

**Tropical Rainforests: Past, Present and Future** edited by Eldredge Bermingham, Christopher W. Dick & Craig Moritz (2005), vii + 745 pp., The University of Chicago Press, Chicago, USA. ISBN 0 226044 68 6 (pbk), USD 45.00/GBP 31.50.

Tropical rainforests have an incredible hold on the human imagination; their diversity, size and seeming vastness make them mysterious and at the same time intimately familiar. The current threats to this diversity also make these forests of great political and social interest. Our generation is probably the first to really wake up to the fact that biodiversity is disappearing all around us, and is certainly the last that will be able to do anything about it. The papers in this edited book look at the mechanisms that generate this diversity, which, from perspectives that range from palaeoecology to population genetics so holds us in thrall. The book is the result of a symposium held in 1998 at James Cook University in Cairns, Australia, that explored ways in which ecology and evolution could intersect and interact to increase understanding of Australia's rich rainforest habitats. It was later expanded with the addition of chapters dealing with the same topics, but for different rainforest regions, and all papers were updated and expanded prior to final publication. Thus, although at first glance it may seem to be the result of a meeting held long ago, the papers (or at least most of them) are fresh, up-to-date views of processes of interest to anyone studying the tropics. The editors have done a good job of choosing authors to compliment and expand the topics from the original symposium; there are papers here about the Neotropics, Africa and South-east Asia.

The book is divided into three sections, with an annoying final bibliography. The bibliography itself is great but it is often frustrating to use a multi-paper book with all the references at the end; this makes it difficult for students to use or for sending a copy of a single chapter to a colleague. The first section of the book is heavily biased towards the Neotropics; it covers a wide variety of ecological and evolutionary influences on the generation of species diversity over many different scales. The refugium theory for the generation of species diversity is refuted by most of the authors. There were pockets of rainforest but they clearly did not act as species pumps. Thank goodness we can now move on to try to really look at patterns of diversity rather than trying to fit everything into an untestable model based on little real evidence. Several of the themes that shine through these opening chapters strike real chords with me, and should with anyone interested in conservation and species diversity. The study of natural history in the field is critical as without field data theories are just words on

paper. We also need to support taxonomists in their studies of this diversity if we are ever to understand how it developed! Several of the authors stress the importance of ecotones; obsession with purity of habitat, the 'untouched virgin forest', may blind us to the importance of these transitional habitats for the conservation not only of tropical forests but of the mechanisms that generate diversity in general. A theme that should resonate with anyone who has worked in tropical forests is that diversity has developed in the context of interdependence, making complexity and unpredictability the rule, rather than minor, annoying exceptions!

The middle section of the book is composed of papers about the Australian wet tropics, one of the few extensively studied and intensively protected tropical ecosystems on Earth. The chapters provide an excellent overview of the history and ecology of the region. For anyone who wants everything in one place about Queensland, this is that place! This Australian section ends with a review of the conservation status of World Heritage sites, concluding that such listing is more than a paper process and really helps achieve conservation goals. The last section of the book has three papers, one detailing how evolutionary processes can be conserved, and two reviewing the quite alarming present and future threats to the two vast tropical regions of the world, South-east Asia and the Amazon. These two chapters should be in every conservationist's reprint drawer. I only hope we can look on them in the future as lines in the sand because we actually made science-based conservation work. This book has in it an enormous diversity of topics, an impressive bibliography (even if it is at the end!) and anyone interested in tropical diversity anywhere in the world should have a copy.

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**Plant Conservation – A Natural History Approach** edited by Gary A. Krupnik & W. John Kress (2005), xviii + 346 pp., The University of Chicago Press, Chicago, USA. ISBN 0 226455 13 0 (pbk), USD 30.00/GBP 21.00.

This review, a collection of contributions by different authors, highlights the variety of ways that natural history collections contribute to plant conservation. The underlying theme is summed up in the foreword by Daniel Janzen *How to conserve wild plants? Give the world the power to read them.* The first part of the book provides a framework for understanding plant diversity. This is followed by chapters on threats and consequences of plant extinctions and the causes of biodiversity loss. The final section describes how, using all the biological

information contained within natural history museums and botanic gardens, plant conservation action can be effectively undertaken.

The value that natural history collections have in the assessment of plant diversity is explored in detail, including the identification of priority habitats for conservation and the assessment of the conservation status of species at genetic, taxon and community levels. The collections serve as an encyclopedia of the earth's flora that must be available for people to read and use for conservation purposes. The management strategies described include *ex situ* plant conservation, which may unfortunately become increasingly necessary as an insurance mechanism given the scale of biodiversity loss, sustainable ecosystem management, implementation of the Convention on Biological Diversity, and grassroots conservation action.

The sustainable ecosystem chapters provide management models for coral reefs and sea grass communities. The chapters propose the use of indicator plants to predict the health and management requirements of marine and coastal ecosystems. Although interesting, I found these chapters sat somewhat oddly within the general context of the book. Natural history museums and botanic gardens contain vast amounts of information on the uses of plant species. This needs to be tapped to contribute to the sustainability of ecosystem use but is one topic scarcely explored within the book. As Kerry ten Kate and John Kress point out 'A goal in many national biodiversity strategies is to help alleviate poverty, to support sustainable livelihoods and to raise living standards'. Natural history collections are an important source of information to support such goals.

The role that individuals can play in plant conservation through membership of voluntary societies, contributing both their natural history expertise and personal commitment, is powerfully described by Stanwyn Shetler. The development of the native plant societies in the USA over the past century is described with the increasing need to 'transform the traditional, popular interest in wildflowers into an ardent concern for the whole native flora in the wild'. Grassroots action at a local level combined with effective education and lifestyle changes are needed to counteract the scenario that 'Species by species, the biotic bleeding will become a great gathering river that drains away the biotic lifeblood of a continent'.

This book provides an important contribution to the literature on plant conservation and a timely reminder for conservationists to use all the information already available within natural history collections. Measures to more rapidly read and utilise the centuries of accumulated information are being developed as natural history museums and botanic gardens collectively respond to

the ambitious targets of the CBD's Global Strategy for Plant Conservation.

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**Biological Diversity and Function in Soils** edited by Richard D. Bardgett, Michael B. Usher & David W. Hopkins (2005), xiv + 411 pp., Cambridge University Press, Cambridge, UK. ISBN 978 0 521 84709 4 (hbk) USD 130; ISBN 978 0 521 60987 9 (pbk) USD 65.

This journal typically deals with species of fauna and flora that we can see. But the trees, tigers, and thrushes that are usually found on these pages are utterly dependent upon fauna and flora that is too small for most of us to see with the naked eye. Furthermore, the biological diversity of our soils receives amazingly scant attention even from those who specialize in soils; they tend to focus much more on soil chemistry and distribution of soil types than they do on the biodiversity of soils.

Fortunately, this blind spot is now receiving attention from more ecologists. The book under review, part of the Cambridge University Press series of Ecological Reviews, contains 20 chapters with 65 contributors from all of the continents. The book is the proceedings of a 2003 Symposium of the British Ecological Society that had the theme *Biological Diversity and Function in Soils*.

Following a comprehensive introduction on new perspectives from current soil biodiversity research (which tends to focus on ecosystem functioning and ecosystem services such as carbon sequestration), the book then has three chapters describing the soil environment, five chapters on patterns and drivers of soil biodiversity, six chapters on consequences of soil biodiversity, and four chapters on the applications of soil biodiversity. The latter section focuses especially on restoration ecology and nature conservation, with a comprehensive chapter on the latter by Michael Usher. Providing a comprehensive overview of soil biodiversity, the book concludes by focusing especially on the functional role of soil biota, especially in terms of resilience, linkages between aboveground and belowground biodiversity, the impact of biodiversity on individual organisms, and the complexity of soil biodiversity. A perhaps surprising conclusion is that biodiversity in terms of species richness is of little functional consequence, but the functional repertoire of the soil biota is what really counts. Soil food webs often work differently than those aboveground, but it is clear that we still have much to learn about soil biodiversity. Less than 5% of the soil-dwelling species have been described, and one estimate quoted in the