

Local weather affects body condition of three North American songbird species on the Texas coast

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Abstract

Body condition is a frequently used physiological indicator of avian health and is affected by an array of environmental variables. Although a number of studies have investigated the specific effects of individual weather variables on body condition in birds, few have analyzed the effects of both temperature and precipitation within the context of an extreme weather event such as hurricanes. In this study we examined the relationship between breeding season body condition and daily maximum temperature, daily minimum temperature, and monthly total precipitation for three passerine bird species at the Welder Wildlife Refuge near Rockport, Texas. We also evaluated yearly changes in body condition over a twelve-year period for northern cardinals (*Cardinalis cardinalis*), painted buntings (*Passerina ciris*), and white-eyed vireos (*Vireo griseus*), focusing on the extreme precipitation event of Hurricane Harvey which caused heavy localized flooding. We found that body condition declined with average daily minimum and maximum temperatures, while precipitation had varied, species-specific effects in the three species analyzed. Our results also suggest that northern cardinals experienced a notable reduction in average body condition in the two years following Hurricane Harvey. Taken together, we conclude that short-term precipitation and temperature drivers can be important correlates of body condition in songbirds and that severe weather events may reduce body condition in some bird species.

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