Meeting: 1003, Atlanta, Georgia, SS 18A, AMS-SIAM Special Session on Recent Advances in Mathematical Ecology, I

1003-92-886 **Azmy S. Ackleh*** (ackleh@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, and **Kazufumi Ito** (kito@unity.ncsu.edu), Department of Mathematics, North Carolina State University, Raleigh, LA 27695-8205. *A hierarchical size-structured population model.*

We present a hierarchical size-structured population model with growth, mortality and reproduction rates which depend on a function of the population density (environment). We give an example to show that if the growth rate is not always a decreasing function of the environment (e.g., a growth which exhibits the Allee effect) the emergence of a singular solution which contains a Dirac delta mass component is possible, even if the vital rates of the individual and the initial data are smooth functions. Therefore, we study the existence of measure-valued solutions. (Received September 30, 2004)