

**Appendix 1.** Candidate models used to evaluate gosling size at banding.

Table A1.1. List of candidate models used to evaluate gosling size at banding for Canada geese nesting on Akimiski Island, NU. All models included the random effect of brood ID. Analyses are based on 1611 measured known aged goslings. See Methods for explanation of covariates.

Model details	$\Delta AIC_c^1$	$W_i$	-2LL	NP <sup>2</sup>
POPEST + TIMING + Rain	0.00	0.98	9699.69	4
POPEST + TIMING <sup>2</sup> + Rain	7.70	0.02	9707.39	5
POPEST + TIMING	53.60	0.00	9753.29	3
POPEST + TIMING <sup>2</sup>	63.08	0.00	9762.76	4
POPEST + TIMING +	63.34	0.00	9763.03	4
<b>SUCCNESTS</b>				
SUCCNESTS + TIMING + Rain	151.51	0.00	9851.20	4
TIMING	165.90	0.00	9865.58	2
TIMING <sup>2</sup>	174.30	0.00	9873.98	3
SUCCNESTS + TIMING	176.56	0.00	9876.24	3
POPEST	266.47	0.00	9966.16	2
Rain	470.50	0.00	10170.19	2
Null (intercept only)	471.04	0.00	10170.72	1
 Post Hoc analysis (1998 – 2010)				
TIMING + Biomass per capita	0.00	0.99	5719.42	3
TIMING + Rain + Biomass per	8.83	0.01	5728.25	3

capita

POPEST + TIMING + Rain +	27.25	0.00	5746.68	5
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grazed biomass

Null (POPEST + TIMING + Rain)	57.11	0.00	5776.53	4
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POPEST + TIMING	59.03	0.00	5778.46	3
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<sup>1</sup>.  $\Delta AIC_c$  is the difference in Akaike's Information Criterion between the best model and the model in question.  $W_i$  is the Akaike's weight and LL is the Log Likelihood.

<sup>2</sup>. Number of estimated parameters