

A MECHANISTIC MODEL TO COMPARE THE IMPORTANCE OF INTERRELATED POPULATION MEASURES: HOST POPULATION SIZE, DENSITY AND COLONY SIZE

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TABLE 1. Raw data for range size simulations. The population parameters are shown along with the number of invasions and the number of simulations. Note that simulations where both pathogens went extinct have been removed (100 simulations were originally run for each parameter set). β is the transmission rate, n is colony size, m is the number of colonies and N is the total population size.

β	n	m	Area ($\times 1000 \text{ km}^2$)	N ($\times 1000$)	Density (km^{-2})	Invasions	Sims
0.1	400	20	2.5	8	3.2	2	100
0.1	400	20	5.0	8	1.6	3	100
0.1	400	20	10.0	8	0.8	2	100
0.1	400	20	20.0	8	0.4	3	100
0.1	400	20	40.0	8	0.2	2	100
0.2	400	20	2.5	8	3.2	3	100
0.2	400	20	5.0	8	1.6	3	100
0.2	400	20	10.0	8	0.8	1	100
0.2	400	20	20.0	8	0.4	4	100
0.2	400	20	40.0	8	0.2	1	100
0.3	400	20	2.5	8	3.2	3	100
0.3	400	20	5.0	8	1.6	3	100
0.3	400	20	10.0	8	0.8	3	100
0.3	400	20	20.0	8	0.4	5	100
0.3	400	20	40.0	8	0.2	9	100

TABLE 2. Raw data for colony size simulations. The population parameters are shown along with the number of invasions and the number of simulations. Note that simulations where both pathogens went extinct have been removed (100 simulations were originally run for each parameter set). β is the transmission rate, n is colony size, m is the number of colonies and N is the total population size.

β	n	m	Area ($\times 1000 \text{ km}^2$)	N ($\times 1000$)	Density (km^{-2})	Invasions	Sims
0.1	100	20	2.5	2	0.8	4	88
0.1	200	20	5.0	4	0.8	5	100
0.1	400	20	10.0	8	0.8	2	100
0.1	800	20	20.0	16	0.8	0	100
0.1	1600	20	40.0	32	0.8	55	100
0.2	100	20	2.5	2	0.8	3	92
0.2	200	20	5.0	4	0.8	6	100
0.2	400	20	10.0	8	0.8	0	100
0.2	800	20	20.0	16	0.8	39	100
0.2	1600	20	40.0	32	0.8	95	100
0.3	100	20	2.5	2	0.8	1	91
0.3	200	20	5.0	4	0.8	4	100
0.3	400	20	10.0	8	0.8	7	100
0.3	800	20	20.0	16	0.8	67	100
0.3	1600	20	40.0	32	0.8	100	100

TABLE 3. Raw data for number of colonies simulations. The population parameters are shown along with the number of invasions and the number of simulations. Note that simulations where both pathogens went extinct have been removed (100 simulations were originally run for each parameter set). β is the transmission rate, n is colony size, m is the number of colonies and N is the total population size.

β	n	m	Area ($\times 1000 \text{ km}^2$)	N ($\times 1000$)	Density (km^{-2})	Invasions	Sims
0.1	400	5	2.5	2	0.8	0	97
0.1	400	10	5.0	4	0.8	0	100
0.1	400	20	10.0	8	0.8	2	100
0.1	400	40	20.0	16	0.8	2	100
0.1	400	80	40.0	32	0.8	7	100
0.2	400	5	2.5	2	0.8	2	99
0.2	400	10	5.0	4	0.8	1	100
0.2	400	20	10.0	8	0.8	0	100
0.2	400	40	20.0	16	0.8	3	100
0.2	400	80	40.0	32	0.8	11	100
0.3	400	5	2.5	2	0.8	1	96
0.3	400	10	5.0	4	0.8	2	100
0.3	400	20	10.0	8	0.8	7	100
0.3	400	40	20.0	16	0.8	15	100
0.3	400	80	40.0	32	0.8	17	100