

British and Irish bryophytes. British Bryological Society, Cardiff.
 Blockeel, T. L., A. Vanderpoorten, A. Sotiaux & B. Goffinet.
 2005. The status of the mid-western European endemic moss,
Brachythecium appleyardiae. *Journal of Bryology* 27: 137–141.
 Holyoak, D. T. & V. S. Bryan. 2005. *Ephemerum hibernicum* sp.
 nov. (Bryopsida: Ephemeraceae) from Ireland. *Journal of*

Bryology 27: 89–95. Lett, H. W. 1915. Census report on the
 mosses of Ireland. *Proceedings of the Royal Irish Academy* 32B:
 65–166. Preston, C. D. 2004. Book review. *Journal of Bryology*
 26: 310–311. Rothero, G. P. 2005. New vice-county records and
 amendments to the *Census Catalogue*. *Musci. Field Bryology* 86:
 29–43. Watson, H. C. 1852. *Cybele Britannica*. Vol. 3. London.

Neotropical bryophyte guide

Reviewed by

XÓCHITL GALARZA AND EFRAÍN DE LUNA

Depto. de Biodiversidad y Sistemática, Instituto de Ecología AC, Xalapa,
 Ver. 91000, México.

E-mails: galarza@posgrado.ecologia.edu.mx; deluna@ecologia.edu.mx

Gradstein, Robbert, Steven P. Churchill & Noris Salazar-Allen. Guide to the bryophytes of tropical America. 2001. *Memoirs of The New York Botanical* 86: iv + 577 pp. [ISBN 0-89327-435-6]. Price US\$30 (hardcover). The New York Botanical Garden Press, Bronx, NY. Website: www.nybg.org.



Literature on the diversity of Neotropical bryophytes is dispersed in many papers and a few books covering small regions or a particular country. The publication of *Guide to the bryophytes of tropical America* in 2001 was received with appreciation for the extensive research needed to compile not only available published information but also accumulated taxonomic expertise by the authors. This important compilation introduces bryologists, students and non-specialists to genera of hornworts, liverworts and mosses of tropical America.

The first three chapters in the Introduction include a general review of morphology of bryophytes, descriptions of bryological peculiarities for the ten Neotropical regions, and discussions of the ecological features and characteristic bryophytes in rain forests, dry forests, savannahs, and alpine habitats in tropical America. The other four chapters of the Introduction deal with the practical side of collecting and processing bryophytes, a basic list of references for Neotropical bryophytes, and a useful list of herbaria in tropical America, arranged by country. A glossary, a list of abbreviations commonly used in taxonomic

descriptions, and cited literature complement very nicely the introductory chapters.

In the Introduction, the review of morphology is adequate in emphasis on the life cycle. Stages of gametophyte and sporophyte development and spore formation are compared for the three groups. Morphological features are stressed to help non-specialists distinguish each group: these include the origin of leaves, origin and development of branching, number of chloroplast in leaf cells, and kind of spore maturation (Table 1). Drawings further illustrate some of the general features of bryophytes, like growth forms, leaf position and shapes. Figure 3 gives a very useful guide for understanding special terminology for branch types, leaf insertion, and leaf position applicable to leafy liverworts. Figures 7 and 8 show similar concepts and terminology for moss leaves. When combined with the glossary, where specific terms for bryophytes are related to illustrations, these facilitate examination and keying of specimens for identification to family and genus.

The inclusion of box tools is a relevant educational aspect of this book because it emphasizes

many topics about bryophytes, such as conservation, the role of bryophytes in tropical ecosystems, and bryophytes as indicators of disturbance. For example, Box 2 (role of bryophytes in tropical ecosystems) helps the botanist to grasp the importance of sampling bryophytes as part of ecosystem diagnosis and to identify the most common species in key habitats and substrates. Box 1 (conservation needs) relates the genera that are considered endemic for every Neotropical region and indicates their importance in conservation.

The guide to the liverworts describes six orders, Jungermanniales, Calobryales, Metzgeriales, Marchantiales, Calobryales, Monocleales and Sphaerocarpaceales. Together, these include 41 families and 191 genera with an estimate of 1350 species for tropical America. Hornworts are described in seven genera, *Phaeoceros*, *Anthoceros*, *Nothothylas*, *Dendroceros*, *Folioceros*, *Leiosporoceros* and *Megaceros*, included in the families Anthocerotaceae, Dendrocerotaceae and Notothylaceae. Around 30 species are present in tropical America.

The guide to the mosses distinguishes 76 families and 402 genera. The authors estimate around 2600 (2300–2950) species for the Neotropics. Descriptions of families are arranged in alphabetic order. In each case, a brief description of the family is included and the second paragraph consists of a brief discussion of the group as known in the world and the Neotropical region. Also, some comments on the relationships and systematics of the family complement the information. The last paragraph cites available literature for the family. As expected, the descriptions of each genus are more detailed. The first paragraph mentions the number of species in the Neotropical area in regard to the total in the world. The second paragraph describes the features of the habitat. The third and fourth

paragraphs are detailed descriptions of the morphological features of the genus, and a brief discussion about those that characterize the genus. The last paragraph presents the information available for the genus in question.

This manual not only functions as a guide for the identification of specimens. It is also like an encyclopedia about diversity of bryophytes in the Neotropics and a very useful guide for planning research projects. In the context of Latin American education, many universities demand a small study at the bachelor's level and a larger project at the doctorate level. This book contains numerous comments about the taxonomic status of many genera and is very useful in helping to select a study group for thesis projects at both levels. For example, the authors identify pending problems in the systematics of Gymnomitriaceae (Jungermanniales, Section 4), pointing out that the position of genus *Paramomitrium* inside the family is questionable. Also, the status and relations of the seven subgenera in *Lejeunea* (Lejeuneaceae) need to be evaluated. For mosses another example of comments on systematics is the case of *Camptodontium* of the Dicranaceae, where the authors suggest that further investigation into the status of the Herzog species is needed. In the case of the Prionodontaceae, the authors point out that the extreme polymorphism in *Prionodon* would make an excellent subject for a combined morphological and molecular study. The addition of those kinds of remarks in a review of the Neotropical bryoflora also makes this a compilation of possible projects. This information will not only be useful for Latin American students, but also for anyone who wants to research the rich but sparsely studied Neotropical bryophyte flora.