

Supplementary material

Table A1. Fixed-effect parameters included in the full model for the analyses of daily variation in winter fat reserves in snow buntings

Variables	Description
Wind speed*	Speed of maximal gust (km/h)
Minimal temperatures	Daily minimal temperature (°C)
Maximal temperatures	Daily maximal temperature (°C)
Snow depth (cm)	Daily analysed snow depth (cm)
Snowfall (cm)	Daily accumulation of snowfall (cm)
Cloud cover*	Daily average of cloud opacity (scale 0-10: 0 = no cloud, 10 = completely covered)
Absolute humidity	Absolute amount of humidity in the air (g/m ³)
Ordinal day	Day of capture. Day 1 is the first day of capture in the dataset (December 20th) and the last day is the end of wintering period (March 15th)
Sex	(Male / Female)
Age	Second year (SY) / After second year (ASY)

* Variables excluded from equation in the models using weather on the three day preceding capture due to missing data.

Table A2. Statistics for the models falling within delta AIC 2 for each of the 4 full models on which selection was performed. "Rfat" and "Rmass" refer to models using weather associated with the focal day of capture, with residual mass and fat score as a response. "Rfat3" and "Rmass3" refer to models using weather averaged over the three day preceding capture, with residual mass and fat score as a response. "NS" means that the variable was not selected in a given model.

Rfat	Intercept	Variables											AICc	Delta	Weight
		Age (ASY)	Sex (Male)	Humidity	Ordinal day	Cloud	Snowfall	Wind	Snow depth	Tmax	Tmin	D.Freedom			
model 1	-0,282	0,095	-0,391	NS	0,158	0,056	0,075	0,049	0,235	-0,310	0,145	13	32456,525	0,000	0,682
model 2	-0,281	0,095	-0,390	-0,037	0,154	0,053	0,075	0,049	0,240	-0,295	0,169	14	32458,055	1,530	0,318

Rmass	Intercept	Variables											AICc	Delta	Weight
		Age (ASY)	Sex (Male)	Humidity	Ordinal day	Cloud	Snowfall	Wind	Snow depth	Tmax	Tmin	D. Freedom			
model 1	0,318	0,170	0,562	NS	0,163	0,155	NS	0,196	0,285	-0,512	0,237	12	49171,310	0,000	0,366
model 2	0,314	0,171	0,560	0,133	0,174	0,166	NS	0,197	0,266	-0,566	0,152	13	49171,971	0,661	0,263
model 3	0,325	0,170	0,557	0,272	0,185	0,199	NS	0,205	0,245	-0,591	NS	12	49172,473	1,163	0,205
model 4	0,318	0,169	0,562	NS	0,162	0,149	0,029	0,191	0,291	-0,512	0,242	13	49172,899	1,589	0,166

Rfat3	Intercept	Variables											AICc	Delta	Weight
		Age (ASY)	Sex (Male)	Humidity	Ordinal day	Snowfall	Snow depth	Tmax	Tmin	D. Freedom					
model 1	-0,261	0,091	-0,384	-0,138	0,112	0,068	0,227	-0,225	0,222	12	32572,917	0,000	1,000		

Rmass3	Intercept	Variables											AICc	Delta	Weight
		Age (ASY)	Sex (Male)	Humidity	Ordinal day	Snowfall	Snow depth	Tmax	Tmin	D. Freedom					
model 1	0,338	0,168	0,564	-0,317	NS	NS	0,404	-0,160	0,359	10	49253,746	0,000	0,414		
model 2	0,343	0,171	0,563	-0,315	0,059	NS	0,364	-0,191	0,382	11	49254,755	1,009	0,250		
model 3	0,357	0,173	0,560	-0,446	NS	NS	0,389	NS	0,345	9	49255,411	1,665	0,180		
model 4	0,338	0,169	0,563	-0,314	NS	-0,011	0,401	-0,162	0,358	11	49255,686	1,940	0,157		

Table A3. Statistics by location for bootstrap two sample t-test for differences in a) body mass^R and b) fat score^R among sex classes in snow buntings

a) Body mass^R

Stations	t-value	df	p-value	n
Cayuga	-3.349	1003.70	< 0.005	1018
Côteau	-1.224	18.49	0.237	216
Fergus	-11.085	969.62	< 0.005	5374
King City	-3.350	2089.20	< 0.005	2311
Mirabel	-1.794	33.71	0.082	494
Mont-Joli	-3.821	21.74	< 0.005	222
Windsor	-3.645	46.02	< 0.005	88

b) Fat score^R

Stations	t-value	df	p-value	n
Cayuga	9.754	1010.30	< 0.005	1018
Côteau	4.145	25.36	< 0.005	216
Fergus	11.608	900.89	< 0.005	5374
King City	13.752	2094.60	< 0.005	2311
Mirabel	1.536	35.68	0.133	494
Mont-Joli	1.388	18.62	0.181	222
Windsor	1.687	45.17	0.099	88

Table A4. Statistics by location for bootstrap two sample t-test for differences in a) body mass^R and b) fat score^R among sex classes in snow buntings

a) Body mass^R

Stations	t-value	df	p-value	n
Cayuga	-0.160	96.03	0.873	455
Côteau	1.105	191.48	0.271	199
Fergus	-3.560	3978.00	< 0.005	4672
King City	-0.538	624.31	0.591	1355
Mirabel	-1.261	460.55	0.207	463
Mont-Joli	-1.636	184.38	0.103	205
Windsor	-0.323	11.952	0.752	23

b) Fat score^R

Stations	t-value	df	p-value	n
Cayuga	-1.060	110.88	0.291	455
Côteau	0.061	196.52	0.951	199
Fergus	-3.210	4256.90	0.001	4672
King City	0.483	634.87	0.629	1355
Mirabel	-2.150	458.62	0.031	463
Mont-Joli	-0.800	168.01	0.429	205
Windsor	-0.300	8.02	0.773	23

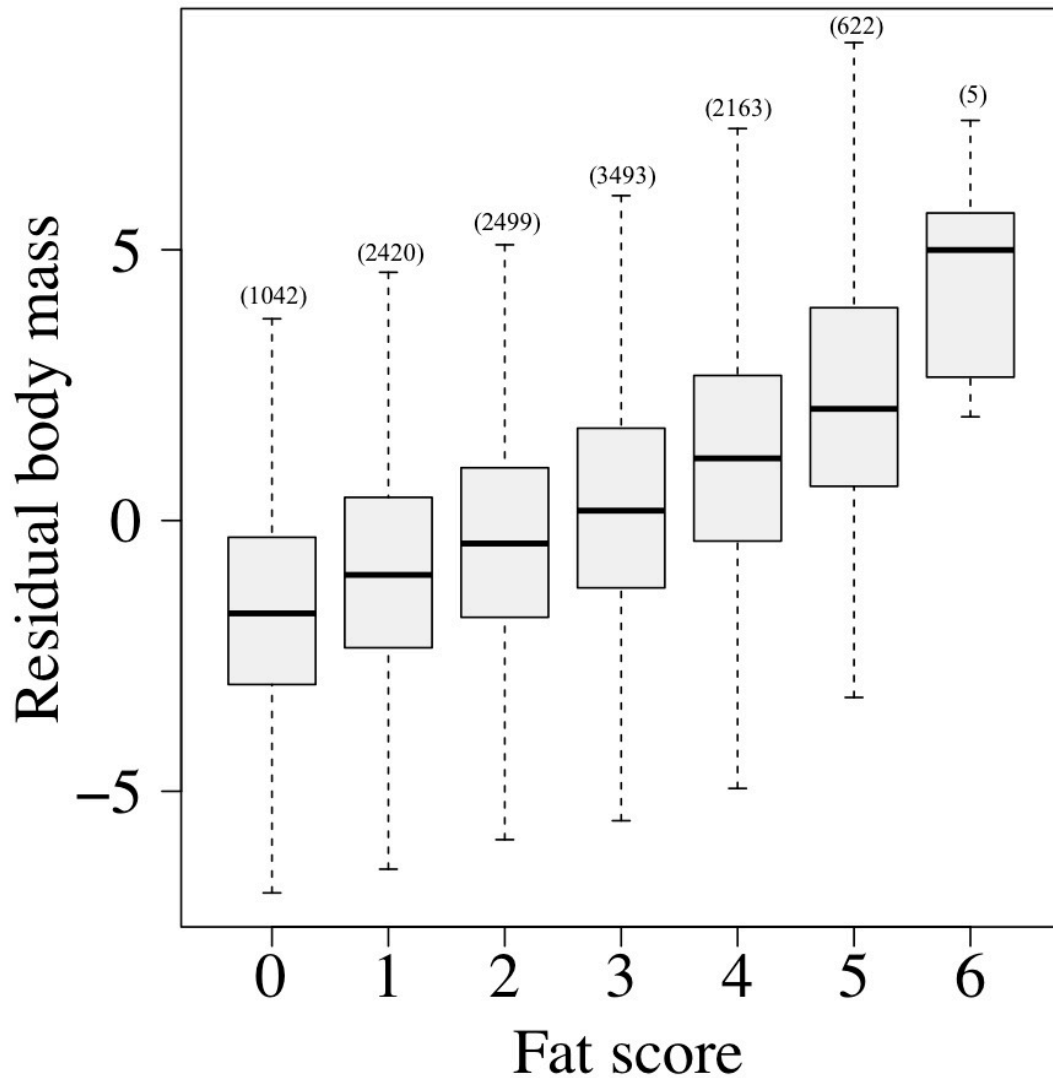


Figure A1. Relationship between snow bunting fat score and residual body mass. Midline in the boxes indicate median value of each group, with the upper and lower limits of the boxes being the third and first quartile (75th and 25th percentile) respectively. Dashed arrows extending out of the boxes represent the minimum and maximum values that do not exceed 1.5 times the interquartile range from the middle 50% of the data. Sample size for each fat class is indicated on top of each box.

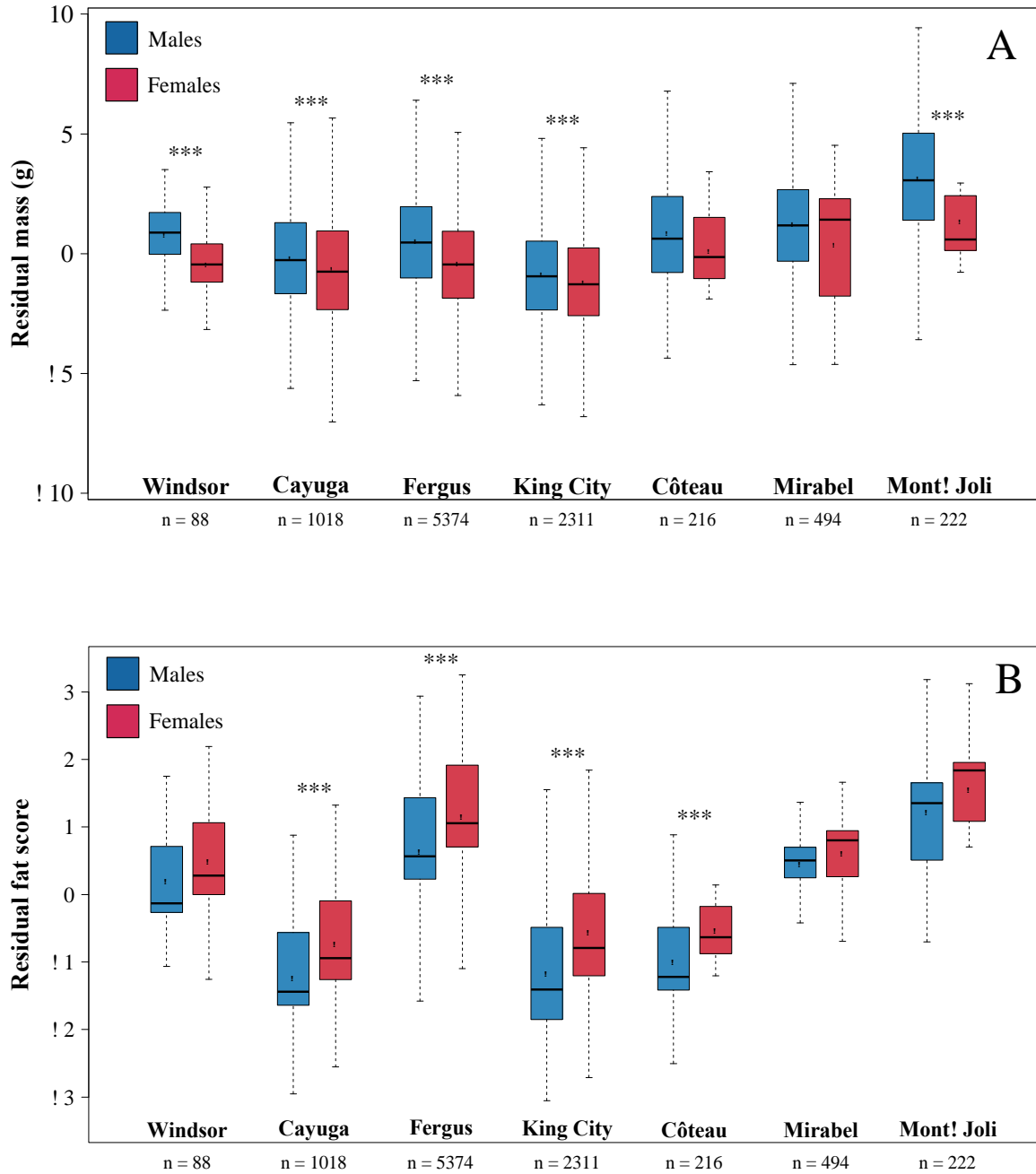


Figure A2. Differences in A) mean body mass^R and B) mean fat score^R of snow buntings between sex classes and within banding locations. Test results compare differences between sexes within locations and do not compare sites. Black lines in the boxes show the median value of each group, with the upper and lower limits of the boxes being the third and first quartile (75th and 25th percentile) respectively. Dashed arrows extending out of the boxes represent the minimum and maximum values that do not exceed 1.5 times the interquartile range from the middle 50% of the data. Black dots within boxplots show the mean values for each sex class and * on top represent level of significance of t-test results. ($p < 0.05 = *$, $p < 0.01 = **$, $p < 0.001 = ***$).

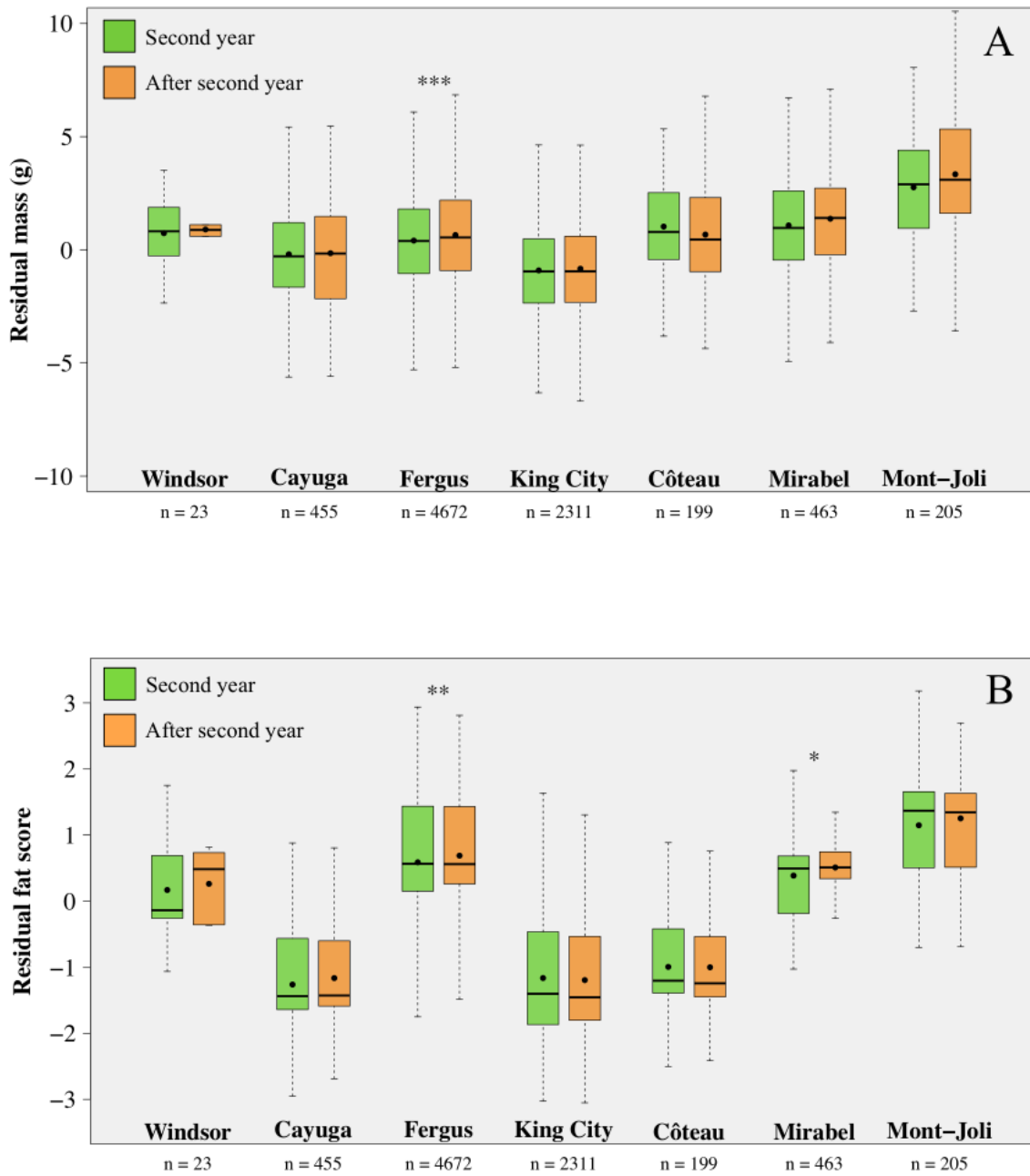


Figure A3. Differences in A) mean body mass^R and B) mean fat score^R of snow buntings between age classes and within banding locations. Test results compare differences between sexes within locations and do not compare sites. Black lines in the boxes show the median value of each group, with the upper and lower limits of the boxes being the third and first quartile (75th and 25th percentile) respectively. Dashed arrows extending out of the boxes represent the minimum and maximum values that do not exceed 1.5 times the interquartile range from the middle 50% of the data. Black dots within boxplots show the mean values for each age class and * on top represent level of significance of t-test results. ($p < 0.05 = *$, $p < 0.01 = **$, $p < 0.001 = ***$).