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Supplementary material

Appendix 1

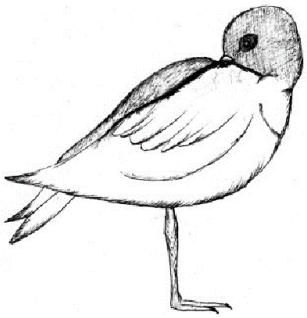
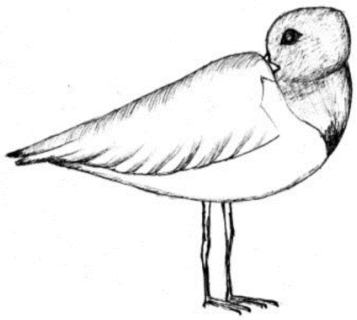
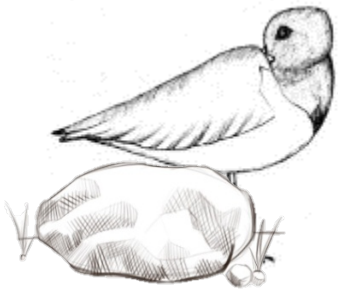
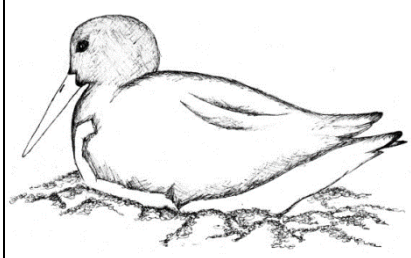
Table A1. Species and sample sizes (number of video bouts and number of individuals used from these) and relevant morphometrics. Tarsal length and body mass data were collected from the literature (see Supplementary Materials and Methods).

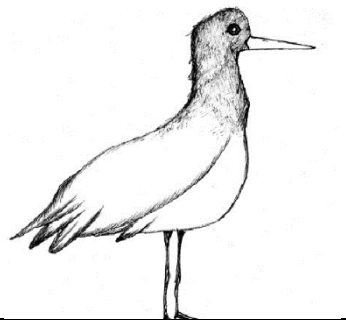
Common name	Scientific name	Video bouts	Total observed time (min)	Individuals observed	Mean mass (g)	Mean tarsus length (mm)
Sharp-tailed Sandpiper	*Calidris acuminata*	21	735.25	42	66.28	29.71
Curlew Sandpiper	*Calidris ferruginea*	19	648.68	38	64.36	30.02
Red-necked Stint	*Calidris ruficollis*	21	745.24	39	30.51	20.08
Red-kneed Dotterel	*Erythrogonys cinctus*	21	742.12	39	53.85	40.32
Pied Oystercatcher	*Haematopus longirostris*	24	571.74	43	744.40	56.64
Black-winged Stilt	*Himantopus himantopus*	27	920.58	53	167.18	110.97
Red-necked Avocet	*Recurvirostra novaehollandiae*	19	717.80	41	324.60	87.91
Common Greenshank	*Tringa nebularia*	19	711.48	38	180.81	59.40
Masked Lapwing	*Vanellus miles*	22	653.33	42	387.00	76.84

Table A2. Locations of field observations.

Region	Location name	Latitude (S) and longitude (E)
Westernport Bay, Victoria, Australia	Corinella	-38.409436, 145.434911
	Newhaven	-38.509292, 145.358929
	Rhyll Inlet	-38.458292, 145.301565
	Churchill Island	-38.508614, 145.344797
Port Phillip Bay, Victoria, Australia	The Western Treatment Complex, Werribee	Between -38.046744, 144.510287 and -37.998546, 144.653321
	Point Cook Coastal Park/Cheetham Saltworks	Between -37.910677, 144.788621 and -37.881360, 144.808271
	Truganina Wetlands	-37.868922, 144.805181
	Altona foreshore	-37.877824, 144.810927
	Kororoit Creek mouth	-37.858705, 144.866952

Table A3. Roosting postures and other non-roosting behaviours used in identification and subsequent characterisation of behaviours observed during video bouts. Images provide generalised examples.

Plate	Behaviour/posture	Definition/description
Roosting postures head positions		
1)	Standing on one leg 	One leg is visible in standing birds, the other leg either visibly or evidently tucked against the body.
2)	Standing on two legs 	Both legs visible, with both feet placed on the ground.
3)	Standing, legs not visible 	Legs obscured behind vegetation, rocks or other birds. These bouts were recorded as 'not visible' and excluded from the analysis.
4)	Sitting 	As above, when the bird was sitting, the legs were recorded as 'not visible' as this was excluded from the analysis. Sitting insulates both legs and therefore constitutes substantively different behaviour.

Non-roosting behaviours		
1)	Vigilant 	A bird was defined as vigilant when it remained relatively immobile but displayed an erect posture with raised breast and full extension/elongation of the neck (nape and throat) (when compared to head forward roosting). The head was orientated up (bill level or pointed up) with the bill usually raised to eye level[9,10]. Rapid orientation of the head was common[4,7].
2)	Moving (repositioning)	Bird stopped roosting and moved or repositioned themselves within the video frame. This was recorded because birds would often make small movements and begin roosting again within short periods of time. Behavioural recordings ceased when the bird continued moving for ≥ 120 seconds.
3)	Grooming	Grooming included both preening (touching the plumage with the bill) and scratching (touching the plumage with the foot)[11-13].

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9. Lazarus, J. (1978). Vigilance, flock size and domain of danger size in the white-fronted goose. *Wildfowl,* 29, 135-45.
10. Robinette, R.L. & Ha, J.C. (2001). Social and ecological factors influencing vigilance by northwestern crows (*Corvus caurinus*). *Anim. Behav.,* 62, 447-452.
11. Clayton, D.H. & Cotgreave, P. (1994). Relationship of bill morphology to grooming behaviour in birds. *Anim. Behav.,* 47, 195-201.
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Table A4. Movements and monthly ambient temperatures (°C; minimia and maxima) experienced by birds during the annual cycle, considering movements, timing of movements and distribution of the species. Climate data were extrapolated from http://www.fao.org/nr/climpag/climate/index_en.asp and http://www.bom.gov.au/jsp/ncc/climate_averages/temperature. Clear accounts of climate experienced by birds during their annual cycle are unavailable, and these estimates should be considered preliminary.

Common name	Movement	Climatic zones occupied in a given year	Average monthly minima – maxima air temperatures of zones inhabited
Sharp-tailed Sandpiper	Migratory	Temperate, tropical, polar	0 – 36
Curlew Sandpiper	Migratory	Temperate, tropical, polar	0 – 36
Red-necked Stint	Migratory	Temperate, tropical, polar	-5 – 36
Red-kneed Dotterel	Resident	Temperate, arid and coastal	9 – 33
Pied Oystercatcher	Resident	Temperate, coastal	6 – 33
Black-winged Stilt	Resident	Temperate, arid and coastal	
Red-necked Avocet	Resident	Temperate, arid and coastal	9 – 33
Common Greenshank	Migratory	Temperate, tropical, polar	2 – 36
Masked Lapwing	Resident	Temperate, coastal and semiarid	6 – 33

Figure A1. Consensus phylogeny for the nine species of shorebird used in the analyses.