

APPENDIX 3. Fine-scale perturbation analysis of input variables representing environmental variation in a stochastic population viability analysis for large-bodied woodpeckers. See Appendix 1 for details on calculations.

Model inputs						Extinction rate (e_i)				Change in e_i (Δe_i)		
N_0^a	S^b	σ_S^2	F^c	σ_F	λ^d	Orig. ^e	$N_0\uparrow^f$	$\sigma_S\downarrow^f$	$\sigma_F\downarrow^f$	N_0^g	σ_S^h	σ_F^h
5	0.8	0.002	1.06	0.09	1.224	0.040	0.035	0.050	0.020	0.005	-0.010	-0.020
17	0.8	0.002	1.06	0.09	1.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.8	0.002	1.06	0.09	1.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.8	0.016	1.06	0.09	1.224	0.055	0.030	0.075	0.065	0.025	-0.020	0.010
17	0.8	0.016	1.06	0.09	1.224	0.000	0.000	0.015	0.005	0.000	-0.015	0.005
30	0.8	0.016	1.06	0.09	1.224	0.000	0.000	0.005	0.000	0.000	-0.005	0.000
5	0.8	0.051	1.06	0.09	1.224	0.300	0.230	0.340	0.250	0.070	-0.040	-0.050
17	0.8	0.051	1.06	0.09	1.224	0.155	0.145	0.175	0.230	0.010	-0.020	0.075
30	0.8	0.051	1.06	0.09	1.224	0.115	0.195	0.175	0.225	-0.080	-0.060	0.110
5	0.8	0.002	1.06	0.20	1.224	0.065	0.020	0.050	0.025	0.045	0.015	-0.040
17	0.8	0.002	1.06	0.20	1.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.8	0.002	1.06	0.20	1.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.8	0.016	1.06	0.20	1.224	0.090	0.070	0.090	0.045	0.020	0.000	-0.045
17	0.8	0.016	1.06	0.20	1.224	0.000	0.005	0.005	0.035	-0.005	-0.005	0.035
30	0.8	0.016	1.06	0.20	1.224	0.000	0.000	0.010	0.000	0.000	-0.010	0.000
5	0.8	0.051	1.06	0.20	1.224	0.330	0.280	0.320	0.255	0.050	0.010	-0.075
17	0.8	0.051	1.06	0.20	1.224	0.180	0.120	0.175	0.215	0.060	0.005	0.035
30	0.8	0.051	1.06	0.20	1.224	0.110	0.110	0.175	0.165	0.000	-0.065	0.055
5	0.8	0.002	1.06	0.31	1.224	0.040	0.040	0.030	0.020	0.000	0.010	-0.020
17	0.8	0.002	1.06	0.31	1.224	0.000	0.000	0.005	0.000	0.000	-0.005	0.000
30	0.8	0.002	1.06	0.31	1.224	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.8	0.016	1.06	0.31	1.224	0.060	0.055	0.090	0.020	0.005	-0.030	-0.040
17	0.8	0.016	1.06	0.31	1.224	0.005	0.000	0.000	0.010	0.005	0.005	0.005
30	0.8	0.016	1.06	0.31	1.224	0.005	0.000	0.000	0.015	0.005	0.005	0.010
5	0.8	0.051	1.06	0.31	1.224	0.275	0.250	0.325	0.230	0.025	-0.050	-0.045
17	0.8	0.051	1.06	0.31	1.224	0.090	0.160	0.150	0.145	-0.070	-0.060	0.055
30	0.8	0.051	1.06	0.31	1.224	0.165	0.125	0.150	0.165	0.040	0.015	0.000

^a Initial number of adult females.

^b Annual adult survival rate.

^c Fecundity; the number of juvenile females recruited per adult female.

^d Deterministic population growth rate, assuming annual juvenile survival = 0.5; $\lambda = S + F * 0.5 * S$.

^e Predicted extinction rate based on original set of input values.

^f Predicted extinction rate based on augmented set of input values where one parameter changed by small, proportional amount and is expected to decrease extinction rate. Arrows indicate whether focal input parameter was increased (\uparrow) or decreased (\downarrow).

^g Change in extinction rate calculated by subtracting the extinction rate based on an augmented set of input values (i.e., one input value increased by small, proportional amount and is expected to decrease extinction rate) from the extinction rate based on original set of input values.

^h Change in extinction rate calculated by subtracting the extinction rate based on original set of input values from extinction rate based on an augmented set of input values (i.e., one input value increased by small, proportional amount and is expected to decrease extinction rate).