



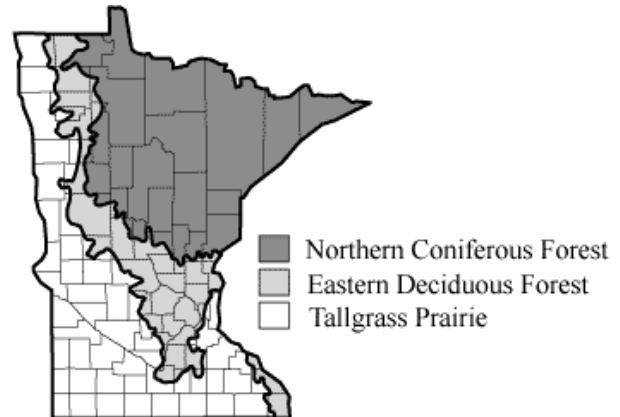
Common Plants of the Saint John's Prairie

Introduction:

Before the arrival of European settlers, prairie was the primary vegetation type in western Minnesota. Roughly speaking, prairie would have been occurred to the south and west of an imaginary diagonal line drawn from the northwest corner of Minnesota to the southeast corner. To the casual observer, prairies appear "boring." However, upon closer examination, prairies have a wealth of species from the dominant grasses to the diverse forbs (non-grass herbaceous plants). In fact, it's not uncommon to find more than 300 species in a native Minnesota prairie. Prairie once covered roughly a third of Minnesota. Today, less than 1% of the original prairie remains, often only because the conditions were unfavorable for agriculture (*i.e.*, too hilly, too wet, a railroad right-of-way or a cemetery).

Prairie plants are adapted to sunny, hot, dry conditions. Not surprisingly, they often have a thick cuticle, stomatal pores on the underside of leaves, lot of hairs to reduce water loss, and deep roots to extract water from the soil depths. Prairie plants are also adapted to periodic fire which would have been caused by lightning. As a consequence, most species keep their buds safely below the soil surface. Fires keep the prairies 'tree-free' since fire readily kills most trees and shrubs, except thicker-barked woody plants like Bur oak (*Quercus macrocarpa*). Fires also serve to recycle nutrients and they remove the duff layer which allows quicker penetration of water and causes soils to heat more quickly in the spring.

The St. John's Arboretum prairie is located on the north end of campus near the intersection of I-94 and County Rd 159. It is approximately 56 acres and was cropped until about 1975. In the 1940's & 1950's it was used for experiments on fertilizers by science students. A project



was initiated in 1990 by Fr. Paul Schweitz, O.S.B., former Arboretum director, to restore this area to prairie, even though original land survey records don't show any prairie on campus in 1850's. Nevertheless, prairie likely occurred within a few miles. Site preparation began in 1990 when the area was graded and prepared for planting. Much of the work was done by Prairie Restorations, Inc (Princeton, MN). The prairie was seeded in 1991. The seed mixed included about 90 species of forbs and grasses. Two different seed mixes were used; one for drier soils included big bluestem, little bluestem, side oats grama, Canada wild rye, Kalm's brome, Indian grass, giant hyssop, butterfly milkweed, black-eyed Susan, leadplant, and prairie clover. The moister sites were seeded with a mix that included big blue, switch grass, bottle gentian, tall blazing star, boneset, blue vervain. In addition, volunteers planted more than 4,800 plugs of assorted species. Additional plantings were made in 1992. Maintenance includes periodic prescribed burns and removal of weeds. To date, more than 250 species have been identified (*see the St. John's Arboretum website*). Our goal during lab will be to learn to identify some of the most common fall-flowering species, especially the grasses.

Perhaps the two most common families of plants in the prairie are Asteraceae (Sunflower family) and Poaceae (Grass family). Some common species in the Asteraceae include wand goldenrod (*S. nemoralis*), stiff goldenrod (*S.*

rigida, black-eyed Susan (*Rudbeckia hirta*), coneflower (*Echinacea* sp.), and gray-headed coneflower (*Ratibida pinnata*). Plants in the genus *Artemisia*, such as prairie sage (*A. ludoviciana*) are typically bluish-green in color and fragrant. It's not surprising that they are wind-pollinated because the flowers are relatively small and unassuming. There are several species of blazing star (*Liatris* sp.), all of which are easily recognized by their unbranched cluster of pink flowers. Traditionally, the genus *Aster* was comprised of many species that typically bloomed in the late summer and autumn. In recent years, this group has been subdivided in many smaller genera. Most now belong in the genus *Symphotrichum*.

The grasses can be readily identified by the morphology of their flowering heads. Though a little more difficult, grasses can also be identified in their vegetative state. To do so,

requires examining a variety of other characteristics. For example, big bluestem (*Andropogon gerardii*) has lower leaves that are covered with silky hairs and has a ligule that is about 1/8 inch and membranous whereas little bluestem (*Schizachyrium scoparium*) has no hairs and a shorter ligule. Canada wild rye (*Elymus canadensis*) has clasping auricles with a short, collar-shaped ligule. The ligule of Indiangrass (*Sorghastrum nutans*) is divided somewhat like a claw hammer. Blue grama grass (*Bouteloua gracilis*) has a ligule comprised of a fringe of short hairs and grayish-green foliage. Sideoats grama (*Bouteloua curtipendula*) has glandular hairs along the margins of the leaf with short membranous ligules.



Checklist of Some Common Species:

AMARYLLIDACEAE (ALLIACEAE)

- Allium stellatum* – Prairie onion

APIACEAE - Carrot Family

- Eryngium yuccifolium* - Rattlesnake master

APOCYNACEAE – Dogbane Family

- Apocynum* sp. – Dogbane
- Asclepias syriaca* – Common milkweed

- Asclepias tuberosa* - Butterfly milkweed

ASTERACEAE (Compositae) - Sunflower Family

- Artemisia absinthium* – wormwood sage
- Artemisia ludoviciana* – Sage
- Artemisia frigida* – Prairie sage
- Coreopsis palmata* – Stiff tickseed
- Echinacea* sp. – Coneflower

- *Heliopsis helianthoides* – Smooth or common oxeye
- *Heterotheca villosa* – Golden aster
- *Liatris sp.* - Blazing star
- *Ratibida pinnata* – Gray-headed coneflower
- *Rudbeckia hirta* – Black-eyed Susan
- *Solidago nemoralis* – Wand or Gray goldenrod
- *Solidago rigida* – Stiff goldenrod
- *Solidago speciosa* – Showy goldenrod
- *Symphotrichum sp.* – Aster

FABACEAE - Bean or Pulse Family

- *Amorpha canescens* - Lead plant
- *Dalea candida* – White prairie-clover
- *Dalea purpureum* – Purple prairie-clover
- *Lespedeza capitata* – Round-headed bush-clover

GENTIANIACEAE – Gentian Family

- *Gentiana andrewsii* – Bottle gentian

LAMIACEAE (Labiatae) - Mint Family

- *Agastache foeniculum* – Giant hyssop
- *Monarda fistulosa* – Wild bergamot
- *Pycnanthemum virginianum* – Common mountain mint

ONAGRACEAE – Evening Primrose Family

- *Calylophus serrulatus* – Sundrops
- *Oenothera biennis* – Common evening-primrose

PLANTAGINACEAE – Plantain Family

- *Penstemon gracilis* – Slender beardtongue
- *Penstemon grandiflorus* – Large flowered beardtongue
- *Plantago major* – Plantain
- *Veronicastrum virginianum* – Culver’s root

POACEAE - Grass Family

- *Andropogon gerardii* - Big bluestem
- *Bouteloua curtipendula* - Side oats grama grass
- *Bouteloua gracilis* - Blue grama
- *Bromus inermis* - Smooth brome
- *Elymus canadensis* - Canada wild rye
- *Elymus (Agropyron) repens* - Quack grass

- *Nassella (Stipa) viridula* - Needlegrass
- *Phalaris arundinacea* - Reed canary grass
- *Phleum pratense* - Timothy
- *Phragmites australis* - Reed grass
- *Poa pratensis* - Kentucky bluegrass
- *Schizachyrium scoparium* - Little bluestem
- *Setaria sp.* - Foxtail
- *Sorghastrum nutans* - Indian grass
- *Spartina pectinata* – Cord grass
- *Sporobolus heterolepis* – Prairie dropseed

RANUNCULACEAE – Buttercup or Crowfoot Family

- *Anemone (=Pulsatilla) patens* – Pasque flower
- *Thalictrum sp.* – Meadow rue

ROSACEAE – Rose Family

- *Geum triflorum* – Prairie smoke
- *Potentilla recta* – Sulphur cinquefoil

SAXIFRAGACEAE – Saxifrage Family

- *Heuchera richardsonii* – Alumroot

SCROPHULARIACEAE – Figwort Family

- *Verbascum thapsus* – mullein

SOLANACEAE – Tomato Family

- *Physalis virginiana* – Ground cherry

VERBENACEAE – Vervain Family

- *Verbena hastata* – Blue vervain
- *Verbena stricta* – Hoary vervain

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Some Common Grasses (from the left) – *Bouteloua curtipendula*, *Bouteloua gracilis*, *Koeleria cristata*, *Phleum pratense*, *Bromus inermis*