

are additional blank entry spaces at the end of each group section for addition of species defined after the publication of this book. The book concludes with an Appendix of recent taxonomic and nomenclatural changes which depart from standard field guides (pages 431-478), Works Cited (pages 469-478), Index to Scientific Names (479-528), and Index to Common Names (pages 529-565). The last two are particularly valuable for equating a name used in older field guides to the name recognized currently.

What this is not is a field book. It is far too large and bulky to be carried on outings. It is a book for post-expedition entries. It is devoid of keys or text on identifications, these are left to consultation of the many guides listed in the references. But even naturalists who may purchase the book with the best of, but later unrealised, intentions, will find it a valued quick reference for their library for its analysis of North America distribution patterns, comparative species totals, and post-Pleistocene zoogeography, among many other con-

siderations, all carefully compiled from recent authoritative sources.

Whit Bronaugh now lives in Oregon and makes a living as a nature writer and photographer, but he grew up among the carefully manicured horse farms of central Kentucky and did not really discover nature until a university field course in Africa. He has remained in awe of the diversity of animal life ever since and, as an initial lifelist of birds expanded to include other groups, the concept to this book was generated initially to fill his own needs. His other work has appeared in popular periodicals such as *Wildlife Conservation*, *National Geographic*, *Natural History*, and *Smithsonian*. His photography presented here is restricted to a few small black-and-white reproductions in the book itself and colour ones on the attractive dust jacket.

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BOTANY

Grasses of Colorado

By Robert B. Shaw. 2008. University Press of Colorado, 5589 Arapahoe Avenue, Suite 206C, Boulder, Colorado 80303 USA. xi + 647 pages. 75 USD Cloth.

The grasses constitute one of the most important families of flowering plants in the world, both economically and ecologically. They are extremely diverse and generally comprise about one-tenth of the vascular flora in many parts of North America. They are dominant in many ecosystems, including several of the most extensive ecosystems in Colorado. *Grasses of Colorado* provides a thorough, up-to-date treatment of the 335 species of grasses known to occur outside of cultivation in the state. The book is arranged in several sections. The introductory section deals mostly with utilitarian aspects of grasses, including food and forage, soil conservation, turf and ornamental uses, and harmful grasses. The ecological significance of grasses receives rather limited discussion, despite the prominent role of the family in the state's major ecosystems. Following the introduction is a section on the physiography and ecoregions of Colorado which is informative and useful in understanding the distribution patterns of the grasses in the state. Maps outlining the major landforms, river systems, mountain ranges, and ecological subdivisions assist considerably in understanding these patterns. This section is followed by a chapter on grass morphology which contains good illustrations that cover most of the important features that are used in grass identification. These illustrations are particularly helpful when coupled with the illustrations of each species that are interspersed in the main taxonomic, descriptive part of the book.

The bulk of the book is comprised of the taxonomic treatments, including keys, descriptions of subfamilies, tribes, genera, and species, illustrations, and range maps depicting counties of occurrence. The species descriptions are quite detailed, including the important floral and vegetative characteristics. A concerted effort has been made to ensure that all descriptions are parallel, not just between species within a genus, but across all genera. Each species treatment also contains information on major synonyms, common names, origin (native vs. alien), a general habitat description, and a section for comments on status in the state, taxonomic issues, and similar species. The accompanying illustrations are reproduced with permission from the two grass volumes of the *Flora of North America* (Barkworth et al. 2003, 2007). These generally are excellent and, when used in conjunction with the keys and descriptions, should enable successful identification. On occasion, I found the comment subsection in the species treatments to be redundant (same information repeated for several species within a genus), but more often than not, there was useful supplementary information there.

In general, Shaw follows the taxonomic concepts espoused by other grass experts, as reflected in the *Flora of North America*. However, there are a few departures, such as the segregation of *Melica* into two genera, *Melica* and *Bromelica*, the segregation of *Bromus* into four genera, *Anisantha*, *Bromopsis*, *Bromus*, and *Ceratochloa*, corresponding to the sections of *Bromus* in most other North American treatments, and the separation of *Critiesion* from *Hordeum*. Most of the rest of the taxonomic treatment will be familiar

to those who follow grass taxonomy, including the segregations and realignments of species within genera in the tribe Stipeae.

The content of the book generally is of high quality, and, as much as is possible with a group of plants that has its own set of descriptive terminology, the text and keys are readable with jargon minimized. There are occasional inconsistencies in the text; for example, in the treatment of *Digitaria sanguinalis*, under Origin, the species is said to be native, but in the Comments section, it is stated to be "a European species now established as a global weed." I detected relatively few proof-reading errors (e.g., synonym not italicized, punctuation misplaced, rare spelling errors), and these do not detract substantively from the book.

This book provides a welcome updated treatment of the grasses of Colorado. In spite of the fact that there is a recent North American taxonomic treatment

of the family, there will always be a need for regional and local treatments, especially for large and diverse families such as this. The book should prove to be useful for the identification of grasses in several adjacent states, including much of the upper Midwest, from Montana to North Dakota and south to Kansas. It should also be useful in the southern portions of the Prairie Provinces.

Literature Cited

- Barkworth, M. E., K. M. Capels, S. Long, L. K. Anderton, and M. B. Piep, Editors. 2007. Flora of North America North of Mexico. Volume 24. *Magnoliophyta: Commelinidae* (in part): *Poaceae*, part 1. Oxford University Press, New York. xxviii + 911 pages.
- Barkworth, M. E., K. M. Capels, S. Long, and M. B. Piep, Editors. 2003. Flora of North America North of Mexico. Volume 25. *Magnoliophyta: Commelinidae* (in part): *Poaceae*, part 2. Oxford University Press, New York. xxv + 783 pages.

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The Macrolichens of New England

By James W. Hinds and Patricia L. Hinds. 2007. *Memoirs of the New York Botanical Garden* Volume 96. New York Botanical Garden Press, Bronx, New York. 608 pages, 65.00 USD Cloth.

The most recent publication on lichens from the New York Botanical Garden is the first detailed treatment of New England macrolichens. Before the reader even opens *The Macrolichens of New England* the 14 beautiful photos on the front and back covers give the sense that it is something special. This much-awaited guide, drawing on 35 years of collected photos and knowledge of the lichenologist team of James and Patricia Hinds, describes and illustrates the lichen flora from a very unique region rich in lichen flora. The Hinds share with the reader a plethora of information ranging from specific species treatments to general lichen biology so it appeals to the serious professional and novice alike.

A quick key index inside the front cover provides the reader with direct access to a group or classification of their choice; a useful tool allowing this book to be used strictly as a field guide. The front sections should not be overlooked as they provide, in much the same way as I. M. Brodo, S. D. Sharnoff, and S. Sharnoff (2001) *Lichens of North America*, 70 pages of useful information that will inform and help the reader to explore the world of lichenology. These early chapters provide essays on anatomy, ecology, lichen conservation and population trends, and identification. The general key section follows the background (approximately 30 pages) which will direct you into the genus descriptions (some 400 pages). The extensive references cited, glossary, two appendixes, and index, organized by Latin name, round out the book.

A total of 502 species is covered, including 308 with colour photos. Some of these species are extremely

rare, not typically described in literature of this type. Included are species found in adjacent localities, which could occur in the region of study. Microlichens are briefly discussed in the introductory chapters but are not treated with the same detail as the macrolichens. Many of the species discussed have coastal affinities, with many others found inland, making this book a great resource for readers interested in species across the entire continent.

For the most part the photos are stunning, and beautiful, capturing key identification features needed for the reader to compare species observed or collected with the photos in the book and make accurate and correct identifications. Capturing the entire depth of field in macro photography is a common problem and generally the authors do a great job. Some of the images, however, suffer from poor depth of field sharpness and have blurred or fuzzy portions. (i.e., figures 111, 165, 272). There are many more stunning and beautiful images with great depth of field than with out. Species described without an image include a reference, when available, to another source where a photo was provided.

Two omissions of occurrence records should be noted. One was on page 51. When describing the rarity of *Leptogium rivulare* the authors suggest that the most recently known collections occurred in the early 1970s (Southern Ontario); however, collections of this species occurred in the early 2000s (Southern Ontario 2002 and Manitoba in 2003) and more recently in Southern Ontario in 2007 (not published). The second was a reference to the distribution of *Xanthoria parietina*, page 525, which is described as restricted to oceanic coastal areas. In general this is true but recent inland discoveries, including records in Southern Ontario (2002 and 2006); have been documented.