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Steve Kirkland, Chi-Kwong Li and Sebastian Schreiber* (sjs@math.wm.edu), Department of Mathematics, The College of William and Mary, Williamsburg, VA 23187. *The evolution of dispersal in patchy environments.*

Plants and animals often live in landscapes where environmental conditions vary from patch to patch. Since the fecundity and survivorship of an individual depends on these conditions, an organism may decrease or increase its fitness by dispersing across the environment. To better understand the evolution of dispersal, we study difference equation models of populations living in a landscape consisting of k patches. For competing asexual populations whose likelihoods of dispersing is patch independent, we prove that the slower dispersing population (i.e. the population with the smaller dispersal probability) displaces the faster dispersing population. Alternatively, for populations whose likelihoods of dispersal are patch specific, we prove that there is a one parameter family of strategies that when adopted by a population resists all invasion attempts by populations playing other strategies. Since these results rely on the absence of environmental fluctuations and genetics, I will discuss how these two factors can significantly alter the preceding predictions. (Received August 30, 2005)