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COMPLETEGUIDETOSPECIESIDENTIFICATION. Welby R. Smith;
photography by Richard Haug.**

Edward S. DeKeyser

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BOOK REVIEWS

SEDGES AND RUSHES OF MINNESOTA: THE COMPLETE GUIDE TO SPECIES IDENTIFICATION.

Welby R. Smith; photography by Richard Haug. 2018.
University of Minnesota Press, Minneapolis, Minnesota,
USA. 667 pages. \$39.95 (paper). ISBN: 978-1-5179-0275-9.

Even the most seasoned individual with a plant identification background can relate to the difficulty of identifying sedges and rushes to the species level. Historically, one has had to rely on dichotomous keys to identify a sedge or rush species in the field. After hours of frustration, a person ends up collecting the plant and, if lucky, bringing the collection back to a herbarium where it can be compared to known specimens. I have been collecting and identifying sedge and rush species for over 25 years, and author Welby Smith along with photographer Richard Haug have published what I believe will be considered one of the most usable field guides for sedge and rush identification in the upper Midwest.

I believe I should mention early in this review what makes this book such an amazing resource for field identification of sedges and rushes—the photography. The photography is of the highest quality I have ever seen! The array of photographs included with each species focuses on the characteristics that clearly differentiate one species from another. Each species usually has a photograph of the whole plant and sometimes the plant within its habitat. There are always photographs of the inflorescence and fruit, including perigynia or capsules and achenes or seeds. For example, the genus *Carex* includes photographs of the scale (sometimes the scale with the perigynium), the perigynium (usually dorsal and ventral views), and the achene, and in certain cases there are multiple photographs of each showing the changes in color during the season. Most of the photographs are of living plants and their parts, which is exactly what one would see in the field. Having pointed out this fact, it is mind boggling how much time and effort that the people involved in the production of this book must have dedicated to putting this resource together. It had to be a passion or, at least, an obsession toward perfection.

Sedges and Rushes of Minnesota starts with an interesting Preface that discusses the fact that sedges and rushes are closely related molecularly to one another, and even though they are grass-like, they are “distant cousins” to the grasses. It continues by including basic descriptions of morphological characteristics of sedges, rushes, and grasses. I agree with the author in the Introduction where he indicates that, although the book is similar in style to the *Flora of North America*, there is not the same degree of technicality. The descriptions

throughout the book are regionally specific to collections within Minnesota and express their variability only within the state. The Introduction also includes explanations and color maps of the major substrate types and vegetation zones of Minnesota. Users may find themselves referring to these maps frequently because each species within the book has county locations indicated on a Minnesota state map.

The fact of the matter is that a novice is going to have difficulty identifying sedges and rushes; however, everyone must begin somewhere, and this book will give the beginner the best chance of learning to identify these species correctly. The key to the genera at the beginning of the book, the keys to taxonomic sections and species, and genera and species descriptions do include technical terminology that the reader will have to understand. These technical terms are necessary for these species, and most terms within the book are in the glossary. The glossary along with the high-quality photos give most terms clear meanings for the reader.

Each genus has a basic technical description of the characteristics common to that genus followed by a key to sections or species, typical of most plant identification books. I especially appreciate the definitions and high-quality photographs of the technical terms used in the different genera. For example, in the genus *Carex*, the photographs showing inflorescence with male and female spikes, gynecandrous spikes, and androgynous spikes make the meaning of these terms crystal clear. It should be noted that the genus *Carex* is broken down first by major section, and then by species.

Two pages are dedicated to each species. The first page includes the current scientific name and a list of synonyms. The author does not provide the common name of species due to lack of agreement by many on the proper common name of sedges and rushes. There is a short technical description of the major morphological characteristics and the timing of maturity within Minnesota. The technical description is followed by a less technical description, utilizing layman’s language and interesting information on the species. The last section of the description includes information on habitat characteristics. The color map of Minnesota includes collection locations within the counties and major vegetation zones. The second page is dedicated to the high-quality photographs described above.

Upon receiving this book, I actually had a large number of sedge and rush species that I had collected as part of fen and wetland research conducted during the last two field seasons. I figured the easiest way to test the usability of this book is to key out the species collected. It was the quickest and easiest

time I have ever had keying out these species. For example, I have always struggled with the *Carex* section *Phacocystis*, especially species like *C. aquatilis*, *C. emoryi*, and *C. stricta*. The ease of use of the keys developed and the high-quality photographs gave me new insights into these species, to the point where I now feel comfortable easily identifying these species in the field. Of course, I am going to make sure I have this book with me in the field, just to be positive. —*Edward S. DeKeyser, Professor/Program Leader, Natural Resources Management, North Dakota State University, Fargo, North Dakota 58108, USA.*