Family size dynamics in wintering geese

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Appendix 1

Model summaries

We provide a table summarising structures of models used in the analysis. This table includes Cohen's f^2 effect sizes that are based on the variance explained. Cohen's f^2 was calculated for each model thus:

$$f^2 = \frac{R^2}{1 - R^2} \tag{1}$$

where R^2 is the coefficient of determination. We calculated pseudo-R^2 for our models as the R^2 of a linear model taking the model response of a null generalised mixed model as the response, and the generalised mixed model fit as the predictor. These values corresponded closely with pseudo-R^2 provided by the *mgcv* package for generalised additive models and were considered reliable. Cohen's f^2 values of 0.02, 0.15, and 0.35 are respectively considered small, medium, and large.

Model	Type	Dataset	Response	Fixed effects	Random effects	Records used	Cohen's f^2
1	GLMM	B	5	1, 5	8, 9, 10	20,160[a]; 14,018[b]	3.22[a]; 4.74[b]
1	GLMM	C	5	1, 5	8, 11	3,289[a]; 7,320[b]	4.87[a]; 4.43[b]
2.a	GLMM	B	1	3, 5, 7	8, 9, 10	34,179	0.09
2.a	GLMM	C	1	5, 7	8, 11	10,426	7.72[c]; 0.62[d]
2.b	GAMM	A	2	3, 5, 7	8, 9, 10	837	9.36
3	GLMM	A	3	5, 6, 7	8, 9, 10	5,700	0.199
4	GAMM	A	4	5, 6, 7	8, 9, 10	5,659	0.52

Effects: *1: Number of juveniles per family, 2: Number of families, 3: Flock size, 4: Proportion of juveniles, 5: Days since autumn arrival, 6: Distance to breeding grounds, 7: Predation index, 8: Breeding year, 9 Observer, 10: Habitat type, 11: Goose identity*

a: $\leq$ 60 days after arrival, b: $\geq$ 60 days after arrival, c: All families, d: Only successful families

Tab. 1: Models and inputs based on observation data.

Model	Type	Response	Fixed effects	Random effects	Records used	Effect size
5.a	GLMM	1	2, 3, 4, 5, 6, 7	9	1,009[a]	0.08
5.b	GLMM	1	3, 8	9	21,271[b]	0.0004

Effects: *1: Split occurrence , 2: Family size, 3: Days since autumn arrival, 4: Daily number of flights, 5: Cumulative number of previous flights, 6: Daily distance travelled, 7: Cumulative distance previously travelled, 8: Time since last take-off, 9: Family identity*

a: Daily positions, b: Half-hourly positions

Tab. 2: Models and inputs based on GPS tracking data.