book review

A mangrove compendium

World atlas of mangroves, by Mark Spalding, Mami Kainuma and Lorna Collins (editors)
2010, Earthscan, 336 pp.ISBN: 9781844076574
Price: £65 (Hardback); http://www.earthscan.co.uk/

The *World atlas of mangroves*, an update to Spalding et al. (1997), is a must-have publication for everyone loving and working with, in, or near to mangroves. It celebrates the wonderful world of these beautiful forests with astonishing figures and photographs. The informative maps and tables provide captivating facts about the ecological and economic values of mangroves and the consequences of their loss.

The atlas scores with the presentation of recent findings on carbon sequestration, showing that mangroves store more carbon than tropical forests (Donato et al. 2011); and with the suitability of intact mangroves for protecting coastal regions against tsunamis (Wibisono and Suryadiputra 2006). This will arm (with powerful arguments) ecologists, conservation biologists and policy-makers, who urgently need to communicate this knowledge in order to increase public awareness and political willingness to protect and rehabilitate one of the most vulnerable ecological systems on earth.

As indicated by its title, the *World atlas of mangroves* gives a comprehensive overview of the global distribution of mangrove species at country level. A detailed description of the particular status of mangrove systems in each country, accompanied by information about their specific threats, level of degradation and extent of rehabilitation programs guides the reader through a multitude of distinct features, while keeping similarities and general principles in mind.

Mangrove experts of international repute contribute boxes on particular topics of interest, such as mangroves' responses to climate change (Gilman, Duke et al.) or their functioning in highly dynamic coastal regions (Fromard and Proisy). They summarise up-to-date research as well as the hot topics that will be developed in the near future. In addition, the annexes containing tree species descriptions, national species lists and country fact sheets serve as an excellent compendium and make this atlas perfect as a quickstart guide for students as well as experienced researchers approaching a new region.

Considering the presentation of global trends as the main purpose of the World Atlas Of Mangroves, this book fulfils expectations. Unnecessary uncertainties and errors in the introduction to the ecology of mangroves leave, however, a drop of bitterness. The first chapters (*Mangrove ecosystems* and *Mangroves and people*) notably omit explicit references to any publications. The authors state that these chapters and the boxes therein 'draw heavily' on the relevant literature, but information presented is confusing or even erroneous, and does not always reflect the content of the publications loosely mentioned at the end of each subchapter, nor established knowledge available in textbooks (e.g. Tomlinson 1986) or extended reviews (e.g. Feller et al. 2010). For example, the classification of mangroves into fringing mangroves, basin mangroves, and overwash mangroves is needlessly incomplete; it could be easily improved by following standard mangrove literature (e.g. Lugo & Snedaker 1974, Woodroffe 1992). The heterogeneous handling of outdated theories and debated hypotheses about the functioning of mangroves is also surprising. For instance, the editors correctly do away with the perspective that the land creates the capability for mangrove formation, but then present elevation and the subsequent gradient of inundation as the only factors driving patterns of species zonation. There are, however, four other major hypotheses to explain this striking feature: geomorphological influences, propagule dispersal, predation and species competition (see e.g. Smith III 1992 for detailed discussion). Further errors in the classification of aerating roots and also in the systematics and geographical distribution of some mangrove species have been already listed and

discussed in detail by Dahdouh-Guebas (2010). It remains a mystery why these chapters have not been written or carefully revised by the leading mangrove experts mentioned above, or the numerous others who contributed to this book with specific boxes.

This volume appears 14 years after *Mangroves – The forgotten forest between land and sea* (Mastaller 1997). It seems that the world has changed and the forgotten forest has been rediscovered. Obviously neither the simple existence of this remarkable ecosystem, nor its fascinating functioning based on adaptation to the harsh conditions of tidal zones, were sufficient to convince people that it is worth protecting mangroves against aquaculture, agriculture, land use and the many types of waste water we produce. The monetary expression of the value of mangroves (US$ 2000–9000 ha^{-1} yr^{-1} according to the statistics in this book), and the change from the ecological perspective to the human perspective in terms of coastal protection against hurricanes and tsunamis and in carbon sequestration, is necessary to improve public awareness about the importance of mangroves for our present life and a critical part of our response to the challenges of environmental changes, including sea level rise and climate change. The *World atlas of mangroves* is a strong contribution towards this goal and, I hope, another step towards ushering in a new era where mangroves are valued for their beauty in the same way as many rain forests or coral reefs.

In summary, if you are working in the field of mangrove conservation or related issues in the context of tropical coastal zones, or if your work is targeted towards practitioners, stakeholders or users of at-risk mangrove ecosystem services, the *World atlas of mangroves* is your book; it will support your daily work with easy-to-understand information and strong facts about the ecological and economic values of this forest. If you are a mangrove ecologist, this book should also be on your shelf because it provides you with a quick overview of mangrove distribution and current status on Earth. It also acts as an enormous source of suitable maps and material to round off your lectures. This should convince your students that mangrove research is a challenge, an urgent demand for mankind and that being involved is an accolade. On the other hand, if you are looking for a general text spanning the interdisciplinary aspects of mangrove ecology, this is not the book for you. The roots of this book largely come from geography and remote sensing. If you are searching for an up-to-date text about the present scientific understanding and recent findings in mangrove research, I recommend supplementing the atlas with textbooks, recent reviews or more detailed publications on mangrove ecosystems and people's depency on their health and functioning.

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Edited by Markus Eichhorn

book review

A comprehensive foundation for the application of biogeography to conservation

Conservation biogeography, by Richard J. Ladle and Robert J. Whittaker (editors)
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It is becoming increasingly clear that the diversity of plant and animal species in the world is continuing to decline in spite of ambitious targets set by governments to prevent this (Butchart et al. 2010). It is also becoming evident that the continued functioning of ecosystems depends on this diversity (Isbell et al. 2011). In order to conserve what is left of biodiversity, it is crucial that we understand the diversity of life and how it is distributed across the biomes and ecosystems of the world. Since understanding the distribution of biodiversity is a central tenet of biogeography, it seems obvious that the field of biogeography should be of central importance in conservation.

In this volume, Richard Ladle and Robert Whittaker bring together chapters by a number of biogeographers to summarise progress to date in applying the principles of biogeography to conservation and to identify areas where there is still work to be done. The book is a comprehensive but digestible summary of the field of conservation biogeography and should make essential reading, not only for the students at whom it is primarily aimed, but also for more experienced scientists. The editors profess at the outset that the aim was to achieve a degree of coherence among the chapters, an aim that is achieved remarkably well to give a very coherent text.

The first section of the book provides a brief but interesting history of the conservation movement and the contrasting values held by different sectors of this movement (Chapters 2 and 3), as well as some background to the field of conservation biogeography (Chapter 1). A distinction is made between approaches that focus on the composition of biological communities and those that focus on ecosystem function through an understanding of ecosystem processes such as nutrient cycling (p. 31). An interesting and growing field in ecology, which receives little attention in the book, uses the functional traits of species to explain the link between the composition of biological communities and the function of the ecosystems that contain them. Functional traits – such as body mass, diet, habitat affinity and development mode of animals, and height and photosynthetic pathway of plants – can help explain how species contribute to the processes underlying the functioning of ecosystems and can also help in predicting how ecosystems will respond to environmental change (McGill et al. 2006).

The second section reviews our current understanding of the distribution of biodiversity, summarises the history of the global protected areas network and describes the methods available for more systematically representing biodiversity in future extensions to this network. There is a strong terrestrial focus here, indeed throughout the entirety of the book, which the authors acknowledge and which is owing to a less complete understanding of the distribution of diversity in the oceans and in freshwater habitats. It is worth noting, though, that the Census of Marine Life, an ambitious $650 million project that finished recently, has made huge progress towards understanding the biogeography of the oceans

