

Keys to Lichens of North America: Revised and Expanded

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Review

Keys to Lichens of North America: Revised and Expanded

Reviewed by

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Brodo, I. M. 2016. *Keys to Lichens of North America: Revised and Expanded*. Yale University Press. New Haven and London. 427 pp. [ISBN 978-0-300-19573-6]. Price \$29.95 USD.



In my mind, 2001 seems to have been a watershed year. Perhaps it was only my internal perceptions; after all, I was new to and newly enthused about lichens and lichenology, and had on my wall a fresh diploma from Humboldt State University. I also had a new job which included lichens, so I was very excited when Yale University Press published *Lichens of North America*, by Irwin M. Brodo, Sylvia Duran Sharnoff and Stephen Sharnoff. Color plates! Eight-hundred and five species! Keys! Range maps! Chemistry! Comments! And best of all, pre-purchase orders cost only \$60 U.S. Where else could you get so much information, at such a scale, for so little money?

It was an ambitious undertaking, resembling nothing in lichenology since Bruce Fink's *Lichen Flora of the United States* (1935), 66 years earlier. That volume assumed a highly informed and perhaps formally educated but certainly determined demographic, working with verbal descriptions and black-and-white drawings and photographs, at a time when people in the U.S. had many concerns more urgent than natural history. *Lichens of North America* (LNA), in large part because of the color photographs, was accessible to just about anyone; at the very least it demonstrated even to an untutored eye that lichens are *beautiful*. Those who "got hooked," who became interested beyond the photos, found a clear and organized body of scientific information, with well-written keys using minimal jargon. In the 2010 text prefacing the errata for *Lichens of North America* (<http://www.lichen.com/book.html>), the writer states "Unfortunately, a second edition [of *Lichens of North America*] does

not seem to be economically feasible at this time. Instead, there are plans to publish updated and expanded keys with modern nomenclature in a spiral-bound workbook-type format."

This is not precisely what you get when you purchase *Keys to Lichens of North America: Revised and Expanded*, although it is certainly true enough; the keys are expanded, there are 2,028 species with updated nomenclature, and the publication is indeed spiral bound (the only way to bind laboratory publications, in my opinion). But in addition to these improvements, brand-new keys have been written to accommodate the dozens of the taxonomic changes that have been instituted since 2001, including among others new keys for *Acarospora*, *Biatora*, *Chrysothrix*, *Fuscidea*, *Lecidea*, *Micarea*, *Phlyctis*, *Placynthiella*, *Pyrrhospora*, *Sarcogyne*, *Sphaerophorus* and *Xylographa*. Changes in names, and new combinations of names, including author citations, have been included in the terminal couplet for many of the taxa; these mostly follow Esslinger (2014). The new keys maintain links to LNA and the descriptions therein by using bold type indicate a species illustrated in LNA, and by referencing the old names used in LNA in notes, or as synonyms of new names.

The author frequently uses some conventional conveniences, such as including *Melanelixia*, *Melanohalea*, *Montanelia*, *Tuckermanella* and brown *Xanthoparmelia* species within the key for *Melanelia*. Similarly, the *Pannaria* key includes the genera *Coccocarpia*, *Fuscopannaria*, *Massalongia*, *Parmeliella*, *Pectania*, *Psoroma*, *Vahliella* and *Vestergrenopsis*. This is a popular approach, and allows the possibility

for morphological similarities to drive the identification process, as opposed to relying entirely on the characters called for by a natural key. It would have been convenient and helpful for the user to have included genus placeholders in the alphabetical position for the genera in these combined keys, so that someone searching for e.g. *Tetramelas* would know that genus is covered under *Buellia*. However, the *Keys* book has an index organized alphabetically by genus which circumvents this potential difficulty.

When one of the keys relies heavily on previously published work, those works are mentioned in the key title (e.g. the keys for *Buellia*, *Lecanora*, *Placopsis*). The notes prefacing the keys for *Leptogium* and *Caloplaca* contain caveats delimiting how far the key accommodates recent work in those families/genera. This is true for other keys as well, and is a reasonable approach given the disruptions suffered by traditional genera and groups caused by recent molecular phylogenetics. Any work published today is a snapshot in time.

There is a glossary, which is comparable if not identical to the one in *Lichens of North America*. The literature cited section encompasses citations from the text reflecting new taxonomies. There is also an index, which should not be taken lightly; this is neither a monograph nor a book per se, but a collection of keys, and not all authors or publishers are willing to devote the time or funds to include an index in such a work. The index is organized by genus, and while I am understanding of those who wish to have an index that has separate alphabetical entries for epithets (i.e. *menziesii* would have its own entry under “M”), I find that the type of index in *Keys* works well for me. Perhaps it is more a matter of how one’s memory works? Following the index there is a section of line drawings and color plates illustrating the characters used in the keys; again, this is similar to *LNA*.

The inclusion of material already part of *LNA* might seem repetitious, but please remember that the author has revised the keys from that volume in part to create a manual that is easier to use in a classroom or workshop setting, with the hardbound book serving more as a reference. Having a glossary and illustrations at your fingertips is more than just a convenience, especially for individuals working at the student level.

One of the attributes of Dr. Brodo’s keys in *LNA* is his desire to keep to a minimum the use of microchemical spot tests and unnecessary technical vocabulary. He makes the same effort in the revised and expanded keys, to the extent that in the preface he is almost apologetic about increasing the use of chemical characters, particularly paraphenylenediamine. Personally I prefer the conciseness of “jargon,” and I wonder if the accessibility of nontechnical vocabulary sometimes results in more key steps, or perhaps more reliance on interpretation rather than the (usually) unambiguous results of spot tests. Possibly so, but I also know that I regularly turn to his keys for a fresh perspective when I have reached a dead end using other material.

The Lichen Flora of the United States (1935) covered 1,578 taxa for the U.S. Esslinger’s *Cumulative Checklist* (2016) reports 4,773 taxa for North America, after subtracting for lichenicolous fungi and other non-lichenized entities. *Keys to Lichens of North America: Revised and Expanded* includes 2,050 taxa, which theoretically means just under 43% of the lichens in North America can key out here. As always with floras that are not comprehensive, there is the danger of keying a specimen accurately but incorrectly. I have a modest 2.6 meters of bookshelf space for my technical material, mostly for California and the Pacific Northwest, that I use when I write about lichens. But when I bring home specimens from the Ouachita Mountains in Arkansas, or from the mountains above Los Alamos in New Mexico, areas for which I do not own the primary literature, I often find myself working with *Lichens of North America*. Now I have a revised and expanded tool in my toolbox.

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