

BOTANY

Twice the Species at Half the Heft: A Review of Keys to the Lichens of North America: Revised and Expanded

By Irwin M. Brodo. 2016. Yale University Press, New Haven, CT, USA. 427 pages, 29.95 USD, Paper.

In 2001, the beautifully-photographed *Lichens of North America* (Brodo *et al.* 2001) was called “a gold mine”, “a book to love”, and “one of the great natural history books of this or any age”. The brief-but-thorough species’ descriptions, range maps, and photographs made this hefty tome a must-have for lichenologists and naturalists alike. Since its publication however, lichen nomenclature and knowledge of species’ distributions have evolved. Despite Brodo’s efforts at updating the original (<http://www.lichen.com/book.html>), this evolution, in combination with interest by readers and workshop participants, led him to write the *Keys to the Lichens of North America: Revised and Expanded* (hereafter referred to as the Keys). The Keys consists almost entirely of improved identification keys to North American lichens, organized alphabetically by genus, and prefaced with a set of twelve ‘keys to the keys’. The Keys includes 2,028 species (approximately twice that in the original book), or about 40% of the currently-described lichen flora of North America. A selection of figures is included as well as a glossary to enable the keys to be used on their own, both of which are almost identical to those included in the original *Lichens of North America*. Soft-covered, stripped of photos, maps and species accounts, and with spiral-binding rather than a spine, the Keys is well-suited for the laboratory. The Keys may not have the beauty of its predecessor, but the elegance of the couplets, the additional species covered, and the modest price means this book is a well-built workhorse, one that you won’t mind spattering with a bit of personal data, or marking up in the margins.

When I had the opportunity to review the Keys for Brodo prior to its publication, I noted a few aspects of the book that make it an indispensable companion to the original volume. One of Brodo’s strengths is his ability to see past the phenotypic plasticity to critical morphological differences and communicate those differences concisely. This ability, combined with the herbarium study done to support this book, means that the Keys is ripe with useful, novel observations. I often consult the Keys to ask, “how DO you tell those two species apart?”, much as I might ask a trusted mentor. The book is a great place to become gently acquainted with the nomenclature changes of the past decade and a half. Recent synonymies follow species’ names and are included in the nomenclatural index, and many keys provide literature references for nomenclatural changes as well as more specialized literature. While many of the taxonomic changes summarized in Esslinger (2015) are incorporated, changes Brodo deemed unstable and didn’t adopt are documented in handy notes at the beginning of or within genus keys. In addition, any corrections to the names ascribed to the original 2001 photographs also are noted throughout.

While the Keys has value for anyone interested in lichen identification, the book may be most valuable as a classroom or workshop teaching aid for areas without regional keys, a condition that describes much of North America. The book is valuable outside the classroom for those that want another opinion on a puzzling specimen, and for those participating in forays in regions new to them. Just remember best practises when keying out a species new to you: read through a species description after working through a key to ensure you haven’t taken a ‘wrong turn’, and compare your lichen to a herbarium specimen identified by a trusted lichenologist. And of course the Keys represents a great starting point to develop your own regional keys.

There are a few missed opportunities in the Keys. Some of the keys would benefit from additional illustrations to better convey cryptic or difficult-to-describe traits. This problem is not unique to the Keys however, and few lichenologists have tackled this (but see Goward 1999). The taxonomic completeness of each key is not noted, so users are advised to check the breadth by comparing the species included in the book to resources such as Esslinger (2015). Finally, in the quest for completeness, some of the expanded keys may be too specialized for beginners and prove frustrating without additional illustrations or species’ descriptions. Conversely, as you gain experience Brodo acknowledges that you’ll likely move towards more specialized keys or creating your own keys. However, the Keys still occupies a useful middle-ground for novices and experts alike. After all, few experts are experts in everything!

In summary, the Keys is a welcome addition to my library, especially in combination with the original 2001 book. The format is conducive to updates, so I suspect Brodo will treat us to future revisions and expansions. It is true that there are excellent guides to floras for regions of North America, but just as many lichens do, Brodo’s Keys occupies a broad but rarified niche by allowing users to compare species across the continent. Many will be grateful for this monumental effort.

References

- Brodo, I. M., S. D. Sharnoff, and S. Sharnoff. 2001. *Lichens of North America*. Yale University Press, New Haven, Connecticut, USA.
- Esslinger, T. L. 2015. A cumulative checklist for the lichen-forming, lichenicolous and allied fungi of the continental United States and Canada. Version 20. <https://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm>.
- Goward, T. 1999. *The Lichens of British Columbia Illustrated Keys. Part 2 – Fruticose Species*. Ministry of Forests Research Program, Victoria, British Columbia, Canada.

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