

Book review

LAINÉ J., FLATBERG K. I., HARJU P., TIMONEN T., MINKKINEN K., LAINÉ A., TUTTILA E.-S. & VASANDER H. 2018. ***Sphagnum* Mosses – The Stars of European Mires**. – University of Helsinki, Department of Forest Sciences, Sphagna Ky, Helsinki. Softcover, 326 pp., >1000 color photographs and b/w line drawings, ISBN 9789515131430, € 69.

A good scientific book should be firstly scientifically rigorous (that goes almost without saying), secondly of an impeccable didactic quality, and finally, it should be highly esthetic. The book “*Sphagnum* Mosses – The Stars of European Mires” comes close to achieving such an ideal. The task of writing this book was a pleasurable one: The peat moss species of the genus *Sphagnum* are not only unique and scientifically spectacular, they also open up exciting ecological perspectives, and they are of significant economic importance. This book may best be described as an homage to the evolutionary process of the *Sphagnum* mosses, an opus entitled “Variations on a Theme”. Peat mosses are probably the best-known and most thoroughly investigated group among bryophytes. This book is based on its precursor “The Intricate Beauty of *Sphagnum* Mosses: A Finnish Guide to Identification” and has adopted the same approach to hybridizing the qualities of an illustrated field guide with a descriptor of microscopic characters. The geographic framework has been expanded to include the entire area of Europe, increasing the number of species being presented to sixty in total. From the regions of Western Europe and the Azores, the authors have added *S. austinii*, *S. pylaesii*, *S. recurvum* (s. str.), *S. skyense* and *S. strictum*, from Western Scandinavia *S. angermanicum*, *S. beothuk*, *S. rubiginosum*, *S. troendelagicum* and *S. venustum*, from Svalbard *S. arcticum*, *S. concinnum* and *S. olafii*, and from Northern Russia *S. lenense*, *S. mirum* and *S. tescorum*. The formerly well-known *S. magellanicum* was recently divided into three taxa that were not yet well established, and both European taxa, *S. medium* and *S. divinum*, are included and described (while the familiar name *S. magellanicum* now belongs to a southern hemispheric species). Some of the other taxa still under dispute among sphagnologists are included, such as *S. brevifolium*, *S. isoviitae* and *S. viride*, giving sphagnologists and practitioners a chance to evaluate their delimitation and their taxonomic value within a broader context.

The species delimitation is narrow, and the taxonomic concept is modern. Five subgenera replace the former sections based on recent molecular analysis, with the subgenus *Acutifolia* subdivided into the four sections *Acutifolia*, *Squarrosa*, *Polyclada* and *Insulosa*.

The book starts with a glossary of important technical terms, followed by a short introduction to classification and distribution of *Sphagnum* mosses, and the ecology of European mires as the most important (yet not the exclusive) habitat of *Sphagnum* mosses. It must be noted that the ecology of the species is not the focus of the book, and this is one of the few aspects that could be improved in the future. On the other hand, the book should be easy to handle, and there is simply not enough room for the complete body of knowledge generated by the authors on the *Sphagnum* topic to be included in a single volume. Other characteristic elements of classical botanical monographs are lacking, such as nomenclatural notes, synonyms, bibliographical data of the protologues, or the location of the type material. These aspects have been deliberately left out in order to give precedence to the documentary images.

From page 10 onwards, the authors address the subject of *Sphagnum* identification. The authors first illustrate where to find the distinguishing characters. A guideline is provided in the form of two overview-tables with selected macroscopic and microscopic spot-characters. The authors abstain from presenting a classical determination key. Even the key to the sections given in the Finnish version was omitted. The book is designed to allow for final identification by comparing the detailed descriptions of the species, which requires some basic knowledge of *Sphagnum*. However, I can recommend the book for beginners, but it is advisable to start by using the regional identification keys that are provided. Under the subheading “Special characteristics” within the species descriptions, the authors select the most important features in comparison to similar species.

The most valuable feature of this book is without a doubt the outstanding quality and quantity of the figures, specifically the hundreds of color (micro)photographs. For every species presented, there are different habit photographs illustrating the intraspecific variability. Some photos were apparent-

ly produced using focus stacking technology, giving a nice three-dimensional effect. Sometimes a habitat photo has been added. Transmission light microscope photos of branch leaves (completely and with closer views of the cell net on both sides), stem leaves, and pieces of branches are always presented, as well as properly made cross-sections of branch leaves, branches and stems. Sometimes the authors even added cross-sections of stem leaves. In addition to incorporating a variety of staining methods, the authors sometimes used light effects like anisotropy and fluorescence microscopy to improve the contrast of the objects. It is unclear why the names of the photographers are not consistently mentioned. The pictures are a veritable feast for the eyes, and the print quality also shows a slight improvement over the Finnish version.

Good didactic ideas from the previous versions, including the placement of the index of species inside the front cover, and an overview of all stem leaf shapes inside the back cover, were welcome im-

provements that are also included in this new edition. The book concluded with excerpts from selected testimonials of the Finnish students involved in bryology teaching, describing their personal relationship to the peat mosses. The closing passages reveal the true driving force behind this rich and elegantly crafted book: the passion of the scientists who have collectively dedicated themselves to this masterwork.

The book is a “must have” for everyone around the globe who shares a passion for peat mosses, and equally for anyone who appreciates beautiful botanical books. Additionally, I can highly recommend it to anyone who needs to identify *Sphagnum* mosses anywhere in Europe.

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