Seventh Workshop Dynamical Systems Applied
to Biology and Natural Sciences DSABNS 2016
Évora, Portugal, February 2-5, 2016

WEAK ALLEE EFFECTS POPULATION GROWTH MODELS IN A RANDOM ENVIRONMENT

Clara Carlos[1,2]* and Carlos A. Braumann[1,3]

[1]Centro de Investigação em Matemática e Aplicações,
Instituto de Investigação e Formação Avançada, Universidade de Évora
[2]Escola Superior de Tecnologia do Barreiro, Instituto Politécnico de Setúbal
[2]Departamento de Matemática, Escola de Ciências e Tecnologia, Universidade de Évora

clara.carlos@estbarreiro.ips.pt (*corresponding author), braumann@uevora.pt

ABSTRACT

Based on a deterministic model of population growth with weak Allee effects, we propose a general stochastic model that incorporates environmental random fluctuations in the growth process. We study the model properties, existence and uniqueness of solution, the stationary behavior and mean and variance of the time to extinction of the population. We then consider as an example the particular case of a stochastic model with Allee effects based on the classic logistic model.

Acknowledgements

Both researchers belong to the Centro de Investigação em Matemática e Aplicações, Universidade de Évora, a researh centre supported by FCT (Fundação para a Ciência e a Tecnologia, Portugal).

 ISBN: 978-989-98750-2-9