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Abstracts

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USING ISOTOPIC VARIANCE TO DETECT LONG-DISTANCE DISPERSAL AND PHILOPATRY IN BIRDS: AN EXAMPLE WITH OVENBIRDS AND AMERICAN REDSTARTS

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Abstract. Understanding movements of individual birds between breeding sites (breeding dispersal) or between natal sites and the site of first breeding (natal dispersal) is crucial to the modeling of population dynamics. Unfortunately, these aspects of demography are poorly understood for avian species in general, and for migratory songbirds in particular. This is because it is often impossible to sample broadly enough to relocate marked birds that have moved. We used stable-hydrogen (δD) and carbon ($\delta^{13}C$) isotope analyses of the feathers of 139 American Redstarts (*Setophaga ruticilla*) and 193 Ovenbirds (*Seiurus aurocapillus*) to evaluate evidence for individuals molting feathers at locations other than their breeding sites from the previous year. We sampled outer rectrices from breeding populations at three extensive boreal forest sites (Prince Albert National Park and Duck Mountain, Saskatchewan, and Lac La Biche, Alberta) and at three isolated forest tracts (Cypress Hills, and Moose Mountain, Saskatchewan, and Turtle Mountain, Manitoba) in western Canada. Based on outlier analysis of δD measurements, we found evidence for long-distance dispersal ranging from 0–29% of individuals. For both species, second-year birds had higher variance in δD values suggesting they had a higher probability of originating from elsewhere compared to after-second-year birds.

Key words: carbon-13, deuterium, dispersal, feathers, philopatry, source-sink populations, stable isotopes.