



## Foreword

# Alcalá 2nd International Conference on Mathematical Ecology (AICME II)

The Alcalá 2nd International Conference on Mathematical Ecology (AICME II) was held at the University of Alcalá de Henares (Madrid), Spain, on September 5–9, 2003 (<http://euromed-biomath.aicme.free.fr>), as a follow-up to the first AICME held in 1998. More than 250 participants from around the world attended this meeting. A wide spectrum of the main topics of mathematical and theoretical ecology was presented during plenary and specialized scientific sessions.

The AICME Organizing Committee recommended a set of articles presented at the conference to constitute special issues in several journals, including this issue in *Mathematical Biosciences* which corresponds to the sessions of epidemiology and stochastic models.

The use of the type-reproduction number  $T$  for an infectious disease is extended in the paper by J.A.P. Heesterbeek and M.G. Roberts as an indicator of control effort required in a system where multiple types of individuals are recognised when control targets a specific type.

Ezio Venturino studies a symbiotic community subject to a disease, reaching the counter-intuitive result that in some cases the disease seems to have a positive effect on the environment, which concurs with some field experiments.

The contribution by J.M. Ireland, B.D. Mestel and R.A. Norman develops an SIR model with density dependence on the death rate and seasonality of the birth rate. This study is performed out of the average value of the seasonal term and applied to two examples, Cowpox in bank voles and rabbit haemorrhagic disease in rabbits.

The contribution by Julien Arino, Richard Jordan and Pauline Van Den Driessche describes the spread of an infectious disease across a landscape by considering the movement of host individuals of multiple species over a range of spatial scales.

Frank Hilker, Michel Langlais, Sergei Petrovskii and Horst Malchow present a detailed study of a reaction-diffusion model for spatiotemporal spread of feline immunodeficiency virus (FIV) in a population of cats, where the role of an Allee effect in the dynamics is studied.

In the frame of a general model for the population growth in a randomly fluctuating environment, Carlos Braumann proves that Itô and Stratonovich calculi yield exactly the same solution

of the corresponding stochastic differential equation provided that average growth rates in each case are adequately interpreted.

Ryszard Rudnicki and Katarzyna Pichór analyse the influence of various stochastic perturbations on a deterministic Lotka–Volterra model, studying the long-term behaviour of both trajectories and distributions of the solutions.

The paper by M. Mota, I. del Puerto and A. Ramos deals with a Galton–Watson branching process for a bisexual population with population-size-dependent mating, where the results are applied to problems involved in repopulating environments with species that have locally gone extinct.

The paper by Tetsuo Fujimagari presents an explanation of the phenomenon of periodiclike population dynamics by means of simple models of a delayed density-dependent branching process. The effects of randomly changing stationary environments on the population dynamics are also considered.

Luis Sanz and Rafael Bravo de la Parra consider multiregional models for population dynamics and study these under the influence of environmental stochasticity for the case where migration processes are fast compared to demographic processes.

An analysis of the fractal dimension of time series of bird population data is developed in the contribution by Alfonso Garmendia and Adela Salvador, leading to further development and application of the Hurst coefficient.

Ovide Arino was a person of extraordinary human quality in addition to being an extremely brilliant scientist. Information on his over 150 published articles and about 60 supervised theses can be found in <http://euromedbiomath.ovid.free.fr/>. He worked tirelessly in favour of the field of biomathematics for more than 20 years, putting aside personal ambitions and never departing from his astonishingly good humour. Thanks to this, he succeeded in bringing together many people from around the world, ranging from scientific leaders in the field to recently graduated students. This is undoubtedly the most valuable of the many jewels of his legacy. The Alcalá International Conferences on Mathematical Ecology would never have taken place without his outstanding scientific and human support. Ovide died on September 29, 2003, but will live forever in our memories.

This issue is dedicated to his memory.

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Received 8 February 2007; accepted 8 February 2007