

Use of a communal display area by Rufous Whistlers *Pachycephala rufiventris*

W. Paul Kessler¹, James A. Kennerley^{1, 2, 3} , Elisa Resendiz^{1, 4}, Paulo C. Ditzel¹,
Emma R. Buckley¹, Claire E. Huff¹, Colleen Poje^{1, 5}, Jonathan T. Coleman^{6, 7},
Jordan Boersma¹, Michael S. Webster^{1, 5} and William E. Feeney^{7, 8, 9*} 

¹Cornell Lab of Ornithology, Ithaca, New York 14850, United States of America

²Rocky Point Bird Observatory, Victoria, British Columbia V8T 2C1, Canada

³Department of Zoology, University of Cambridge, Cambridge CB2 3EJ, United Kingdom

⁴College of Forest Resources and Environmental Science, Michigan Technological University, Houghton, Michigan 49931, United States of America

⁵Department of Neurobiology and Behavior, Cornell University, Ithaca, New York 14850, United States of America

⁶Queensland Bird Research and Banding Group, Birds Queensland, Brisbane QLD 4101, Australia

⁷Wildlife Research and Education Institute, Brisbane QLD 4066, Australia

⁸Doñana Biological Station, Spanish National Research Council (CSIC), 41092 Seville, Spain

⁹Centre of Planetary Health and Food Security, Griffith University, Nathan QLD 4111, Australia

*Corresponding author. Email: william.e.feeney@wildliferesearchandeducation.com

Abstract. We observed a congregation of Rufous Whistlers *Pachycephala rufiventris* perform courtship displays toward each other on multiple occasions, a previously undocumented behaviour. We posit that the location of the courtship behaviour represented a communal display area and the behaviour arose either because of individuals congregating at an established location to form pair bonds, or because the location was at a shared territory boundary where individuals gathered to defend their territories, which led to courtship behaviour between multiple individuals. Our observations provide new insights into the courtship behaviour of Rufous Whistlers and we suggest how future work could offer insight into the origin and function of communal display behaviour in this species.

Introduction

The Rufous Whistler *Pachycephala rufiventris* is a small passerine bird distributed across mainland Australia. During its breeding season (approximately July–February), territory-holding males perform ritualised courtship displays with females typically in attendance (Jack 1949; Bridges 1994a,b; McDonald 2001; Higgins & Peter 2002). The most common of these displays are ‘courtship pursuit-flights’, during which a female initiates the pursuit by crouching and spreading and quivering her wings; a male then chases the female through his territory in an erratic fashion (Jack 1949; Erickson 1950, 1951). Between courtship flights, males perform ‘bob displays’, in which males bob up and down while puffing out the chest and erecting the tail, and make short whistle calls (McDonald 2001). These displays have only been recorded as occurring between pairs of birds (Jack 1949; Erickson 1950, 1951; McDonald 2001).

Study site

Observations were made at our study site on the western side of Lake Samsonvale (27°16'S, 152°51'E), Queensland. The habitat at Samsonvale is varied, with large areas of grassland planted with eucalypts *Eucalyptus* spp., remnant dry sclerophyll forest dominated by Myrtaceae species particularly of the genus *Eucalyptus*, and secondary regrowth dry sclerophyll forest. Remnant rainforest is also present in gullies at the site. In each habitat, the understorey is often dominated by the introduced and invasive Common Lantana *Lantana camara*.

The site supports a diverse avifauna including a large population of Rufous Whistlers, and hosts a long-term study into the resident avifauna, with a principal focus on the ecology of Variegated Fairy-wrens *Malurus lamberti*, Superb Fairy-wrens *M. cyaneus*, and Red-backed Fairy-wrens *M. melanocephalus*, along with White-browed Scrubwrens *Sericornis frontalis* and the cuckoos that parasitise them (e.g. Feeney *et al.* 2018; Kennerley *et al.* 2019; Poje *et al.* 2019; Richardson *et al.* 2019; Carr *et al.* 2020; Boersma *et al.* 2023).

Observations

On 30 October 2023, WPK observed five adult male and two adult female Rufous Whistlers engaging in courtship behaviour in the lower branches of eucalypts surrounding a small clearing. When perched in these branches, all the individuals were no further than ~2 m apart. All the birds performed rapid, erratic flights through the trees, with males closely chasing females and sometimes other males. Between courtship flights and chases, the two females sat still in different locations while all the males perched around them within a 2-m radius and exhibited rapid bob displays and short whistle calls and songs. Occasionally, one of the males moved within 1 m of the females before continuing to bob up and down. WPK also observed females move either closer to or further away from the males. After one of these bob display sessions, a copulation occurred between one of the males and a female.

On 2 November 2023, WPK observed another courtship event between Rufous Whistlers at the same location as on 30 October, again between five males and two females. All five males exhibited courtship flights, during which they chased females and occasionally other males. Between courtship flights, males gave bob displays and vocalised while females perched nearby. Copulation did not occur following this event, and the group of birds dispersed after one final courtship flight.

On 14 November 2023, WPK observed courtship behaviour between three male Rufous Whistlers and one female at the same location. The males again chased one another and the female in erratic courtship flights. Between chases, the males positioned themselves around the perched female and gave bob displays and short whistles and songs. During one of these bob display sessions, one of the males moved within 0.5 m of the female. Copulation did not occur during this observation, which ended before the birds dispersed.

Discussion

The Rufous Whistler is a monogamous species with biparental care that is known to have complex courtship rituals (Jack 1949; Bridges 1994b; McDonald 2001). To date, courtship displays within congregations of individuals have not been documented in the literature (Higgins & Peter 2002). Each of our observations consisted of a group of males displaying to a smaller group of females within an area of 2 m² amongst eucalypt branches. In lekking species, males hold small territories in which they display for females (Höglund & Alatalo 1995); however, the male Rufous Whistlers that we observed pursued other males and females rather than holding established territories. This suggests that these congregations were not formalised leks (which would be unusual for a monogamous species with biparental care) but instead that their site could be a communal display area. In other passerine species, a communal display area is used as a location where pair bonds are formed before pairs disperse to establish breeding territories (Summers-Smith 1954; Nakamura 1991). We suggest two scenarios why a communal display area was apparent: (1) it was an established display location where individuals congregated for courtship to establish pair bonds, or (2) the location was at the convergent boundaries of multiple territories which led to a territorial dispute followed by courtship behaviour. Future studies investigating this behaviour would benefit from colour banding a population of Rufous Whistlers and following individuals during and after communal displays. Documenting social pairings and how these change through time, especially following courtship events, will further assist our understanding of the function of communal display behaviour in this species.

Documenting the presence of unique behaviours is critical for more substantive studies into how and why traits evolve. In addition to providing new insights into the courtship displays of this species, our documentation of communal display underscores the importance of comprehensive, species-specific behavioural studies for advancing our understanding of the complex interplay between ecology and evolution in avian populations.

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