

Spring 2011

North American Wildland Plants, Second Edition

James Stubbendieck

Stephan L. Hatch

Neal M. Bryan

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NORTH AMERICAN WILDLAND PLANTS

Second Edition

James Stubbendieck, Stephan L. Hatch, and Neal M. Bryan

North American



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Wildland Plants

SECOND EDITION

A FIELD GUIDE



Illustrated by *Angie Fox, Kelly L. Rhodes Hays,
Bellamy Parks Jansen, and Debra Meier*

Maps by *Kathleen Lonergan-Orr
and Neal M. Bryan*

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Library of Congress Cataloging-in-Publication Data
Stubbenieck, James L.

North American wildland plants : a field guide /
James Stubbenieck, Stephan L. Hatch, and
Neal M. Bryan; illustrated by Angie Fox . . . [et al.];
maps by Kathleen Lonergan-Orr and Neal M. Bryan.
— 2nd ed.

p. cm.

Title changed (from: North American range plants)
with the 2003 edition, cited as 6th ed. This is the 2nd
edition with the new title.

Includes bibliographical references and index.

ISBN 978-0-8032-3485-7 (pbk.: alk. paper)

1. Range plants — North America — Identification.
2. Forage plants — North America — Identification.
3. Range plants — North America. 4. Forage plants —
North America. I. Hatch, Stephan L., 1945–
II. Bryan, Neal M. III. Title.

SB193.3.N67S88 2011

581.7'4097 — dc22

2010037339

Set in Arno by Bob Reitz.

Designed by Nathan Putens.

To Cheryl, Nora Lee, Kristine, and our families

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Acknowledgments

The authors wish to acknowledge Kathie J. Diller, Charles H. Butterfield, and Lori M. Landholt for their contributions to earlier editions of this book. Angie Fox, Kelly L. Rhodes Hays, Bellamy Parks Jansen, and Debra Meier prepared the illustrations. Kathleen Lonergan-Orr and Neal M. Bryan prepared the maps.

Juan M. Martínez-Reyna, Jesús Valdés-Reyna, Juvenal Gutiérrez-Castillo, and Juan A. Encina-Dominguez are recognized for furnishing the common names used in Mexico. Others contributing to this and earlier editions include Kelly Allred, Val Anderson, William T. Barker, Margaret R. Bolick, Cheryl Dunn, Kylie Faulk, Jessica Garlick, T. Mark Hart, Marshall Hervey, Barry Irving, Stanley D. Jones, Barbara Kagima, Robert B. Kaul, Gary E. Larson, Elizabeth Manrique, Jacob Meador, Catherine Mills, Daniel Nosal, Linda L. Rader, Jesús Valdés-Reyna, Walter H. Schacht, Susan Schuckert, Karen Spath, Susan Tunnell, and J. K. Wipff.

NORTH AMERICAN WILDLAND PLANTS

Introduction

A comprehensive reference containing the important characteristics of the most important wildland plants of North America is critical for ecologists, range managers, land managers, and other natural resource professionals. In addition, university students and range plant identification teams needed a single, primary resource for learning about important wildland plant species. *North American Range Plants* was developed to meet these needs and was first published in 1981. Subsequent editions (1982, 1986, 1992, 1997) included changes in nomenclature, refinement of distributions, additional information on each of the species, and new illustrations. The illustrations were prepared to highlight general and specific characteristics to aid identification of the featured range plants. The fifth edition (1997) reflected changing attitudes toward riparian areas and wetlands. Reflecting this increased concern and interest, about 10 percent of the species included in this book occur on these sites. *North American Wildland Plants* (2003) included many nomenclatural changes, and the illustrations were labeled to accentuate specific characteristics. The title change reflected the importance of plants across ecosystems and the multiple uses of the plant resources within ecosystems. The seventh edition contains further refinements in the nomenclature, distribution, illustrations, and descriptions of plants. This field guide will help both individuals with limited botanical knowledge and natural resources professionals to identify wildland plants.

The two hundred species in this book were selected because of their abundance, desirability, or noxious properties; in short, they are important wildland species. The list of plant species was developed over the course of more than fifty years by faculty from the universities and colleges with rangeland management and ecology programs and by coaches of range plant identification teams. The formal list is now the Master Plant List for the International Range Plant Identification Contest sponsored by the Society for Range Management (10030 West 27th Avenue, Wheat Ridge CO 80215-6601; www.rangelands.org).

Plant species descriptions in this book include characteristics for their identification, a labeled illustration of a typical plant (with enlarged plant parts), and a refined general distribution map for North America. Each species description includes nomenclature; life span; origin; season of growth; inflorescence, flower or spikelet or other reproductive parts; vegetative parts; and growth characteristics. Forage value for wildlife and livestock is estimated. Brief notes are included on habitat; livestock losses; and historic, food, and medicinal uses. Information on historic, food, and medicinal uses was gathered from numerous sources and is presented as a point of interest and to broaden readers' appre-

ciation of these plants. It is strongly emphasized that these plant species should not be used for these purposes.

Grasses (POACEAE family) are described first and are aligned by tribe, genus, and specific epithet in alphabetical order by rank. Grass-like plants (CYPERACEAE and JUNCACEAE families) are next. All other families follow in alphabetical order by rank for family, genus, and specific epithet with the exception of the ASTERACEAE family, which are aligned as the POACEAE family.

The grass (POACEAE) and composite (ASTERACEAE) families are treated by tribe to help the reader relate to smaller groups within these large, complex families. Recognition of species within tribes builds a concept of tribal characteristics. When an unknown species of either family is encountered, knowledge of tribal alignments below family may reduce the time required for making an identification using a diagnostic key.

The classification system in *Gould's Grasses of Texas* (Hatch 2009) was followed for the grass tribal names. The tribal classification of the composites follows *Vascular Flora of the Southeastern United States* (Cronquist 1980).

Numerous authoritative floristic treatments from the wildland areas of North America were consulted for species names and authorities. Selected synonyms, noting other names for the same species, are included on the illustration page for each species to help clarify the species concept used in this text. The synonyms will help in finding additional information in other floristic treatments.

Common and alternative common names are given for the plants, but they may not include the common name used in a particular area. Common names were restricted to two words, sometimes resulting in long and cumbersome words. Common names used in Mexico are listed for the appropriate taxa and may exceed two words.

The origin of each species is given as native or introduced. Origins of introduced taxa are given parenthetically. Many species are known to be introduced, while others are thought to have been. *Poa pratensis* L. is an example of a species that is listed as introduced but may be native to North America.

Season of growth is listed as cool, warm, or evergreen. Cool-season plants complete most of their growth in the fall, winter, and spring, whereas warm-season plants grow most when temperatures are the highest in the summer. The evergreen plants retain their ability to grow whenever climatic conditions are suitable.

Plant characteristics for each species are separated into categories to help in making comparisons between species. Bold type is used in this edition to emphasize important characteristics that separate species. These characteristics are intended to be useful to students preparing to compete in the International Range Plant Identification Contest and to amateur botanists. Conservative characteristics, those that are not greatly influenced by the environment, should be the basis for identification. These may include floral, spikelet, leaf, and inflorescence type but may vary with the species. Pubescence, ligule lengths, and awn lengths are highly variable characteristics, and primary importance should not be placed on these when identifying grasses. Presence or absence of rhizomes

is another variable characteristic that is somewhat dependent upon moisture and other features of the habitat.

Forage values of the plants discussed in this book are relative values that vary with the type of animal utilizing the particular plant species. Values are determined on the basis of palatability, nutrient content, and the amount of forage produced by the plant species. These values may vary with the climatic conditions, the part of North America where the plant is growing, when the forage is consumed, associated plant species, and the age class of each animal species utilizing the forage.

Losses due to poisonous plants, one of the major problems facing the livestock industry, are included in these plant descriptions. Annual losses on wildlands amount to hundreds of millions of dollars, with the effects of poisonous plants varying from slightly reduced rate of gain to deformities or death of the animal. Losses that are easy to document, such as death, are not as economically important as the losses wherein growth rate or milk production is reduced. The brief mention of livestock losses in this book include the animals affected and the type of poison, commonly referred to as the poisonous principle, contained in the plant species.

This book includes a glossary, list of authorities, and list of selected references. This supplementary information will give the student, professional natural resource manager, and anyone else interested in plants a more complete knowledge of plants and a starting place in the literature to seek additional information. The index is comprehensive, including all scientific and common names used in the text.

The information contained in *North American Wildland Plants* is by no means complete. The authors have opted for brevity with the expectation that this book will be a starting point for those interested in wildland plant identification. Plant taxonomists and extension personnel in each locality can provide additional information on plant species of interest.

Wildland Plants

LIFE SPAN

Most wildland plant species are classified as annuals or perennials. Annuals complete their life cycle in one growing season, while perennials generally live three or more years. Herbaceous perennials have aerial stems that die back to the soil level each year while the underground parts remain alive. Perennial grasses, grass-like plants, and forbs are in this category. Woody perennials have aerial stems that remain alive throughout the year, although they may become dormant for part of the year. Trees and shrubs are in this category. Biennial is a third lifespan category. Biennials require two growing seasons to complete their life cycle. Growth during the first year is generally vegetative, and seed is produced during the second growing season. Relatively few plants fit into this category.

ORIGIN

Wildland plants that originated in North America are termed “native.” The term “introduced” refers to plants that have been brought into North America from another continent and were adapted to conditions here. Several introduced species are valuable forage plants that were intentionally introduced for that purpose. Some introduced species were brought in for various reasons (e.g., landscaping) and then escaped; of these, some are now troublesome weeds. Some species were accidentally introduced through contaminated crop seed, packing material, or ballast.

CLASSIFICATION

Botanical nomenclature refers to a system of naming plants. Plants are described and grouped according to their structure, particularly structure of the flowering or other reproductive parts. The classification system from general to specific is:

KINGDOM (PLANT)
DIVISION (PHYLUM)
CLASS
ORDER
FAMILY
TRIBE
GENUS
SPECIFIC EPITHET

(The genus and specific epithet are combined to form the species name.)

While plants included in this book come from various divisions, classes, and orders, we will be concerned only with the last four parts of the classification system:

A. FAMILY

A plant family is the basic division of plant orders. Morphological characteristics or similarities determine the family to which a plant belongs. Flowering characteristics are extremely important in the classification of families. All grasses have similar flowers in spikelets and belong to the same family, POACEAE. For the other plants, numbers of petals, sepals, stamens, pistils, and other flowering parts are used to assign family. All family names of vascular plants used in this book have a standard ending-ACEAE.

B. TRIBE

A plant family may be divided into tribes. In this book, the POACEAE and ASTERACEAE are the only families for which tribes are recognized. An example is the ANDROPOGONEAE tribe of the POACEAE family. All tribe names of vascular plants have the standard ending-EAE.

C. SCIENTIFIC NAME

There is only one correct scientific name for each species. The scientific name, or binomial, consists of two main parts. The first part is the genus, and the second is the specific epithet. The binomial is unique to each species. The authority is added for completeness and accuracy.

1. GENUS

Classification of plants into genera (plural of genus) is based on similarities in flowering and/or morphological and nonmorphological characteristics, although with more specific divisions. An example is the genus *Schizachyrium*, which is part of the ANDROPOGONEAE tribe of the POACEAE family. The first letter of the genus is capitalized, and the word is underlined or italicized.

2. SPECIFIC EPITHET

The second part of the scientific name is the specific epithet. It is italicized or underlined but not capitalized. A species is the kind of plant and is named by the combination of the genus and specific epithet. This classification is based on differences in flowering and/or morphological and nonmorphological characteristics that distinguish a plant from related species. An example is the specific epithet *scoparium* for the species *Schizachyrium scoparium*, which differs from all other species of *Schizachyrium* in specific morphological characters.

3. AUTHORITY

The scientific name, for reasons of completeness and accuracy, is followed by the abbreviation or whole name of the person or persons who first applied that name

to the plant. For example, (Michx.) Nash are the authorities for *Schizachyrium scoparium*. The French botanist Andre Michaux (1746–1802) first described and applied the specific epithet to that species. The name used was *Andropogon scoparius* Michx. American agrostologist George Nash (1864–1921) later transferred the species to the genus *Schizachyrium*. Nash became the author of a new combination/classification involving that specific epithet. Hence, the name *Schizachyrium scoparium* (Michx.) Nash. A list of authorities follows the glossary.

4. COMMON NAME

Common names have been given to many species of plants. Common names are usually simple and often descriptive of the plant, honor some person, or give a geographical location. However, one species may have more than one common name, even within the same language. In this book we use little bluestem as the common name of *Schizachyrium scoparium*, but it is also called prairie beardgrass in some parts of English-speaking North America, while in Mexico it is referred to as popotillo colorado or popotillo cañuelo. Another weakness of common names is that one common name may be applied to several species. For example, junegrass in Kentucky is *Poa pratensis*; junegrass in Nebraska is *Koeleria macrantha*; and junegrass in Utah is *Bromus tectorum*.

As noted, there is only one correct scientific name for each plant; nevertheless, the name for a given plant will change if that plant is reclassified or if it is discovered that another valid name for it was published earlier. Although date of publication is absolute, the assignment of rank and position in the classification process is a matter of taxonomic opinion, which is often annoying to the layman. Names other than the correct one are synonyms and can be found listed below the accepted scientific and common names on the page of each species illustration.

A summary of the classification system for little bluestem is:

FAMILY: POACEAE

TRIBE: ANDROPOGONEAE

GENUS: *Schizachyrium*

SPECIES: *Schizachyrium scoparium* (Michx.) Nash

PLANT GROUPS

Wildland plants may be divided into grasses, grass-like plants, forbs, and woody plants. These can be easily distinguished by certain characteristics. Figure 1 presents a comparison of plant groups.

Grasses have either hollow or solid stems with nodes. Leaves are two-ranked, sheathing, and have parallel veins. Flowers are small, inconspicuous, and occur in spikelets. Fruits are usually caryopses.

Grass-like plants resemble grasses but generally have solid or pithy stems without elongated internodes. Leaf veins are parallel, but the leaves are two-ranked or three-ranked. Stems are often triangular, and the flowers are small and inconspicuous.

Forbs are herbaceous plants other than grasses and grass-like plants. They usually have solid stems and generally have broad leaves with netted venation. Flowers are often large and showy colored, although they may be small and inconspicuous. Forbs have a variety of fruit types.

Woody plants have secondary growth of their aerial stems that live throughout the year, although they may be dormant part of the time. Leaves are often broad and net-veined. Flowers are often showy, but they may be inconspicuous. Both trees and shrubs fit into this category. Fruit types of woody plant species vary.

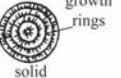
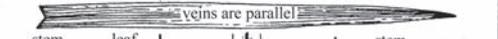
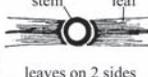
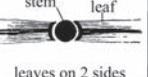
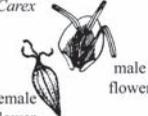
| | GRASSES | GRASS-LIKES | | FORBS | SHRUBS |
|-------------------------------|--|--|--|---|--|
| | | SEDGES | RUSHES | | |
| STEMS CROSS-SECTION |  node hollow or pithy |  solid, not jointed |  solid |  solid or pithy |  growth rings solid |
| LEAVES AND LEAF RANKING |  veins are parallel | | |  veins are netted | |
| |  leaves on 2 sides |  leaves on 3 sides |  leaves on 2 sides | | |
| FLORETS AND FLOWERS |  floret |  <i>Carex</i> female flower male flower |  modified flowers |  showy, large or small |  showy, large or small |
| EXAMPLES |  western wheatgrass |  threadleaf sedge |  baltic rush |  scarlet globemallow |  wild rose <i>By William Pursh, 1811</i> |

FIGURE 1. Comparison of plant groups