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Field Guide to the Grasses of Oregon and Washington
Cindy Talbott Roché, Richard E. Brainerd, Barbara L. Wilson, Nick Otting, and Robert C. Korfhage. 2019. Oregon State University Press. ISBN 9780870719592. 488 pp. soft cover. \$35

This is a review of the *Field Guide to the Grasses of Oregon and Washington*, a long-awaited book by a group of eminently qualified and experienced botanists and ecologists. According to the authors, this work began in 2003 as a desire to complete a definitive reference work for the grasses of Oregon. Washington state was added later. I was asked to write a review of this field guide from the perspective of a field botanist/range conservationist who has dealt with, and often struggled with, grass identification over the course of several decades.

First, reading the 14-page introduction is crucial. Here you'll find an explanation as to why grasses are important, a discussion of what constitutes a grass and a bit about grass identification in general. The bulk of the introduction consists of a section entitled "Grass Structure and Vocabulary" with the caveat "READ ME." The authors aren't kidding. Read and understand this section and you'll know enough grass anatomy to be well on your way to becoming an agrostologist. This was enjoyable, even entertaining reading, enhanced by the inclusion of appropriate line illustrations. Completing the introduction are sections on grass biology and tips on how to use the book.

Following the introduction are the "Keys to the Genera of Grasses." Starting at square one, dichotomous choices will take you first to "groups" and then to genera. Once you've determined (or guessed) a genus, the next section, "Genus Descriptions and Keys to Species" is where you need to be. Conveniently, this is organized alphabetically for all taxa. So, if you key to the genus *Hordeum*, for example, thumb through the genus descriptions to *Hordeum*, and there you'll find a key to determine species. So far, this is somewhat standard for most keys.

However, once you think you've identified your grass to species, then the next section, Species Accounts, is where this book really shines, not to slight the keys. Here you'll (typically) find a page for each species, organized alphabetically. Generally, two-thirds of each page is devoted to high quality, detailed photographs of each grass, from a general view of the plant itself all the way down to diagnostic features such as ligule size and shape, glume

hairs and the like, including measurements where important. The rest of the page includes a map of the species' occurrences from the Oregon Flora Project, a technical description, a brief habitat statement, and informative comments. Each species is also tagged as to its nativity (also indicated in the species keys), and, of course, the latest nomenclature is used.

As per the authors' advice, one can either use the key, the species accounts, or both. For me, both are essential, and my preference would be to use the key first, and then the species account to validate or refine. But if you know your genus, you could thumb through the species accounts to come up with an ID.

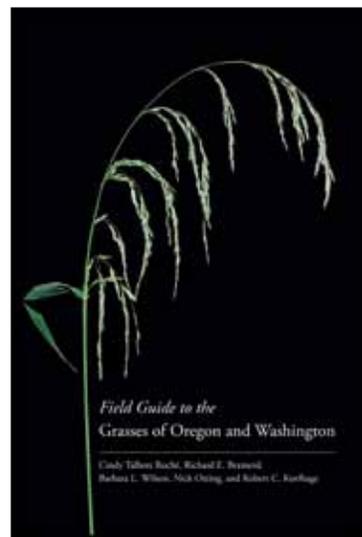
To test the key, I found a couple of dry, weathered specimens (all I could find mid-November) and worked them through. It seemed pretty easy, but I can't wait until next field season to really give it a workout.

Following the Species Accounts is a fairly standard glossary followed by a list of references and an index. The index is where you'll find taxonomic synonyms.

What I really like about this book is that it's technically correct yet friendly. For example, in the introduction is a brief discussion about spikelets being laterally compressed, cylindrical or dorsiventrally compressed. These can be intimidating words. However, the authors suggest you simply place the spikelet on a table and depending on how it orients itself, this will tell you how it's compressed. In another case to determine if a spikelet is flat or not, it is suggested to just roll it between your fingers. These are simple "tricks" that only come with experience, and I've never encountered such helpful advice in any other key. It's as if someone was looking over your shoulder helping you make sense of it all.

About the size of half a sheet of paper and an inch thick, the book is small enough to take with you to the field, and its glossy cover should provide some protection from the elements.

If you care about grass identification, either as an amateur or professional, you need this book. From my experience, no other grass key is as useful and user friendly. Along with GPS, GIS, digital cameras and Google Earth, I wish I had this book 40 years ago.—Ron Halvorson, *High Desert Chapter*



**Winner of the
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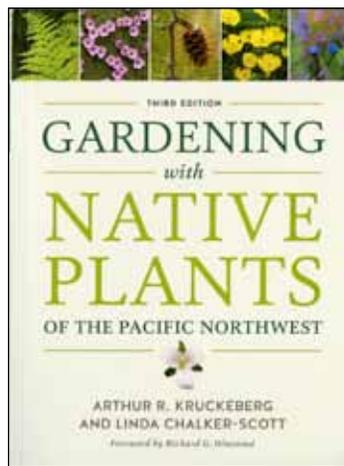
**Gardening with Native Plants of the Pacific Northwest
Third Edition**

Arthur Kruckeberg and Linda Chalker-Scott. 2019. University of Washington Press, Seattle, Washington. ISBN 978-0-295-74415-5 374 pp. Softcover. \$35.00

Three and a half decades ago, Art Kruckeberg shared his passion for cultivating native plants in *Gardening with Native Plants of the Pacific Northwest*. At that time good references on this topic were scarce and his book filled a gap between desire to grow natives and knowledge of how to do so. Much has changed since publication of that first edition, indeed since the second edition in 1989. Interest in growing natives has grown exponentially, starting with roadside beautification and wetland restoration and expanding into home gardens, parks and street side “hell strips.” Pollinator support has shifted awareness to hardy native plants that provide habitat as well as nectar and pollen for native insects. Water restrictions and wildfires have generated interest in drought-tolerant and fire-resistant natives.

The contents of this third edition are organized into seven chapters, preceded by an introduction. Sami Gray managed the layout of this edition, with the goal of illustrating every habitat and each species with a photo. She succeeded by enlisting 80 photographers from throughout the Pacific Northwest, including both of us. All references to wild collection of native plants have been removed; many species are now available as plants or seed from commercial sources. The introduction chapter discusses plant names, the options one encounters in plant nurseries (natives, varieties, cultivars and hybrids), and uses of native plants in gardens and landscapes. The icons used throughout the book for habitats are explained here, so don't skip over this chapter. Chapters two and three are new to this edition and review garden ecology and science, covering basic knowledge needed by anyone growing native plants.

Chapters three through seven introduce trees, shrubs, perennial forbs, graminoids, and annuals. The nomenclature was updated to the newly published second edition of the *Flora of the Pacific Northwest*. The original edition described about 250 species, this number was expanded to nearly 1,000. In each section, species are grouped by type (ferns, lilies and irises, etc.) then alphabetically by genus, making them easy to locate, or sorted by height, a layout that will appeal to gardeners looking for plant solutions for specific spots. Habitat icons help the reader decide which species to try, and which to avoid based on the likeliness, or not, of delivering the proper habitat conditions in one's home garden. Rock garden selections are featured in several sections. One native endemic shrub



was mentioned, queen-of-the-forest (*Filipendula occidentalis*), a lovely shrub that is often overlooked in regional field guides.

Perennial forbs (wildflowers) are allotted the most space (40 pages), while trees and shrubs share about equal coverage, 24-26 pages. Much less space is devoted to grasses and grass-like plants (13 pages) and annuals (4 pages). The latter was justified by a statement in the introduction: “unlike in California and the Southwest, there are few native annuals in the Northwest, and even fewer with any exceptional garden potential.” But the light coverage of native grasses cannot be attributed to the same rationale, as the number of species offered by native plant nurseries far exceed the options mentioned in chapter six. Indeed, a major omission was a section on options for native grasses as low to no-mow turfs for replacing lawns. In the back, there is a new appendix listing plant societies and botanical gardens, along with a glossary, bibliography, index of subjects, and of common and scientific names.

There appears to be a rather heavy bias toward the west side of the Cascades, which isn't surprising since the authors and editors are all based in western Washington. It would be good if future editions created a little more balance for east and west recommendations. For example, potential problems should be mentioned when mixing native and nonnative plants in urban gardens of arid regions. Urban landscape substrates frequently have only a few inches of “topsoil” or compost added over heavily compacted fill material, forcing plants to depend on shallow roots. To compensate for the absence of deep roots, ornamentals are watered frequently, saturating the surface soil. Native plants in arid eastern Oregon often die in these conditions, either from overwatering (lack of permeability) or from drought (lack of rooting depth). In addition, recommendations for grasses east of the Cascades are less than they could be. For example, the statement “the tallest native grass in the Pacific Northwest surely must be giant rye grass (*Elymus canadensis*)” leaves me puzzled. The common name for *Elymus canadensis* is Canada wildrye; the tallest native bunchgrass is basin wildrye (*Leymus cinereus*), which is highly recommended for landscaping, but not even mentioned in the book. The most common grass referred with the common name squirreltail is *Elymus elymoides*, not *Elymus multisetus*. While both are excellent species for restoration, they are not particularly good garden plants because they readily self-seed and the awns are a nuisance for dogs. The book's roster of eastside grasses on pages 236-7 is equally misleading: *Buchloa* and *Bouteloua* are not native to eastern Oregon and Washington;

Grama (presented as a genus name) is the common name for *Bouteloua*; the genus name *Stipa* (now *Achnatherum* for our species) is listed, despite the statement in the preface that the book follows nomenclature of the *Flora of the Pacific Northwest*; *Poa* is such a large genus that it is nearly meaningless to list *Poa* spp.

Despite these criticisms, we recognize that offering plant selection advice on both sides of the Cascades, from the seashore to interior montane gardens, is a formidable challenge, given the variation in growing conditions in the Pacific Northwest. Without adding another fifty pages or so of habitat and climate details, this book provides succinct and visually gorgeous information to guide readers in growing native plants in home gardens. It's definitely worth upgrading to the new edition; it contains a wealth of recommendations. —*Kathleen Sayce, Filipendula Chapter and Cindy Roché, High Desert Chapter*

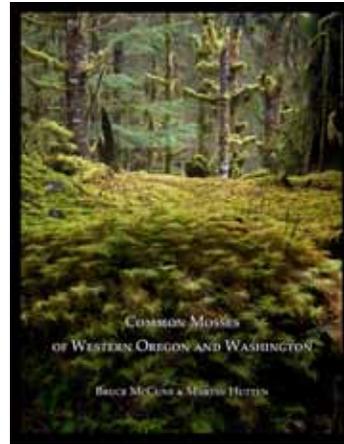
Common Mosses of Western Oregon and Washington

Bruce McCune and Martin Hutten. 2018. ISBN: 978-0-9987108-2-2. Wild Blueberry Media, Corvallis, Oregon, U.S.A. Paperback. \$40. Available from <https://www.wildblueberrymedia.net>

Geared towards beginning moss enthusiasts, this luxuriantly illustrated guide to “one of the mossiest places in the world” is a great place to start for bryo-curious botanists in the Pacific Northwest. The volume is perfect for the field or lab, as it includes field-observable and microscopic photographs on nearly every page and, at only 146 pages long, it easily fits in one's backpack. The authors are both scientists who specialize on bryophytes and lichens. The first author, Bruce McCune, is a professor at Oregon State University where he has taught for over 20 years and published extensive scientific research and identification guides on lichens and bryophytes. The second author, Martin Hutten, currently works for USDA Forest Service in Alaska, and has worked for National Forests and National Parks throughout North America. Martin earned a PhD in 2014 from Oregon State University where he conducted research on lichens in Yosemite National Park. The two authors combine their wealth of knowledge on bryophytes with exceptional photography to write a book that is accessible for beginners wanting to dive into the world of mosses. I was particularly interested in writing this review for two reasons. First, I am a lichenologist who recently started to learn bryophyte identification. Second, I teach undergraduate botany at a university and was curious to see if this book would be a good educational aid.

The text is organized into three main sections: introductory material, extensive keys, and further information including a glossary and references. The introductory material begins by outlining the scope and purpose of the book and unique features of the keys. A detailed review of moss basic biology and life cycles follows with illustrations and bolded key vocabulary. The section wraps up with instructions on how to collect, preserve, and study mosses

in the lab. Next, the keys comprise the bulk of the book (110 of 148 pages). The structure of the keys in this book is unique when compared to similar references. The distinguishing features for each couplet is listed first and demarcated by a semicolon. Then, descriptions are listed after the semicolon, and full illustrations are integrated onto the page where the species is listed. This layout reduces the amount of flipping back and forth between keys, descriptions, and illustrations that is inevitable in the layout of most similar books. Illustrations in the key section are extensive. The right page of each two-page spread is all photographs, and the left page is a quarter to half photographs as well. For instance, if you collected a sample of



Claopodium you would be directed to “Key O – Pleurocarps; Costa Long and Single; Papillose Leaves.” On this two-page spread, in addition to extensive discussion on the differences among the three species, on the left, you will find a photograph illustrating differences among the leaves of the three species and, on the right, macroscopic photographs of the three species, along with

a micrograph of the diagnostic papillae of *Claopodium crispifolium*. After the keys, there is a short nomenclatural note on synonyms, a page illustrating the evolutionary relationships among moss genera, and my favorite part of the back material—a thoroughly illustrated glossary. Most terms are illustrated with high quality photographs, and a full-page line drawing of leaf shapes is included as well. Acknowledgements, references, and an index wrap up the very end of the book. This content is encompassed in an easy-to-pack paperback book with all glossy paper.

Common Mosses of Western Oregon and Washington is a great starting point for botanists interested in expanding their knowledge to moss identification from northern California to British Columbia. I also recommend it for educators who incorporate moss identification into their teaching, as I know of no better beginner's reference. —*Jessica Allen, PhD, Assistant Professor, Eastern Washington University*

Flora and Fauna of the Pacific Northwest Coast

Colin Varner. 2018. University of Washington Press, Seattle, Washington. ISBN 978-0-295-74464-3 464 pp. 2000 color illus. 7.5 x 10 in. Paper. \$34.95

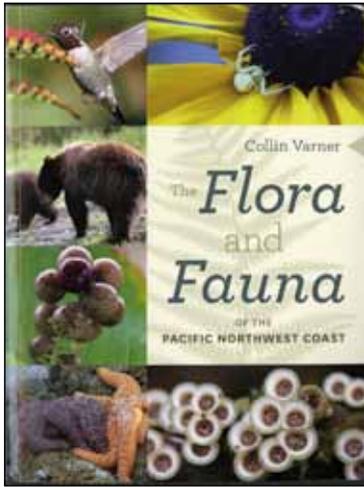
Colin Varner started his career in 1977 in the botanical garden of the University of British Columbia, where he became the university's arborist/horticulturist and also teaches native plant studies. He spent 17 years collecting information and photos for this book. Most of the photos

are by the author and most are stunning. The layout is impressive as well. In the author's definition, the Pacific Northwest coast extends from Juneau, Alaska, to San Francisco, California. As if that weren't a big enough area, he extends his coverage inland about 60 miles, so that the species in this book are "the delights that the ambler encounters from the intertidal to the subalpine areas." If one skips over this introduction, it could be confusing to encounter high elevation species in a book about the coast.

As the title indicates, there are two main divisions in the book, flora and fauna. The flora section has eight chapters: Flowering Plants, Berries, Ferns, Shrubs and Bushes, Trees, Fungi and Allies, Invasive Plants, and Marine Plants. The fauna section has six chapters: Birds, Land Mammals, Amphibians, Reptiles, Insects and Associates, and Marine Life.

The Flowering Plants chapter includes mostly forbs with showy flowers, arranged alphabetically by family name, from Asteraceae through Violaceae. Curiously, here he includes three members of the family Lycopodiaceae, which produce spores, not flowers. Goatsbeard, *Aruncus dioicus*, appears twice, once in Flowering Plants and again in Shrubs (pages 87 and 139). The only error we found here was that the photo for *Carex nigricans* on page 43 is a *Juncus* species, possibly *J. mertensianus*. Photos of the other two sedges, *Carex macrocephala* and *C. obnupta*, show the characters beautifully, and the understatement that *Carex macrocephala* is not pleasant to step on with bare feet is a nice touch. This section completely avoids grass species, possibly because the author considers them to be "more obscure species" that are not "visible to the typical viewer," and we can't argue with this.

The Berries chapter is mostly edibles; it includes two blackberries that are on several invasive species lists (*Rubus armeniacus* and *Rubus laciniatus*). The Fern chapter describes ten common ferns. In the Shrubs and Bushes chapter, photos show fruits or flowers and leaves or growth habit. Trees are also organized alphabetically by family name, which serves, conveniently, to present the hardwoods first, followed by the conifers. Fungi and Allies starts with members of the sub-family of Ericaceae (Monotropoidae) and finishes with fungi ranging from *Amanita* to dog vomit slime mold. The problem with this is that whether one defines "allies" as related species or as species that help one another, the term does not fit here. Fungi are more closely related to a human baby than they are to plants (Dan Luoma, pers. comm.);



the plants described in this chapter are now considered mycotrophytes.

The final chapter in the Flora section is a thorough and comprehensive collection of non-native plants. The author's coverage is impressive and underscores the prevalence of introduced species in mild coastal environments. We are curious only about why, in the alphabetical listing of families, he chose to include wild proso millet (in the family Poaceae) in between the families Chenopodiaceae and Convolvulaceae. Compared to European beachgrass and cordgrasses, this is a relatively innocuous weedy grass. The more aggressive and easily identified genera of *Ammophila* and *Spartina* are not mentioned.

In the Marine Plants Chapter, one would be able to identify *Nereocystis* from the photo alone, but not *Macrocystis*. The rockweeds and sargassum are adequately presented; algae covered are most of the larger kelps and commonest greens and reds. Let's say this chapter serves as an introduction to the uninitiated. The remaining chapters cover the fauna, but beyond admiring the photos, we won't detail that section for this plant society review.

We don't recommend this book as a technical guide, but as the author indicated, he wrote it for casual observers not deeply familiar with the natural history west of the Coast Range. The book is a bit too large to easily carry as a field guide, but with its lovely photos, it's a book that visitors would be delighted to find in any vacation rental house along the coast. —Kathleen Sayce, *Filipendula* Chapter

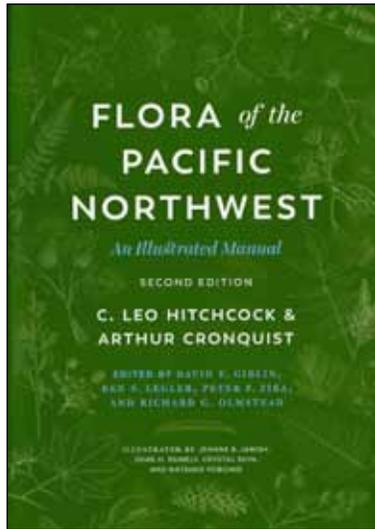
Flora of the Pacific Northwest, An Illustrated Manual, Second Edition

C. Leo Hitchcock and Arthur Cronquist. Second edition edited by David E. Gibling, Ben S. Legler, Peter F. Zika, and Richard G. Olmstead. 2018. University of Washington Press, Seattle, WA. ISBN 978-0295742885. 936 pp. Hard cover \$75.

The *Flora of the Pacific Northwest* is the long awaited, fully updated, second edition of Hitchcock and Cronquist's 1973 classic botanical text for our region. This masterpiece has been revised to include current research in vascular plant systematics, including reorganized family structure and up-to-date name changes. It also includes over 1,000 newly described or documented native and naturalized non-native species, and an additional 1,382 illustrations.

The need for an update is obvious when one considers that 40% of the taxa in the first edition have new names. The scope of this update is enormous. The editors are to be congratulated, along with the many others who helped both in time and money. However, the revisions are not just in names and taxa. The editors' experiences in field taxonomy shines throughout the volume. To my surprise, the keys and descriptions were improved in ways that would only be possible by expert botanists well versed in the original edition.

I have been using the *Flora of the Pacific Northwest* with students for more than 30 years. Steven Yeager, Heron Brae, and I teach a 300-hour class that focuses heavily on field taxonomy as a skill. We read the family descriptions and keys out loud and define every term. I have compared keying in both versions for all the plants we identify in class, plus many more, for a total of over 100.



The results exceeded all my expectations in that almost every plant keyed as well as or better than in the first edition.

Many keys in new floras use computer-generated statistics to design couplets that separate out the highest number of taxa. Although this makes the key shorter, sometimes a distinctive, easy-to-see characteristic for a taxon is not mentioned until its description. Hitchcock and Cronquist realized that humans are good at seeing “which of these are not like the others,” and often used couplets that easily separated distinctive species from the others, a process that works particularly well in condensed floras that do not include descriptions. The new version of their keys continues this approach. For example, on the first page of the family key, branch parasites and cacti are distinguished from other families by their unique characters, simplifying the rest of the key.

The new edition maintains the style of the original edition in which each couplet contains more than one characteristic and numbers are used instead of relative terms like large vs. small. The editors further improved the keys by selecting additional characters to couplets that were difficult in the first edition. For example, in the first lead, the new edition adds the character whether the keel is pubescent or glabrous, which quickly distinguishes *Collinsia sparsiflora* from other *Collinsia* species. This small addition makes a great difference in a couplet that was often difficult for me.

When we teach how to use the family key, after reading a family description, we teach supplemental information, such as particular terms and techniques for measuring floral parts specific to the family. The editors made our work easier by adding this information to the family descriptions (and other places, as needed). For example, the editors describe how to measure the corolla of a bilabiate tubular flower in the Lopseed Family (*Phrymaceae*).

We use the buttercup family to teach our students about flower morphology and how to recognize each of the four floral whorls. For example, students often mistake the showy sepals for petals. The revised key clarifies this

common error, and shows a much-appreciated attention to detail.

Old version:

- 1a. Fl(lower) strongly bilaterally symmetrical, showy
- 1b. Fl(ower) nearly or quite reg(ular), often not showy

New version:

- 1a. Fl(ower)s strongly bilaterally symmetrical, sepals showy, > petals.
- 1b. Fl(ower)s radially symmetrical, sepals showy or not, petals various, occ(asionally) absent.

The authors also go to great trouble to help the reader understand technicalities not evident, or of concern, to non-professionals. For example, some new taxa are morphologically identical to, but differ genetically from, the original taxon. The authors describe the diploid variant of Youth on Age (*Tolmiea diplomenziesii*) and group it with the original taxon in the key. Also, the *Liliaceae* has been split to several new families, which is confusing at first. Along with keys for each of the new families, understanding that lilies in the traditional sense are easy to recognize as a group, the editors include a lily key that encompasses all the original taxa.

A current trend in contemporary keys is to use a simpler vocabulary, the “dumbing down” of botanical language. Academic botany is moving away from the traditional field approach; young botanists are immersed in genetics. Some newer keys are written primarily as checklists and descriptions of taxa, and the actual keys are of poor design. I have been told that within the next decade, keys will be obsolete. I guess we will have handheld iPhone-size “gene-machines” that identify the plants for us. Thus, I was concerned that the rich vocabulary of the original *Flora of the Pacific Northwest* would be lost, as well as the skill of field taxonomy, much like the art of celestial navigation, “hands-on” physical assessment by doctors, and the language and music of indigenous cultures. With this second edition, the editors have revitalized and preserved the tradition of field taxonomy for the enjoyment of future generations.

This book is the most up-to-date, comprehensive reference of vascular plants for the Pacific Northwest, except the southern part of Oregon where botanists will continue to use The Jepson Manual and the Intermountain Flora until the remaining volumes of the Flora of Oregon are published. Unlike field guides illustrated with color photos of flowers, this is a technical manual, replete with dichotomous keys, line drawings, and botanical terminology. The University of Washington Press website states it will be of interest to (and I would add “a must have” book for) “professional and amateur botanists, ecologists, rare plant biologists, plant taxonomy instructors, land managers, nursery professionals, and gardeners.” —*Howie Brounstein, Columbine School of Botanical Studies, Emerald Chapter.*