

998-92-173

Robert Stephen Cantrell* (rsc@math.miami.edu), Department of Mathematics, The University of Miami, Coral Gables, FL 33124, and **Chris Cosner** (gcc@math.miami.edu), Department of Mathematics, The University of Miami, Coral Gables, FL 33124. *Density dependent behavior at habitat boundaries and the Allee effect.*

We study a model for the dynamics of a biological species in an isolated bounded habitat. The particular modeling regime in question is a diffusive logistic equation for the population density of the species in the habitat, augmented by a nonlinear condition on the density along the boundary of the habitat. The boundary condition is designed to reflect a reduction in the tendency of the members of the species to leave the habitat as the density of conspecifics increases near the boundary of the habitat. This work is motivated by empirical work by the ecologist Ilkka Hanski and his collaborators on the Glanville fritillary butterfly suggesting that density dependent emigration is a mechanism for the Allee effect. (Received February 24, 2004)