in more detail for this group. Strict analytical and experimental work should concentrate on mechanisms of plant defence, factors of dispersal, and strategies of resource use. The book by Herbert Nickel will help to identify rewarding ecological situations.

The book by Herbert Nickel is an exemplary approach to biodiversity. The book is a highly welcome synthesis and source of references. Clearly, it should be in all scientific libraries and on the bookshelves of all students of biodiversity—ecologists, entomologists, botanists or laymen.

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Food webs
Pimm, S.L. University of Chicago Press, Chicago, 1982/2002, 219 pages, 65 drawings, 24 tables, US$25, ISBN: 0-226-66832-0

The late 1970s saw a sudden eruption in publications on food webs. This was not only caused by new data being available (due to quantifying studies following Odum's "energy flow in ecosystems"-concept), but also by increasing microcomputer power. Permutation and resampling procedures as well as difference equation modelling and stability analysis became accessible also to non-engineering scientists at that time. Thus armed, Stuart Pimm in 1982 set out to explore the marvels of food web structure in his book "Food Webs". His main method of investigation was the computer-aided random construction of food webs within biologically reasonable limits (e.g. no loops, singularities).

By 2002, these techniques are (almost) commonplace to ecologists, nevertheless the publisher decided to surf the retro-wave and re-print Pimm's Food Webs, despite new volumes reviewing and extending Pimm's leading work from the 1980s (e.g. Polis 1996: Food Webs: Integration of Patterns & Dynamics, Kluwer or Cohen/Briand/Newman 1990: Community Food Webs, Springer). Before looking at the 39-page-long "Foreword" to the new edition, let us look at the "old" bit first.

The first three chapters deal with definitions and the mentioned mathematical approaches. In Chapter 4, Pimm investigates the effect of diversity, connectance and species deletion stability on food web stability. Despite the real-world food web complexity easily exceeds hundreds of species in a given food web (as acknowledged in the foreword), Pimm uses 6–8 species "tinker-toy" models to drive *general* patterns. These are, e.g., the higher the connectance the lower the stability; remove a polyphagous herbivore and few further species will be lost; remove a polyphagous predator the opposite happens. Chapter 6 culminates in two take-home-messages: (1) The more species in a web, the lower the connectance, and (2) "no clear relationship between species number and stability has been demonstrated repeatedly" (p. 96).

In the next three chapters Pimm addresses patterns that are well investigated: length of food chains omnivory and compartments. He investigates in his usual style random food webs, comparing them to real ones, and concludes that food chains are shorter, omnivory scarcer and compartments rarer than expected at random. In the penultimate chapter Pimm illustrates patterns for which he cannot formulate a reasonable null model: predator–prey-ratios; the number of predators of a species vs. the number of species it preys upon; and niche overlap, i.e. prey-sharing. The last topic is of particular interest, as he enters a new technique, graph theory. Working, as it may, for his simple models, the mathematical representation for big webs is extremely sophisticated (reference given in foreword).

In the final chapter Pimm lists 12 food web patterns and tries to investigate both causes and consequences. The causes can be biological constraints or (rarely) energetic constraints. Mostly these patterns are explainable by interaction dynamics, i.e. along the lines of stability analysis in Lotka–Volterra-like food web models. As for consequences, Pimm argues that with succession species number increases and connectance decreases, leading to tighter nutrient cycling and thus lower resilience to perturbations.

Reading half a dozen joint papers with John Lawton from the 1980s the reader will find virtually all arguments and conclusions developed, and the book adds little to them. The new foreword shows little new, mainly experimental tests of (a)

energetic constraints on food chain length, (b) food chain length and nutrient cycling, as well as some references to new food web data. It does not reflect cutting edge science, mostly because the topic of food webs has disintegrated to specific trophic interactions. However, not even the few books recently reviewing progress in this field are cited, notably the work of Polis is virtually absent. Also, virtually all studies looking at control between trophic levels have not been considered by him, while those looking at interactions among all species in a web (or at least between functional groups within a web) are few and far between. Omitting current research themes in the foreword leaves the reader wondering about the usefulness of Pimm's ''old book''.

What is striking in this book is the difference between the enormous complexity of real food webs (and their notoriously difficult quantification) and the simplicity and poverty of species of the mathematically formulated model webs. In 1982, this was understandable (and due to lack of insufficient computer power), and the approach presented was cutting edge. In 2003, more sophisticated methods are available (see, e.g., Diekmann, Law and Metz, 2000: The geometry of ecological interactions, Cambridge University Press). Nowadays, scientists interested in food web structure and its causes and consequences will quickly browse through Pimm's Nature papers, Lawton's review on pattern in 1988, and the pending book of Polis, Power and Huxel with the same publisher and can skip Food Webs without major loss of information.

And, if allowed a comment on a technical aspect: if you nevertheless decide to buy the book, check if pages xxiii–xxxii are included. They were missing in my first and second copy of the book, and it took me half a year to get the pdf-version from the publisher (which can hence be found on my homepage).

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Applying ecological principles to land management.
V.H. Dale, R.A. Haeuber (Eds.); Springer, Berlin, 2001, 346 pages, 56 illustrations, 53.45 €, ISBN 0-387-95100-8

The main topic of this volume are ecological principles for land use and land management, that had been developed by the Ecological Society of America (ESA) Land Use Committee between 1996 and 1998 and were published in a report from the ESA in 1999. In 1998 and 1999 a series of four ESA symposia focussed on the application of those principles to various experiences with land use, land management and conservation. In this volume, the editors Virginia A. Dale and Richard A. Haeuber, the chair (1996–1999) and a member of the ESA Land Use Committee, respectively, have compiled papers presented at these symposia together with several invited contributions, to provide illustrations of how ecology can be integrated into land management. The book clearly reflects the scientific interests of Virginia A. Dale, a member of the Environmental Sciences Division at the Oak Ridge National Laboratory, and an adjunct professor of Mathematical Ecology and Landscape Ecology in the Department of Ecology and Evolutionary Biology at the University of Tennessee, viz. the study of ecological consequences of land-use change and environmental decision analysis.

The volume is divided into four parts. In Part I, the editors introduce the topic and give an account of the reasons, that led to the publication of this book. At the same time this part introduces the scientific background of the ecological principles and of eight guidelines for land use and land management derived from these principles. Examples and case studies on the application of the principles and guidelines are given in the six contributions of Part II. By means of those examples and case studies ecological theory and applied land use decision-making are linked. Using four examples, Part III presents techniques to consider future conditions of the land through modelling of future developments. Part IV treats the ways that people make decisions. Amongst others, one contribution of this part focusses on the role of the Local Governments up to the Federal Government of the United States in American land-use policy.

Through the arrangement and selection of the contributions the editors have compiled a coherent book, that in a vivid and demonstrative way will