578 **Appendix 1: Supporting information**

Treatment	r	K	m_1	m_2
L	-0.095 (-0.098 – -0.092)	NA	0.285 (0.273 – 0.300)	0.000 (0.000 – 0.001)
FL	-0.050 (-0.052 – -0.049)	NA	0.220 (0.203 – 0.238)	0.079 (0.069 – 0.089)
BL	-0.241 (-0.247 – -0.234)	NA	0.219 (0.202 – 0.236)	0.031 (0.022 – 0.042)
FBL	-0.122 (-0.124 – -0.118)	NA	0.292 (0.278 –0.304)	0.000 (0.000 –0.013)
H	0.247 (0.233 – 0.0261)	6.553 (6.453 – 6.653)	0.325 (0.303 – 0.350)	0.035 (0.025 – 0.046)
FH	0.147 (0.137 – 0.156)	6.762 (6.589 – 6.934)	0.152 (0.137 –0.168)	0.114 (0.103 –0.125)
BH	0.219 (0.207 – 0.236)	7.904 (7.783 – 8.025)	0.369 (0.352 – 0.386)	0.014 (0.006 – 0.021)
FBH	0.185 (0.176 – 0.193)	3.397 (3.335 – 3.460)	0.211 (0.237 – 0.237)	0.161 (0.143 – 0.181)

579

580 **Table S1. Parameter estimates.** Maximum likelihood fits to experimental data from
581 treatments where aphids had L- low dispersal and H- high dispersal while alone or in the
582 presence of the following natural enemies: F- entomopathogenic fungus only, B- ladybird
583 beetle only, and FB- fungus and beetle combined. Parameters include r, growth rate of
584 aphids, K, carrying capacity of aphids, m_1, local migration rate, and m_2, long-distance
585 migration rate. Values in parentheses represent 95% confidence intervals using likelihood
586 ratio test. K could not be estimated in L treatments due to extinctions.

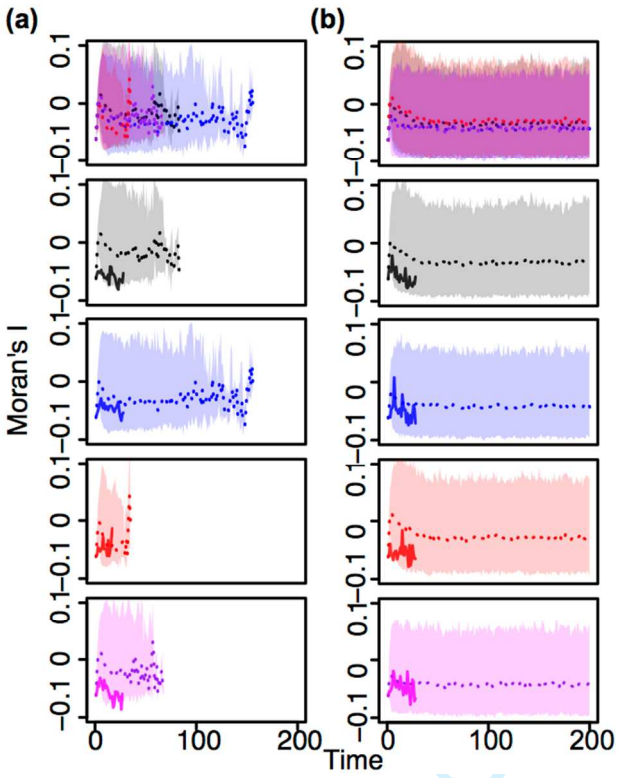

Fig. S1. Spatial clustering for 4X5 matrix. Plots of Moran's I for low **(a)** and high **(b)** dispersal treatments where aphids were alone (black, second row) or under control by fungal pathogen (blue, third row), beetle predator (red, fourth row), or both (purple, fifth row). In top row, all plots are overlaid to show differences between treatments. Mean Moran's I across all repetitions from experiment are plotted as solid lines and overlaid on top of mean model predictions (dotted lines) and 95% confidence intervals constructed from 1000 simulations of the model assuming a 4X5 spatial grid with edge effects, projected to 200 time steps. Moran's I > 0 indicates clustered, < 0 indicates dispersed and 0 = random spatial patterns.