added, "We know that winter conditions can have large

impacts on [migratory birds](#) in eastern North America, but to our surprise we found that conditions on migration had a far greater impact on survival and reproduction of yellow warblers in the west. This is an intriguing result and suggests that differences in the geography of the flyways across eastern and western North America alter when climatic conditions influence the population dynamics of migratory songbirds."

More information: Drake A, Rock CA, Quinlan SP, Martin M, Green DJ (2014) Wind Speed during Migration Influences the Survival, Timing of Breeding, and Productivity of a Neotropical Migrant, *Setophaga petechia*. *PLoS ONE* 9(5): e97152. [DOI: 10.1371/journal.pone.0097152](https://doi.org/10.1371/journal.pone.0097152)

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