

Souchay, G., Besnard, A., Perrot, C., Jakob, C and Ponce, F 2018. Anthropic and natural factors drive variation of survival in a fast galliform species in southern France. – Wildlife Biology 218: wlb.00438

Appendix 1

Complete model selection

Table A1. Model selection of loss of signal and mortality probabilities in red-legged partridge marked from 2000 to 2006 in three sites in southern France. For each model, we give the number of estimable parameters (Np - when the model was not full rank, np is followed by an *), the deviance and associated Akaike's information criterion (AIC) and the difference in AIC (Δ AIC). Models are sorted by increasing values of Δ AIC.

#	Loss of signal	Hunting mortality		Natural mortality			Np	Dev	AIC	Δ AIC
		Pailhès	Else	Luberon	Pailhès	Porquerolles				
1	hunt	H[sex × origin × age] + NH[-]	-	rep × age	origin × age	age	17*	1791.6	1825.6	0.0
2	hunt	H[R[sex × age] + W[age]] + NH[-]	-	rep × age	origin × age	age	15*	1796.5	1826.5	0.9
3	hunt	H[sex × origin] + NH[-]	-	rep	origin × age	-	15	1801.1	1831.1	5.5
4	hunt	H[origin × age] + NH [-]	-	rep × age	origin × age	age	15*	1801.3	1831.3	5.7

5	hunt	H[origin × age] + NH [-]	-	rep	origin × age	-	15	1802.5	1832.5	6.9
6	hunt	H[sex × origin] + NH[-]	-	rep	origin	-	13	1807.6	1833.6	8.0
7	hunt	H[R[sex] + W[-]] + NH[-]	-	rep	origin	-	12	1810.2	1834.2	8.6
8	seas	H[sex × origin] + NH[-]	-	rep	origin	-	14	1807.0	1835.0	9.4
9	hunt	H[origin] + NH[-]	-	rep	origin	-	11	1814.3	1836.3	10.7
10	hunt	hunt × sex × origin	-	rep	origin	-	15	1807.6	1837.6	12.0
11	hunt	hunt × origin	-	rep	origin	-	12	1814.3	1838.3	12.7
12	hunt	H[sex × origin × age] + NH[-]	-	rep × age × sex	origin × age × sex	age × sex	26	1787.6	1839.6	14.0
13	hunt	hunt × sex × origin	-	rep	-	-	14	1812.0	1840.0	14.4
14	hunt	hunt × sex × origin	-	rep	rep × origin	-	17	1807.5	1841.5	15.9
15	hunt	hunt × sex × origin	-	-	origin	-	14	1814.0	1842.0	16.4
16	hunt	hunt × sex × origin	-	rep	rep × origin	rep	18	1807.1	1843.1	17.5
17	hunt	hunt × sex × origin	-	rep	rep	rep	16	1811.4	1843.4	17.8
18	hunt	hunt × sex × origin	-	-	-	-	13	1818.4	1844.4	18.8
19	hunt	hunt × sex × origin	-	seas	seas × origin	seas	22	1803.7	1847.7	22.1
20	hunt	hunt × sex × origin	-	seas	seas	seas	19	1810.2	1848.2	22.6

21	seas	hunt × sex × origin	-	seas	seas × origin	seas	23	1803.2	1849.2	23.6
22	-	hunt × sex × origin	-	seas	seas × origin	seas	21	1809.2	1851.2	25.6
23	hunt	hunt	-	rep	origin	-	10	1852.1	1872.1	46.5
24	hunt	hunt × sex	-	rep	origin	-	12	1851.0	1875.0	49.4
25	hunt	hunt × sex × origin	-		seas × origin		16	1844.5	1876.5	50.9
26	hunt	hunt × sex × origin	-		rep		12	1857.6	1881.6	56.0
I	seas	year × hunt × sex × origin	-	year × seas	year × seas × origin	year × seas	75	1736.9	1886.9	61.3

Notation: *seas* = time effect with 3 seasons (Hunting=Sep, Oct, Nov; Other = Dec, Jan, Feb, Mar; Breeding = Apr, Mai, Jun, Jul, Aug); *hunt* = time effect with 2 levels regarding the hunting season (Hunting[H] vs Non-Hunting [NH]); *rep* = time effect with 2 seasons regarding the breeding season; *age* = age effect with 2 levels (FY = first-year, AFY = after first-year); *origin* = group effect for origin (released [R] vs wild [W]); *sex* = group effect for sex; - = constant term; x = interaction term. I = Initial model

Appendix 2

Estimates of mortality rates from models 1, 2 and 3, i.e. the three most supported models

Table A2.1. Estimates of monthly hunting mortality

Origin	Sex	Age	Estimate \pm SE		
			Model 1	Model 2	Model 3
W	F	FY	1.00 \pm 0.00*	0.44 \pm 0.17	0.33 \pm 0.12
		AFY	0.29 \pm 0.12	0.14 \pm 0.05	0.33 \pm 0.12
	M	FY	0.38 \pm 0.17	0.44 \pm 0.17	0.14 \pm 0.05
		AFY	0.08 \pm 0.05	0.14 \pm 0.05	0.14 \pm 0.05
R	F	FY	0.61 \pm 0.08	0.61 \pm 0.08	0.63 \pm 0.08
		AFY	0.33 \pm 0.27	0.33 \pm 0.27	0.63 \pm 0.08
	M	FY	0.79 \pm 0.07	0.79 \pm 0.07	0.83 \pm 0.06
		AFY	1.00 \pm 0.00*	1.00 \pm 0.00*	0.83 \pm 0.06

* unidentifiable parameter

Table A2.2. Estimates of monthly natural mortality

Site	Period	Origin	Age	Estimate \pm SE		
				Model 1	Model 2	Model 3
LU	Breed	-	FY	0.10 \pm 0.00*	0.10 \pm 0.00*	0.16 \pm 0.03
			AFY	0.16 \pm 0.03	0.16 \pm 0.03	0.16 \pm 0.03
	NB	-	FY	0.00 \pm 0.00*	0.00 \pm 0.00*	0.05 \pm 0.02
			AFY	0.06 \pm 0.03	0.06 \pm 0.03	0.05 \pm 0.02
PA	-	W	FY	0.15 \pm 0.06	0.15 \pm 0.06	0.15 \pm 0.06
			AFY	0.05 \pm 0.01	0.05 \pm 0.01	0.05 \pm 0.01
		R	FY	0.20 \pm 0.07	0.20 \pm 0.07	0.20 \pm 0.07
			AFY	0.00 \pm 0.00	0.00 \pm 0.00	0.00 \pm 0.00
PO	-	-	FY	0.03 \pm 0.10	0.03 \pm 0.10	0.03 \pm 0.00
			AFY	0.02 \pm 0.00	0.02 \pm 0.00	0.03 \pm 0.00

* unidentifiable parameter