Single species victory in a two-site, two-species model of population dispersion JACK WADDELL, Department of Mathematics, University of Michigan, Ann Arbor, Michigan 48109-1043, LEN SANDER, Department of Physics, University of Michigan, Ann Arbor, Michigan 48109-1120, DAVID KESSLER, Department of Physics, Bar-Ilan University, Ramat-Gan IL52900, Israel — We study the behavior of two species, differentiated only by their dispersal rates in an environment providing heterogeneous growth rates. Previous deterministic studies have shown that the slower-dispersal species always drives the faster species to extinction, while stochastic studies show that the opposite case can occur given small enough population and spatial heterogeneity. Other models of similar systems demonstrate the existence of an optimum dispersal rate, suggesting that distinguishing the species as faster or slower is insufficient. We here study the interface of these models for a small spatial system and determine the conditions of stability for a single species outcome.

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