Supplementary tables

				Rayleigh's test of uniformity		Watson William's test between during and outside of migration	
	Goose	Stage of year	Median Time of peak T_b	Rho	P Value	F (d.f.)	P Value
(A)	All data						
	A	During migration	02:41	0.506	<0.001	32.947 (1,64)	<0.001
		Outside of migration	11:53	0.301	0.011		
	B	During migration	01:57	0.462	<0.001	141.967 (1,63)	<0.001
		Outside of migration	12:36	0.479	<0.001		
	C	During migration	07:36	0.341	<0.001	6.945 (1,112)	0.01
		Outside of migration	10:31	0.216	0.037		
	D	During migration	00:13	0.305	<0.001	45.057 (1,113)	<0.001
		Outside of migration	07:05	0.314	<0.001		
	E	During migration	02:43	0.378	<0.001	36.343 (1,88)	<0.001
		Outside of migration	16:13	0.327	0.025		
	F	During migration	00:48	0.206	0.04	51.418 (1,105)	<0.001
		Outside of migration	09:16	0.425	<0.001		
	G	During migration	02:32	0.308	0.001	91.975 (1,105)	<0.001
		Outside of migration	14:25	0.333	<0.001		
(B)	Stationary days						
	A	During migration	01:04	0.387	0.09	39.486 (1,41)	<0.001
		Outside of migration	11:53	0.272	0.028		
	B	During migration	02:02	0.476	<0.001	109.085 (1,50)	<0.001
		Outside of migration	12:36	0.479	<0.001		
	C	During migration	07:59	0.426	<0.001	3.422 (1,98)	0.070
		Outside of migration	10:31	0.245	0.018		
	D	During migration	04:05	0.252	0.171	4.556 (1,57)	0.040
		Outside of migration	06:45	0.317	0.002		
	E	During migration	08:49	0.283	0.022	104.195 (1,49)	<0.001
		Outside of migration	17:49	0.343	0.028		
	F	During migration	22:02	0.247	0.05	75.286 (1,85)	<0.001
		Outside of migration	09:10	0.42	<0.001		
	G	During migration	02:23	0.341	<0.001	171.947 (1,94)	<0.001
		Outside of migration	14:27	0.351	<0.001		

Table S1 Median time of day that the hottest T_b occurred for each goose displayed alongside a Rayleigh's test for uniform distribution (and associated P value) for within and outside of migration days including all data (A) and only stationary days (B). A Watson Williams's test was used to compare if these distributions differed within and outside of migration.

Parameter	Estimate	Lower CI	Upper CI
(Intercept) Sea level – 1,000m	40.582	40.414	40.750
1,000 m – 2,000 m	-0.232	-0.263	-0.200
2,000 m – 3,000 m	-0.190	-0.231	-0.150
3,000 m – 4,000 m	-0.330	-0.369	-0.290
4,000 m – 5,000 m	-0.351	-0.388	-0.315
5,000 m – 6,000 m	-0.492	-0.543	-0.442
flight stationary	-0.297	-0.341	-0.253
1,000 m – 2,000 m:flightstationary	0.158	0.119	0.198
2,000 m – 3,000 m:flightstationary	0.018	-0.030	0.066
3,000 m – 4,000 m:flightstationary	0.277	0.226	0.327
4,000 m – 5,000 m:flightstationary	0.016	-0.031	0.064
5,000 m – 6,000 m:flightstationary	0.131	0.054	0.208

Table S2 T_b variation across altitude and flight status. Model averaged means (estimate), and 95% confidence intervals (CI) for the fixed effects of altitude bin and flight status. Intercept estimate T_b varied across geese (extracted random effects value per goose; goose A: 40.66°C, goose B: 40.33°C, goose C: 40.43°C, goose D: 40.71°C, goose E: 40.47°C, goose F: 40.49°C, goose G: 40.98°C).

Supplementary Figures

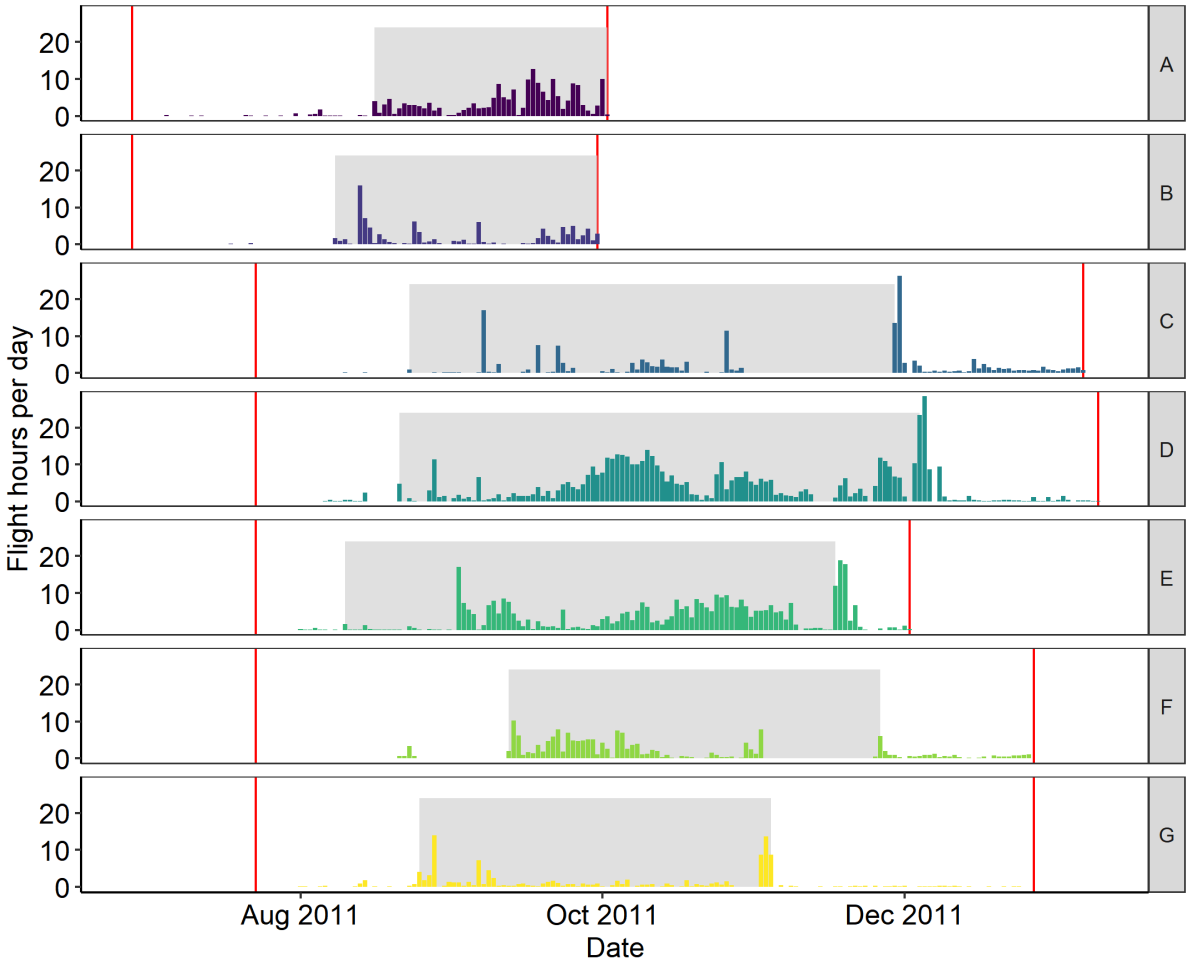

Fig. S1 Red lines show start and end of tracking period, grey box shows time period classed as migration, and coloured bars show the total number of hours (long or short) spent flying per day.

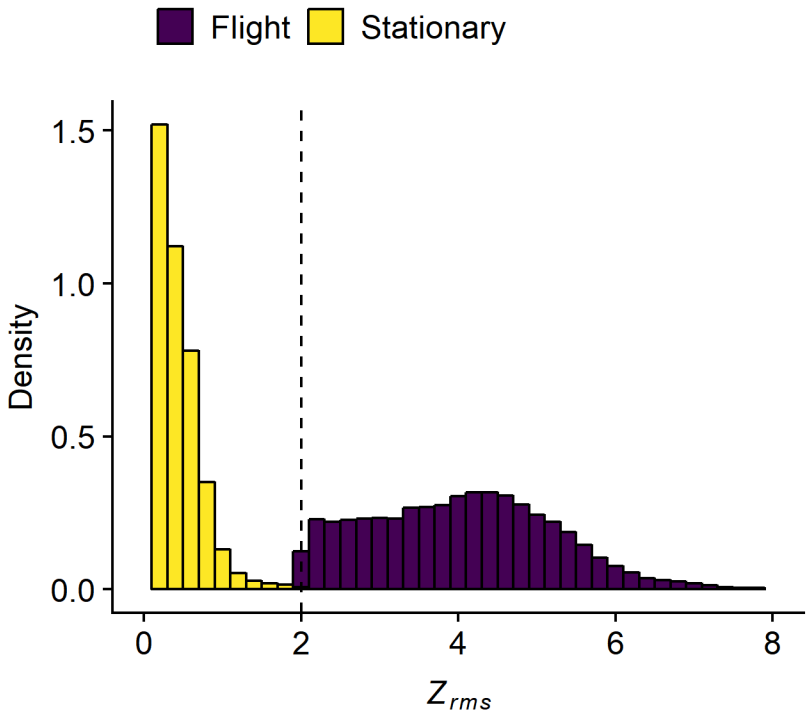

Fig. S2 Density plot showing the bimodal distribution of $\ddot{Z}_{rms}$, dashed vertical line at $\ddot{Z}_{rms}$= 2 shows the threshold we used to distinguish flight from other stationary and less active periods.

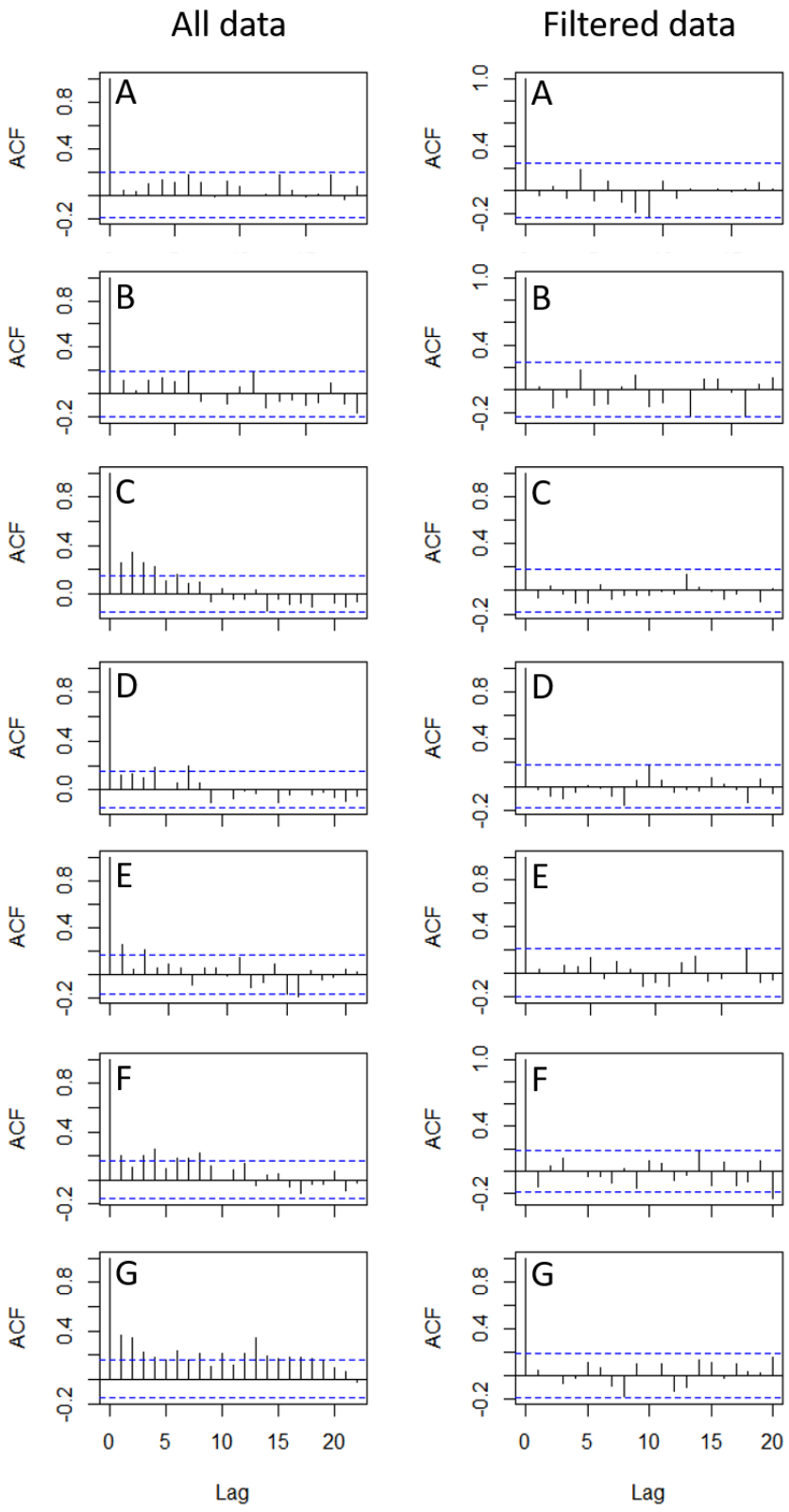

Fig. S3 ACF plots per goose (A-G) to demonstrate that removing a random 33% of data removed temporal autocorrelation from the time of peak daily T_b data set. Left hand column shows the full original dataset and right-hand column shows each goose data set once 33% was removed.

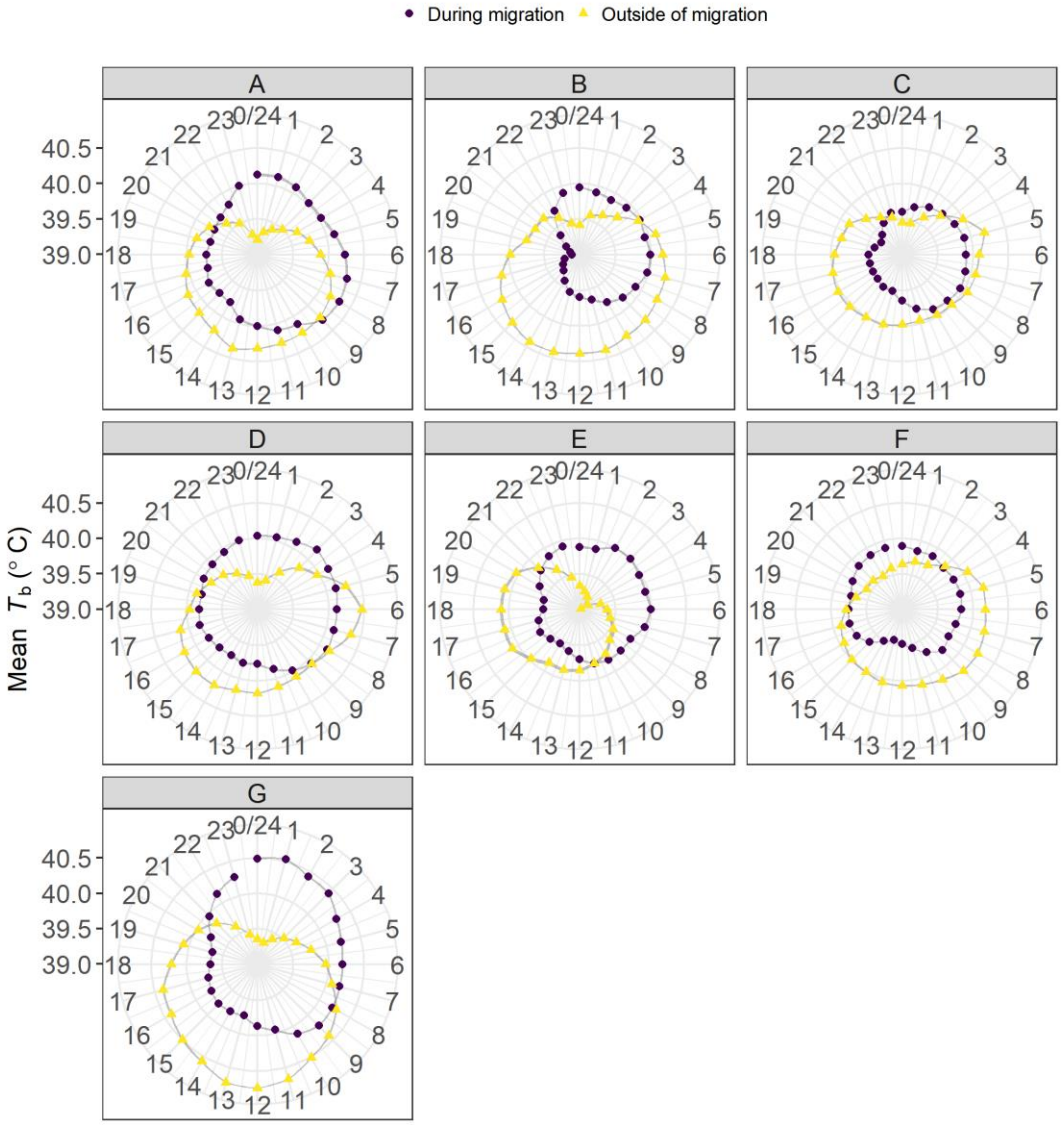

Fig. S4 Circular plot showing mean (± s.e. as shaded area around the mean) hourly T_b of five geese during migration (purple) and outside of migration (yellow). Data corrected to local time before plotting.