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Poster Session 9: Phenomics

Allometry, sexual selection, and evolutionary lines of least resistance shaped the evolution of exaggerated sexual traits within the genus *Tyrannus*

June 23
12:00 PM
Session 9

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The direction and magnitude of evolutionary change not only depend on change driving processes (e.g., selection) but also on the genetic architecture underlying, making intraspecific variation a key factor to evolution increasing or impeding response to selection. Here we study the genus *Tyrannus* as a model for examining the conditions and drivers that facilitate the repeated evolution of exaggerated, secondary sexual traits in the face of significant functional limitations, with particular focus on the role of phenotypic trait covariation. The clade includes two deep-fork-tailed species, the Scissor-tailed (*T. forficatus*) and Fork-tailed (*T. savana*) flycatchers. Both show extremely elongated and functionally-constraining long feathers that independently diverged from the rest of the genus. We then focused on the roles of allometry, sexual selection, and their interaction on the diversification of tail morphology in *Tyrannus*. Historically, birds' tails have been understood as mere flight devices, tackling the phenomenon of exaggerated traits mainly from a 'selection' angle. That way, the origin of this trait was regarded either as the result of natural (adaptive) selection or, more prominently, sexual selection. Instead, we approached the issue from a 'structuralist' perspective, isolating and assessing different types (or axes) of morphological variation (interspecific and intraspecific –e.g., sexual dimorphism and allometric variation–). As a main result of this study, both sexual dimorphism and allometric variation of the deep-forked species aligned with the between-species maximum variation axis of 'ordinary'- tailed species. Therefore, we present evidence of amplified divergence via the cooption and reorientation of allometric shape variation feeding a sexual selection process that repeatedly drove morphology along a historically favoured direction of cladogenetic evolution.
