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# First impressions and findings on *Sphagnum* Mosses – The Stars of European Mires

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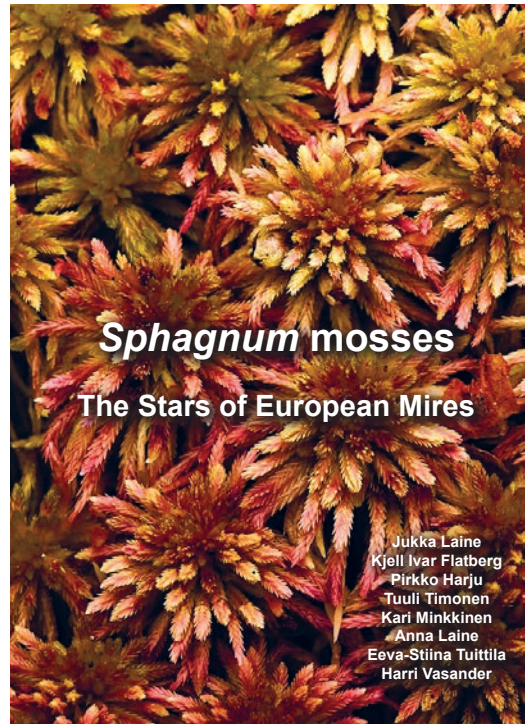
*Jukka Laine, Kjell Ivar Flatberg, Pirkko Harju, Tuuli Timonen, Kari Minkkinen, Anna Laine, Eeva-Stiina Tuittila & Harri Vasander 2018. Sphagnum Mosses — The Stars of European Mires. University of Helsinki Department of Forest Sciences, Sphagna Ky. 326 p.*




When I received the book "*Sphagnum* Mosses – The Stars of European Mires" by mail then my very first sincere impression was "wow", what a book with so many good photos from species and their habitats. Since I was involved in writing and taking photos for the book "The *Sphagnum* mosses of Estonia (Eesti turbasamblad)" (Vellak et al., 2013), I might also know a bit from the process to prepare such a book and can understand and value the huge work done. After browsing the book several times and admiring it I looked it through with more attention and I like to share some findings. However, this is not a proper review by the bryologist or systematic, but rather the first impression from peatland ecologist, who have had touch with *Sphagnum* mosses from the paleobotanical analysis of peat to mire vegetation analysis and growth measurements.

The identification of *Sphagnum* mosses may become a bit easier when knowing their preferred habitat on micro-topographic gradient, mire types and distribution, but these maps are missing. But I understand that these data are difficult to get for all of the Europe; they are available with different accuracy and they continuously change. Another possibility could be to add the short names of the species distribution zone in an additional column of the identification key (for example referring to the map on the page 12). For example, when working in Mediterranean region, one could exclude from further identifications several similar species occurring only in northern regions. Identification of species in this book is given only as tables. But often this does not lead to the right species or it is difficult, especially if all the columns of the different features are not filled (for example *S. compactum* and *S. strictum*). Therefore, in the next editions an identification key with thesis vs antithesis is welcome.

When introducing the European mires, and Philippi peatland in Greece, where the peat layer

is *ca* 190 m, it could be nice to get information on its age as well, not just Pleistocene, which lasted over 2.5 million years and does not give a proper idea about the age of this peatland. Instead of just saying that the largest mires in the world are located in certain regions, I would like to get also the names and areas of those mires. It is not easy to get this information from the literature and internet since wetlands, peatlands and mires and differences between them are often scanty or incorrect. These facts, like illustration of the global importance of mires in carbon accumulation could fascinate more readers and reveal the real power of the *Sphagnum* mosses.

When identifying the moss species, it is thankful that authors are pointing out the high importance to check closer the mosses, because first look can often be misleading and closer look with magnifying lens and key-book is always recommended not only to be sure of the species but also to enable the new discoveries. Just remember, for how long we thought that *Sphagnum magellanicum* is one of those species, which we recognize from the run. When describing the new *Sphagnum* species, *S. divinum* and *S. medium*, I was surprised that their alias *Sphagnum magellanicum* is not named, and no specific recommendations are given to separate these two species from *S. magellanicum,* which had always been imagined to be well-known. This is strange since the photo of *S. divinum* (p. 40, left) is a part of the photo used by the same authors in their earlier book (Laine *et al*., 2009, p. 29) for *S. magellanicum*! The same re-use is true for microscopic photos of branch leaves and photos of *S. medium* (p. 45 in new and p. 28 in earlier book). Some species have quite broad distribution, and also their habitat and look are different but, most of the habitat photos are from Finland. The photos of *S. mirum* are from Canada, even though this is the book of European mosses(!). It remains unclear, why the names of the photo authors are presented for given photos and for some ones not.

Since I have some experience with taking *Sphagnum* photos, I like very much several good moss and habitat photos. For example, the leaf photos of *S. austinii* on page 52 and *S. centrale* on page 73 give a nice 3D feeling and good understanding of the real shape of the Sphagnum cells. Several photos are re-used from the earlier published book (Laine *et al*., 2009) and it is good to see how much sharper they could be (for example photos of *S. affine* on page 55 versus photo on page 20 in earlier book. But in case of some species (for example photos of *S. palustre*, *S. papillosum, S. rubellum* and some others), it is surprising how different the colours of the same photos are in the earlier book. This raises the question, which of them is closer to natural truth colour and describes best the moss real look? Fortunately, for some species, there are several photos to illustrate their large variation in their colour depending on the habitat and season. Surprisingly, the photo of *S. capillifolium* with sporophytes on page 176 is given in the shape of quadrat, while the very same photo covering the same view was earlier printed in the rectangular shape.

There is some inconsistency in the usage of scale and scale bars on pages with microscopic photos of leafs, stems and cross sections. Even if the same length of scale bar is given, then its text is presented with different font size, smaller of them almost difficult to read (fortunately, mostly for these photos scale bar unit is given also in photo name, while some, especially with bolder scale bar, do not have it). And if, for example, branch and stem leaves are given in the same magnification (according to the scale information), then why not to print them in the same scale to make their size comparison easier?

These were some minor gaps in this magnificent book and finally I would like to point out some "cherries on the cake": excellent photos illustrating the large variation in the colour of the same species depending from the habitat, region and season; personal, warm and sincere impressions about *Sphagnum* mosses by students; stem leaves shapes on the back cover for quick look. I'm sure that this book motivates and encourages many people to discover that these "rather boggy places" are actually among the most ancient survived natural habitats in Europe, where tiny mosses have the leading roles. Let's look and learn them closer!