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Appendix 1

A1 Estimation of egg volume

All eggs in a clutch were photographed in a standardized way (Fig. A1). The same type of digital camera (Olympus μ300D) with built-in-flash, the same focal length (17 mm; 3x optical zoom) and the same picture quality (3.2 mp,"highest quality" JPG compression) was used when taking all the photos. Each egg was placed in a dent on a flat surface equipped with a millimetre scale. The camera was mounted on a black plastic tube which was placed on top of the egg holder.

Propagule size was estimated as egg volume (to the nearest 0.01 mm^3) from photographs using the Sparrow egg software (Sæther and Almås unpubl.). First the scale (pixels [px] per mm) and the edges of each egg had to be defined. Then each row of pixels in an egg was assumed to be a cylinder with height 1 px, and egg volume calculated by the sum over all cylinders. The digital measurements have been found to be slightly larger than the actual measurements (Kvalnes et al. 2013). Thus, egg volumes (EV) for 29 house sparrow eggs were estimated using both the software and the 18 formula $EV = K_v * LW^2$ (Hoyt 1979), where K_v is a correction coefficient set to 0.51, L is egg length and W is egg width. Length and width were estimated as the mean of three measurements per egg using a slide caliper ($\pm$ 0.005 mm). Then the relationship between the two measures of egg volume was estimated (major axis regression: linear egg volume = 96.483 + 0.909 * digital egg volume) and used for adjusting egg volumes (Fig. A2).

Table A1. Ranking of models explaining variation in nestling mortality from hatching until (a) fledging and (b) recruitment in a house sparrow population in Norway. All models with $\Delta AICc < 2$ relative to the highest ranked model are shown. The intercept model was ranked (a) 41 and (b) 22 among the 48 candidate models in each analysis with a sample size of 179 broods. Generalized mixed effects models were fitted with brood number as a fixed effect, a random intercept for cohort, a binomial distribution and a complementary log-log link function. $\Delta AICc$ is the difference in $AICc$ value from the highest-ranked model, w is the Akaike weight and $ER = w_{best}/w$ = the evidence ratio for each model compared to the highest-ranked model. BN brood number, CS clutch size, PS mean propagule size, T temperature and P precipitation. The highest ranked model is shown in bold.

Rank	Model	$\Delta AICc$	w	ER
(a) *Fledging*				
1	**BN + PS + T + P + PS×P**	**0**	**0.525**	**1**
2	BN + PS + T + T^2 + P + PS×P	1.41	0.259	2.03
3	BN + CS + PS + T + P + PS×P	1.78	0.215	2.44
(b) *Recruitment*				
1	**BN + CS + PS + T + T^2 + PS×T**	**0**	**0.277**	**1**
2	BN + CS + PS + T + PS×T	0.90	0.176	1.57
3	BN + CS + T	0.95	0.172	1.61
4	BN + CS + T + T^2	1.11	0.159	1.74
5	BN + CS	1.80	0.112	2.46
6	BN + CS + PS + T + T^2 + P + PS×T	1.95	0.105	2.64

Table A2. Ranking of models explaining variation in fledgling (a) body mass and (b) tarsus length in a house sparrow population in Norway. All models with $\Delta AICc < 2$ relative to the highest ranked model are shown. The intercept model was ranked (a) 20 and (b) 41 among a total of 48 candidate models in each analysis with a total sample size of (a) 388 and (b) 386 individuals. Linear mixed effects models were fitted with brood number as a fixed effect and random intercepts for brood, mother and cohort. $\Delta AICc$ is the difference in $AICc$ value from the highest-ranked model, w is the Akaike weight and $ER = w_{best}/w =$ the evidence ratio for each model compared to the highest-ranked model. BN brood number, PS mean propagule size, T temperature and P precipitation. The highest ranked model is shown in bold.

Rank	Model parameters	$\Delta AICc$	w	ER
(a) *Body mass*				
1	**BN + PS + T + T^2 + PS×T**	**0**	**0.293**	**1**
2	BN + PS + T + T^2	0.31	0.250	1.17
3	BN + T + T^2	0.71	0.205	1.43
4	BN + PS + T + PS×T	1.55	0.135	2.17
5	BN + PS + T + T^2 + P + PS×T	1.82	0.118	2.49
(b) *Tarsus length*				
1	**BN + T + T^2 + P**	**0**	**0.218**	**1**
2	BN + T + P	0.00	0.218	1.00
3	BN + PS + T + T^2 + P + PS×T	1.16	0.122	1.79
4	BN + PS + T + T^2 + P	1.17	0.122	1.80
5	BN + PS + T + P + PS×T	1.18	0.121	1.81
6	BN + PS + T + P	1.27	0.116	1.89
7	BN + T + T^2	1.93	0.083	2.62

Figure A1. An example of a standardised photo of a completed clutch with house sparrow eggs in an insular population in Norway.

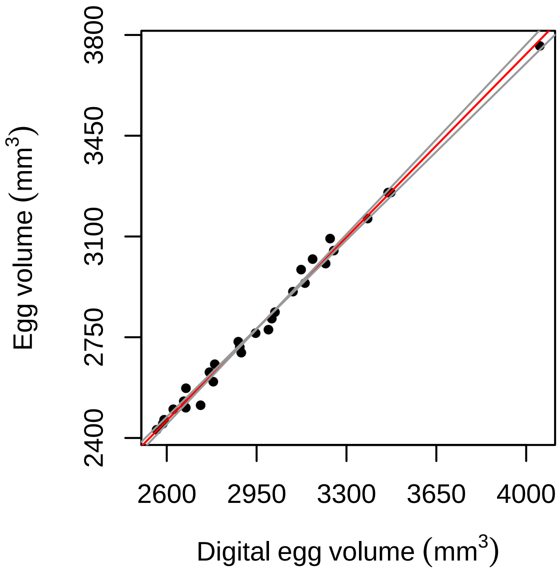

Figure A2. The relationship between egg volumes (mm^3) calculated from standardised digital photographs and egg volumes (mm^3) calculated from linear measurements by slide caliper (major axis regression: egg volume = 96.483 + 0.909×digital egg volume). 29 house sparrow eggs were measured with both methods and the relationship between them was used to adjust digital egg volumes.

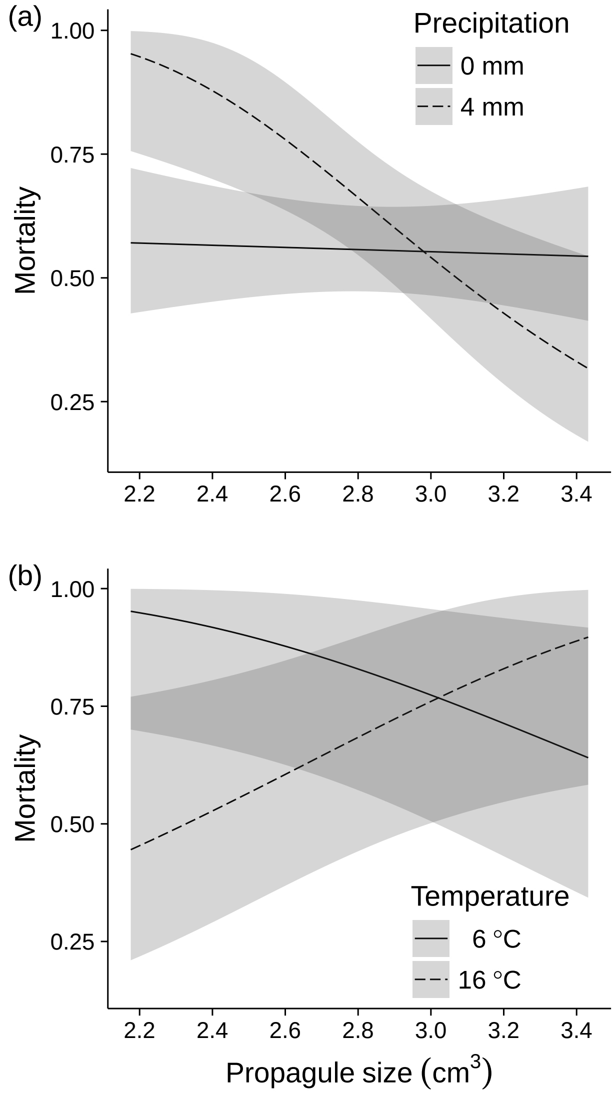

Figure A3. The predicted consequences of propagule size for offspring mortality from hatching until (a) fledging and (b) recruitment with 95 % confidence intervals (CI) in an insular house sparrow population in Norway. The effect of propagule size on mortality depends on the prevailing environmental conditions during the early life of nestlings (age 0 to 5 days of age). Predictions were made by taking the 95% CI for observed (a) precipitation (CI = [0, 4] mm) and (b) temperature (CI = [6, 16] °C), other explanatory variables in the models were kept at their mean.

References

Hoyt, D. F. 1979. Practical methods of estimating volume and fresh weight of bird eggs. - Auk 96: 73–77.

Kvalnes, T., Ringsby, T. H., Jensen, H. and Sæther, B.-E. 2013. Correlates of egg size variation in a population of house sparrow *Passer domesticus*. - Oecologia 171: 391–402.