

Use of a genetically informed population viability analysis to evaluate management options for Polish populations of endangered beetle *Cerambyx cerdo* L. (1758), (Coleoptera, Cerambycidae)

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Table S2

Effects of different levels of carrying capacity, mortality rates, supplementation and the number of lethal equivalents in Vortex simulation models of *Cerambyx cerdo* populations from Ispina and Rogalin

Scenarios	#Runs	Population	det-r	stoch-r	SD(r)	PE	N-extant	SD(Next)	N-all	SD(Nall)	MedianTE	MeanTE	mortality	supplementation	LE	CC
1	500	1	-0.0844	-0.1319	0.2087	0.2	10.77	7.21	8.91	7.5	0	18.4	1	1	1	1
1	500	2	-0.0844	-0.0887	0.0746	0	237.14	61	237.14	61	0	0	1	1	1	1
2	500	1	-0.108	-0.1631	0.2372	0.48	6.85	4.43	4.03	4.43	0	17.7	2	1	1	1
2	500	2	-0.108	-0.1131	0.0821	0	146.65	41.76	146.65	41.76	0	0	2	1	1	1
3	500	1	-0.0844	-0.1455	0.2169	0.296	8.35	5.11	6.21	5.47	0	18.2	1	1	2	1
3	500	2	-0.0844	-0.0911	0.0766	0	228.03	65.87	228.03	65.87	0	0	1	1	2	1
4	500	1	-0.108	-0.1797	0.232	0.658	5.58	3.36	2.32	3.16	19	17.3	2	1	2	1
4	500	2	-0.108	-0.1162	0.0813	0	138.83	43.9	138.83	43.9	0	0	2	1	2	1
5	500	1	-0.0844	-0.1049	0.1908	0.064	15.83	9.05	14.95	9.4	0	19.1	1	2	1	1
5	500	2	-0.0844	-0.0915	0.0784	0	225.3	61.86	225.3	61.86	0	0	1	2	1	1

6	500	1	-0.108	-0.1372	0.227	0.204	9.13	5.98	7.56	6.21	0	18.4	2	2	1	1
6	500	2	-0.108	-0.1171	0.0849	0	135.89	40.42	135.89	40.42	0	0	2	2	1	1
7	500	1	-0.0844	-0.1183	0.2016	0.08	12	6.91	11.19	7.19	0	18.9	1	2	2	1
7	500	2	-0.0844	-0.0939	0.078	0	214.31	59.23	214.31	59.23	0	0	1	2	2	1
8	500	1	-0.108	-0.1503	0.2276	0.33	7.73	5.36	5.62	5.42	0	18.3	2	2	2	1
8	500	2	-0.108	-0.1191	0.0861	0	130.88	40.27	130.88	40.27	0	0	2	2	2	1
9	500	1	-0.0844	-0.0683	0.2088	0.002	29.07	13.86	29.01	13.9	0	20	1	3	1	1
9	500	2	-0.0844	-0.1004	0.0935	0	189.09	54.26	189.09	54.26	0	0	1	3	1	1
10	500	1	-0.108	-0.1005	0.2357	0.046	16.2	8.34	15.56	8.67	0	18.9	2	3	1	1
10	500	2	-0.108	-0.1242	0.0994	0	118.65	37.87	118.65	37.87	0	0	2	3	1	1
11	500	1	-0.0844	-0.0762	0.2136	0.004	24.74	11.79	24.66	11.83	0	19.5	1	3	2	1
11	500	2	-0.0844	-0.1005	0.094	0	189.87	58.42	189.87	58.42	0	0	1	3	2	1
12	500	1	-0.108	-0.1098	0.2381	0.068	13.85	7.54	13.1	7.82	0	19.1	2	3	2	1
12	500	2	-0.108	-0.1276	0.1019	0	110.68	34.73	110.68	34.73	0	0	2	3	2	1
13	500	1	-0.0844	-0.1301	0.2109	0.218	11.73	8.05	9.42	8.37	0	18.1	1	1	1	2
13	500	2	-0.0844	-0.089	0.0753	0	237.16	67.07	237.16	67.07	0	0	1	1	1	2
14	500	1	-0.108	-0.1622	0.234	0.462	6.81	4.5	4.05	4.52	0	17.5	2	1	1	2
14	500	2	-0.108	-0.1119	0.0802	0	149.68	41	149.68	41	0	0	2	1	1	2
15	500	1	-0.0844	-0.1514	0.2164	0.344	7.7	4.89	5.42	5.11	0	18.2	1	1	2	2
15	500	2	-0.0844	-0.091	0.0755	0	227.94	65.02	227.94	65.02	0	0	1	1	2	2
16	500	1	-0.108	-0.178	0.2315	0.632	5.61	3.51	2.49	3.29	19	17.3	2	1	2	2
16	500	2	-0.108	-0.1155	0.0812	0	140.45	42.02	140.45	42.02	0	0	2	1	2	2
17	500	1	-0.0844	-0.1039	0.191	0.05	15.77	9	15.06	9.3	0	18.6	1	2	1	2
17	500	2	-0.0844	-0.0929	0.0788	0	219.56	62.63	219.56	62.63	0	0	1	2	1	2
18	500	1	-0.108	-0.1376	0.2247	0.248	9.5	6.01	7.49	6.32	0	18.4	2	2	1	2
18	500	2	-0.108	-0.1169	0.0845	0	136.7	42.86	136.7	42.86	0	0	2	2	1	2
19	500	1	-0.0844	-0.1176	0.2012	0.11	12.67	7.45	11.48	7.83	0	18.8	1	2	2	2
19	500	2	-0.0844	-0.0939	0.0791	0	214.99	61.7	214.99	61.7	0	0	1	2	2	2
20	500	1	-0.108	-0.1493	0.2273	0.324	7.53	4.63	5.49	4.88	0	18.3	2	2	2	2
20	500	2	-0.108	-0.1201	0.0858	0	128.29	39.6	128.29	39.6	0	0	2	2	2	2

21	500	1	-0.0844	-0.0672	0.208	0.004	28.69	12.44	28.58	12.53	0	19	1	3	1	2
21	500	2	-0.0844	-0.0983	0.0924	0	197.18	57.34	197.18	57.34	0	0	1	3	1	2
22	500	1	-0.108	-0.0974	0.2346	0.046	17.1	8.37	16.42	8.75	0	19	2	3	1	2
22	500	2	-0.108	-0.1248	0.1023	0	116.68	36.24	116.68	36.24	0	0	2	3	1	2
23	500	1	-0.0844	-0.079	0.2133	0.002	23.36	11.44	23.32	11.48	0	15	1	3	2	2
23	500	2	-0.0844	-0.1	0.0913	0	190.61	55.67	190.61	55.67	0	0	1	3	2	2
24	500	1	-0.108	-0.1068	0.2398	0.05	14.36	7.95	13.72	8.25	0	18.7	2	3	2	2
24	500	2	-0.108	-0.1264	0.1012	0	113.78	36.65	113.78	36.65	0	0	2	3	2	2

Abbreviations after Lacy et al. (2017)

det-r - the deterministic growth rate, stoch-r – the mean stochastic growth rate experienced in the simulations, [SD(r)]- the SD of the stoch-r, N-all – the mean population size, specified separately for all populations, and N-extant – reported only for those remaining extant; PE - probability of extinction; MedianTE: median time to extinction, if the population went extinct in at least 50% of the simulations, MeanTE: mean time to extinction of those simulated populations that became extinct; standard error (SE) and standard deviation (SD) across 500 iterations (runs); Population: 1: Ispina; 2: Rogalin; Cc: carrying capacity: 1: 5,000 indivs., 2: 420 indivs. (Ispina) and 1,818 indivs. (Rogalin); Mortality: 1: 10% females and 10% males in all age classes, 2: 20% females and 30% males at the imago stage, keeping mortality rates unchanged in the remaining age classes (10%), all with a standard deviation of 3%; Supplementation: 0: lack of supplementation/harvest; simulations of supplementation of the Ispina population and harvest of the Rogalin population (1): 10 individuals or (2): 30 individuals each year across three years; Lethal equivalents (LE): (1): 3.14 and (2): 6.29

Reference

Lacy RC, Miller PS, Traylor-Holzer K (2017) Vortex 10 User's Manual. 21 April 2017 update. IUCN SSC Conservation Breeding Specialist Group, and Chicago Zoological Society, Apple Valley, Minnesota