

Ecological and social correlates of phenotypic divergence in Papuan fairywrens

John Anthony Jones^{1*}, Jordan Boersma², Erik Enbody¹, and Jordan Karubian¹

¹Tulane University, New Orleans LA; ²Washington State University, Pullman WA

*Corresponding: johnajones91@gmail.com



Introduction

- Australo-Papuan fairywrens are emerging as a model system for sexual selection and sociality
- Little is known about how ecological factors influence life-history strategies and ultimately signal evolution
- White-shouldered fairywrens represent a unique opportunity to study female color evolution as they express three color phenotypes across geographically isolated populations
- Investigating the ecological and social correlates of phenotypic divergence may provide insight into better understanding the interplay between natural and sexual selection acting on females

Objectives

- Determine morphometric differences between populations
- Determine extent of home range between sexes
- Determine sociality differences

Methods

Two populations of fairywren:

- Milne Bay Province (Ornamented)
Western Province (Unornamented)
- Banded birds, took standard morphometrics including male cloacal protuberance volume (CP, an index of male promiscuity) and female tail length (which has reversed sexual dimorphism in males)

25 min behavioural observations:

- Every 5 min: recorded spatial location and group composition

Hypothesis:

The stability and predictability of the ecological environment and resources influences life-history strategies associated with competition, sociality, and signaling

Results

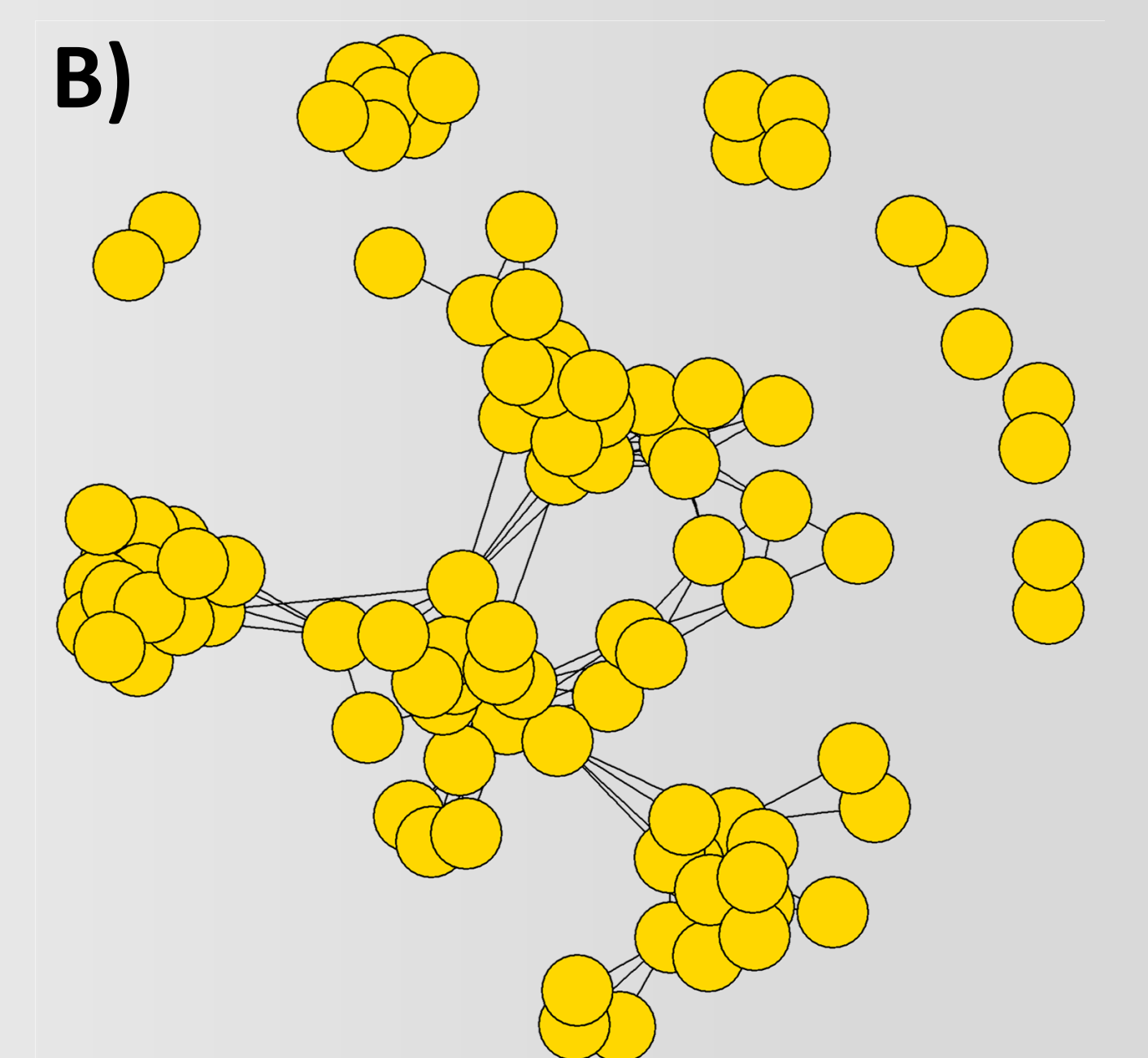
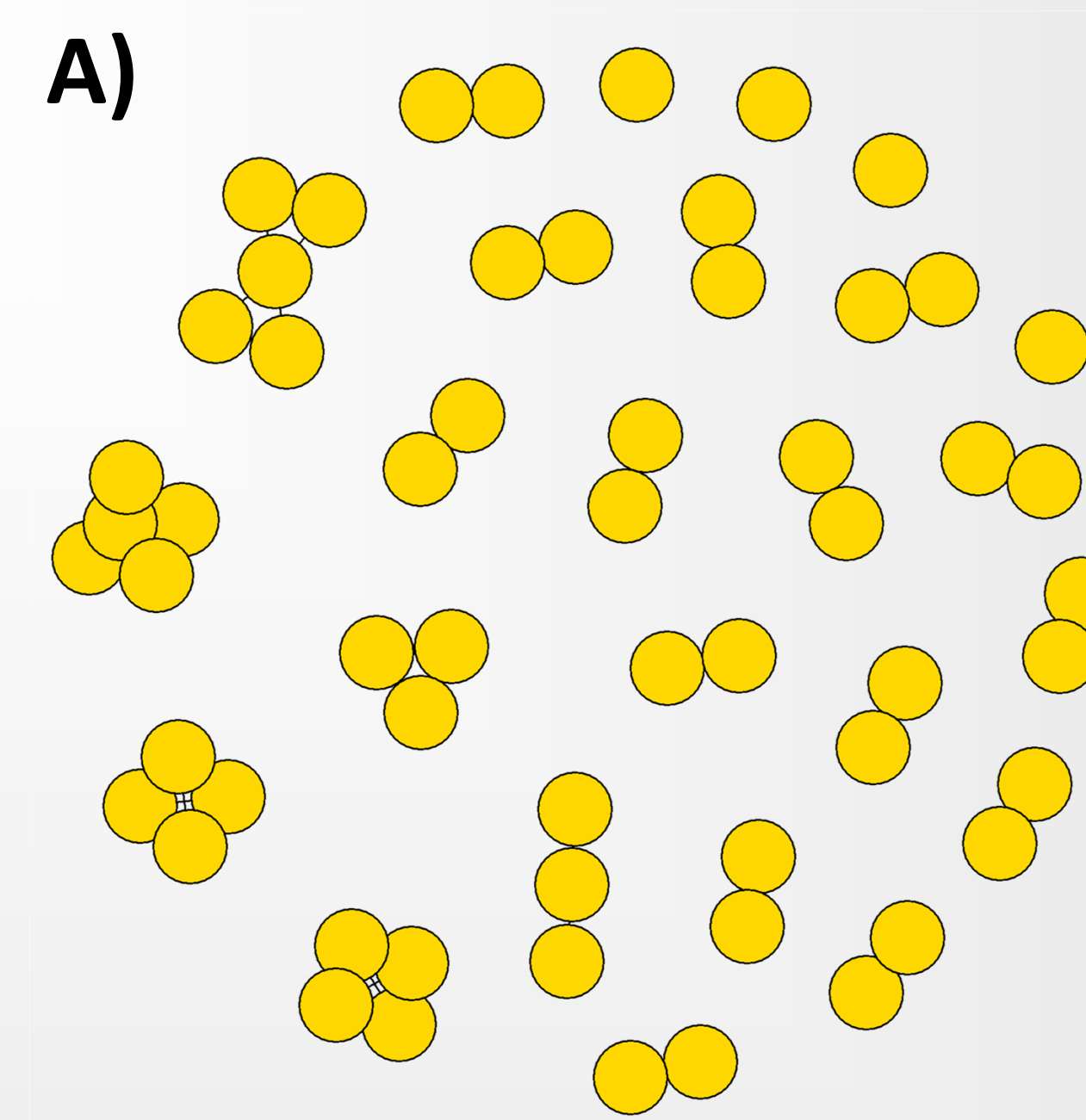
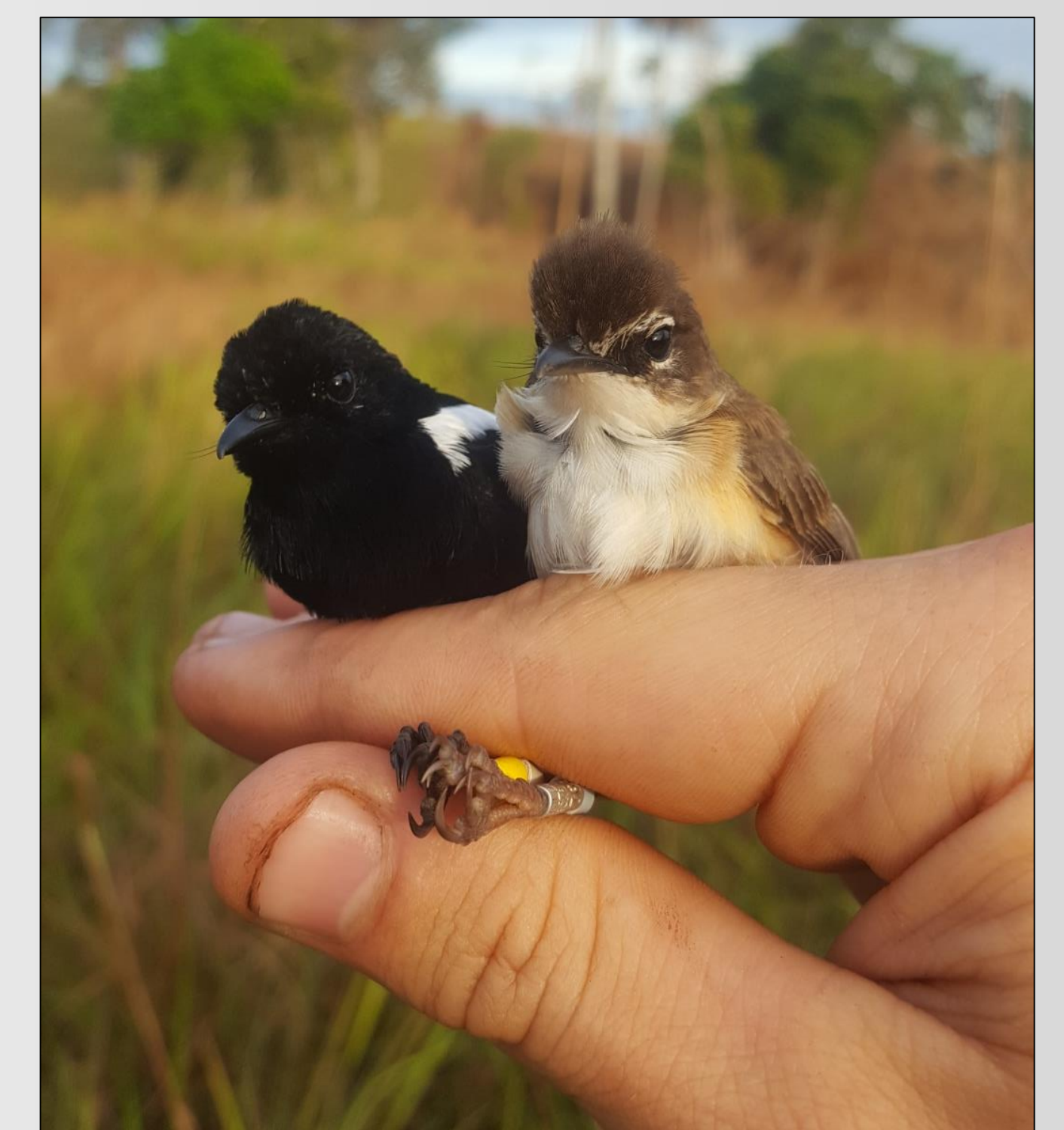
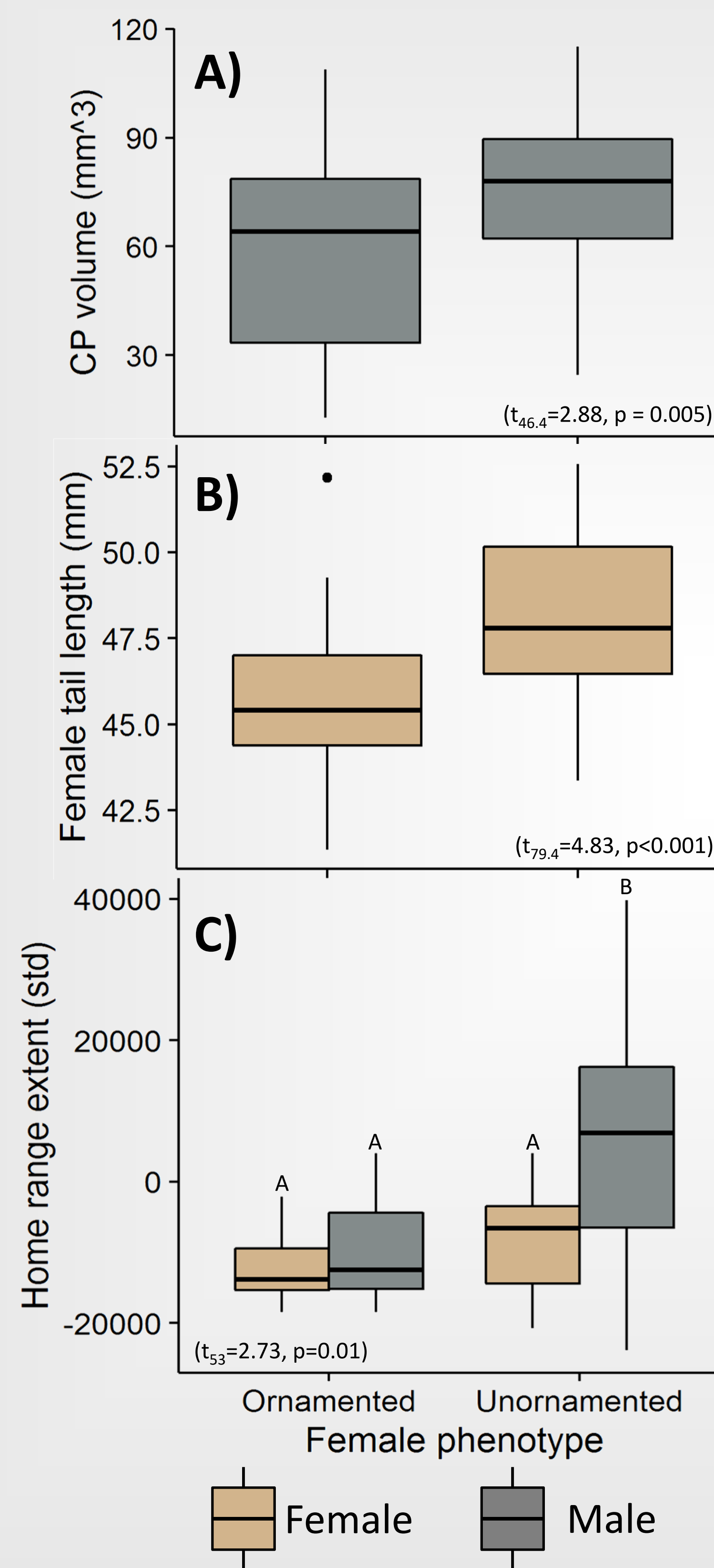


Figure 1 (left). Comparisons of (A) male CP, (B) female tail length, and (C) home range size (standardized for sampling effort) between populations of fairywrens that vary in female ornamentation.

Figure 2 (above). Social structure of fairywren populations with (A) ornamented and (B) unornamented female phenotypes using R package 'igraph.'

Summary

- Populations with predictable resources and tend to be aseasonal (ornamented females) have males with smaller CPs, females with shorter tails, and both sexes have fewer social connections
- Unornamented populations (highly seasonal) have males that have enlarged CPs and home ranges and both sexes are highly social

Future directions

More comparative approach:

- Increase sampling of fairywrens throughout New Guinea
- Expand to include bicolored fairywrens of Australia

Document ecological factors

contributing to life-history variation:

- Seasonality, elevation, temperature, habitat structure, etc.

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