962-92-570 **Robert S Cantrell*** (rsc@math.miami.edu), Department of Mathematics, The University of Miami, Coral Gables, FL 33124, and **George C Cosner** (gcc@math.miami.edu), Department of Mathematics, The University of Miami, Coral gables, FL 33124. *Conditional persistence in logistic models via nonlinear diffusion.*

A nonlinear diffusion process modeling aggregative dispersal is combined with local (in space) population dynamics given by a logistic equation and the resulting growth-dispersal model is analyzed. The nonlinear diffusion process models aggregation via a diffusion coefficient which is decreasing with respect to the population density at low densities. This mechanism is similar to area-restricted search, but it is applied to conspecifics rather than prey. The analysis shows that in some cases the models predict a threshold effect similar to an Allee effect. That is, for some parameter ranges, the models predict a form of conditional persistence where small populations go extinct but large populations persist.(Logistic equations without diffusion or with nonaggregative diffusion predict either unconditional persistence or unconditional extinction.) Furthermore,the minimum patch size needed to sustain an existing population at moderate to high densities may be smaller than the minimum patch needed for invasibility by a small population. The tradeoff is that if a population is inhabiting a large patch whose size is reduced below the size needed to sustain any population, then the population in the patch can be expected to experience a sudden crash rather than steady decline. (Received September 15, 2000)