962-92-766 **Azmy S. Ackleh*** (ackleh@louisiana.edu), P.O. Box 41010, Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, **H. T. Banks** (htbanks@math.ncsu.edu), P.O. Box 8205, Center for Research in Scientific Computation, North Carolina State University, Raleigh, NC 27695-8205, and **Keng Deng** (deng@louisiana.edu), P.O. 41010, Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010. *A coupled system of nonlinear size-structured populations.*

We consider a nonlinear hyperbolic initial-boundary value problem which models the evolution of N size-structured subpopulations competing for common resources. We develop an implicit finite difference scheme to approximate the solution of this model. The convergence of this approximation to a unique weak solution is obtained. The numerical results for a special case of this model suggest that when subpopulations are closed under reproduction, one subpopulation survives and the others go to extinction. Moreover, in the case of open reproduction, survival of more than one population is possible. (Received September 25, 2000)