

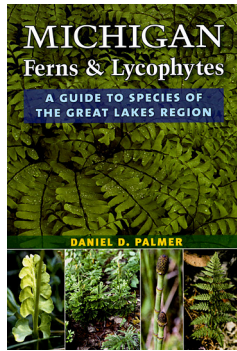
BOTANY

Michigan Ferns & Lycophytes: A Guide to Species of the Great Lakes Region

By D.D. Palmer. 2018. University Michigan Press. 381 pages, 29.95 USD, Paper.

The state of Michigan, USA, enjoys exceptionally rich floristic coverage and is admirably served both by the *Field Manual of Michigan Flora* by E.G. Voss and A.A. Reznicek (University of Michigan Press, 2012) and the excellent Michigan Flora Online (<https://michiganflora.net/home.aspx>). The *Field Manual* is widely seen to serve more than 'just' a local state flora function and to also provide a regional (Great Lakes) perspective. For decades, however, a curious gap in the state coverage has been with pteridophytes. Although a fern treatment was provided earlier by C. Billington's *Ferns of Michigan* (Cranbrook Institute of Science, 1952), and the University of Michigan was home base for American fern guru W.H. (Herb) Wagner for much of the time thereafter, no modern fern treatment existed. The current volume corrects that omission.

The book begins with a variety of standard introductory elements for a flora, including a brief summary of fern investigations in the state, a discussion of what makes pteridophytes 'tick', and a review of the abundance and distribution (including habitats) of pteridophytes in the state. A map showing the landscape diversity and/or major vegetation zones of Michigan would have been helpful here for understanding local distributions, especially for out-of-state readers, but the text does satisfy our basic needs in that regard. Similarly, it would have been useful to have a brief discussion of what makes Michigan's fern flora special on a regional or even continental scale. We eventually get some of this with discussion of endemics, but there are several broad biogeographic and evolutionary themes well represented in



the Michigan pteridophyte flora that also could have been profitably discussed here.

It is quickly evident that *Michigan Ferns & Lycophytes* provides an admirable introduction and review of the distribution and identification of pteridophytes in that state. There are excellent photographic and line drawing illustrations of key identification features, only slightly hampered by the absence of scale bars. The *Isoetes* photo montage (p. 290), for example, is particularly effective for this tricky group. Individual treatments provide effective, clearly expressed technical descriptions for the taxon in question with an emphasis on identification. The comparative feature tables provided for most complex groups such as *Botrychium*, *Dryopteris*, *Equisetum*, *Lycopodiella*, and *Woodsia*, are very helpful. The identification keys for each genus are sound and are not overly laden with technical jargon. Distributional information seems to be quite up-to-date and accurate, although the unreferenced report of *Cystopteris tennesseensis* being (disjunct) in northern Ontario (p. 101) is news to us.

In some cases, we suspect treatments may be over-simplified. For challenging members of Lycopodiaceae, for example, it would be great to believe Great Lakes taxa are as straightforward to identify as they are presented to be in *Michigan Ferns & Lycophytes*. More than 30 years of wrestling with them on this side of the border suggests they are often otherwise!

Michigan Ferns & Lycophytes prominently claims a secondary objective, professing to share the same regional scope as that of the *Field Manual of Michigan Flora*. Yes, most Great Lakes pteridophyte taxa are found in Michigan, but that is equally true for New York, Ontario, Ohio, etc. To truly be a regional guide, however, also requires that a local treatment explicitly reflect the regional context. *Michigan Ferns & Lycophytes* falls short in this, particularly regarding

Canadian input. At least seven species are listed (pp. 11 and 238) as occurring in the Great Lakes portion of adjacent Ontario, Minnesota, and Wisconsin but not in Michigan, without further discussion. Another species—*Isoetes tuckermanii* A. Braun—and at least seven more hybrids known in Ontario from within this region are not even mentioned.

The discussion of *Dryopteris* hybridization (pp. 150–153) omits reference to any of the regionally—indeed, globally—significant cytological research on this genus undertaken by Ontario’s Donald M. Britton. Similarly, the discussion of *Botrychium* (*s. l.*) diversity also makes no mention of how sites along the Ontario shore of Lake Superior were critical to the taxonomic discoveries and innovations of the University of Michigan team studying this group.

Simply put, Wagner and Britton made the largest contributions of anyone to our understanding of the pteridophytes of the Great Lakes. Accordingly, the absence of even a single citation from Britton’s voluminous Great Lakes-relevant literature—not even W.J. Cody and D.M. Britton’s 1989 *Ferns and Fern Allies of Canada* (Agriculture Canada)—is surprising, even within just a Michigan ferns context. Together, these various omissions present a significant credibility problem for *Michigan Ferns & Lycophytes*’ claim to offer a regional perspective on Great Lakes pteridophytes.

There are 108 species treated in *Michigan Ferns & Lycophytes* (121 full treatments including a selection of some additional subspecies, varieties, or hybrids). Taxa within some genera are treated in considerable detail while others receive more basic consideration. The *Equisetum* treatment, for example, employs 42 pages of text for the treatment of 13 taxa. This includes species-comparable treatments for four sterile hybrids because they are “quite common and often form large clones” (p. 51). The considerably more ecologically, genetically, and biogeographically significant *Dryopteris* genus, however, is addressed in

only 27 pages treating 12 taxa. This treatment includes stand-alone discussions of the two hybrids considered to be most common in the state. Another 16 hybrid combinations are listed as occurring in Michigan but without any supporting documentation or references. Why stop there? Readers should at least have been directed to some pertinent references from Britton’s Ontario literature on *Dryopteris* hybrids and/or to James Montgomery’s excellent 1982 North American treatment (Fiddlehead Forum 9: 23–30). The paucity of supporting references is a problem throughout, in fact, with the References section of the book having a surprisingly low total of fewer than 50 citations.

Etymology is discussed for each taxon that receives a stand-alone treatment. There is no harm in that because the origin of names has some popular interest. When these cultural/biographical discussions use large amounts of text space that could otherwise be profitably applied to the core identification objective of the book, however, they become counter-productive. The excessively long, biography-like etymological discussion for *Huperzia ×josephbeitelii* A. Haines (p. 318), for example, is twice the length of the remaining text available for the technical description of this difficult taxon.

At its core, *Michigan Ferns & Lycophytes* presents a valuable tool for the identification of pteridophytes in Michigan and substantially fills a long-standing need. It also is an asset for the understanding of pteridophyte diversity in a geographically wider area as well. Out-of-state (especially Canadian) readers, however, will need a range of supplementary literature in order to gain the appropriate regional perspective.

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