

sification of sticky-leaved carnivorous plants, their trapping mechanisms, evolution, and known mutualistic relationships with arthropods.

The bulk of the book examines the seven known genera of sticky-leaved carnivores. Most readers may be familiar with the sundews (*Drosera*) that make up at least 188 species and that occur on every continent except Antarctica. McPherson dedicates a chapter to each of the seven genera of sticky-leaved carnivorous plants: *Byblis*, *Drosera*, *Drosophyllum*, *Ibicella*, *Pinguicula*, *Roridula* and *Triphyophyllum*. He describes each genus in terms of botanical history, plant structure, distribution and habitat, and general ecology. The final two chapters examine issues related to habitat loss and threat of extinction and to cultivation and horticulture.

McPherson's travels to the global hinterland and collaboration with botanical specialists the world over enrich this book. Complementing the text are 279

exquisite photos of various sticky-leaved species, many published for the very first time. A short but helpful glossary plus a specialized bibliography complement the text.

We are increasingly aware of the loss of Earth's biodiversity – a loss that is often irreparable and final. We seem unable to reverse the tide. However, maybe it will be books like this one that will provide a glimmer of hope. It is the progeny of an author whose passion for a marvellous and exquisite group of plants shines forth throughout these pages. If you are a devotee of carnivorous plants, this book is for you. If you just love plants, this book will carry you into an exotic world – a world that invites appreciation, care and maybe even love.

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### Trees and Shrubs of Minnesota

By Welby R. Smith. 2008. State of Minnesota Department of Natural Resources and University of Minnesota Press, 111 Third Avenue South, Suite 290, Minneapolis, Minnesota 55401-2520 USA. 640 pages, 59.95 USD, Cloth.

Spectacular, comprehensive, user-friendly – this book is a must for everyone interested in trees and shrubs. Obviously it is about Minnesota but don't despair – the boreal forest and prairie regions of Saskatchewan, Manitoba and Ontario (and most other surrounding areas) have the same woody plants that occur in Minnesota. This means that the keys, descriptions, identification notes, natural history notes, and, most importantly, numerous (actually 1027) spectacular photographs will still be totally useful. This is an unbelievable buy!

The book covers all native (present prior to settlement by Europeans) and naturalized (non-native but now established and reproducing without human assistance) species of woody plants (506 trees, shrubs and vines) in the state of Minnesota. The objectives and basis for the book are outlined in a short preface. The work is intended to appeal to a broad audience. A very useful introduction follows. The maps of original vegetation, ecological provinces, climate and substrate type, are extremely valuable for all surrounding regions as well as providing an essential context for understanding distribution in the state. The book is not without surprises. A few pages in the introduction on the importance of fire in determining vegetation are unusually clear and help to provide an understanding of ecological processes. A page on forest change since settlement is also illuminating. I would like to have seen a little more about the devastating impact of alien woody plants on native ecosystems and perhaps also some warning about introduction and cultivation of non-woody native species. For more information regarding Canada see Catling (1997). Some details

on the history of the study of woody plants in the state might also have been of interest.

Following the introduction are easy to use keys to the genera. Occasional reference to an adequate glossary at the back of the book may be necessary to use this and other keys. The species are organized by their scientific names. This results in the separation of similar species such as Black Locust and Honey Locust, but of course there are compensating advantages. Where a number of species occur in the same genus a few pages of introduction and a key are provided. Coloured tabs on the edge of the pages are the same for all members of a genus. For each species there is a page of text, including a description, and notes on identification and natural history. A few things might be added to the identification notes here and there. For example, the absence of two white lines on the underside of the leaf of Canada Yew helps to distinguish it from Hemlock and Balsam Fir. Potential improvements are minor and the keys and identification aids are very good. Both state and North American distribution maps also appear on the text page. The state maps are based on herbarium specimens.

Opposite the text is a page of colour photographs of fruit, flowers, bark, leaves, and whole plants. This is often accompanied by a habit drawing by Vera Ming Wong, who also provided helpful comparable drawings of leaves of many species. The photographs are of excellent quality and in seconds will answer questions like "how do flowers of red maple differ from those of sugar maple." The book concludes with an 8-page glossary, an 8-page bibliography and an index to common and scientific names.

As soon as a comprehensive book becomes available, it results in a surge of interest and exploration in the subject area. There will be new information on

the shrubs of Minnesota, just as a result of this book. Hopefully Welby Smith will publish an update, and perhaps later a revised edition. This will provide an opportunity for some minor improvements. A few of the North American maps need minor changes, some likely too recent to have been included in this volume. For example it is not clear that *Amorpha fruticosa* is both native and introduced in southern Ontario (Catling 2006) and *Amelanchier sanguinea* occurs in Saskatchewan (Catling and Mitrow 2006). It would have been helpful if *Crataegus coccinea* and *C. scabrida* were included in the key since this increases the opportunity of their rediscovery. There is lots of space on page 583 (which is blank) for a key to all of the greenbriers (*Smilax*). Although the five other species that occur in the state are not woody, this would be helpful. Spreading invasives that are likely future arrivals to the state such as Autumn Olive (*Elaeagnus umbellata*) and Amur Honeysuckle (*Lonicera maackii*) might have been included in the keys to facilitate their future discovery in the state. Cultivated apples (*Malus*) are naturalized in Minnesota (Ownbey and Morley 1991) and probably should be in this book. The hybrid poplar, *Populus × jackii* Sarg. (*balsamifera × deltoides*) should also be discussed briefly. Smith notes that the threat of introduced White Mulberry to native Red Mulberry “does not seem great”, but it does seem to be great in other regions, such as southern Ontario, where White Mulberry and hybrids occupy available space and pure Red Mulberries are increasingly scarce (personal observation). These are minor considerations for the slight improvement of a remarkable book.

What is it that makes this book so comprehensive? The author reads the scientific literature and communicates with world experts. It will be of interest to Canadians that he sought the help of prominent Canadian scientists George Argus, world expert on willows, and James Phipps, world expert on hawthorns. The current, sensible and accurate treatments of complex groups such as serviceberries (*Amelanchier*), hawthorns (*Crataegus*), raspberries and blackberries (*Rubus*) and willows (*Salix*), make this book especially valuable. *Rubus* expert Mark P. Widrlechner is the senior author of the treatment of *Rubus* which is based largely on 300 recently collected herbarium specimens.

This is not the first book on the woody plants of Minnesota published by the University of Minnesota Press. Possibly the first was *Minnesota Trees and Shrubs* (Clements et al. 1912). Rosendahl and Butters (1929) is a revision of the same book with much of the same text and illustrations. It was later expanded

and revised to cover the upper Midwest (Rosendahl 1955, second printing in 1963), but Smith’s book is the biggest improvement yet and it is quite a different book. Other specialized regional books on woody plants that are available now for Ontario and the prairie provinces include Lamont (1980), Soper and Heimburger (1982), Stephenson (1973), Laurialt (1992), Farrar (1995), and Kershaw (2001). Although all of these books on woody plants are very useful, they are out of date and incomplete. As a result, Smith’s book is very important.

*Trees and Shrubs of Minnesota* will serve as a valuable reference to a very broad audience ranging from an average gardener to teachers and specialized plant taxonomists. It is highly recommended. For another outstanding book by this author, see a review of *The Orchids of Minnesota* in *The Canadian Field-Naturalist* 108: 263-264.

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