

# Supplementary Information

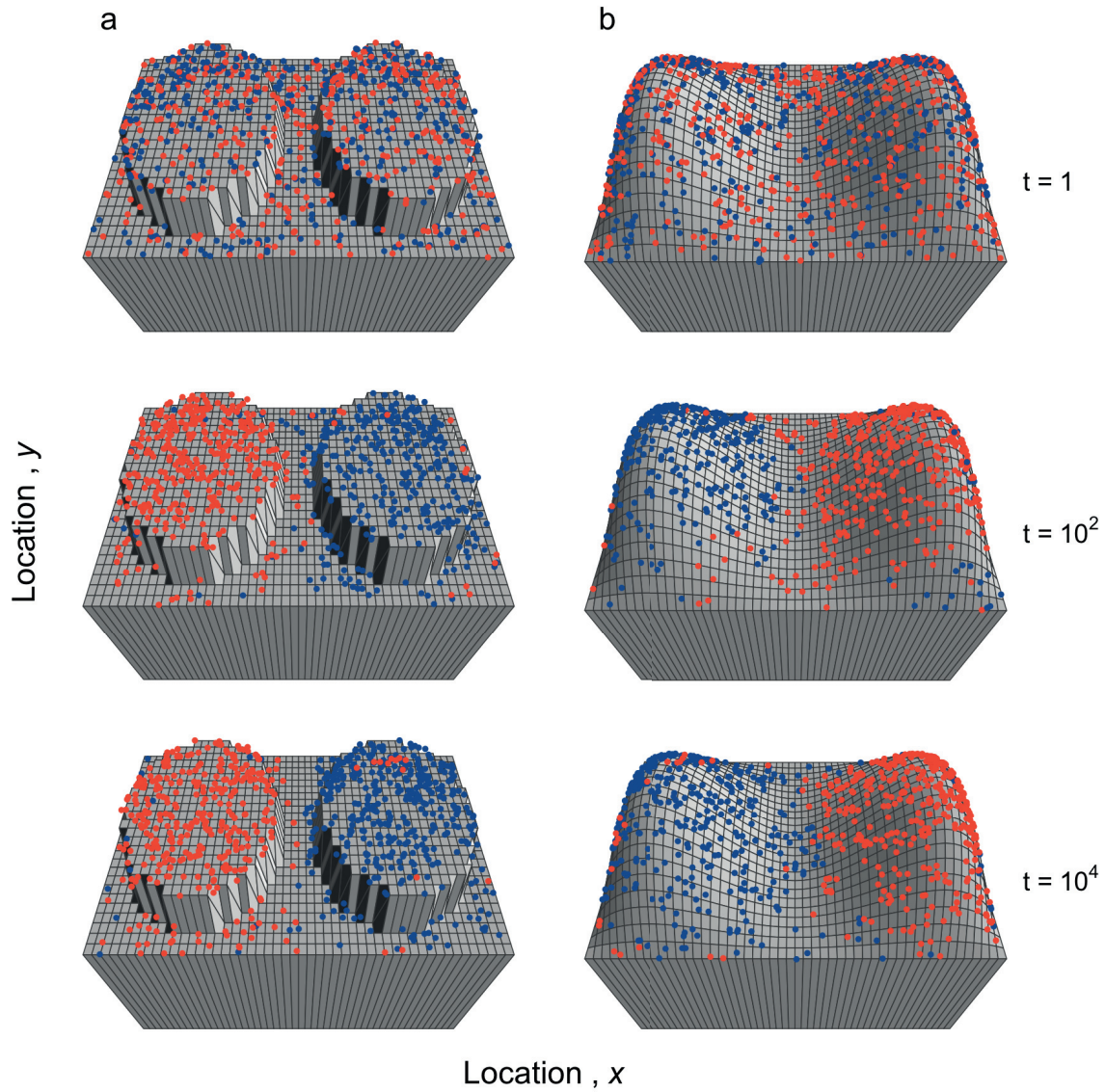


Figure S1: Sample runs in landscapes where resources are distributed unevenly either such that **(a)** there are two circular regions with uniformly elevated resource abundance or **(b)** there are two resource peaks defined by a simple polynomial function. The height of the surface indicates the resource abundance at each location. The levels of resource variation, as defined in Eq. 1, are  $\nu = 0.25$  in panel (a) and  $\nu = 0.5$  in panel (b). Rows correspond to time points indicated by corresponding labels. All other parameters and model assumptions are as in Fig. 1.

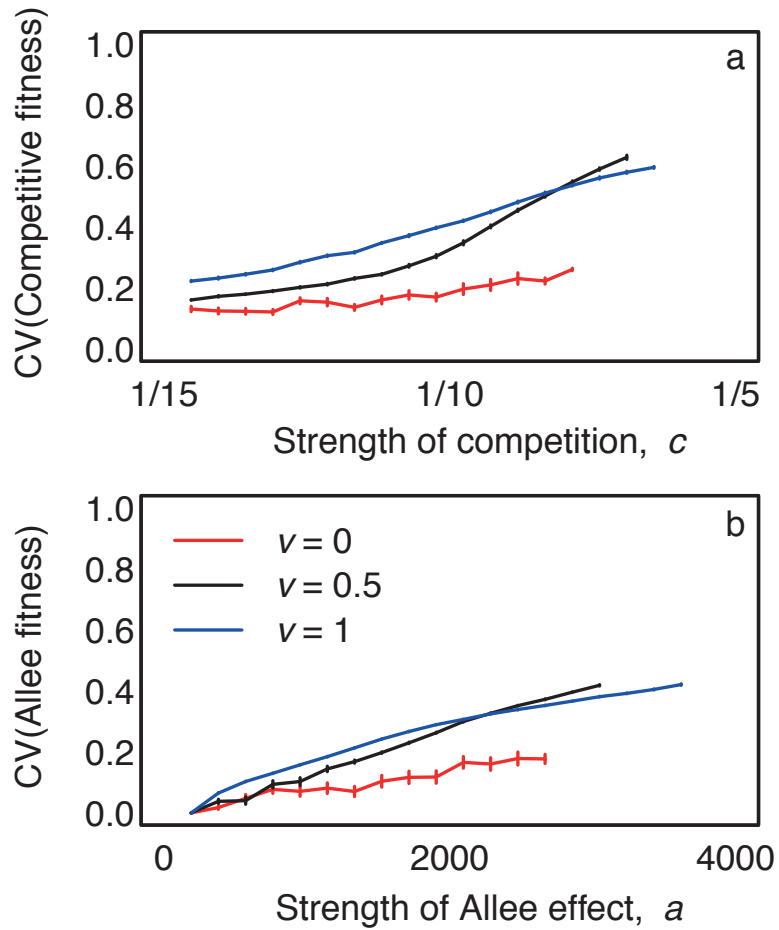


Figure S2: Coefficient of variation in competitive fitness as a function of the strength of competition (**a**) and in Allee fitness as a function of the strength of Allee effects (**b**). Curves correspond to different levels of spatial variation in resources. Curves terminate at different values on the right hand side because populations went extinct. All other parameters are as in Fig. 1.

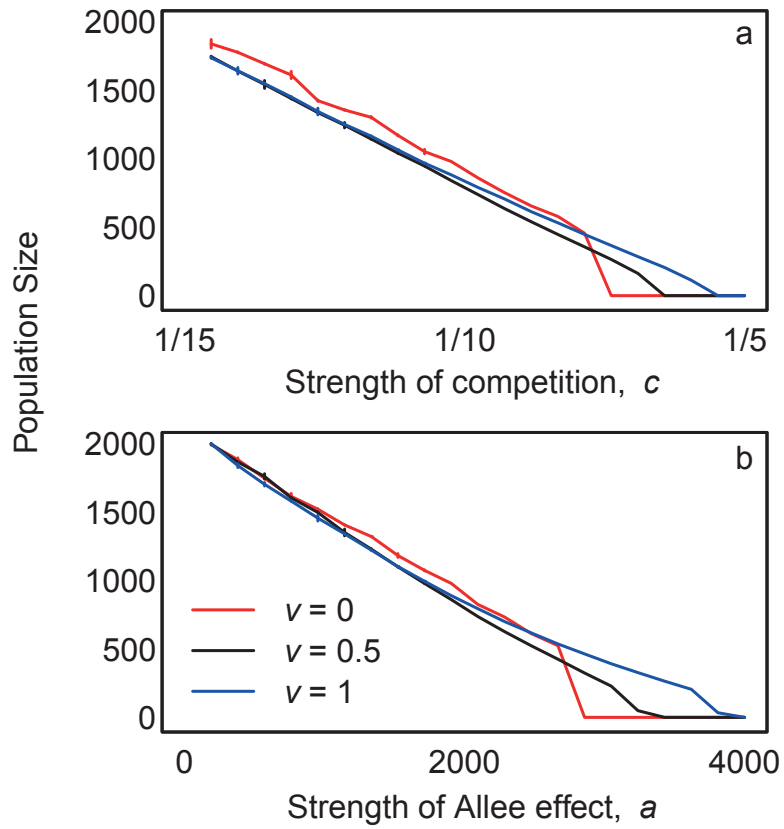


Figure S3: Population size for a range of strengths of competition (a) and strengths of Allee effects (b). Curves correspond to different levels of spatial variation in resources. All other parameters are as in Fig. 1.

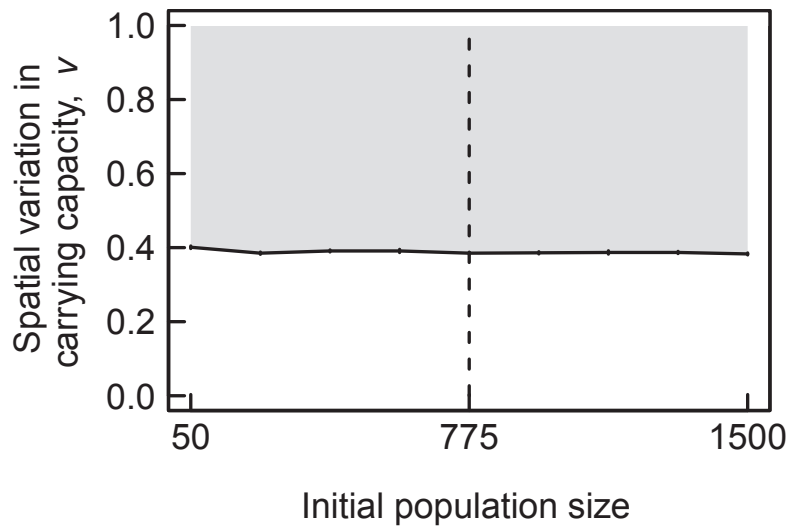


Figure S4: The minimum level of spatial variation in resources,  $v$ , required to stabilize co-existence for at least  $10^4$  generations with various initial population sizes. To create the black curve, we increase the spatial variation  $v$  until the average co-existence time across 10 replicate runs exceeds  $10^4$  generations. Vertical bars denote standard errors across these replicates. Grey shading denotes regions where co-existence is expected. Dashed vertical lines indicate values used in Fig. 1 of the main text. Because we are not interested in the probability that different species colonize each peak, but instead in characterizing whether co-existence occurs once such colonization has happened, we begin runs with two equally sized and spatially segregated populations. All other parameters are as in Fig. 1.