

Review

Flechten der Schweiz

Reviewed by

ROBERT LÜCKING

Botanischer Garten und Botanisches Museum Berlin, Freie Universität Berlin, Königin-Luise-Straße 6–8, 14195 Berlin, Germany
e-mail: r.luecking@bo.berlin

Scheidegger, C., C. Keller & S. Stofer. 2023. *Flechten der Schweiz*. Vielfalt, Biologie, Naturschutz. Haupt Verlag, Bern [ISBN: 978-3-258-08309-4], Softcover, 591 pp, approximately 1,400 color photographs. 68 €. <https://www.haupt.ch/buecher/natur-garten/flechten-der-schweiz.html>



“Vielleicht begann es damit, dass wir uns Baumwärte zwischen Nase und Oberlippe einklemmten.” [“Perhaps it started by sticking tree beards between nose and upper lips.”]. So begins the unusual foreword by Kim l’Horizon to the wonderful new book *Flechten der Schweiz* by Christoph Scheidegger, Christine Keller and Silvia Stofer. Kim l’Horizon is a Swiss novelist and playwright, whose play from 2022 *Hänsel & Greta & The Big Bad Witch* has the lung lichen as a prominent element, and his foreword brings a refreshing perspective to the book, providing a societal context of the lichen theme. The three book authors combine impressive expertise in lichenology, biodiversity research, conservation, and biodiversity informatics, and are to be congratulated for putting together this phenomenal book on Swiss lichens, with a much-needed focus on outreach and conservation.

Flechten der Schweiz compares well with the slowly growing number of books about lichens that provide an attractive hybrid between an attractive coffee table book and an informative expert source that goes far beyond showing beautiful pictures of lichens. Besides the international flagship book *Lichens of North America* (Brodo et al. 2001), in Europe such books are for instance available for Germany (*Die Flechten Baden-Württembergs*; Wirth et al. 1995; *Die Flechten Deutschlands*; Wirth et al. 2013), Central Europe (*Die Flechten Mitteleuropas*; Wirth & Kirschbaum 2023), Britain and Ireland (*Lichens: An Illustrated Guide to the British*

and Irish Species; Dobson 2018), and Finland (*Lichens of Finland*; Stenroos et al. 2016). Unfortunately, those books for the Central European region are currently only available in German.

The new book covering Switzerland is divided into three parts. A general, introductory part of approximately 90 pages deals with the biology of lichens, their growth forms and reproductive strategies, aspects on their physiology and ecology, focusing on their desiccation tolerance, and their importance in terms of ecosystem services, as well as their conservation. The much longer second portion includes 364 species portraits of common or otherwise notable Swiss lichens. At the end, the third part enumerates 52 specific lichen excursions for the enthusiast to diverse habitats across Switzerland.

The first portion of the general part (Chapter 2: “*Biologie, Ökologie und Naturschutz der Flechten*”) is useful to make the readers familiar with the basics of lichen morphology and biology. Its structure is rather straightforward, although it may not seem as effectively presented as in some other, similar books. For instance, no schemes are offered in this section and most aspects are illustrated with macro- and (some) microphotography and SEM pictures. The box layout is only used twice, both in section 2.1, as if for the remaining text the authors had forgotten about this design feature. The second box, about photobionts, may have been more effective as a separate section in this chapter. As a box going over three pages, with a smaller font, it is a bit difficult to digest.

The chapters on growth forms and reproduction (Chapter 3: “*Wuchsformen des Lagers*”; Chapter 4: “*Vermehrungsstrategien und Ausbreitungsbiologie der Flechten*”) are richly illustrated with habit shots and macrophotographs but only rarely with microscope views. The authors acknowledge that they mostly rely on non-microscopic characters to facilitate the approach to lichens for the user. This is meant well, but in the introductory part it sometimes detracts from showing important details in a more instructive manner, such as a good section of a thallus or of an ascoma. For instance, the splendid picture of *Staurothele areolata* on page 35 could have been accompanied by a section through a perithecium showing the asci and spores. Instead of microscopic sections, SEM pictures are often used. These provide an impressive three-dimensional look at features, but may have limited educational value, as users may have access to a compound microscope but are not able to reproduce SEM pictures. An example are the asci of *Veizdaea rheocarpa* (p. 39, 66), the internal structure of which is difficult to imagine with an SEM picture alone. Also, some of the SEM pictures could have benefitted from false coloring to discern the fungal and photobiont components, such as the thallus section of *Pseudevernia furfuracea* on page 27 or of *Lobaria pulmonaria* on page 55.

Having said that, many of the SEM pictures are simply superb, such as the ascus and germinating ascospore of *Veizdaea aestivalis* on page 40 or the close-up of the thallus pruina of *Parmelia sulcata* on page 27. Even so, it might have been more instructive to start the section on foliose lichens with the habitus pictures of the two following pages and then the SEM pictures, both perhaps accompanied by habitus pictures of the corresponding lichens. In one of the few instances where the authors used microscope images, I found the arrangement of the apothecial sections and surface images of *Lecanora allophana* and *Buellia leptocline* on p. 42 to be very clever. This model could have been used more often, as it is not only very instructive but also aesthetically striking. Notably, the chapter on growth forms deals on four pages with crustose and on six pages with foliose lichens, but only one page is dedicated to fruticose lichens, and this is missing illustrations of genera such as *Alectoria*, *Ramalina* or *Usnea* and their morphological features.

The chapter on reproduction provides some unique information, such as the explanation of the rarely used term parasoredia. This section could have benefitted from some schemes or more microscopic photographs, although the SEM pictures are superb. Some portions of this chapter could have been structured differently, however. For instance, the part on goniocysts and isidia on pages 46–48 has text on page 46 and images on pages 47 and 48; alternatively, two sections could have been provided, one on goniocysts and one on isidia, each with text and images on a single page. The information on the goniocysts, superbly illustrated with SEM examples of *Veizdaea rheocarpa*, is repeated three times in the text and in the image legend and similar SEM pictures were provided in a different context on page 38.

Chapter 6 on lichen systematics (“*Systematik der Flechten*”) provides a brief overview of how lichen mycobionts are classified within the fungi. While useful, the chapter contains a few inconsistencies. The orders within the largest class, Lecanoromycetes, are listed in a somewhat arbitrary sequence, with two sets in alphabetical order. If the intention was to separate the two larger subclasses Lecanoromycetes and Ostropomycetes, the order Gyalectales would be misplaced between Caliciales and Lecanorales. Gomphillaceae should be in Graphidales, not Ostropales, and Porinaceae is mentioned twice, as Porinaceae under Ostropales but also as Trichotheliaceae under Gyalectales, whereas the correct classification would be Porinaceae under Gyalectales. The order Teloschistales mentions the three subfamilies of Teloschistaceae but not the family itself. Some complicated genus concepts have understandably not been followed, such as in *Buellia* s.lat. or *Caloplaca* s.lat., and it will take a while until the lichenological community can settle on broadly acceptable solutions in these cases. Notably, Chapter 6 is not listed with a separate header in the Table of Contents, but instead its sections have been accidentally merged with Chapter 5.

The strongest components of the general part are the sections on ecophysiology (Chapter 5: “*Wechsel-feuchte Lebensweise: Bei Stress abschalten*”), habitat ecology (Chapter 7: “*Flechtenstandorte und Lebensraumtypologie*”), ecosystem services (Chapter 8: “*Ökosystemfunktionen und dienstleistungen von Flechten*”), and diversity and conservation (Chapter 9: “*Artenreichtum, Gefährdung und Naturschutz*”). Overall, these

four chapters are given much more space than the chapters on morphology and systematics, clearly placing the emphasis of the general part on ecological and conservation aspects of lichens. Particularly the last chapter on conservation takes 15 pages, a reflection of the expertise of the authors and of the necessity to increase public awareness to protect lichen habitats and biodiversity in general. The sections on lichen biology and ecology focus on the nature of lichens as a nutritional symbiosis, also touching on the more recent findings that lichens are miniature ecosystems, containing also a diverse bacterial microbiome. The rather recent change in the consideration of lichens as desiccation symbioses is reflected in the ample discussion on the implications of lichens being poikilohydric.

Most of the book is taken up by the individual species portraits. There are 364 of them, representing 191 genera (if I counted correctly) and spanning a diversity of taxa that most users may also spot in the field. While the checklist of Alps portion of the Swiss lichens already enumerates 1,835 species (Nimis et al. 2018), the book authors estimate at least 2,000 species for all of Switzerland, already surpassed by the report of 2,094 species in the *SwissLichens* database (see below). The 364 taxa included in the new book thus make up a sizable portion of the most common and most interesting species.

The species portraits follow a very useful layout. On top there is a row of several photographs including habitat, overall appearance of the lichen, and/or macromorphology. The lower part of each page features a brief description of characters that can be discerned in the field, followed by some useful general information on the species, aspects of its conservation status, and its delimitation from other, similar species. To the right of the concise text there is a series of three informative graphs displaying altitudinal distribution, temperature and precipitation range, and a distribution map. The authors decided to sort the species alphabetically and not by similarity or shared habitat, which makes the book quite valuable as a reference work, as anyway the book is a bit too large and heavy to take into the field.

The third portion of the book, aptly introduced with “*Wo bitte geht’s zu den Flechten?*”

(“*Where to go to the lichens, please?*”), represents a rather novel idea for books of this type: a section describing dedicated lichen excursions across

Switzerland (but which easily fit many regions in central Europe). While the idea of lichen excursions is not new, it has usually been presented as small booklets that can be taken into the field, a favorite place for excursions being graveyards. In the present format, it is quite novel, although one would most like to have this section of the book in a portable manner. Perhaps this idea can be taken up for the future?

Anyway, this section, describing 52 dedicated excursions to diverse lichen habitats that can be found across Switzerland, close and distant from one’s home, from easy to difficult, puts all the previous information into a practical context and encourages the reader to go out and hunt for lichens. If one takes it seriously, there is an excursion for every weekend of the year (attempting to find a new species of those portrayed in the main section for every day of the year). The excursions are preceded by an introductory part giving practical hints and introducing the “Datenzentrum” (data center) *SwissLichens* (<https://swisslichens.wsl.ch/en>), encouraging users to engage in citizen science by reporting sightings in a structured database. One thing perhaps missing for each of the excursions is a short list of target species (perhaps ten species each) that users can look out for and tick off, similar to a birding list. Also, the arrangement of the excursions seems somewhat arbitrary, as comparable habitats (e.g., urban, forest, alpine) appear in different places. However, if one really plans to dedicate the 52 weekends of a year to lichen excursions, strictly following the list will guarantee a lot of variation each weekend. The selected habitats, including some peculiar substrates, make sure the user gets to know a large portion of the Swiss lichen diversity.

One very special “habitat” included is herbaria, with the suggestion to visually browse through digitized online collections. Herbaria are indeed a treasure chest for potentially undiscovered diversity, but access to digitized collections, even if openly available, is not straightforward and perhaps something for the more advanced aficionado. But I could easily imagine people getting hooked on this type of virtual excursion, so what we urgently need is improved virtual lichen herbaria. One good place to start would be the database of the Swedish Museum of Natural History, which has very good macroshots of lichen specimens (<https://herbarium.nrm.se/search/specimens>). I also liked the ideas for further engagement of the public, such as the

suggestion on p. 488 to photograph lichen-colored urban walls and take part in a competition for the best pictures on *SwissLichens*. Unfortunately, the excursions have no index and are also not included in the table of contents, so the readers have to make their own list to keep track of which excursions are described on which page.

The book is completed and enhanced by an “Anhang” (appendix) including a list of cited or otherwise useful literature, acknowledgments, a glossary, picture credits, short biographical sketches of the authors, a subject index, and an index to vernacular (German) and scientific names. The picture credits caught my eye: with a book of approximately 1,400 color photographs, one would have expected a long list of contributors. However, with the exception of two (a scheme and an urban lichen map), all images are from the first author, Christoph Scheidegger. Christoph has of course been in the business for almost four decades now, but even so, the range of lichens he has documented photographically, ranging from their habitats to close-up macro shots, is impressive! As a passionate lichen photographer myself, the diversity and the quality of the pictures was one of the central aspects of the book that got my attention. If pressed for a list of favorites, from the general part alone I would mention *Coniocarpon fallax* (page 9), *Caloplaca pseudofulgensia* (p. 10–11), *Pseudevernia furfuracea* (p. 22), *Placopsis gelida* (p. 25), *Staurothele areolata* (p. 35), *Multiclavula mucida* (p. 41), *Dactylina ramulosa* (p. 43), *Xanthomendoza ulophylloides* (p. 50), *Teloschistes chrysophthalmus* (p. 95), and *Ramalina dilacerata* (p. 96).

Overall, *Flechten der Schweiz* is a must have for lichen aficionados, professionals and enthusiasts alike. Its few shortcomings are really in the detail, and I had to make an effort to find them. It is overall a splendid work, including the highly informative layout of the species pages and the set of suggested excursions. The focus on ecology and conservation, which reflects the unique expertise of the authors, makes for another obvious strength of the book. The German language will

limit the use of much of its textual content to a target audience in the German speaking region of Europe, but apart from the large number of informative photographs, many features are useful despite the language barrier, such as the taxonomic and ecological information on each of the species. And becoming hooked by the idea of weekly lichen excursions is certainly language-independent. The lichenological community needs the input by the community in monitoring efforts to effectively protect lichen habitats and biodiversity as a whole.

“*Lichens are queer things*” says a line in *Trouble with Lichen*, a novel by John Wyndham published nearly 65 years ago, about a lichen that slows the aging process and its implications for society and female empowerment. The thought-provoking forward to *Flechten der Schweiz* by Kim l’Horizon underlines the consideration of the lichen symbiosis as a metaphor for humanity and reminds us that, as a society, we need a new relationship with nature, understanding humanity as integral part of it. How better to begin this transformation by making ample use of *Flechten der Schweiz*, learning about lichens, their ecology and their conservation needs, and appreciating nature anew each and every weekend on a different lichen excursion?

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