1046-92-554 **Azmy S Ackleh*** (ackleh@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, **Keng Deng** (Deng@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, LA 70504-1010, and **Qihua Huang** (qxh6207@louisiana.edu), Department of Mathematics, University of Louisiana at Lafayette, Lafayette, 70504-1010. *Deterministic and stochastic juvenile-adult models with application to amphibians.*

We present a deterministic juveniles-adult model where juveniles are structured by age and adults are structured by size. As is the case for many amphibian populations, we assume that juveniles (tadpoles) compete for different resources than adults (frogs). An explicit finite difference method to approximate the model solution is developed. Convergence of this method to the unique weak solution of the model is discussed. A discrete stochastic model based on the deterministic finite difference method is developed taking into account the inherent randomness in birth, death and age/size changes. As the time, age and size mesh lengths are decreased a system of stochastic partial differential equations (SPDE) is derived. Numerical results comparing the deterministic model solution to the mean of the discrete stochastic model and the mean of the SPDE solutions are presented. (Received September 07, 2008)