DOES ALLEN'S RULE HOLD UP AFTER 146 YEARS?

In hotter climates, endotherm appendages tend to become larger, allowing for more heat exchange with the environment

Joel Allen

Avonet

Avonet is an open-source database of morphological, geographical and ecological data for all bird species. It was compiled by Catherine Sheard and Joseph Tobias to serve as a tool for testing out theories in evolutionary biology, ecology and ecosystem science for the birds. (Tobias et al. 2021)

AIm

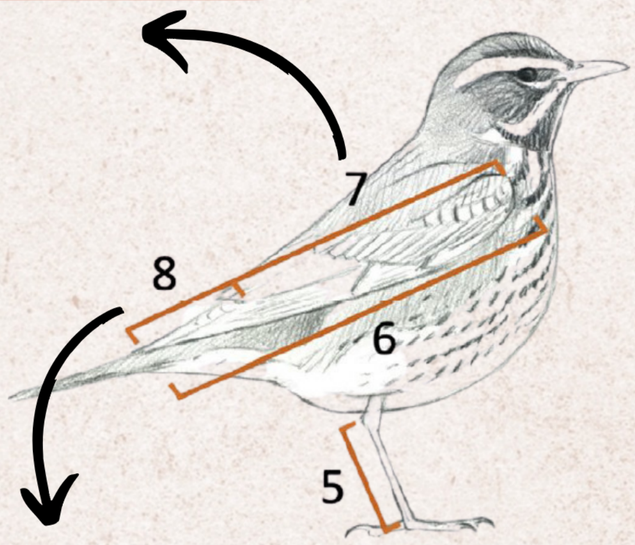
This study aims to understand how Wing and Tail Length factor into Allen's rule across the world's species.

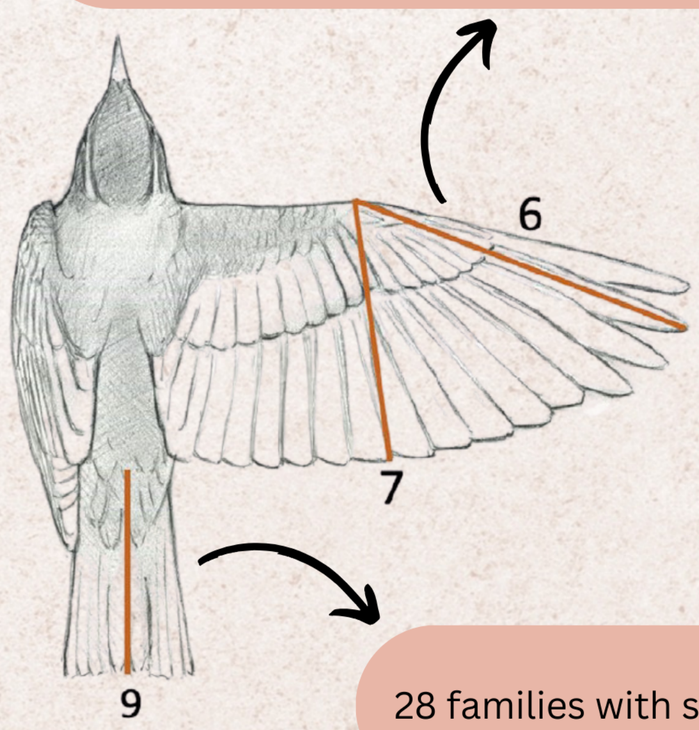
17 families with significant correlations

Most negative correlation: Laridae
Most positive correlation: Scolopacidae

25 families with significant correlations

Most negative correlation: Remizidae
Most positive correlation: Maluridae





40 families with significant correlations

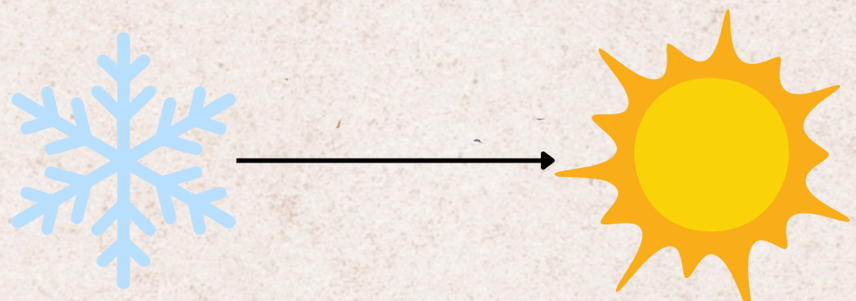
Most negative correlation: Remizidae
Most positive correlation: Musophagidae

28 families with significant correlations

Most negative correlation: Pteroclididae
Most positive correlation: Gruidae

Allen himself hypothesised that larger birds would be more likely to follow his rule. (Frohlich et al. 2023) The vastly different masses of Remizidae and Gruidae supports this. Additionally, Xu et al. found that passerines (Remizidae) exhibit a negative trend with annual mean temperature, while non-passerines (Gruidae) exhibit a positive trend for bill and tarsus length. (Xu 2023) It is possible, then, that Wing and Tai length are under similar selection pressures to that producing these trends in tarsus length.

Remizidae



Gruidae