

Auld, J. R. and Charmantier, A. 2010. Life history of breeding partners alters age-related changes of reproductive traits in a natural population of blue tits. – *Oikos* 120: 1129–1138.

Appendix 1

Table A1. The results of model comparison to evaluate male and female age effects and age by AFR interactions that were significant in our final model (Table 1) for laying date. Deviance shows $-2 \times$ residual log-likelihood for each model. LRT X^2 shows the decrease in model deviance with inclusion of additional terms (i.e. the likelihood-ratio test; distributed as X^2). LRT p shows the corresponding p-value. AIC is the model AIC, Δ AIC shows the decrease in AIC for each model. All models include male and female age at first reproduction (AFR) as fixed effects as well as male identity, female identity, and year as random effects.

Model	Added term(s)	Deviance	LRT X^2	LRT p	AIC	Δ AIC
1	♀ Age	6295.6			6301.6	
2	♂ Age	6291.4	4.2	0.04	6297.4	4.2
3	♀ Age ²	6223.3	68.1	< 0.001	6229.3	68.1
4	♂ Age ²	6220.0	3.3	0.07	6226.0	3.3
5	♀ Age $\times$ ♀ AFR	6215.2	4.8	0.03	6221.2	4.8
6	♀ Age $\times$ ♂ AFR + ♀ Age ² $\times$ ♂ AFR	6209.8	5.4	0.02	6215.8	5.4
7	♂ Age $\times$ ♀ AFR + ♂ Age ² $\times$ ♀ AFR	6208.5	1.3	0.25	6214.5	1.3

Table A2. Results from linear mixed models on laying date and clutch size where all records containing males or females with age > 6 years were excluded. All formatting follows Table 1 in the main text. p-values: *p < 0.05, **p < 0.01, ***p < 0.001.

		Laying date			Clutch size		
		Est.	SE	p	Est.	SE	p
Fixed effects	Intercept	71.9	1.50	***	6.53	0.21	***
	Male (♂) age	-1.35	0.46	***	0.08	0.03	**
	♂ Age ²	0.17	0.07	*	ns		
	Female (♀) age	-0.17	0.38	0.7	0.22	0.05	***
	♀ Age ²		ns			ns	
	♂ Age × ♀ age		ns			ns	
	♂ AFR	2.30	0.52	***	0.14	0.07	*
	♀ AFR	2.54	0.87	***	-0.25	0.09	**
	♂ Resident status		ns			ns	
	♀ Resident status		ns		-0.32	0.12	**
	♂ Age × ♂ AFR		ns			ns	
	♂ Age ² × ♂ AFR		ns			ns	
	♀ Age × ♀ AFR	-0.65	0.24	**		ns	
	♀ Age ² × ♀ AFR		ns			ns	
	♂ Age × ♀ AFR		ns			ns	
	♂ Age ² × ♀ AFR		ns			ns	
	♀ Age × ♂ AFR	-2.07	0.31	***		ns	
	♀ Age ² × ♂ AFR	0.38	0.05	***	-0.02	0.01	***
Random effects	♂ Identity	0 ^a	.	.	0.03	0.04	0.2
	♀ Identity	10.8	1.24	***	0.63	0.07	***
	Year	20.0	5.58	***	0.13	0.05	**
	Residual	12.0	0.79	***	0.61	0.05	***
Sample size	♂		595			595	
	♀		542			542	
	Years		29			29	
	Breeding attempts		1019			1018	

^aThis component was set to zero because it was negative if unbound.

Table A3. Age-specific trait means, standard deviations (SD) and sample sizes (n) arranged as male age (♂) nested within female age (♀); ages are in years. Unrepresented categories are marked '—'.

♀	♂	Laying date			Clutch size			Nb fledglings			Nb recruits		
		Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n
1	1	72.2	6.41	153	6.5	1.21	153	5.2	1.89	90	0.3	0.55	81
	2	71.9	6.93	140	6.6	1.08	140	5.3	1.30	80	0.2	0.48	78
	3	72.0	5.42	51	6.8	1.73	51	5.3	1.49	29	0.2	0.50	28
	4	73.0	5.99	24	6.8	1.43	24	4.6	2.24	9	0.1	0.33	9
	5	68.9	7.85	8	6.9	1.13	8	3.5	0.71	2	1.0	1.41	2
	6	71.9	10.1	8	6.9	1.13	8	6.0	0.00	3	0.7	0.58	3
	7	84.0	4.24	2	5.5	0.71	2	—	—	—	—	—	—
	8	75.0	0	2	5.0	0.00	2	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—
2	1	70.4	7.24	77	6.6	1.12	77	5.7	1.20	43	0.3	0.51	37
	2	68.9	7.28	126	6.7	1.12	126	5.5	1.78	77	0.4	0.69	71
	3	69.0	5.71	48	6.7	1.21	47	5.9	1.33	29	0.5	0.81	26
	4	73.2	8.09	29	7.1	1.19	29	5.6	1.76	20	0.7	1.04	20
	5	71.5	7.76	14	6.9	1.41	14	5.6	1.78	10	0.4	0.97	10
	6	67.1	6.45	9	6.4	1.24	9	5.0	1.83	4	1.0	1.00	3
	7	78.3	4.73	3	7.0	1.00	3	—	—	—	—	—	—
	8	69.0	9.90	2	6.0	1.41	2	5.0	—	1	0.0	—	1
	9	77.0	—	1	6.0	—	1	2.0	—	1	0.0	—	1
3	1	67.2	7.90	29	7.1	0.98	29	4.3	1.80	13	0.4	1.39	13
	2	70.8	5.93	50	6.4	0.97	50	5.3	1.54	25	0.6	0.90	23
	3	68.4	7.24	41	7.1	1.28	41	5.9	1.50	20	0.2	0.38	18
	4	69.1	6.18	17	6.7	1.40	17	5.3	2.54	10	0.1	0.32	10
	5	69.4	6.06	17	6.9	0.86	17	5.9	0.93	9	0.1	0.33	9
	6	63.5	4.04	4	7.3	1.26	4	4.0	—	1	0.0	—	1
	7	62.4	10.2	5	6.4	0.55	5	5.0	0.00	2	1.0	0.00	2
	8	74.0	—	1	5.0	—	1	5.0	—	1	0.0	—	1
	9	—	—	—	—	—	—	—	—	—	—	—	—
4	1	69.1	8.75	18	6.6	1.20	18	4.8	1.04	8	0.4	0.52	8
	2	68.8	7.45	29	7.0	0.98	29	5.4	1.80	21	0.2	0.37	19
	3	70.2	7.54	21	6.4	1.03	21	5.0	1.95	12	0.7	1.07	12
	4	68.8	7.28	18	7.1	1.47	18	4.9	1.95	7	0.5	0.84	6
	5	67.6	4.24	7	6.6	0.79	7	5.2	0.84	5	0.2	0.45	5
	6	68.8	3.87	6	6.8	0.75	6	5.3	0.96	4	0.0	0.00	4
	7	68.0	—	1	8.0	—	1	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	67.0	—	1	7.0	—	1	6.0	—	1	0.0	—	1

♀	♂	Laying date			Clutch size			Nb fledglings			Nb recruits		
		Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n
5	1	69.4	4.64	9	6.6	1.13	9	3.0	0.82	4	0.0	0.00	4
	2	68.4	8.66	19	6.4	1.01	19	4.8	1.06	12	0.8	0.75	12
	3	68.7	7.88	12	6.9	1.16	12	6.6	1.14	5	0.0	0.00	5
	4	73.0	8.23	9	5.4	1.24	9	4.8	1.33	6	0.5	0.84	6
	5	70.8	6.95	4	7.0	1.15	4	7.5	0.71	2	0.5	0.71	2
	6	65.0	—	1	7.0	—	1	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—
6	1	73.6	5.59	5	6.2	1.10	5	5.7	1.15	3	0.5	0.71	2
	2	70.4	6.78	7	7.6	1.51	7	5.2	1.92	5	0.0	0.00	4
	3	74.7	6.81	3	5.7	0.58	3	5.0	—	1	0.0	—	1
	4	66.7	8.33	3	5.0	0.00	3	3.0	1.41	2	0.0	0.00	2
	5	68.0	5.29	3	6.7	1.53	3	2.0	—	1	0.0	—	1
	6	—	—	—	—	—	—	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—
7	1	67.0	—	1	7.0	—	1	4.0	—	1	—	—	—
	2	73.0	17.0	2	6.5	2.12	2	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—
	4	68.0	1.41	2	5.5	0.71	2	3.5	0.71	2	0.5	0.71	2
	5	67.0	—	1	5.0	—	1	4.0	—	1	2.0	—	1
	6	—	—	—	—	—	—	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—
8	1	—	—	—	—	—	—	—	—	—	—	—	—
	2	85.0	—	1	6.0	—	1	2.0	—	1	0.0	—	1
	3	56.0	—	1	7.0	—	1	—	—	—	—	—	—
	4	—	—	—	—	—	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—	—	—	—	—	—
	6	66.0	—	1	6.0	—	1	—	—	—	—	—	—
	7	—	—	—	—	—	—	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—
9	1	—	—	—	—	—	—	—	—	—	—	—	—
	2	—	—	—	—	—	—	—	—	—	—	—	—
	3	—	—	—	—	—	—	—	—	—	—	—	—
	4	—	—	—	—	—	—	—	—	—	—	—	—
	5	—	—	—	—	—	—	—	—	—	—	—	—
	6	—	—	—	—	—	—	—	—	—	—	—	—
	7	65.0	—	1	6.0	—	1	—	—	—	—	—	—
	8	—	—	—	—	—	—	—	—	—	—	—	—
	9	—	—	—	—	—	—	—	—	—	—	—	—