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Abstracts

SHORT COMMUNICATIONS

WING MICROEVOLUTION IN THE HOUSE SPARROW PREDICTED BY MODEL OF OPTIMIZED WING LOADING

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Abstract. Wing loading, defined as the ratio of body mass to wing area, is a critical phenotype affecting flight. In the House Sparrow (*Passer domesticus*), wing loading is optimized, and both the mean and variation in body mass are inverse functions of ambient temperature. Combined, these relationships predict that climatically induced changes in body mass under optimized wing loading must be countered by directional and variance selection on wing area. Measuring multiple North American House Sparrow populations sampled throughout the 20th century, I show that observed sex-specific changes in the mean and variation in wing length (a close proxy of wing area) are related to changes in winter temperature and quantitatively predicted from a model where wing loading is optimized.

Keywords: climate change, House Sparrow, optimized wing loading, *Passer domesticus*, wing microevolution.