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PREFACE TO THE FOURTH EDITION

The field guides of the *Colorado Flora* began in 1949 and continue to be works in progress. We learn more and more every season and I, myself, feel very lucky to have lived long enough to have made a good start. Ours is a most interesting flora, unique in its remarkable altitudinal range, special climatic events, and numerous microhabitats. Although having written extensively on vascular plants, lichens, and bryophytes, we have only scratched the surface. Twenty years ago I (Bill) rashly pronounced that I had seen nearly all of the flora in the field and that there was not much left to do. With the wisdom of age and experience, I now am convinced that the flora is so vast and complex that our work is still in the exploratory stage, even after our combined efforts of more than 65 years (Weber) and 30 years (Wittmann).

Currently, taxonomy is in a state of upheaval, largely due to evidence introduced by the comparative analysis of DNA. Some of this molecular evidence supports the traditional classification, but much of it seems to conflict with morphological ideas that have ruled taxonomy since the time of Linnaeus. Although we feel that it is premature to adopt the new taxonomy, lock, stock, and barrel, we often mention at least the proposed changes. In any case, professional and amateur field botanists require a practical classification scheme that is based primarily on morphology and ecology, and that de-emphasizes characters that cannot be easily observed. We hope that local floras and field guides such as this one will serve their needs.

If nothing else, the present, often heated, taxonomic debates illustrate that botany is a vibrant, dynamic science. Plant names will continue to change to reflect our best understanding of phylogeny. There is no end in sight. According to Dominguez and Wheeler (1997), "Taxonomic stability is ignorance." Amateurs, who are often confused by all of the new names, should keep in mind that in our science the names we use are concise statements of our opinions. To paraphrase Gilbert & Sullivan's "Nightmare Song" (*Iolanthe*), "We conceive you may use any names that you choose to indulge in without impropriety." In this edition we have provided a number of references in support of our positions.

While we were preparing this fourth edition of the *Colorado Flora*, a massive project has been going on to produce a complete encyclopedia of the vascular plants and bryophytes of the United States and Canada. The *Flora of North America North of Mexico* (**abbreviated FNA in our text**) is well under way, but is only half completed. We have attempted to bring the *Colorado Flora* into harmony, following the FNA in some instances and noting differences of opinion in others.

The FNA promises a wealth of information (in 30 volumes), including exhaustive descriptions for all of our taxa, but it is in no way a replacement for local floras. There are several disadvantages: (1) Because of the larger number of species, FNA keys tend to be complex and technical. (2) There are many errors (omissions and inclusions) regarding the occurrence of plants in Colorado. A lack of documentation makes it nearly impossible to settle distribution issues cleanly. (3) Distributional information is too general. (4) Habitat data are slighted. (5) Synonymy is scanty, making it difficult to relate the FNA to other floral treatments of Colorado. (6) Authors often have no direct knowledge of the Colorado flora. (7) The FNA is expensive and certainly cannot be carted into the field.

Our field guide offers several advantages: (1) In a local flora the keys can be simpler. Taxa tend to be better defined (less problematic) locally. (2) Occurrences are supported by documented records that are available in herbaria and online databases. (3) Distribution of uncommon taxa is frequently given by county. (4) Habitat is a major point of emphasis. (5) We account for names used in other Colorado treatments, including the FNA. A published *Catalog* (Weber & Wittmann, 1992) provides even more complete synonymy. (6) Local authorities have more intimate knowledge of the flora in the herbarium and in the field. (7) Local floras are relatively inexpensive and they can be carried into the field.

Readers will find invaluable the points of view offered by other local and regional floras. The University of Colorado Museum's website is a particularly useful resource. Here will be found the specimen database of Colorado vascular plants, various county checklists, *Catalog of the Colorado Flora* (electronic), and links to other herbaria and botanical sites. When citing specimens we use standardized herbarium abbreviations: COLO (University of Colorado), CS (Colorado State), RM (Rocky Mountain). Other abbreviations may be decoded at the *Index Herbariorum* website: <http://sweetgum.nybg.org/ih/>.

We believe that those who use field and local floras should become serious about their hobby and try to really learn about their subject, including the history of classification, the rules of nomenclature, and the fundamentals of growth and reproduction. The ultimate purpose of our *Flora* is to educate local amateurs and professionals in the recognition of plant species so that they can be better stewards of our priceless and irreplaceable biological heritage.

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February 2012