

[10.1071/PC24058](https://doi.org/10.1071/PC24058)

Pacific Conservation Biology

Supplementary Material

Drought in south-west Australia links to urban immigration across multiple avian taxa

Harry A. Moore^{A,B,}, and Anna K. Cresswell^C*

^A School of Agriculture and Environment, University of Western Australia, Crawley, WA 6009, Australia.

^B Department of Biodiversity, Conservation and Attractions, Locked Bag 104, Bentley Delivery Centre, Bentley, WA 6121, Australia.

^C Oceans Institute, The University of Western Australia, Crawley, WA 6009, Australia.

*Correspondence to: Harry A. Moore School of Agriculture and Environment, University of Western Australia, Crawley, WA 6009, Australia Email: harryamos07@gmail.com

Supplementary material

Table S1 –Top models for each of the four bird species that showed increases in reporting rates corresponding with the 2023/2024 rainfall anomaly.

Species	Model	AICc	df
Black-shouldered Kite	reporting_rate ~difference_cumulative_6_ _month_rainfall	129.4 2	3
Black-shouldered Kite	reporting_rate ~difference_cumulative_18 _month_rainfall	136.3 3	3
Black-shouldered Kite	reporting_rate ~difference_cumulative_12 _month_rainfall	137.0 2	3
Black-shouldered Kite	reporting_rate ~null	153.9 5	2
Black-tailed Native-hen	reporting_rate ~difference_cumulative_12 _month_rainfall	78.75	3
Black-tailed Native-hen	reporting_rate ~difference_cumulative_18 _month_rainfall	81.85	3
Black-tailed Native-hen	reporting_rate ~null	81.94	2
Black-tailed Native-hen	reporting_rate ~difference_cumulative_6_ _month_rainfall	82.77	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_6_ _month_rainfall	109.0 2	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_18 _month_rainfall	118.3 1	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_12 _month_rainfall	119.6 2	3
Tawny-crowned	reporting_rate ~null	121.1 0	2

Honeyeater			
Western Spinebill	reporting_rate ~difference_cumulative_18 _month_rainfall	68.01	3
Western Spinebill	reporting_rate ~difference_cumulative_12 _month_rainfall	87.90	3
Western Spinebill	reporting_rate ~difference_cumulative_6_ month_rainfall	90.38	3
Western Spinebill	reporting_rate ~null	99.79	2

Species	Model	AICc	df
Black-shouldered Kite	reporting_rate ~difference_cumulative_6_month_rainfall	234.8	3
Black-shouldered Kite	reporting_rate ~difference_cumulative_18_month_rainfall	268.9	3
Black-shouldered Kite	reporting_rate ~difference_cumulative_12_month_rainfall	274.2	3
Black-shouldered Kite	null	286.4	2
Black-tailed Nativehen	null	326.3	2
Black-tailed Nativehen	reporting_rate ~difference_cumulative_6_month_rainfall	327.1	3
Black-tailed Nativehen	reporting_rate ~difference_cumulative_12_month_rainfall	327.2	3
Black-tailed Nativehen	reporting_rate ~difference_cumulative_18_month_rainfall	328.3	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_6_month_rainfall	255.3	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_18_month_rainfall	289.8	3
Tawny-crowned Honeyeater	reporting_rate ~difference_cumulative_12_month_rainfall	295.0	3
Tawny-crowned Honeyeater	null	297.6	2
Western Spinebill	reporting_rate ~difference_cumulative_6_month_rainfall	139.7	3
Western Spinebill	reporting_rate ~difference_cumulative_18_month_rainfall	147.4	3
Western Spinebill	reporting_rate ~difference_cumulative_12_month_rainfall	159.4	3
Western Spinebill	null	163.1	2

Table S2 –Basic ecological description of species that showed increases in reporting rates corresponding with the 2023/2024 rainfall anomaly.

Species	Size (g)	Habitat	Movement	Diet	Reference
Black-shouldered Kite <i>Elanus axillaris</i>	200-350g	Heath and woodland areas in southwestern Australia, along with treed grasslands, can be found on farms, along roads, and in vacant wastelands of urban and coastal regions in mainland Australia.	Nomadic; populations may irrupt in response to mouse plagues in particular areas.	Rodent, insects	(Menkhorst et al. 2017, Storr et al. 1979)
Black-tailed native-hen <i>Tribonyx ventralis</i>	350-430g	Dispersive with seasonal movements, occasionally irrupting based on conditions. They may suddenly appear in large numbers in various habitats and then quickly disappear.	Dispersive, with regular seasonal movements; may irrupt based on seasonal conditions.	Generalist, seeds, fruits, small invertebrates and vertebrates	(Menkhorst et al. 2017, Storr et al. 1979)
Tawny-crowned Honeyeater <i>Gliciphila melanops</i>	16-22g	Coastal heathlands in temperate southern Australia; can extend into sand plains with suitable vegetation.	Mostly sedentary, with some seasonal movements.	Nectar and insects.	(Menkhorst et al. 2017, Storr et al. 1979)
Western Spinebill <i>Acanthorhynchus superciliosus</i>	8-12.5g	Coastal heathlands, woodland, forest	Mostly sedentary, with some seasonal movements.	Nectar and insects.	(Menkhorst et al. 2017, Storr et al. 1979)

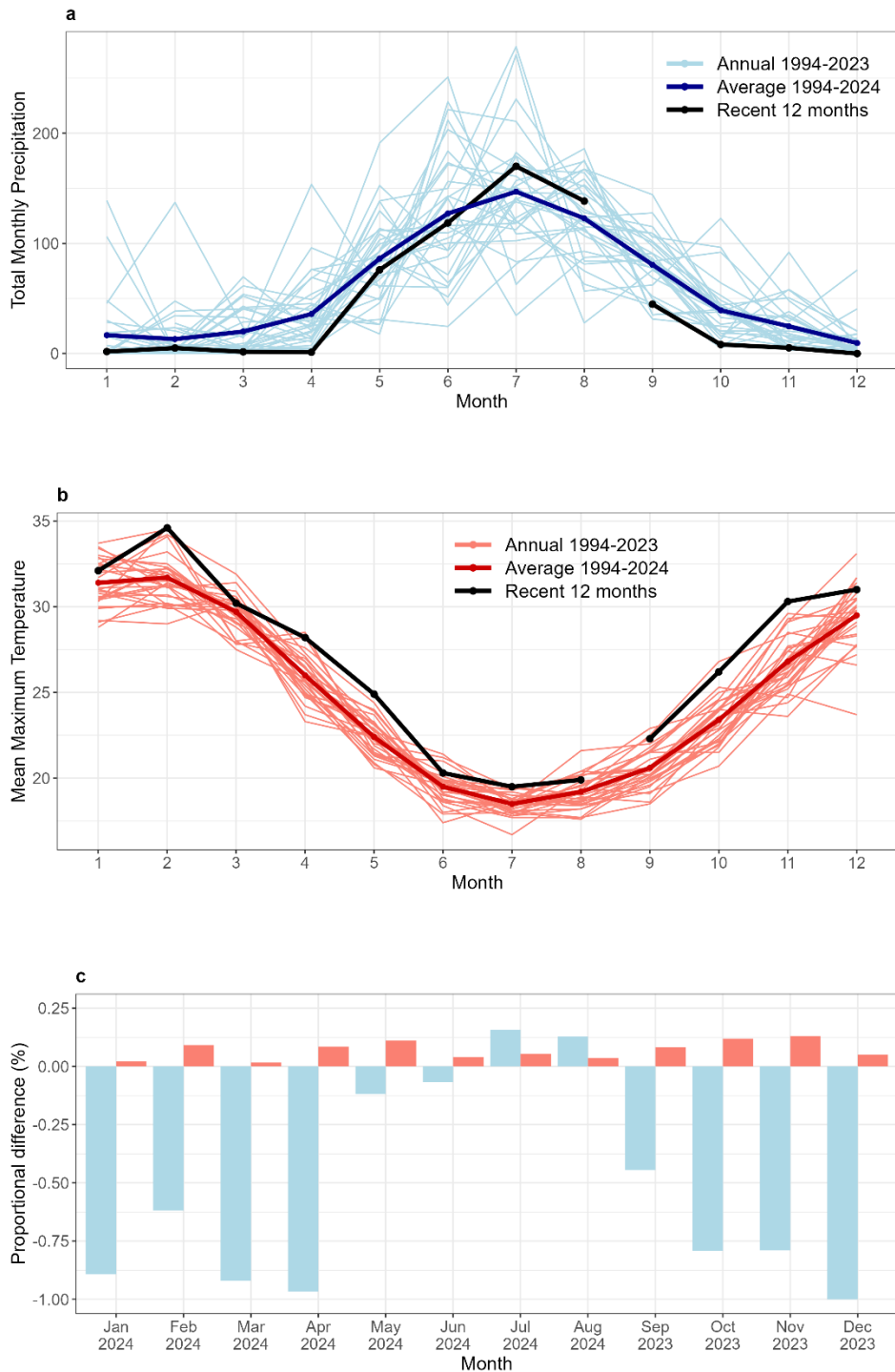


Figure S1: Total Monthly Rainfall and Maximum Monthly Temperature for the Perth Metropolitan Area as sourced from BOM (2024) Climate Statistics. In a) thin colored lines represent historical monthly rainfall (blue) and in b) maximum monthly temperatures (red) data. The thick coloured lines shows the average monthly values from 1994-2024, while the black lines shows values from August 2023 to August 2024 (i.e. the most recent 12 months at time of writing).