



Book reviews

K. J. Gaston and J. I. Spicer (eds.) 2004. **Biodiversity: An Introduction** (Second Edition). Blackwell Science Ltd, a Blackwell Publishing Company, Padstow, Cornwall, 191 pp. ISBN 1-4051-1857-1, paperback, price: USD 49.95, GBP 19.99.

Biodiversity is the subject of world wide research and discussion. Many recent books include the word 'biodiversity' in their titles, and there are several specialized journals explicitly devoted to this subject (e.g., *Biodiversity and Conservation*, *Diversity and Distributions*). The study of biodiversity is broad in scope and depends greatly on many traditional fields of biology. For these reasons, an overview of the approaches used to study biodiversity should be equally broad and encompassing. *Biodiversity: An Introduction by Gaston and Spicer* is an attempt to provide such an overview.

This book contains six chapters describing different areas of biodiversity successfully. The book represents an authoritative, well-written, original account of current research in the field of biodiversity, and it has the potential to reach a broad audience of university students, researchers in different fields of biology and professional biologists world wide.

The first, introductory chapter of this book describes various aspects of biodiversity, with an example of Marion Island containing a charismatic diversity of birds and mammals which makes this chapter more attractive for students.

The second chapter introduces a new approach to the temporal aspects of biodiversity: how biodiversity has arisen, and how it changed in the past. This chapter also focuses on how human activities are responsible for biological diversification.

In chapter three, the authors address some issues regarding the effects of spatial scale on observed levels of biodiversity, spatial patterns in the occurrence of areas of extremely high and low biodiversity, spatial gradients and their mechanism and also spatial congruence in the biodiversity of different groups. In this chapter, the authors make a distinction between species richness at local and regional or large spatial scales.

Chapter four has the heading 'Does biodiversity matter?' The authors try to attract the attention of generations of natural historians, palaeobiologists and ecologists to biodiversity problems.

In chapter five, the authors draw our attention to the negative human impacts on biodiversity, with particular emphasis on the extinction of species.

The final chapter deals with topics such as the convention on biodiversity (section 1.2), identification, monitoring, in-situ conservation, ex-situ conservation and sustainable use of components of biological diversity.

As demonstrated above, this textbook comprehends all fundamental and up-to-date aspects of biodiversity. The book is written in a lucid, simple and readable style. This book contains 85 figures, 6 tables and brief summary at the end of each chapter and thus it offers an easy way to understanding the problems of biodiversity and protection. The text provides full descriptions of biodiversity around the globe. The bibliography is rich, most of the citations represent recent works on biodiversity. At the end of Chapter 6, we find a section on further reading which certainly helps the students who wish to know more about this topic.

No doubt that the authors have done an excellent job. We would recommend this book not only for the undergraduate and graduate students, but also for researchers and biologists seeking a good account of current approaches to the study of biodiversity.

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U. Sommer and B. Worm (eds.) 2002. **Competition and Coexistence. Ecological Studies, Vol. 161.** Springer Verlag, Berlin, 221 pp. (with 69 figures, 5 in color, and 2 tables). ISBN 3-540-43311-2, hardback, price: EUR 69.95.

One of the most classical problems in community ecology is the relative importance of predation and competition in maintaining coexistence. Current interest is focused

around their spatiotemporal pattern and interdependence, since it has been realised that these are not independent mechanisms (resource competition, a major type of competitive effects, is the resulting indirect effect of two predatory interactions). The legendary question of Hutchinson is much more complex than we believed decades ago – if we acknowledge at all that it is a real question. The editors of this book tried to present a very limited yet broad variety of research done in order to outline the colourful background of this problem. These include theoretical and experimental, terrestrial and marine, as well as plant and animal studies.

In the Introduction, the editors set the stage by reviewing the history of the problems in two parts: work done before and after 1990. Chapter 2 is one of the two theoretical issues written by J. Passarge and J. Huisman on well-mixed or simply structured habitat models. They discuss experimental and theoretical aspects for light competition in a vertically non-homogeneous environment. The second part of the chapter deals with the competitive coexistence generated by chaos in planktonic communities. Chapter 3 brings the spatial view to our mind: C. A. Klausmeier and D. Tilman present models of terrestrial plant communities and marine sessile organisms and emphasise the importance of spatially explicit models. In Chapter 4, U. Sommer switches the theoretical part of the book to the experimental one, by summarising laboratory microcosm and field mesocosm experiments in the community of passively moving plankton species in mixed reactors. In Chapter 5, M. E. Ritchie discusses actively moving animals, for example, the „moose and snowshoe hare system” with emphasis on habitat segregation and scaling problems. Maybe the most interesting chapter is the sixth one written by B. Worm and R. Karez on benthic rocky shore communities. The resource-ratio hypothesis, the competitive hierarchy hypothesis, and the discussion of intransitive competitive networks of species take us very close to the heart of community ecology. They have shown convincingly how diverse mechanisms are responsible for the coexistence of competitors even in a very restricted group of communities. Chapter 7, written by J. Fargione and D. Tilman, also presents a current problem linked to the old ones: the importance of belowground ecology in understanding aboveground questions.

The editors close the book in Chapter 8 by listing some key concepts in explaining the high diversity of species. These are tradeoffs, the intermediate disturbance hypothesis and its effects on predation and competition, spatial aspects, self-generated heterogeneity, exclusive resources of specialists, and slow exclusion (temporal aspects). They argue that the Hutchinson problem was

based mostly on oversimplified theoretical frameworks and highly artificial experiments. They argue that it is no wonder how many species we have. They are certainly right.

Similarly to most other edited books, there are some overlaps (e.g., the problem with the definition of intermediate disturbance hypothesis). However, regarding its net 218 pages, the book is very effective in presenting the variability of relevant approaches. Considering that libraries are full with literature on this topic, many interesting works and excellent researchers are necessarily left out of this work. The book is certainly an interesting and well-written menu of the competition-diversity problematics, and is recommended to graduated students and specialists as well.

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J. Kolbek, M. Šrůtek and E. O. Box. (eds.) 2003. **Forest Vegetation of Northeast Asia**. Geobotany 28. Kluwer Academic Publishers, Dordrecht, xii+462 pp. ISBN 1-4020-1370-1, hardback, price: EUR 200.00.

This book is the first overview in English on the forest vegetation of Northeast Asia, including eastern Siberia, Manchuria, Korea and northern Japan. This geographical region covers boreal and cool temperate zones, a fact explaining why South Korea and Honshu, the main Japanese island, are excluded from the survey. The authors came from the countries concerned, whereas quite a few contributions originate from the USA and the Czech Republic. This internationality of authorship explains some heterogeneity of the material, and differences between schools of vegetation science are quite apparent throughout. Botanical nomenclature also varies because Russian botanists use a species concept narrower than elsewhere in the region.

The book falls into 11 chapters. The Introduction (by the editors) informs the reader about the high cultural, ethnic and linguistic diversity of the region. The authors had to cope with this diversity in standardizing geographical

names, for example. Three general chapters follow. Box and Choi describe the climate, Košťák, Krestov and Okitsu overview the geological characteristics, whereas Qian, Krestov, Fu, Wang, Song and Chourmouzis introduce us into the phytogeography of NE Asia. The last one is absolutely necessary for a deeper understanding of the subsequent chapters. There is a short summary of floristic conditions, informing us about the unexpectedly high percentage of endemism (18.4%) within the area (most endemics represent families of *Asteraceae*, *Fabaceae*, *Ranunculaceae* and *Poaceae*). Based on these data, the 18 phytogeographical units distinguished by the authors are evaluated by nonmetric multidimensional scaling. The alternative analyses offer a comparison at genus and species levels.

As admitted by the editors in the Introduction, the methodology is not homogeneous over the different chapters. Krestov (Forest vegetation of easternmost Russia) and Qian, Yuan and Chou (Forest vegetation of northeast China) largely follow the principles of the forest typological school developed in Russia. Community types are therefore named as “*Picea jezoensis-Abies nephrolepis* forest” and so on. Okitsu (Forest vegetation of northern Japan and the southern Kurils) follows Braun-Blanquetian methods in descriptions (see data types in synoptic tables, for example). The names are typological throughout, whereas an Appendix provides cross references between the typological and the Zürich-Montpellier phytosociological nomenclature. None of these three chapters provide any numerical treatment of the data. This is not so with the following three chapters discussing the forest vegetation of North Korea (a relatively small region thus receiving much emphasis in this book). Kolbek, Jarolimek and Valachovič (Forest vegetation of the northern Korean Peninsula) provide the most detailed phytosociological treatment in the book, based on numerical classification of data; the large phytosociological tables attached in an Appendix. This chapter was the most enjoyable part for me, which is perhaps a biased view because the referee shares the experience of the authors in visiting the area. Šrútek, Kolbek, Jarolimek and Valachovič (Vegetation-environment relationships within and among selected natural forests in North Korea) provide an excellent numerical treatment (using CANOCO) of vegetation and environmental data. The vegetation gradient along the slopes of the most spectacular area, Paektu-San is evaluated through a complex approach by Šrútek, Kolbek and Lepš (Species and spatial structure of forests on the southeastern slope of Paektu-San, North Korea), with special emphasis on *Larix olgensis*. The closing chapter by Kolbek, Valachovič, Ermakov and Neuhäuslová (Comparison of forest syntaxa and

types in northeast Asia) provides a useful summary as a first attempt to synthesize results of the typological and phytosociological approaches.

Despite that the methodological treatment is diverse and the regional coverage is fairly unbalanced, the book is an indispensable source of information for forest ecologists and anyone else interested in the vegetation ecology of the Far East.

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J. Seckbach (ed.) 2002. **Symbiosis: Mechanisms and Model Systems**. Kluwer Academic Publishers, Dordrecht, 808 pp. ISBN 1-4020-0189-4, hardback, price: EUR 290.00, GBP 200.00, USD 319.00.

We know from classical biology that symbiosis is a mutually beneficial type of association between partner organisms and is represented, for example, by the relationship between algae and bivalves and between fungi and higher plants. Naturally, symbiosis is an *a priori* community level phenomenon that should not escape attention in ecological studies as well. Also, symbiosis has long been known to be responsible for the emergence of peculiar organisms, such as lichens, evolved as a result of an unusually close association between algae and fungi. However, extensive studies in the past decades radically modified our views on this phenomenon and revealed that symbiosis is a major source of novelty in eukaryotic evolution at a much lower organisational level than ever thought before: the cells. This book is concerned with the full range of possibilities, from intracellular symbiosis to interspecific mutualism, with ample information on all levels.

The book falls into eight sections, each containing three to 15 articles, and thus giving a total of 50 papers, written by more than 87 contributors from various countries. In a community ecology perspective, Section I is perhaps the most important. D. P. Zook discusses symbiotic systems as cornerstones in maintaining the biodiversity of the Earth, with several examples such as the dinoflagellatae symbionts of corals, or cyanobacterial symbionts in water ferns. P. Nardon and H. Charles have a contribution that must be read before any other chapter: they introduce us into the terminology of the subject and classify symbiotic interactions based on the relative morphological positions of partners and also on their taxonomic status. D. Secord's paper is the most relevant for the readers of our journal.

His paper gives a summary of the significance of symbiotic interactions in community ecology, with emphasis on the effect of symbiosis detected at population and community levels. The impact of symbiosis on agro-ecosystems and on invasions is also discussed briefly.

The subsequent sections illuminate various aspects of symbiotic relationships and perfectly illustrate the extreme diversity and complexity of the subject matter. Symbiosis is placed into a phylogenetic perspective in the section on „Origin and Evolution”. Without the contributions discussing the endosymbiotic origin of cell organelles, the early evolution of eukaryotes cannot be understood at all. The third section is concerned with bacteria and algae, whereas the next two include papers on fungal and lichen symbionts. Plant symbiosis is discussed in Section VI. For a terrestrial botanist, the papers on algae living on trees and the cyanobacterial symbionts in the coralloid roots of cycads appear the most interesting. The next section deals with protistan symbionts and as such, this is mostly recommended for hydrobiologists. The last

section, on the „Symbiosis in insects and higher animals” comprises about one-quarter of the entire book. This is not surprising, because animals, ranging from sponges and corals (in contradiction with the unfortunate title of the section) to insects and squids take part in an extreme variety of symbiotic interactions.

In summary, the editor, Dr Joseph Sekbach from Hebrew University, Jerusalem, made a very good job in bringing together the contributions covering various aspects of symbiosis. Frankly speaking, this is an extremely interesting book and must be present on the bookshelf of all open minded biologists. We can only hope that the essence of the contents will soon appear in university textbooks as well.

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