ECOLOGICAL MODELS AND DYNAMICS: AN INTERACTIVE TEXTBOOK.

By Roger Schmitz. New York: Garland Science. Taylor & Francis Group. $50.00 (CD-ROM and Booklet). CD-ROM Contents: Chapters 1–10 of *Ecological Models and Dynamics* in PowerPoint and PDF; Interactive PowerPoint, Mathcad®, Acrobat®, and Excel files and LabVIEW™ executables; LabVIEW™ runtime engine installer. [Opens in PowerPoint and PDF format.] ISBN: 978-0-8153-4426-1. 2009.

A profusion of textbooks exist for advanced undergraduate or graduate-level courses in theoretical ecology. As with any field, a select few titles are in common use and new offerings must distinguish themselves in increasingly pronounced ways. Enter Roger Schmitz's computer-based text for ecological modeling, existing entirely as a duplicate set of PDF and PowerPoint slides with hyperlinks to interactive exercises. In principle, the electronic textbook is an overdue break from convention, one that promises to integrate passive instruction and inquiry-based learning in the millennial mode of information consumption.

In practice, this volume is an oddball for reasons even a new format cannot escape. First, its intended audience appears to be departments of applied mathematics rather than ecology. However, neither the title nor the introductory chapter gives such indication. Second, the introduction presents an unusual use of first person narrative in a Victorian style, a device that is maintained throughout the text. The effect is at times engaging, but generally contributes to the textbook's third detractor, its lack of authority. The author's command of mathematics is evident, but his connection to ecology is not. Although typographical errors are common in all chapters, the attribution of Gause's foundational data on protozoan population dynamics to "Grause" belies a morbid distance from the subject. The notable poverty of references is an additional detractor.

Despite its weaknesses, this electronic textbook does provide a quick summary of a large breadth of models in ecology and maintains the focus (promised in the title) on dynamics. Chapters are organized in a biologically hierarchical structure from single species to communities that is easy to follow. Some of the interactive exercises use an included simulation platform; others require Mathcad. The exercises are generally interesting and successfully recapitulate the usual exploration of dynamical behaviors in simple ecological models. In the hands of an instructor familiar with ecology, this brief electronic textbook and its accompanying interactive modules might serve well as supporting material for a survey of modeling in biology.

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A PRIMER OF ECOLOGY WITH R. *Use R!*

By M. Henry H. Stevens. New York: Springer. $64.95 (paper). xvi + 401 p.; ill.; index. ISBN: 978-0-387-89881-0 (pb); 978-0-387-89882-7 (eb). 2009.

This volume fills an important niche in the ecology textbook community. Like other primers, this book covers many of the core concepts of ecology, particularly population ecology, but Stevens goes into greater depth, presenting many of the complexities of core ecological processes. For example, the text contains a thorough treatment of Lotka-Volterra competition models, including methods for analyzing multiple basins of attraction (i.e., alternate stable states). However, the real novelty of this volume is the incorporation of the computer programming language R into the study of ecological processes. Using this higher level programming language, Stevens guides readers to a fuller understanding of core ecological concepts through modeling and analysis of ecologically relevant data. Additionally, *A Primer of Ecology with R* includes a clear and concise introduction to programming in R (Appendixes A and B) that will bring novices up to speed and perhaps even teach experienced R users a few new tricks.

Owing to the greater depth Stevens plumbs, the text requires a patient reader who will review the R code included, run the models and simulations, and take time to interpret the output. Although this is not an unreasonable expectation, it does counter the author's hope that the text can be used while ignoring the R code. Writing the code and interpreting the results are both important aspects of understanding the ecological concepts and, barring this, the text loses some of its distinction from other publications.

A Primer of Ecology with R is an excellent volume for graduate-level courses in ecology and will be useful to ecologists who desire to refamiliarize themselves with core ecological concepts while learning computational analysis and modeling techniques.

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THE THEORY OF ISLAND BIOGEOGRAPHY REVISITED.

Edited by Jonathan B. Losos and Robert E. Ricklefs. Princeton (New Jersey): Princeton University Press. $99.50 (hardcover); $49.50 (paper). xvii + 476 p.; ill.; index. ISBN: 978-0-691-13652-3 (hc); 978-0-691-13653-0 (pb). 2010.

Science often progresses through paradigm shifts. This edited volume of 16 chapters marks the 40th anniversary of one of the most profound paradigms shifts in biogeography, one that also must rank highly in ecology and conservation biology. In a paper published in 1963, followed by a book in 1967, Robert MacArthur and Edward O. Wilson

proposed a dramatic new way of viewing island biotas, in which species richness was characterized by colonization and extinction operating on a short time scale, leading to an equilibrium in species richness accompanied by frequent turnover in individual species. In contrast to preceding views that emphasized stability and speciation in island biotas, this led to investigations that showed that species richness is often not fixed, but rather is influenced by such factors as the degree of isolation and area of the island, and the number of species in the source area. In response to the new model, biogeographers sought to measure the impact of the relevant processes, ecologists began to view continental populations as occurring in "habitat islands," and conservation biologists applied the theory to increasingly island-like fragments of habitats, often on continents. For much of the last 40 years, for some biologists, especially many ecologists and conservationists, "biogeography" almost became synonymous with MacArthur and Wilson's equilibrium model of island biogeography.

The chapters of this book, resulting from a symposium that marked this 40th anniversary, reflect the legacy of MacArthur and Wilson's theory in many respects. Several chapters deal with the history of development and application of the theory, pointing out what we learned and what we still do not know about the patterns and processes that it highlighted. Insightful critiques by Schoener, Lomolino et al., Simberloff and Collins, Hubbell, and Velland and Orrock emphasize a largely ecological approach that harmonizes well with the original model, while extending into studies of individual species and into population genetics (Clegg). Several excellent chapters pick up the theme of habitat fragmentation and its impact on conservation of biotic diversity, using this perspective to understand such topics as metapopulation dynamics (Hanski), trophic cascades (Terborgh), the effects of surrounding degraded habitat (Laurence), and food webs (Holt).

If the volume included only these papers, it would deserve to be widely read and heavily cited. However, the editors recognized that another major paradigm shift is now taking place in island biogeography, and many of the chapters highlight that shift. Biological diversification was briefly mentioned by MacArthur and Wilson, but for several decades was barely discussed or ignored by most users of their theory. As several chapters in this volume show, recent studies have demonstrated that the dynamics of species richness on oceanic islands is often dominated by local speciation, and the chapters by Ricklefs, Grant and Grant, Losos and Parent, and Gillespie and Baldwin describe island systems that are progressively more thoroughly dominated by indigenous speciation. In the most far-reaching chapters, Whittaker et al. further develop their new model in which biological diversification operates on the same time scale as the rise and fall of volcanic oceanic islands, demonstrating that patterns of biological diversity are often thoroughly intertwined with the geological histories of the islands on which they live. In this model, rates of colonization and extinction are not rapid, but instead are appropriately measured on the same time scale as geological processes.

Together, these chapters lead to a view in which biodiversity on nearshore islands and in continental habitat fragments "behave" as modeled by MacArthur and Wilson, but the biotas of many islands—those thousands that are scattered widely over the world's oceans—are dynamic on a vastly longer time scale, and the story of their biotic richness, community assembly, and ecology is heavily influenced by in situ evolution. Perhaps not surprisingly, this new view, while not in any sense falsifying MacArthur and Wilson's brilliant insights but rather building on them, takes us closer to the view expressed by two earlier biogeographers who described the process of speciation among animals living in oceanic archipelagoes—Charles Darwin and Alfred Russel Wallace. Science often progresses though paradigm shifts, but sometimes does so by returning to its roots.

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Ecology and Evolution of Parasitism.
Edited by Frédéric Thomas, Jean-François Guégan, and François Renaud. Oxford and New York: Oxford University Press. $150.00 (hardcover); $70.00 (paper). xiii + 224 p.; ill.; index. ISBN: 978-0-19-953532-3 (hc); 978-0-19-953533-0 (pb). [Translation of *Écologie et évolution des systèmes parasites*, De Boeck and Larcier, Bruxelles, Belgium, 2007.] 2009.

This edited volume does a good job of summarizing recent work on the ecology and evolution of parasites, which represent at least half of all living organisms. Nine chapters range in subject matter from ecological immunology to conservation biology. The book contains an excellent appendix that reviews molecular methods and evolutionary genetics. The appendix alone makes this publication a useful resource, particularly for students.

As expected for a translated volume, there are a few mistakes. For example, Box 3.1 reviews Møller's classic experiment, in which he cross-fostered swallow nestlings after they "eclosed" (rather than hatched) in order to study the genetics of resistance to "ticks" (rather than *Ornithonyssus* mites). But such