1067-35-776 **Robert Stephen Cantrell*** (rsc@math.miami.edu), Department of Mathematics, The University of Miami, Coral Gables, FL 33124, and **Chris Cosner**, **Yuan Lou** and **Chao Xie**.

Random dispersal versus fitness-dependent dispersal.

We discuss a quasi-linear spatially heterogeneous reaction-diffusion-advection model for competition of two biological species in a bounded habitat. The species are assumed to be ecologically identical but to employ different dispersal strategies. Species 1 disperses solely on the basis of diffusing randomly throughout the habitat. Species 2 supplements the random component of its motion by advecting up the gradient of fitness; i.e., the spatially dependent local per capita growth rate discounted by the population densities of the two species. Both species are subject to no-flux conditions at the boundary of the habitat. We examine the dynamics of this system as the diffusion and advection parameters vary and draw conclusions about the relative efficacy of the two dispersal strategies. (Received September 14, 2010)