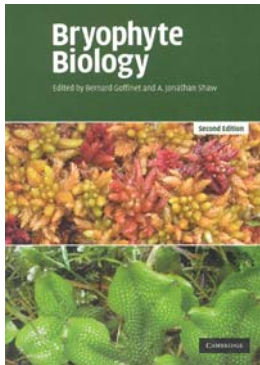


Book Reviews

doi:10.1093/aob/mcp109



Bryophyte biology, 2nd edn
Goffinet B, Shaw AJ. eds. 2009.
Cambridge: Cambridge University
Press.
£35 (paperback). 565 pp.

Our last review, of the first edition, was broadly favourable, but made several suggestions that have not been taken up. Doubtless the editors had many conflicts to resolve, but while this compilation may prove enormously frustrating for the non-expert, it certainly

does fit the back cover description ‘..an authoritative treatment of bryophyte biology, with rich citation of the current literature, suitable for advanced students and researchers’. There remain no references to being ‘accessible and well illustrated’ (in the first edition), so the editors have obviously decided to pitch to the cognoscenti.

The book achieves its aims – providing the reader has an understanding of the meaning of terms such as ‘prosenchymatous’, ‘anacrogynous’, ‘Bauplan’, ‘superincumbent’ and ‘nematodontous’ or access to a good bryological dictionary, there is a huge amount of useful information to be had. Illustrations are sparse and exclusively black and white, but typographical errors are very few (e.g. achegoniata) and mismatch of message the same (please let’s agree on substrate/substratum!), so the reader is faced with an exceptionally rich and well-edited resource. The editors have collected many of the major bryological players and generated a tome of enormous merit. We take exception to the concept of the bryophyte life cycle being ‘peculiar’ (p. 394) as we are comfortable that it is the master plan, with all subsequent life cycles being mere derivatives, but have few other constitutional disagreements.

Once again, the book starts with morphology and classification – not for the faint hearted, and laden with jargon, but bang up to date and richly referenced. We especially liked the idea of ‘papillae as snorkels emerging from the water surface’ and were intrigued to learn that leafy shoots remain viable after passage through bats. The going gets easier with the chapter on ‘mosses as model organisms ...’ by Andrew Cuming, a refreshing non-‘Arabidocentric’ view of the plant kingdom that makes recent research extremely accessible to the non-expert. Michael Proctor continues the tone – we especially liked the explanation of desiccation tolerance as the reversible biological equivalent of good electron microscopy fixation! Jeff Bates shows a particularly keen awareness of recent developments in his account of mineral

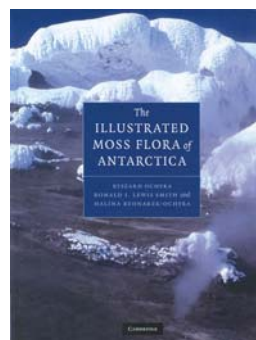
nutrition and substratum ecology, and his section on internal recycling is an incredibly useful compilation.

Alain Vanderpoorten and Tomas Hallingback’s chapter on conservation is as information-dense as the rest of the book. All of the chapters require a careful read, and re-read with a dictionary at hand, but the attention is richly repaid. To anyone embarking on conservation projects involving bryophytes – read this chapter first! This is a comprehensive review of why bryophytes need conserving – but serves to highlight how little we actually know. Places of conservation interest for bryophytes only partially overlap areas of interest for angiosperms and animals. This suggests that bryophytes are not good indicators of overall diversity but follow different rules. It is a pity that the authors have missed recent papers showing that desiccation-intolerant species can be cryopreserved, but this is a minor complaint.

We end with an unapologetic self-plagiarized quote from the review of the first edition – this ‘should be an essential purchase for budding bryologists with plenty of background literature to hand, to all established bryological researchers [we defy you not to learn something new!] and to all libraries’.

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The illustrated moss flora of Antarctica

Ochyra R, Lewis Smith RI,
Bednarek-Ochyra H. 2008.
Cambridge: Cambridge University
Press. £125 (hardback). pp. 704.

This is the first modern flora to provide a comprehensive description of all known species and varieties of moss in the Antarctic biome. It complements *The liverwort flora of Antarctica* (Bednarek-Ochyra *et al.*, 2000), so that now Antarctica can boast the best bryophyte floras of anywhere in the world. A beautiful, self-contained account of what is the major component of the Antarctic flora, this book represents the culmination of many years of meticulous research and extensive fieldwork. The authors’ intimate knowledge of the Antarctic biome and of mosses shines through: Ryszard Ochyra is a renowned moss taxonomist; Halina Bednarek-Ochyra is a renowned illustrator and bryophyte taxonomist; and Ronald

I. Lewis Smith, until recently a senior ecologist with the British Antarctic Survey, Cambridge, has worked extensively on cryptogam research in Antarctica for over 40 years.

Prior to the publication of this volume, identification of Antarctic mosses was often marred by nomenclatural inaccuracies in the literature and misdeterminations of specimens. Similarly, information on the biogeographic zones, environment and moss-dominated communities of the Antarctic could only be obtained by delving into numerous original papers in many journals, often difficult to access. This work now fills a major lacuna not only in bryology but also in plant science as a whole, by accompanying what is a coherent and comprehensive moss flora with extensive information on the biogeography, ecological provinces, climate, geology and vegetation of the Antarctic biome.

Bryophytes, and in particular mosses, are the dominant component of the vegetation in ice-free coastal regions of Antarctica. Thus an understanding and appreciation of mosses, their diversity and distribution, is fundamental in any assessment of the effects of climate change in Antarctica. The importance of mosses as model organisms to study the effects of environmental stresses such as cold and water stress (not to mention the impact of changes in natural UV-B radiation as a result of ozone depletion) on land plants is well established and has received a further boost recently with the sequencing of the *Physcomitrella* genome. Reliable and comprehensive information on Antarctic mosses is also indispensable for any conservation strategy to protect the fragile ecosystems of the Antarctic biome, threatened not only by the changing climate but also by socio-economic pressures, including ever-increasing tourism.

The flora describes in detail 111 species and two varieties of mosses in 55 genera from 17 families. It comprises six chapters, together with a glossary of terms and an exhaustive bibliography. Chapters 1 to 5 form an extensive introduction: Chapter 1 includes sections on the biogeography, climate and geology of the Antarctic biome, Chapter 2 is dedicated to the history of muscological investigations in Antarctica, whilst Chapter 3 covers ecology and conservation. Chapter 4 focuses on diversity and phytogeography of the moss flora; it presents theories on the origins of the flora and includes 42 coloured plates illustrating the principal Antarctic moss-dominated communities. These lovely colour pictures and their legends provide important details of habitat features and how these influence the occurrence and development of moss communities (as discussed in Chapter 3). Chapter 5 discusses with clarity the aims and objectives of the work and provides guidance to users of the flora as well as listing comprehensive details of all the specimens examined. The systematic accounts of the taxa are given in Chapter 6; the keys are excellent, the detailed species descriptions are of the highest standard, and the same is true of the superb line drawings. These drawings are not only beautiful but also highly informative, and are provided for each of the species described. The additional comments, including notes on reproduction, habitat and distribution (both Antarctic and global), together with a discussion on diagnostic characters, peculiarities of morphology, taxonomic problems and possible sources of confusion during identification, are invaluable since Antarctic mosses are often environmentally modified and sterile.

Armed with this book and its companion volume, *The liverwort flora of Antarctica* (Bednarek-Ochyra *et al.*, 2000), researchers visiting Antarctica (and with access to a microscope) should be confident that they will be able to identify correctly each and every bryophyte they encounter. This critical assessment of the diversity and biogeography of the Antarctic moss flora will also prove indispensable for other regions, particularly the cool-temperate and cold zones of the Southern Hemisphere, e.g. Tierra del Fuego and The Falklands, which lack modern regional moss floras.

In conclusion, this is a highly informative and practical book that will greatly benefit researchers undertaking applied and ecological research on the Antarctic bryoflora, as well as conservation organizations. The first five chapters are very readable and interesting and the systematic treatment of the taxa in Chapter 6 is of the highest standard. I cannot recommend this flora too highly.

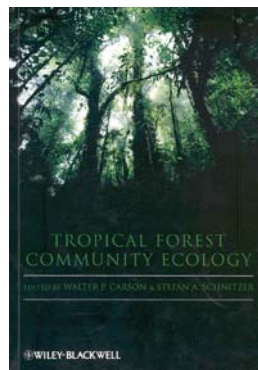
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Tropical forest community ecology

Carson WP, Schnitzer SA. eds. 2008.

Oxford: Wiley-Blackwell. £39.99 (paperback). 517 pp.

Tropical forests have, in equal measure, fascinated and frustrated naturalists, explorers and scientists for centuries. Few other terrestrial ecosystems confront ecologists so plainly with their empirical and theoretical shortcomings. As Marlow, the narrator of Joseph Conrad's *Heart of Darkness* muses '... all that mysterious life of the wilderness that stirs in the forest, in the jungles, ... He has to live in the midst of the incomprehensible, which is detestable. And it has a fascination, too, that goes to work upon him'. For botanists, ecologists and zoologists working in tropical forests, the remarkable diversity is intriguing and captivating, but simultaneously overwhelming. Thirty years ago the flow of new research from tropical forests was but a trickle. As Joe Wright, a senior scientist with the Smithsonian Tropical Research Institute (STRI), notes in his foreword to this excellent volume, one or two new papers a week on tropical forests in those days meant that it was relatively easy to stay abreast of the current research. By the mid-2000s, however, this trickle had become a torrent, with the number of publications on tropical forests increasing by nearly an order of magnitude. No longer is it possible for students of tropical forests to keep up with all