Oikos

O16545
Descamps, S., Boutin, S., Berteaux, D. and Gaillard, J.-M. 2008. Age-specific variation in survival, reproductive success and offspring quality in red squirrels: evidence of senescence. – Oikos 117: 1406–1416.

Appendix 1. Results of the model selection for capture rates of North American red squirrels, Kluane, Yukon, Canada. Models in bold represent selected models. Survival rates were defined as $\phi(a \times t)$. Dev indicates the deviance of the model, ΔAICc the difference in AICc between the model considered and the model with lowest AICc.

Models	np	Dev	AICc	ΔAICc	np	Dev	AICc	ΔAICc
p(t)	83	1203.147	7.689	3.342	80	792.118	966.680	5.598
p	**71**	**1223.805**	**0.000**	**0.000**	68	845.533	991.937	30.855
p(a)	77	1221.822	12.095	10.017	75	834.655	997.392	36.310
p(e)	72	1223.026	1.554	1.221	**69**	**812.361**	**961.082**	**0.000**

t: time; a: age (full-age dependant model); e: capture effort intensity

Appendix 2. Age effect in North American red squirrels, Kluane, Yukon, Canada. Litter size corresponds to litter size at birth, and Bequeathal to the bequeathal behaviour of females (3 modalities: kept; gave away part; gave away all). n_{obs} indicates the number of measurements (or number of '1' in the matrices of presence-absence used for survival analyses based on capture-recapture data) and n_{ind} the number of individuals measured. Dev indicates the deviance of the model, ΔAICc the difference in AICc between the model considered and the model with lowest AICc, and w_i the AICc-weight of the model considered. Models in bold represent selected models.

(a) Mass of females after parturition (n_{obs}=423, n_{ind}=226)

Model	np	Dev	ΔAICc	w_i
Mass of females ~ 1/Age+ Year +Litter size	**17**	**2494.515**	**0.000**	**0.171**
Mass of females ~ ($linear_{1–5}$; $linear_{5–8}$) + Year +Litter size	18	2493.079	0.746	0.118
Mass of females ~ ($linear_{1–5}$; $constant_{5–8}$) + Year +Litter size	17	2495.553	1.038	0.102
Mass of females ~Age+Age^2+ Year +Litter size	18	2493.693	1.360	0.086
Mass of females ~ ($linear_{1–4}$; $constant_{4–8}$) + Year +Litter size	17	2496.018	1.503	0.081
Mass of females ~ ($quad_{1–6}$; $constant_{6–8}$) + Year +Litter size	18	2494.158	1.825	0.069
Mass of females ~ ($quad_{1–5}$; $constant_{5–8}$) + Year +Litter size	18	2494.263	1.930	0.065
Mass of females ~ ($quad_{1–5}$; $linear_{5–8}$) + Year +Litter size	19	2492.679	2.539	0.048
Mass of females ~ ($quad_{1–4}$; $constant_{4–8}$) + Year +Litter size	18	2495.180	2.847	0.041
Mass of females ~ ($quad_{1–6}$; $linear_{6–8}$) + Year +Litter size	19	2493.781	3.641	0.028
Mass of females ~ ($linear_{1–4}$; $linear_{4–8}$) + Year +Litter size	18	2496.015	3.682	0.027
Mass of females ~ (Yearling, Prime age 2–4, Senescent ≥5) + Year +Litter size	18	2496.494	4.161	0.021
Mass of females ~ ($quad_{1–3}$; $linear_{3–8}$) + Year +Litter size	19	2494.628	4.488	0.018
Mass of females ~ ($linear_{1–6}$; $constant_{6–8}$) + Year +Litter size	17	2498.752	4.237	0.021
Mass of females ~ ($linear_{1–3}$; $constant_{3–8}$) + Year +Litter size	17	2498.768	4.253	0.020
Mass of females ~ ($linear_{1–3}$; $linear_{3–8}$) + Year +Litter size	18	2497.019	4.686	0.016
Mass of females ~ ($quad_{1–4}$; $linear_{4–8}$) + Year +Litter size	19	2495.111	4.971	0.014
Mass of females ~ ($linear_{1–6}$; $linear_{6–8}$) + Year +Litter size	18	2497.273	4.940	0.014
Mass of females ~ ($quad_{1–3}$; $constant_{3–8}$) + Year +Litter size	18	2497.521	5.188	0.013
Mass of females ~ Age_8 classes + Year +Litter size	23	2487.745	6.486	0.007
Mass of females ~ Age+Year + Litter size	17	2500.145	5.630	0.010
Mass of females ~ (Yearling, Adult) + Year +Litter size	17	2500.814	6.299	0.007
Mass of females ~ (Yearling, Prime age 2–6, Senescent ≥7)+ Year + Litter size	18	2500.771	8.438	0.003
Mass of females ~ (Yearling, Prime age 2–5, Senescent ≥6)+ Year + Litter size	18	2502.691	10.358	0.001
Mass of females ~ (Prime age 1–4, Senescent ≥5) + Year + Litter size	17	2512.308	17.793	0.000
Mass of females ~ (Prime age 1–5, Senescent ≥6) + Year + Litter size	17	2522.113	27.598	0.000
Mass of females ~ (Prime age 1–6, Senescent ≥7) + Year + Litter size	17	2522.291	27.776	0.000
Mass of females ~ Year + Litter size (no age effect)	16	2522.504	25.818	0.000
Mass of females ~ null model	1	2765.933	237.917	0.000

(b) Mass of males (n_{obs}=483, n_{ind}=205)

Model	np	Dev	ΔAICc	w_i
Mass of males ~1/Age + Year	**16**	**2674.328**	**0.000**	**0.469**
Mass of males ~ ($quad_{1–5}$; $constant_{5–8}$) + Year	17	2675.783	3.604	0.077
Mass of males ~ ($quad_{1–4}$; $constant_{4–8}$) + Year	17	2675.799	3.620	0.077
Mass of males ~ ($quad_{1–6}$; $constant_{6–8}$) + Year	17	2676.022	3.843	0.069
Mass of males ~ Age+Age^2+Year	17	2676.118	3.939	0.065
Mass of males ~ ($quad_{1–3}$; $constant_{3–8}$) + Year	17	2677.006	4.827	0.042
Mass of males ~ ($quad_{1–4}$; $linear_{4–8}$) + Year	18	2675.661	5.640	0.028
Mass of males ~ ($quad_{1–5}$; $linear_{5–8}$) + Year	18	2675.685	5.664	0.028
Mass of males ~ ($quad_{1–6}$; $linear_{6–8}$) + Year	18	2676.018	5.997	0.023
Mass of males ~ ($linear_{1–3}$; $constant_{3–8}$) + Year	16	2680.044	5.716	0.027
Mass of males ~ ($quad_{1–3}$; $linear_{3–8}$) + Year	18	2676.211	6.190	0.021
Mass of males ~ ($linear_{1–4}$; $constant_{4–8}$) + Year	16	2681.016	6.688	0.017
Mass of males ~ (Prime age 1–4, Senescent ≥5) + Year	17	2679.372	7.193	0.013
Mass of males ~ ($linear_{1–4}$; $linear_{4–8}$) + Year	17	2679.631	7.452	0.011
Mass of males ~ (Yearling, Adult) + Year	16	2681.678	7.350	0.012
Mass of males ~ ($linear_{1–3}$; $linear_{3–8}$) + Year	17	2679.861	7.682	0.010
Mass of males ~ (Prime age 1–5, Senescent ≥6) + Year	17	2681.284	9.105	0.005
Mass of males ~ (Prime ge 1–6, Senescent ≥7) + Year	17	2681.289	9.110	0.005
Mass of males ~ Age_8 classes + Year	23	2671.013	11.923	0.001
Mass of males ~ ($linear_{1–5}$; $linear_{5–8}$) + Year	17	2685.909	13.730	0.000
Mass of males ~ ($linear_{1–5}$; $constant_{5–8}$) + Year	16	2689.549	15.221	0.000
Mass of males ~ Piecewise regression ($linear_{1–6}$; $linear_{6–8}$) + Year	17	2693.331	21.152	0.000
Mass of males ~ ($linear_{1–6}$; $constant_{6–8}$) + Year	16	2696.968	22.640	0.000
Mass of males ~ Age+Year	16	2702.281	27.953	0.000
Mass of males ~ (Yearling, Prime age 2_4, Senescent ≥5) + Year	16	2746.405	72.077	0.000
Mass of males ~ (Yearling, Prime sge 2–5, Senescent ≥6) + Year	16	2755.194	80.866	0.000
Mass of males ~ (Yearling, Prime age 2–6, Senescent ≥7) + Year	16	2759.314	84.986	0.000
Mass of males ~ Year (no age effect)	16	2761.002	86.674	0.000
Mass of males ~ null model	2	2885.716	182.246	0.000

(c) Survival of females (n_{obs}=971, n_{ind}=343). Recapture probabilities were considered constant (Appendix 1)

Model	np	Dev	AICc	ΔAICc	w_i
Survival of females ~ Age + Age² + Year	**18**	**1269.648**	**1306.366**	**0.000**	**0.304**
Survival of females ~ ($linear_{1–4}$; $linear_{4–8}$) + Year	18	1271.422	1308.140	1.774	0.125
Survival of females ~ ($quad_{1–5}$; $linear_{5–8}$) + Year	19	1269.909	1308.708	2.342	0.094
Survival of females ~ ($quad_{1–6}$; $linear_{6–8}$) + Year	19	1269.946	1308.745	2.379	0.092
Survival of females ~ ($linear_{1–5}$; $linear_{5–8}$) + Year	18	1272.079	1308.797	2.431	0.090
Survival of females ~ ($quad_{1–6}$; $constant_{6–8}$) + Year	19	1270.202	1309.001	2.635	0.081
Survival of females ~ ($quad_{1–3}$; $linear_{3–8}$) + Year	19	1270.494	1309.293	2.927	0.070
Survival of females ~ ($quad_{1–4}$; $linear_{4–8}$) + Year	19	1271.398	1310.197	3.831	0.045
Survival of females ~ ($linear_{1–6}$; $constant_{6–8}$) + Year	18	1274.294	1311.012	4.646	0.030
Survival of females ~ ($linear_{1–3}$; $linear_{3–8}$) + Year	18	1274.511	1311.229	4.863	0.027
Survival of females ~ ($linear_{1–6}$; $linear_{6–8}$) + Year	18	1275.249	1311.967	5.601	0.018
Survival of females ~ (Prime age 1–4, Senescent ≥5) + Year	17	1280.306	1314.948	8.582	0.004
Survival of females ~ ($quad_{1–5}$; $constant_{5–8}$) + Year	19	1276.339	1315.138	8.772	0.004
Survival of females ~ (Prime age 1–5, Senescent ≥6) + Year	17	1280.481	1315.123	8.757	0.004
Survival of females ~ ($linear_{1–5}$; $constant_{5–8}$) + Year	18	1278.826	1315.544	9.178	0.003
Survival of females ~ Age_8 classes + Year	23	1268.390	1315.556	9.190	0.003
Survival of females ~ Age + Year	17	1281.912	1316.554	10.188	0.002
Survival of females ~ (Yearling, Prime age 2–5, Senescent ≥6) + Year	18	1280.218	1316.936	10.570	0.002
Survival of females ~ (Yearling, Prime age 2–4, Senescent ≥5) + Year	18	1280.299	1317.017	10.651	0.001
Survival of females ~ ($linear_{1–4}$; $constant_{4–8}$) + Year	18	1285.145	1321.863	15.497	0.000
Survival of females ~ ($quad_{1–4}$; $constant_{4–8}$) + Year	19	1284.204	1323.003	16.637	0.000
Survival of females ~ ($linear_{1–3}$; $constant_{3–8}$) + Year	18	1294.448	1331.166	24.800	0.000
Survival of females ~ ($quad_{1–3}$; $constant_{3–8}$) + Year	18	1294.448	1331.166	24.800	0.000
Survival of females ~ (Prime age 1–6, Senescent ≥7) + Year	17	1297.454	1332.096	25.730	0.000
Survival of females ~ (Yearling, Prime age 2–6, Senescent ≥7) + Year	18	1296.189	1332.907	26.541	0.000
Survival of females ~ 1/Age + Year	17	1299.631	1334.273	27.907	0.000
Survival of females ~ Year (no age effect)	16	1307.952	1340.522	34.156	0.000
Survival of females ~ (Yearling, Adult) + Year	17	1306.078	1340.720	34.354	0.000
Survival of females ~ null model	2	1360.334	1364.346	57.980	0.000

(d) Survival of males (n_{obs}=595, n_{ind}=216). Recapture probabilities were a function of capture effort (Appendix 1). Preliminary analyses indicated that survival of males did not vary with Year so that Year was not included in our analyses.

Model	np	Dev	AICc	ΔAICc	w_i
Survival of males ~ (Prime age 1–6, Senescent ≥7)	**4**	**880.767**	**888.835**	**0.000**	**0.221**
Survival of males ~ ($linear_{1–6}$; $linear_{6–8}$)	5	879.887	889.989	1.154	0.124
Survival of males ~ (Prime age 1–5, Senescent ≥6)	4	882.025	890.093	1.258	0.118
Survival of males ~ (Yearling, Prime age 2–6, Senescent ≥7)	5	880.767	890.869	2.034	0.080
Survival of males ~ ($quad_{1–6}$; $linear_{6–8}$)	6	879.309	891.452	2.617	0.060
Survival of males ~ ($linear_{1–5}$; $linear_{5–8}$)	5	881.492	891.594	2.759	0.056
Survival of males ~ Age + Age^2	5	881.656	891.758	2.923	0.051
Survival of males ~ ($linear_{1–6}$; $constant_{6–8}$)	5	881.963	892.065	3.230	0.044
Survival of males ~ (Yearling, Prime age 2–5, Senescent ≥6)	5	882.004	892.106	3.271	0.043
Survival of males ~ ($linear_{1–4}$; $linear_{4–8}$)	5	882.777	892.879	4.044	0.029
Survival of males ~ ($quad_{1–5}$; $linear_{5–8}$)	6	880.800	892.943	4.108	0.028
Survival of males ~ Age	4	885.064	893.132	4.297	0.026
Survival of males ~ ($quad_{1–6}$; $constant_{6–8}$)	6	881.341	893.484	4.649	0.022
Survival of males ~ null model	3	888.151	894.192	5.357	0.015
Survival of males ~ ($linear_{1–3}$; $linear_{3–8}$)	5	884.188	894.290	5.455	0.014
Survival of males ~ ($quad_{1–4}$; $linear_{4–8}$)	6	882.589	894.732	5.897	0.012
Survival of males ~ (Prime age 1–4, Senescent ≥5)	4	886.751	894.819	5.984	0.011
Survival of males ~ 1/Age	4	887.453	895.521	6.686	0.008
Survival of males ~ ($quad_{1–3}$; $linear_{3–8}$)	6	883.645	895.788	6.953	0.007
Survival of males ~ (Yearling, Adult)	4	888.008	896.076	7.241	0.006
Survival of males ~ ($linear_{1–3}$; $constant_{3–8}$)	5	886.574	896.676	7.841	0.004
Survival of males ~ ($linear_{1–5}$; $constant_{5–8}$)	5	886.619	896.721	7.886	0.004
Survival of males ~ (Yearling, Prime age 2–4, Senescent ≥5)	5	886.749	896.851	8.016	0.004
Survival of males ~ ($linear_{1–4}$; $constant_{4–8}$)	5	887.153	897.255	8.420	0.003
Survival of males ~ Age_8 classes	11	874.874	897.327	8.492	0.003
Survival of males ~ ($quad_{1–4}$; $constant_{4–8}$)	6	886.546	898.689	9.854	0.002
Survival of males ~ ($quad_{1–5}$; $constant_{5–8}$)	6	886.577	898.720	9.885	0.002
Survival of males ~ ($quad_{1–3}$; $constant_{3–8}$)	6	886.575	898.718	9.883	0.002

(e) Litter size at birth (n_{obs}=423, n_{ind}=259)

Model	np	Dev	ΔAICc	w_i
Litter size ~ (linear$_{1–6}$; linear$_{6–8}$) + Mass + Year	**18**	**–226.769**	**0.000**	**0.244**
Litter size ~ (quad$_{1–6}$; linear$_{6–8}$) + Mass + Year	19	–226.787	2.175	0.082
Litter size~Age_8 classes + Mass + Year	23	–235.566	2.277	0.078
Litter size~1/Age+Mass + Year	17	–221.595	2.992	0.055
Litter size ~ (linear$_{1–3}$; constant$_{3–8}$) + Mass + Year	17	–221.580	3.007	0.054
Litter size ~ (linear$_{1–4}$; constant$_{4–8}$) + Mass + Year	17	–221.460	3.127	0.051
Litter size ~ (linear$_{1–6}$; constant$_{6–8}$) + Mass + Year	17	–221.076	3.511	0.042
Litter size ~ (linear$_{1–5}$; constant$_{5–8}$) + Mass + Year	17	–220.687	3.900	0.035
Litter size ~ (Yearling, Adult) + Mass +Year	17	–220.465	4.122	0.031
Litter size ~ Age + Age^2 + Mass + Year	18	–222.499	4.270	0.029
Litter size ~ Age + Mass + Year	17	–220.255	4.332	0.028
Litter size ~ Mass + Year (no age effect)	16	–217.939	4.477	0.026
Litter size ~ (Prime age 1–5, Senescent ≥6) + Mass +Year	17	–219.888	4.699	0.023
Litter size ~ (Yearling, Prime age 2–5, Senescent ≥6) + Mass + Year	18	–221.997	4.772	0.022
Litter size ~ (Yearling, Prime age 2–6, Senescent ≥7) + Mass + Year	18	–221.762	5.007	0.020
Litter size ~ (linear$_{1–4}$; linear$_{4–8}$) + Mass + Year	18	–221.732	5.037	0.020
Litter size ~ (quad$_{1–5}$; constant$_{5–8}$) + Mass + Year	18	–221.710	5.059	0.019
Litter size ~ (quad$_{1–4;}$ constant$_{4–8}$) + Mass + Year	18	–221.642	5.127	0.019
Litter size ~ (quad$_{1–3}$; constant$_{3–8}$) + Mass + Year	18	–221.582	5.187	0.018
Litter size ~ (linear$_{1–3}$; linear$_{3–8}$) + Mass + Year	18	–221.581	5.188	0.018
Litter size ~ (quad$_{1–6}$; constant$_{6–8}$) + Mass + Year	18	–221.400	5.369	0.017
Litter size ~ (Prime age 1–6, Senescent ≥7) + Mass + Year	17	–219.050	5.537	0.015
Litter size ~ (linear$_{1–5}$; linear$_{5–8}$) + Mass + Year	18	–220.880	5.889	0.013
Litter size ~ (Yearling, Prime age 2–4, Senescent ≥5) + Mass + Year	18	–220.477	6.292	0.011
Litter size ~ (Prime age 1–4, Senescent ≥5) + Mass + Year	17	–218.061	6.526	0.009
Litter size ~ (quad$_{1–4}$; linear$_{4–8}$) + Mass + Year	19	–221.808	7.154	0.007
Litter size ~ (quad$_{1–5}$; linear$_{5–8}$) + Mass + Year	19	–221.719	7.243	0.007
Litter size ~ (quad$_{1–3}$; linear$_{3–8}$) + Mass + Year	19	–221.584	7.378	0.006
Litter size ~ null model	2	–154.224	38.881	0.000

(f) Number of weaned juveniles (n_{obs}=580, n_{ind}=259)

Model	np	Dev	ΔAICc	w_i
Number of weaned juveniles ~ (Yearling, Prime age 2–6, Senescent ≥7) + Year	**17**	**1516.788**	**0.000**	**0.357**
Number of weaned juveniles ~ Age + Age^2 + Year	17	1519.078	2.290	0.113
Number of weaned juveniles ~ ($quad_{1–6}$; $linear_{6–8}$) + Year	18	1517.301	2.643	0.095
Number of weaned juveniles ~ (Yearling, Prime age 2–4, Senescent ≥5) + Year	17	1520.556	3.768	0.054
Number of weaned juveniles ~ (Yearling, Adult) + Year	16	1522.684	3.773	0.054
Number of weaned juveniles ~ ($quad_{1–5}$; $constant_{5–8}$) + Year	17	1521.134	4.346	0.041
Number of weaned juveniles ~ (Yearling, Prime age 2–5, Senescent ≥6) + Year	17	1521.385	4.597	0.036
Number of weaned juveniles ~ ($quad_{1–6}$; $constant_{6–8}$) + Year	17	1521.453	4.665	0.035
Number of weaned juveniles ~ ($linear_{1–4}$; $linear_{4–8}$) + Year	17	1521.745	4.957	0.030
Number of weaned juveniles ~ ($quad_{1–5}$; $linear_{5–8}$) + Year	18	1519.696	5.038	0.029
Number of weaned juveniles ~ ($quad_{1–4}$; $linear_{4–8}$) + Year	18	1519.918	5.260	0.026
Number of weaned juveniles ~ ($linear_{1–3}$; $linear_{3–8}$) + Year	17	1522.379	5.591	0.022
Number of weaned juveniles ~ ($quad_{1–3}$; $constant_{3–8}$) + Year	17	1522.696	5.908	0.019
Number of weaned juveniles ~ 1/Age + Year	16	1525.037	6.126	0.017
Number of weaned juveniles ~ ($quad_{1–3}$; $linear_{3–8}$) + Year	18	1520.866	6.208	0.016
Number of weaned juveniles ~ ($linear_{1–3}$; $constant_{3–8}$) + Year	16	1525.323	6.412	0.014
Number of weaned juveniles ~ ($quad_{1–4}$; $constant_{4–8}$) + Year	17	1523.376	6.588	0.013
Number of weaned juveniles ~ ($linear_{1–6}$; $linear_{6–8}$) + Year	17	1524.074	7.286	0.009
Number of weaned juveniles ~ Age_8 classes+ Year	22	1514.324	8.264	0.006
Number of weaned juveniles ~ ($linear_{1–5}$; $linear_{5–8}$) + Year	17	1525.461	8.673	0.005
Number of weaned juveniles ~ ($linear_{1–4}$; $constant_{4–8}$) + Year	16	1527.725	8.814	0.004
Number of weaned juveniles ~ (Prime age 1–6, Senescent ≥7) + Year	16	1528.640	9.729	0.003
Number of weaned juveniles ~ ($linear_{1–5}$; $constant_{5–8}$) + Year	16	1530.288	11.377	0.001
Number of weaned juveniles ~ ($linear_{1–6}$; $constant_{6–8}$) +Year	16	1531.208	12.297	0.001
Number of weaned juveniles ~ Year (no age effect)	15	1533.836	12.810	0.001
Number of weaned juveniles ~ Age + Year	16	1531.764	12.853	0.001
Number of weaned juveniles ~ (Prime age 1–4, Senescent ≥5) + Year	16	1533.273	14.362	0.000
Number of weaned juveniles ~ (Prime age 1–5, Senescent ≥6) + Year	16	1533.273	14.362	0.000
Number of weaned juveniles ~ null model	2	1621.887	74.031	0.000

(g) Number of weaned juveniles adjusted for litter size at birth (n_{obs}=580, n_{ind}=259)

Model	np	Dev	ΔAICc	w_i
Number of weaned juveniles ~ (Yearling, Prime age 2–6, Senescent ≥7) + Litter size + Year	**18**	**1501.222**	**0.000**	**0.424**
Number of weaned juveniles ~ ($quad_{1–6}$; $linear_{6–8}$) + Litter size + Year	19	1501.759	2.675	0.111
Number of weaned juveniles ~ Age + Age^2 + Litter size + Year	18	1504.390	3.168	0.087
Number of weaned juveniles ~ (Yearling, Adult) + Litter size + Year	17	1507.874	4.522	0.044
Number of weaned juveniles ~ (Yearling, Prime age 2–4, Senescent ≥5) + Litter size + Year	18	1506.075	4.853	0.037
Number of weaned juveniles ~ (Yearling, Prime age 2–5, Senescent ≥6) + Litter size + Year	18	1506.322	5.100	0.033
Number of weaned juveniles ~ ($quad_{1–6}$; $constant_{6–8}$) + Litter size + Year	18	1506.547	5.325	0.030
Number of weaned juveniles ~ ($quad_{1–5}$; $constant_{5–8}$) + Litter size + Year	18	1506.815	5.593	0.026
Number of weaned juveniles ~ ($linear_{1–4}$; $linear_{4–8}$) + Litter size + Year	18	1506.894	5.672	0.025
Number of weaned juveniles ~ ($quad_{1–5}$; $linear_{5–8}$) + Litter size + Year	19	1505.003	5.919	0.022
Number of weaned juveniles ~ ($linear_{1–6}$; $linear_{6–8}$) + Litter size + Year	18	1507.230	6.008	0.021
Number of weaned juveniles ~ ($quad_{1–4}$; $linear_{4–8}$) + Litter size + Year	19	1505.361	6.277	0.018
Number of weaned juveniles ~ ($linear_{1–3}$; $linear_{3–8}$) + Litter size + Year	18	1507.602	6.380	0.017
Number of weaned juveniles ~ ($quad_{1–3}$; $constant_{3–8}$) + Litter size + Year	18	1507.850	6.628	0.015
Number of weaned juveniles ~ 1/Age+Litter size + Year	17	1510.010	6.658	0.015
Number of weaned juveniles ~ ($linear_{1–3}$; $constant_{3–8}$) + Litter size + Year	17	1510.321	6.969	0.013
Number of weaned juveniles ~ ($quad_{1–3}$; $linear_{3–8}$) + Litter size + Year	19	1506.178	7.094	0.012
Number of weaned juveniles ~ (Prime age 1–6, Senescent ≥7) + Litter size + Year	17	1510.537	7.185	0.012
Number of weaned juveniles ~ ($quad_{1–4}$; $constant_{4–8}$) + Litter size + Year	18	1508.475	7.253	0.011
Number of weaned juveniles ~ ($linear_{1–5}$; $linear_{5–8}$) + Litter size + Year	18	1509.081	7.859	0.008
Number of weaned juveniles ~ ($linear_{1–4}$; $constant_{4–8}$) + Litter size + Year	17	1512.190	8.838	0.005
Number of weaned juveniles ~Age_8 classes + Litter size + Year	23	1500.062	9.607	0.003
Number of weaned juveniles ~ ($linear_{1–5}$; $constant_{5–8}$) + Litter size + Year	17	1514.056	10.704	0.002
Number of weaned juveniles ~Year + Litter size (νo age effect)	16	1516.859	11.384	0.001
Number of weaned juveniles ~ ($linear_{1–6}$; $constant_{6–8}$) + Litter size + Year	17	1514.807	11.455	0.001
Number of weaned juveniles ~ Age + Litter size + Year	17	1515.231	11.879	0.001
Number of weaned juveniles ~ (Prime age 1–5, Senescent ≥6) + Litter size + Year	17	1515.607	12.255	0.001
Number of weaned juveniles ~ (Prime age 1–4, Senescent ≥5) + Litter size + Year	17	1515.939	12.587	0.001
Number of weaned juveniles ~ null model	2	1621.887	87.467	0.000

(h) Mass of juveniles at weaning (average per litter). Discrete models including an age class ≥7 years were not considered because data were missing for 7 and 8 year old squirrels (n_{obs}=258, n_{ind}=159)

Model	np	Dev	ΔAICc	w_i
Weaning mass ~ (linear$_{1–3}$; constant$_{3–8}$) + Year + Litter size	**16**	**1537.311**	**0.000**	**0.158**
Weaning mass ~ (linear$_{1–4}$; constant$_{4–8}$) +Year + Litter size	16	1537.739	0.428	0.128
Weaning mass ~ (quad$_{1–3}$; constant$_{3–8}$) + Year + Litter size	17	1535.819	0.801	0.106
Weaning mass ~ (linear$_{1–5}$; constant$_{5–8}$) + Year + Litter size	16	1538.289	0.978	0.097
Weaning mass ~ Age+Year + Litter size	16	1538.472	1.161	0.088
Weaning mass ~ 1/Age + Year + Litter size	16	1539.084	1.773	0.065
Weaning mass ~ (linear$_{1–3}$; linear$_{3–8}$) + Year + Litter size	17	1537.100	2.082	0.056
Weaning mass ~ (quad$_{1–4}$; constant$_{4–8}$) + Year + Litter size	17	1537.685	2.667	0.042
Weaning mass ~ (linear$_{1–4}$; linear$_{4–8}$) + Year + Litter size	17	1537.731	2.713	0.041
Weaning mass ~Age+Age^2 + Year + Litter size	17	1537.743	2.725	0.040
Weaning mass ~ (quad$_{1–5}$; constant$_{5–8}$) + Year + Litter size	17	1537.743	2.725	0.040
Weaning mass ~ (quad$_{1–3}$; linear$_{3–8}$) + Year + Litter size	18	1535.815	3.109	0.033
Weaning mass ~ (linear$_{1–5}$; linear$_{5–8}$) + Year + Litter size	17	1538.288	3.270	0.031
Weaning mass ~ (quad$_{1–4}$; linear$_{4–8}$) + Year + Litter size	18	1537.658	4.952	0.013
Weaning mass ~ (quad$_{1–5}$; linear$_{5–8}$) + Year + Litter size	18	1537.677	4.971	0.013
Weaning mass ~ (Yearling, Adult) + Year + Litter size	16	1542.456	5.145	0.012
Weaning mass ~ Year + Litter size (no age effect)	15	1544.995	5.410	0.011
Weaning mass ~ (Yearling, Prime age 2–4, Senescent ≥5) + Year + Litter size	17	1541.644	6.626	0.006
Weaning mass ~ Age_8 classes + Year + Litter size	20	1535.653	7.629	0.003
Weaning mass ~ (Prime age 1–4, Senescent ≥5) + Year + Litter size	16	1543.826	6.515	0.006
Weaning mass ~ (Yearling, Prime age 2–5, Senescent ≥6) + Year + Litter size	17	1541.878	6.860	0.005
Weaning mass ~ (Prime age 1–5, Senescent ≥6) + Year +Litter size	16	1544.253	6.942	0.005
Weaning mass ~ null model	2	1592.994	25.473	0.000

(i) Number of recruited juveniles (i.e. number of weaned juveniles surviving to one year of age). Models including an age class ≥7 years were not considered because only one data point was available for 7 and 8 year old squirrels (n_{obs}=286. n_{ind}=212)

Model	np	Deviance	ΔAICc	w_i
Number of recruited juveniles ~ (Yearling, Prime age 2–5, Senescent ≥6) + Year + Number weaned + Bequeathal	**20**	**–306.062**	**0.000**	**0.278**
Number of recruited juveniles ~ (Prime age 1–5, Senescent ≥6) + Year + Number weaned + Bequeathal	19	–302.644	1.105	0.160
Number of recruited juveniles ~ Age + Age^2 + Year + Number weaned + Bequeathal	20	–303.765	2.297	0.088
Number of recruited juveniles ~ ($quad_{1–5}$; $constant_{5–8}$) + Year + Number weaned + Bequeathal	20	–302.498	3.564	0.047
Number of recruited juveniles ~ ($quad_{1–3}$; $linear_{3–8}$) + Year + Number weaned + Bequeathal	20	–305.610	3.622	0.045
Number of recruited juveniles ~ (Yearling, Prime age 2–4, Senescent ≥5) + Year + Number weaned + Bequeathal	20	–302.405	3.657	0.045
Number of recruited juveniles ~ ($linear_{1–3}$; $linear_{3–8}$) + Year + Number weaned + Bequeathal	20	–302.346	3.716	0.043
Number of recruited juveniles ~ ($quad_{1–4}$; $constant_{4–8}$) + Year + Number weaned + Bequeathal	20	–302.260	3.802	0.041
Number of recruited juveniles ~ ($quad_{1–4}$; $linear_{4–8}$) + Year + Number weaned + Bequeathal	21	–304.525	3.867	0.040
Number of recruited juveniles ~ ($quad_{1–5}$; $linear_{5–8}$) + Year + Number weaned + Bequeathal	21	–304.196	4.196	0.034
Number of recruited juveniles ~ ($quad_{1–3}$; $constant_{3–8}$) + Year + Number weaned + Bequeathal	20	–301.630	4.432	0.030
Number of recruited juveniles ~ (Prime age 1–4, Senescent ≥5) + Year + Number weaned + Bequeathal	19	–298.741	5.008	0.023
Number of recruited juveniles ~ ($linear_{1–4}$; $linear_{4–8}$) + Year + Number weaned + Bequeathal	20	–300.836	5.226	0.020
Number of recruited juveniles ~ (Yearling, Adult) + Year + Number weaned + Bequeathal	19	–298.388	5.361	0.019
Number of recruited juveniles ~ ($linear_{1–5}$; $linear_{5–8}$) + Year + Number weaned + Bequeathal	20	–300.628	5.434	0.018
Number of recruited juveniles ~ Year + Number weaned + Bequeathal (no age effect)	18	–295.920	5.534	0.017
Number of recruited juveniles ~ Age_8 classes + Year + Number weaned + Bequeathal	24	–309.666	5.824	0.015
Number of recruited juveniles ~ Age + Year + Number weaned + Bequeathal	19	–297.059	6.690	0.010
Number of recruited juveniles ~ ($linear_{1–5}$; $constant_{5–8}$) + Year + Number weaned + Bequeathal	19	–296.495	7.254	0.007
Number of recruited juveniles ~ 1/Age + Year + Number weaned + Bequeathal	19	–296.227	7.522	0.006
Number of recruited juveniles ~ ($linear_{1–3}$; $constant_{3–8}$) + Year + Number weaned + Bequeathal	19	–296.058	7.691	0.006
Number of recruited juveniles ~ ($linear_{1–4}$; $constant_{4–8}$) + Year + Number weaned + Bequeathal	19	–296.046	7.703	0.006
Number of recruited juveniles ~ null model	2	–34.598	232.336	0.000