FROM THE GUEST EDITOR

This Special Issue of *Mathematical Biosciences and Engineering* (MBE) contains a few of the papers presented at a special session in Mathematical Biology at the Regional Meeting of the American Mathematical Society, held in Lincoln, Nebraska, on October 21-23, 2005. The AMS meeting was preceded by a 2-day workshop on educational issues in mathematical biology, organized by Glenn Ledder. Many of the visitors attended both meetings, and therefore the five-day period was an enriching, double-barreled, math biology experience for nearly everyone. Near the end of the session the Editor-in-Chief of MBE, Yang Kuang, asked if we would be willing to collect together some of the papers from the special session for an issue of MBE.

We extended a call for papers to all of the participants, inviting them to submit a paper based on their talk or based on some aspect of research relating to their talk. Eight papers were eventually submitted and rigorously refereed according to MBE guidelines, and they make up the content of this Special Issue.

A few of the papers at the conference focused on neuron models, and one is contained in this issue-Chris Elmer's paper on discrete traveling waves in nerve axons. However, the main theme of the session was mathematical ecology, and the remaining papers are in that area. Glenn Ledder's paper discusses new details of the asymptotics of the classic spruce-budworm problem; he identifies different scenarios based on the size of the dimensionless parameters in the model. Roger Nisbet, Kurt Anderson, Edward McCauley, and Mark Lewis present a theory that describes the dynamics of populations in a medium with strong unidirectional flow, such as a stream or river, which is modeled by advection. Andrew Whittle, Suzanne Lenhart, and Lou Gross investigate the optimal control of invasive plants based on constraints such as budgets, effort, and location of the efforts. Two papers involve modeling the dynamics of insect populations under predation pressure; temperature and variable food quality play a crucial role in their development, as does their level of vigilance (David Logan, Bill Wolesensky, and Tony Joern). The other model (Bill Wolesenky and David Logan) incorporates stochasticity, state-dependent risks, and trade-offs between foraging effort and predation risk. Hao Wang and Yang Kuang take a theoretical look at lemming populations and show how large, seasonal fluctuations, which are usually modeled by nonautonomous equations, can be captured by the dynamics of an autonomous system. And, finally, Guangyu Sui, Meng Fan, Iralkli Loladze, and Yang Kuang introduce a discrete analog of a continuous stoichiometric plant-herbivore system and compare the dynamics of the continuous and the discrete model, especially examining the question of the robustness of the dynamics to time discretization.

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David Logan