

Native Plant ID and Pollinator Habitat Training

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Pollinator Partnership

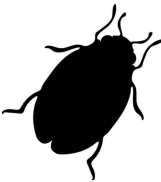


www.pollinator.org



United States
Department of
Agriculture

Natural Resources Conservation Service



The Pollinator Partnership:

The Source for Pollinator Action and Information



**POLLINATOR
PARTNERSHIP**

What We
Do





<https://wisconsinlandwater.org/>

Conserving Resources. Empowering Communities.
Building Better Futures.

In Wisconsin, locally led conservation is key to healthy soils, resilient farms, clean water, and vibrant communities.

Schedule for the Day

9:30 – Welcome and introductions

9:45 – Plant ID tools and common botanical terms

10:00 – Group activity to introduce/id common native plants

Break

11:30 – Plant sample circuit and questions

12:00 – Lunch

12:30 – Components of good pollinator habitat; NRCS programs that support habitat creation

1:00 – Field tour of different habitats at RNC and practice plant ID in field w/ scavenger hunt

2:45 – Wrap up, discussion/questions, feed-back form

3:00 – Adjourn

Please introduce yourself!

- Name
- Affiliation
- Experience to date w/ native plants
- What you most want to get from today's workshop



Photo credit: Amber Barnes

Plant ID Tools and Resources

Plant ID guides/books



Useful online resources



https://www.inaturalist.org/pages/seek_app



<https://www.illinoiswildflowers.info/>



<https://www.minnesotawildflowers.info/>



<https://wisflora.herbarium.wisc.edu/index.php>



<http://www.missouriplants.com/>



<https://www.prairienursery.com/>



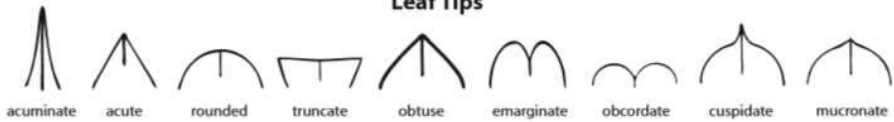
<https://www.prairiemoon.com/>

<https://secure.iowadot.gov/lrtf/docs/PrairieSeedlingGuide.pdf>

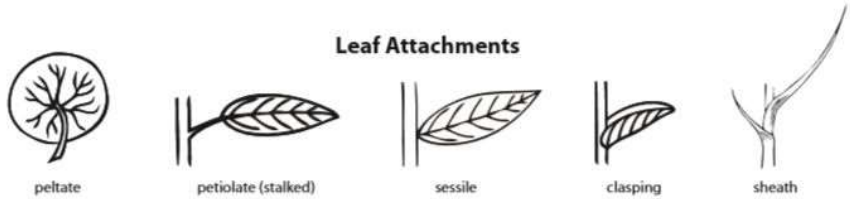


Getting familiar with botanical terminology

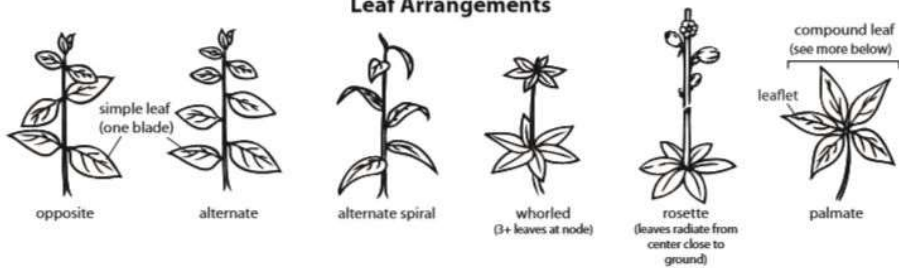
Leaf Tips



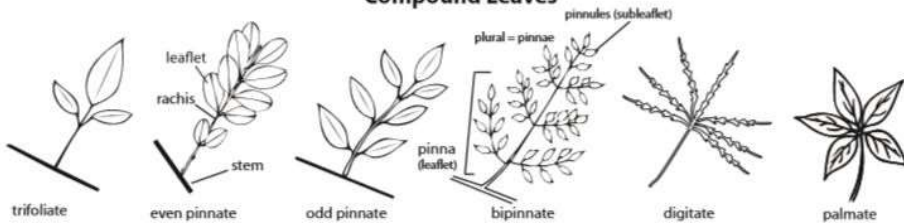
Leaf Attachments



Leaf Arrangements

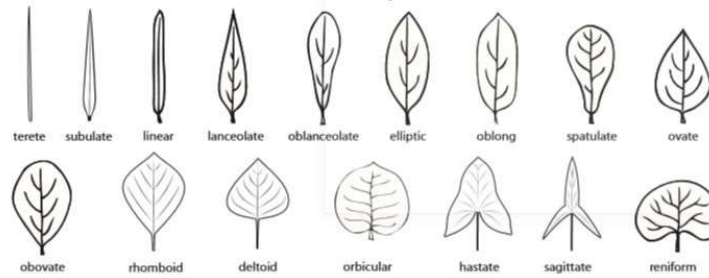


Compound Leaves

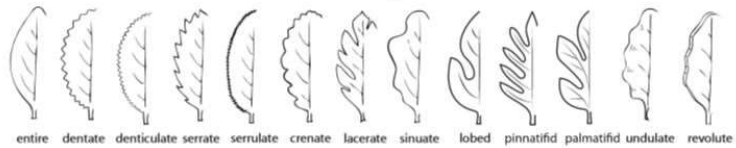


Illustrated Plant Structures

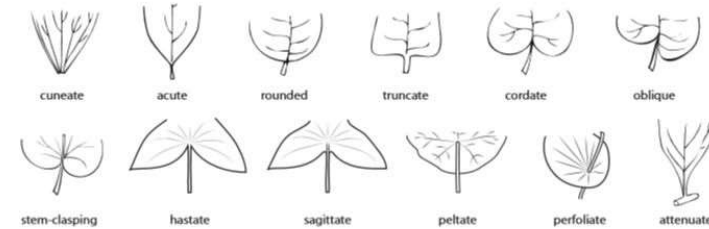
Leaf Shapes



Leaf Margins



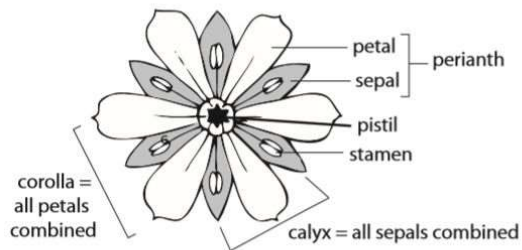
Leaf Bases



Getting familiar with botanical terminology

Flower Parts

bird's eye view



cross section

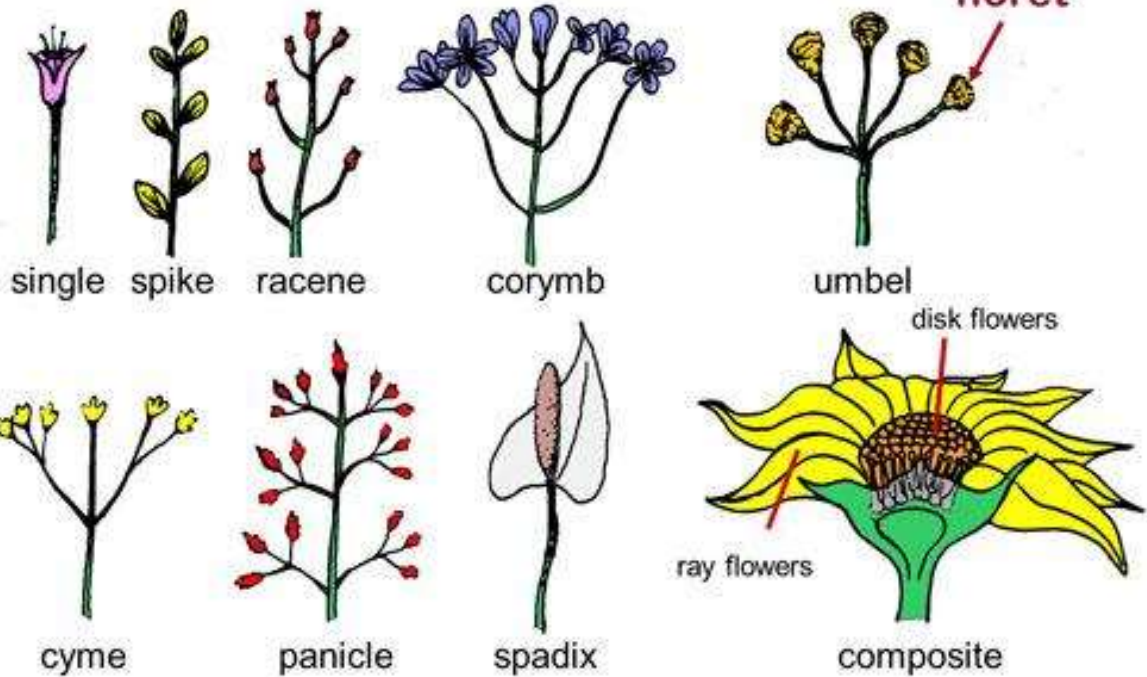
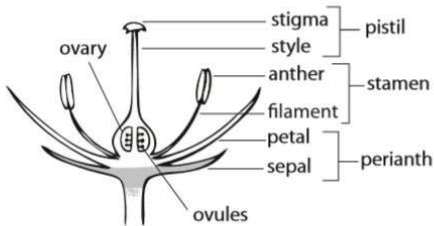


Image credit: worldoffloweringplants.com

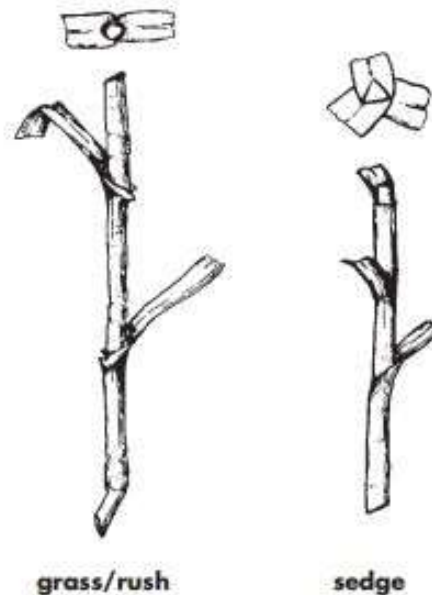
Getting familiar with botanical terminology

Sedges have edges, Rushes are round, Grasses are hollow.

Is it a grass?

Grasses can sometimes be confused with sedges and rushes. To distinguish them, look for the following characteristics:

- **Sedges** have triangular stems that are filled with pith. The nodes are inconspicuous and leaves grow from the stem in three directions when viewed from top.
- **Rushes** have round or flat stems. Stems are commonly leafy only at the base. Leaves grow from two directions when viewed from the top.
- **Grasses** have round or flat stems. Stems are leafy along the entire length. Leaves grow from two directions when viewed from the top.



Grasses have stems that are leafy along the entire length

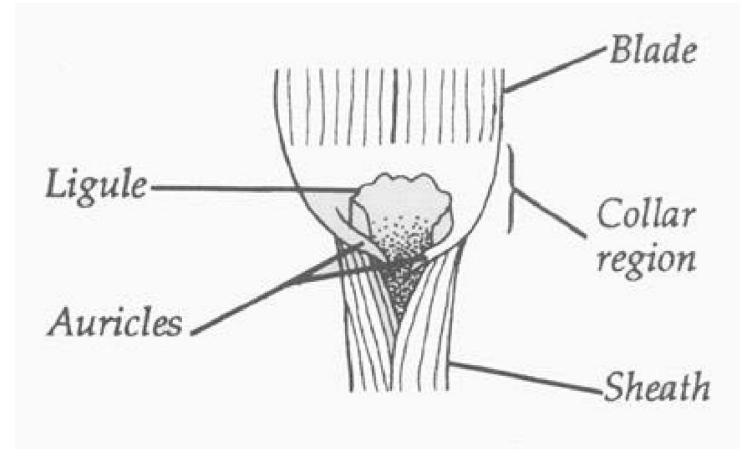
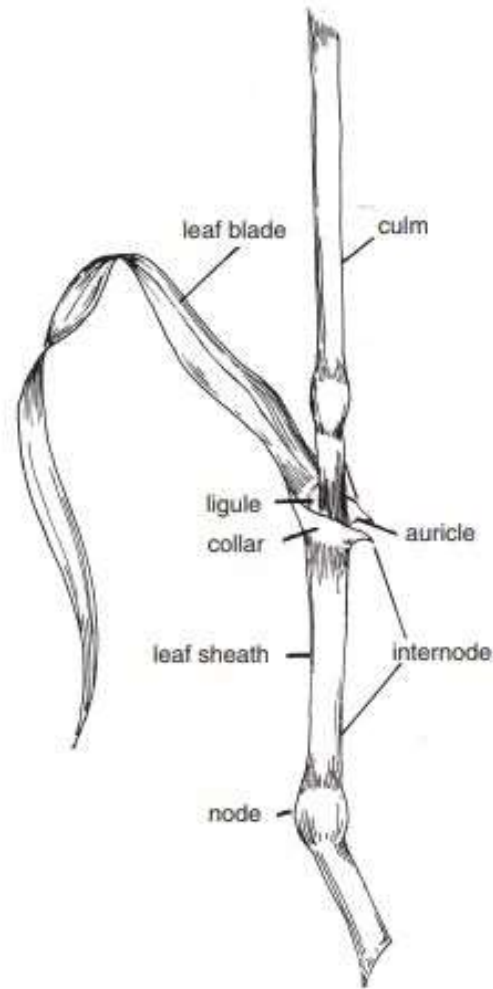
Identifying Pasture Grasses

UWEX Bulletin A3637

<https://fyi.extension.wisc.edu/forage/grasses/>

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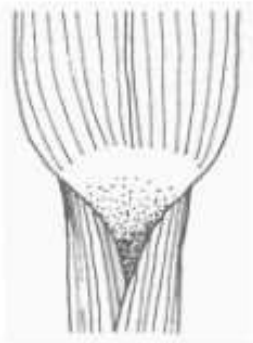
Getting familiar with botanical terminology - GRASSES!



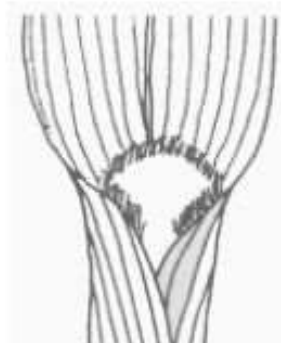
Getting familiar with botanical terminology - GRASSES!

Ligules of grasses will either be absent (A), hairy (B), or membranous (C and D). the absence and presence of auricles can be seen between images C and D.

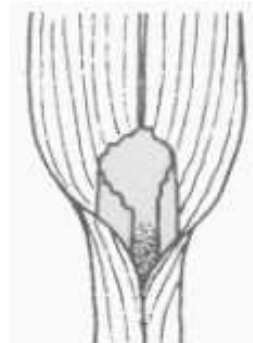
A



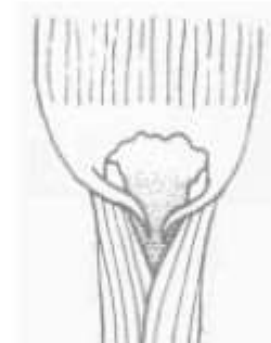
B



C



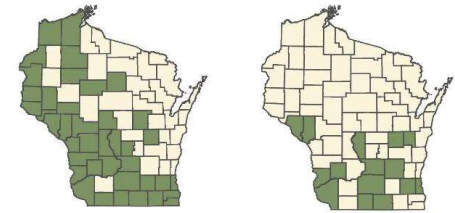
D



<http://extension.cropsciences.illinois.edu/fieldcrops/weeds/factsheets/>

Plant ID tips: know what it isn't

- Use deductive reasoning! Get to know a few species really well.
- Use county range maps to narrow your search.
- Learn plant families to narrow your search.
- Know the soil/moisture/light conditions you are in
- Learn invasive/noxious weeds



vs



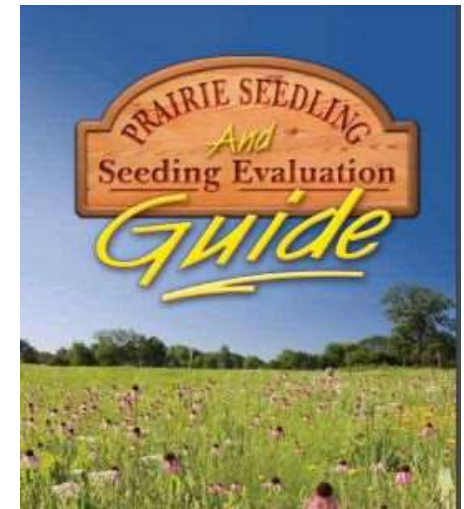
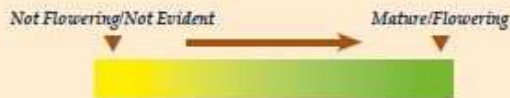
Plant ID tips: have some idea what to expect

Common Establishment Periods for Prairie Species in this Guide

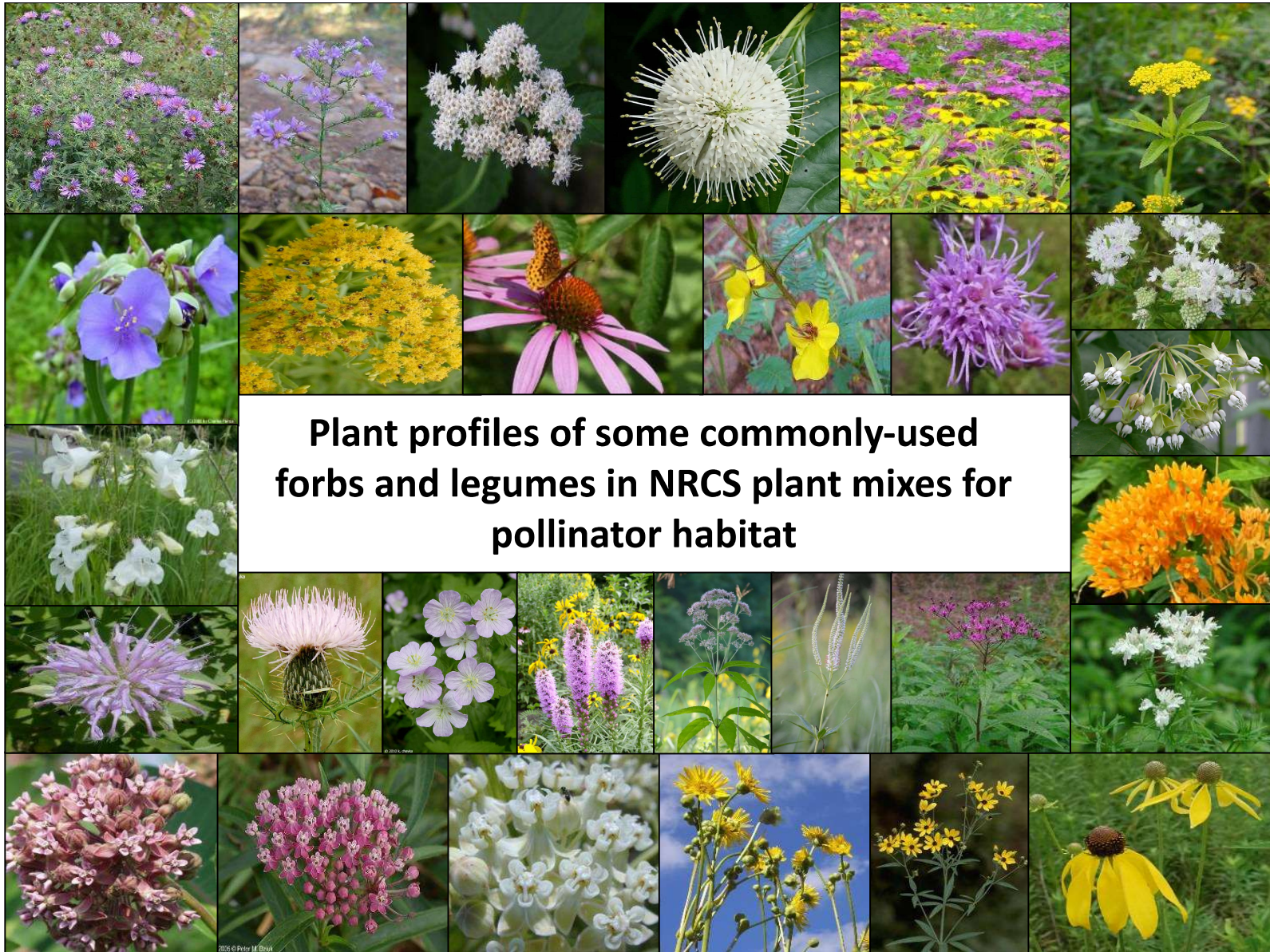
Common Name/Scientific Name	Year				
	1	2	3 to 5	5 to 10	10+
Grasses					
Big bluestem <i>Ambropogon gerardii</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Canada wildrye <i>Elymus canadensis</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Indian grass <i>Sorghastrum nutans</i>	Light Green	Light Green	Light Green	Light Green	Light Green
June grass <i>Koeleria macrantha</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Little bluestem <i>Schizachyrium scoparium</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Porcupine grass <i>Stipa spartea</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Prairie dropseed <i>Sporobolus heterolepis</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Sideoats grama <i>Bouteloua curtipendula</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Switch grass <i>Panicum virgatum</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Tall dropseed <i>Sporobolus asper</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Virginia wildrye <i>Elymus virginicus</i>	Light Green	Light Green	Light Green	Light Green	Light Green

Common Name/Scientific Name	Year				
	1	2	3 to 5	5 to 10	10+
Forbs					
Alumroot <i>Heuchera richardsonii</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Black-eyed susan <i>Rudbeckia hirta</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Blazingstar <i>Liatris spp.</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Blueflag iris <i>Iris spp.</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Butterfly milk-weed <i>Asclepias tuberosa</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Canada milk-vetch <i>Astragalus canadensis</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Canada tick trefoil <i>Desmodium canadense</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Compass plant <i>Silphium laciniatum</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Cream-colored false indigo <i>Baptisia bracteata</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Culver's root <i>Veronicastrum virginicum</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Cup plant <i>Silphium perfoliatum</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Evening primrose <i>Oenothera biennis</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Golden alexanders <i>Zizia aurea</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Great blue lobelia <i>Lobelia siphilitica</i>	Light Green	Light Green	Light Green	Light Green	Light Green
Heath aster <i>Aster ericoides</i>	Light Green	Light Green	Light Green	Light Green	Light Green

Establishment Key



<https://secure.iowadot.gov/Irtf/docs/PrairieSeedlingGuide.pdf>



**Plant profiles of some commonly-used
forbs and legumes in NRCS plant mixes for
pollinator habitat**

Zizia aurea golden Alexanders

- Carrot family
- One of the first species to bloom in spring
- Occurs in both degraded and higher quality
- Grows 2½' tall, forming occasional lateral stems
- Leaves are compound, oddly-pinnate with 3 or 5 leaflets
- Flowers are flat to slightly rounded compound umbels of yellow flowers occur at the ends of the upper stems



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Baptisia alba White wild indigo

- Legume family
- Grows 3-6ft, likes full sun
- Compound leaves are trifoliate, greyish green in color
- White flowers resemble a typical pea flower in spike-like racemes and very showy
- Blooms in late spring/early summer
- Loved by bumble bees



Baptisia australis blue false indigo

- Legume family
- Grows 3-6ft, likes full sun but tolerates part shade
- Alternate trifoliolate leaves, greyish green in color
- Blue flowers resemble a typical pea flower in spike-like racemes and very showy
- Blooms in late spring/early summer
- Loved by bumble bees



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Coreopsis lanceolata lanceleaf coreopsis (aka tickseed)

- Aster family
- It does especially well in dry or sandy sites
- Blooms in late spring/early summer
- The basal leaves are erect or widely spreading; 3-6" long, and entire (toothless) along their margins. Along the lower half of the stem, pairs opposite leaves occur; the uppermost leaves tend to be smaller and sessile (no leaf stem)



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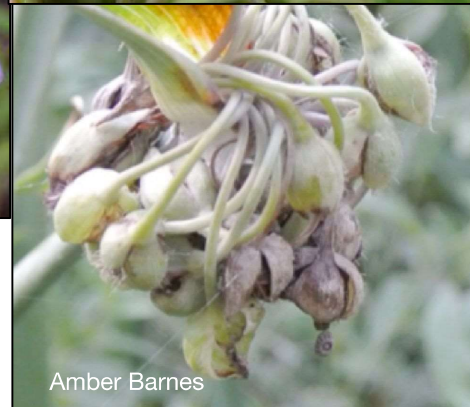
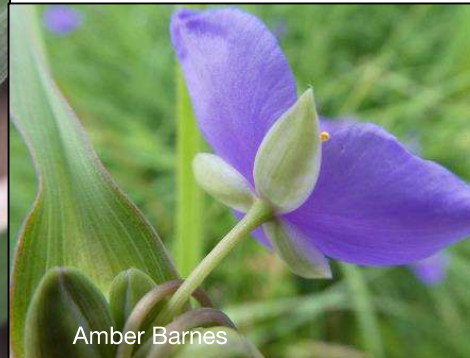


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Tradescantia ohiensis

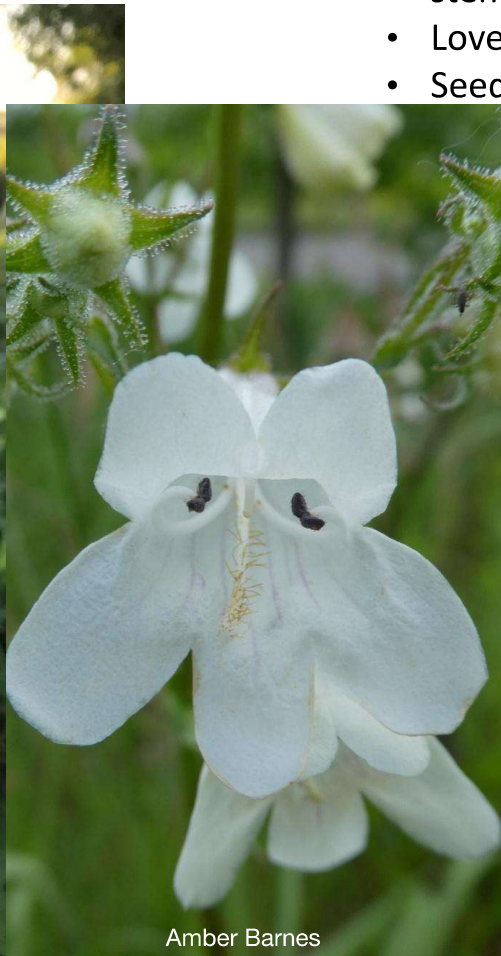
Ohio spiderwort

1. Early summer blooms
2. Can be found in a wide variety of habitat types
3. 2-4' tall and mostly unbranched
4. Grey- or blue-green alternate leaves are up to 15" long and 1" across, resembling grass blades.
5. Light violet to blue-violet flowers occur in small clusters on hairless flowering stems at the top of the plant.



Penstemon digitalis foxglove beardtongue

- Another early bloomer; plant can grow up to 3 feet tall
- Leaves are medium green, sometimes with reddish tints, are variable in shape, but tend to be ovate and are up to 6" long and 2½" wide
- White flowers occur in an open panicle at the top of each flowering stem; blooms during late spring or early summer for about a month
- Loved by bumble bees
- Seed heads are very distinctive and take on a reddish hue



Asclepias species

Milkweeds

- Host for monarch reproduction, therefore an essential component of monarch habitat
- Most milkweed species have a milky sap and opposite leaves
- Loved by many pollinators and is an excellent nectar source for many pollinators



Asclepias syriaca common milkweed

- Very common, growing in many different environments. It likes disturbance, which is why it is associated with fields and roadsides.
- Individual plants have a single stem, and most often will be found growing clusters as it reproduces by root, one of the earlier-blooming milkweeds
- Plants can grow to 6.5 ft. tall, the leaf arrangement is opposite



All photos by Amber Barnes



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Asclepias incarnata swamp milkweed

- As its common name implies prefers moist soils and can be found near bodies of water, as well as wet meadows, and prairies
- Grows up to 6 ft. tall, with a single reddish stem growing from the base but then branches in multiple stems towards the
- Leaves are opposite, up to 6" long, narrow, and lance-shaped – distinguishing it from other milkweeds



Asclepias tuberosa butterfly milkweed

- Stem is stout and densely hairy with leaves that are narrow and lance-shaped, 2" to 6" inches long and may be arranged alternate or opposite
- Flowers are hard to miss –fantastic bright shades of orange; a favorite of bumble bees and is most often 'a buzz
- Flowering occurs earlier than the other milkweeds and will begin in June and may last until August.
- This milkweed does not produce milky sap



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Asclepias verticillata whorled milkweed

- Can be found in prairies, forest openings, road sides, old fields
- Grows from slender single-stems, from 1-3 ft. tall
- Easily distinguished by its leaves which are very narrow, approx. 1/8" wide, and linear in shape; arranged in whorls around the stem



Chamaecrista fasciculata partridge pea

- Annual in the legume family that typically grows to 1-3' tall
- Large, showy, yellow flowers , up to 1" across, and bloom from the upper leaf axils in short clusters (each to 2-6 flowers) from late June to September
- Readily self-seeds, a good cover especially for establishing prairies



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Echinacea pallida pale purple coneflower

- Aster family, threatened species in WI
- Early-blooming summer species, very important nectar plant
- Differentiate from *E. purpurea* by narrow leaves at base



Echinacea purpurea purple coneflower

- Aster family, this species is out of the native range in Wisconsin, but it is still a very important nectar plant for our pollinators, do not plant if near remnant sites
- Differentiate from *E. pallida* by ovate-shaped leaves that arrange up the entire stem; blooms after *E. pallida*



Eryngium yuccifolium rattlesnake master

- Carrot family
- Leaves are mostly basal, long and sword-like with parallel veins and tapering to a sharp point
- Whitish green globe-like flower heads, $\frac{1}{2}$ to $\frac{3}{4}$ inch wide, are arrayed in an orbital cluster at the end of a tall, smooth stalk



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Peter M. Dziuk

Peter Dziuk – Minnesota Wildflowers

Eutrochium sp. joe pye weeds

- Aster family, prefers moderate to wet soils
- Leaves are whorled in groups of 3 to 6, usually 4 or 5. Leaves are up to 9 inches long and to 2 inches wide, coarsely toothed and pointed on both ends with very short stalks and variously hairy
- Stems are usually green or purplish (with purple spots for spotted joe-pye weed)
- Flower is pink to light purple, blooms mid to late summer



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Photo by John Hilty, Illinois Wildflowers



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Photo by John Hilty, Illinois Wildflowers



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Dalea purpurea and *Dalea candida* purple and white prairie clovers

- Legume family
- Thimble-shaped flowers in purple or white,
- Flowers bloom from the bottom up the spike and flowers for about a month
- Very high-value plant for pollinators



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Pycnanthemum spp.

Virginia and narrow-leaf mountain mints

- Mint family
- Leaves are lanceolate, with smooth edges
- Flowers form in profuse, somewhat flat-topped, terminal clusters, made up of small, white, 2-lipped flowers which bloom in mid to late summer
- all parts of the plant emit a strong, mint-like aroma when crushed



Heliopsis helianthoides ox-eye sunflower

- Aster family, upright, clump-forming short-lived perennial, typically grows to 3-4' tall
- Flowers (2-3" diameter) with yellow-orange rays surrounding brownish-yellow center cones that bloom throughout summer
- Leaves are **opposite**, ovate, toothed up to 6" long



2007 © Peter M. Dziuk



Photo credit: Laura Jach-Smith



Photo credit: Laura Jach-Smith

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Agastache foeniculum Lavender/ Anise hyssop

- Mint family
- May flower within the first year, ultimately grows 3-4', mid-summer bloomer and will bloom for several months
- Very high pollinator value being an important nectar source
- Self-seeds well



John Hilty, Illinois Wildflowers



Photo credit: Laura Jach-Smith



Photo credit: Laura Jach-Smith

Ratibida pinnata yellow coneflower

- Aster family
- Easy to establish and typically occurs in dry prairies, but is not picky
- Very distinct, pinnate leaves that subdivide into lobes
- Flowers have 13 gracefully drooping, bright yellow ray flowers that are ~ 3" long. The ray flowers surround a dull-gray to brown central disk, that looks like an elongated cylinder



Photo credit: Laura Jach-Smith



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Photo credit: Laura Jach-Smith

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Veronicastrum virginicum

Culver's root

- Occurs most often in moist prairies, but can tolerate a range
- Typically reaches 3-7' tall when in bloom, may branch to have several spikes of blooms
- Lance-shaped leaves are arranged in whorls around the stem (3-7 leaves per whorl)
- Visited by many native bees



Rudbeckia hirta black-eyed Susan

- Aster family, biennial
- Very common native wildflower which typically occurs in prairies, fields, open woodlands, and roadsides; often blooms in just established prairies
- It is a coarse, hairy plant growing 1-2.5' tall
- Each stem produces a single flower that are up to 3" across with 8 to 20 bright yellow to orange-yellow rays
- Its leaves are alternate and feel rough due to its stiff hairs
- Blooms throughout the summer months



Rudbeckia triloba brown-eyed Susan

- Aster family
- Short-lived perennial and typically blooms right after *R. hirata*, sometimes continuing until frost with many small coneflowers
- Lanceolate to ovate leaves, has many branching reddish stems
- It is typically self-pollinated but still visited by numerous nectar-seeking pollinators and important for a late-season nectar source



Rudbeckia triloba from left to right: small coneflowers, single leaf, and branching stems (photo credits Matt Smith).

Rudbeckia subtomentosa sweet black-eyed Susan

- Aster family
- Longer-lived perennial compared to the other *Rudbeckia sp.*
- Coneflower looks remarkably similar to *Rudbeckia hirta*; however, the deeply lobed leaves easily distinguish it from that of *R. hirta*

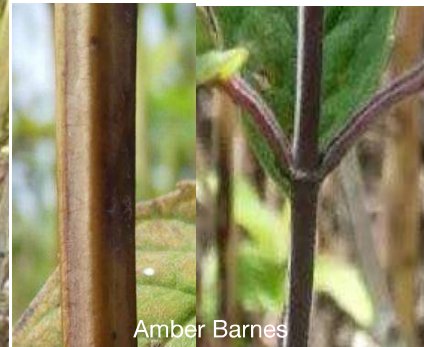


Photo credits Matt Smith



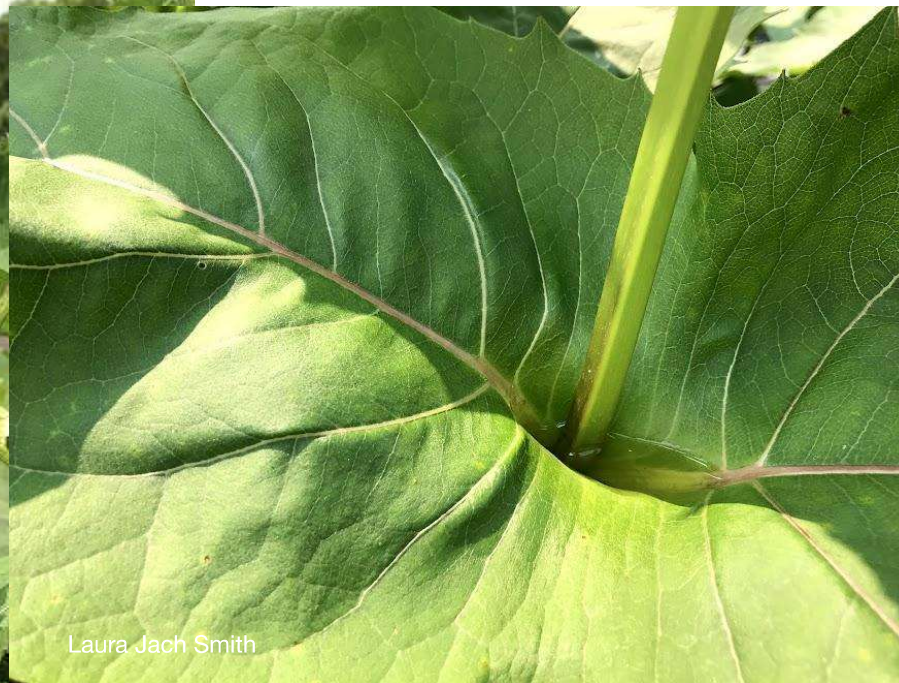
Monarda fistulosa wild bergamot

- Mint family, square stem, tends to form large colonies
- Occurs throughout moist to dryish soils in a variety of habitat areas
- It has lavender, two-lipped, tubular flowers
- Leaves are toothed and aromatic
- Very high-value plant for pollinators, preferred by the rusty-patched bumble bee



Silphium perfoliatum cup plant

- Aster family
- Grows in medium-wet prairies
- Stem leaves are very large, to 10 inches long and 6 inches wide, opposite pairs joined together at the stem, forming a cup (hence the name) which is an excellent watering hole for pollinators!



Silphium perfoliatum rosinweed

- Aster family
- Central stems, but branch right before the inflorescence
- Leaves are ovate, have a sand-papery texture
- Prefers mesic to dry soils
- Nectar source for a variety of native bees



Liatris sp. blazing star

- Aster family
- Several species of blazingstar have dense spikes of flowers, including the dense/marsh (*L. spicata*) and prairie (*L. Pycnostachya*)
- 4" to 18" long terminal flower spikes produce fluffy, small, but densely arranged deep purple flower heads. Flowers begin to bloom at the top of the spike open later below
- High-value pollinator plant, especially for monarchs



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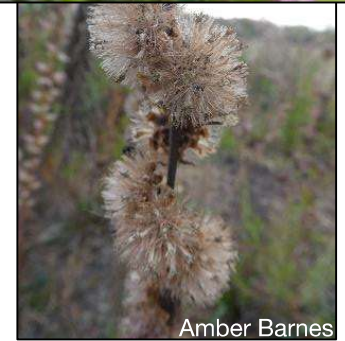
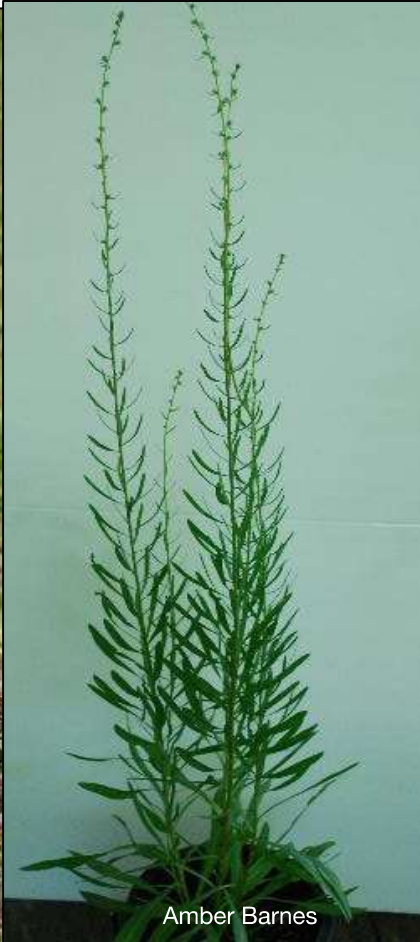
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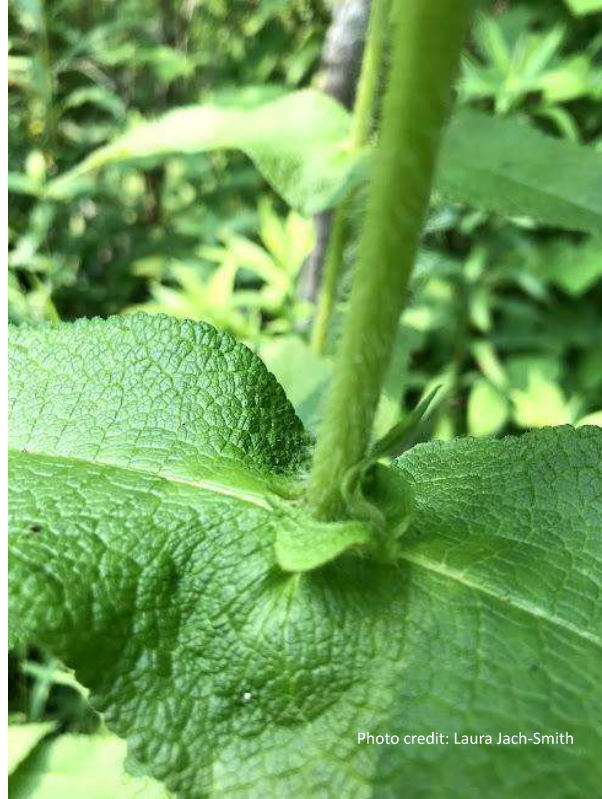
Liatris aspera button/purple blazing star

- Commonly known as rough or button blazing star, is an upright, clump-forming, perennial which typically grows 2-5' tall
- Commonly occurs in dryish soils on prairies, glades, & meadows.
- Stalks grow from basal tufts of rough, very narrow, lance-shaped leaves
- High-value for monarchs



Eupatorium perfoliatum common boneset

- Typically occurs in wet soils in low woods, thickets, and in meadows and prairies
- Grows 2' to 4' tall and tends to form colonies
- White flat-topped clusters of small flowers appearing in the late summer to fall.
- Stems are covered in long hairs and its leaves are opposite, lance-shaped, and perfoliate - uniting around the stems, almost appearing as one leaf



Vernonia fasciculata smooth ironweed

- Aster family
- Likes full sun, including wet to mesic prairies, in meadows
- Smooth ironweed grows to be a stout, unbranched 2-4' tall plant
- The central stem is often reddish to purple; and hairless – which is a key to distinguishing it from other ironweeds
- Leaves are alternate, narrow lanceolate to linear, with serrated margins



Oligoneuron rigidum stiff goldenrod

- Aster family
- Full to partial sun; dry to moderate moisture
- leaves are alternate, stiff, gray-green, oval to oblong, hairy on both sides; lower leaves up to 10" long and 5" wide on long petioles
- Stem is unbranched, very stiff, densely hairy
- Blooms Aug thru Oct, very high-value late season nectar source



Solidago speciosa showy goldenrod

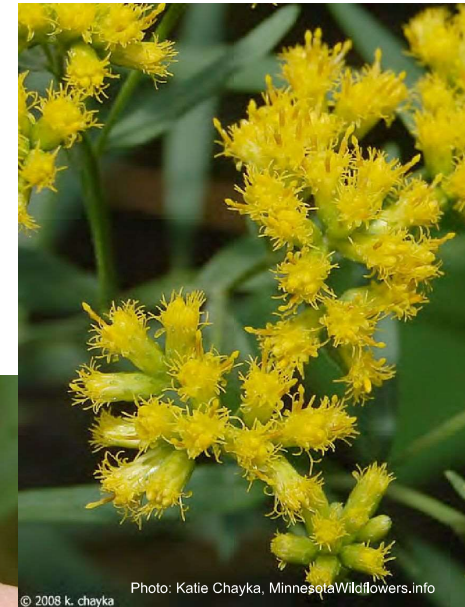
- Aster family, very showy bloom, stands about 4ft tall with a dense panicle of yellow compound flowers
- Blooms Aug thru Oct, very high-value late season nectar source
- Distinguished from other goldenrods because of its unbranched, erect stems with one cylindrical-shaped cluster of flowers on top
- Stem tends to take on a reddish hue
- Leaves are lanceolate and toothless



Euthamia graminifolia

Grass-leaved goldenrod

- Aster family
- Easily distinguished from other goldenrods by its flat-top, smaller flowers, and narrow leaves that look “grass-like”
- Blooms late August/September – one of the later-blooming goldenrods



Symphotrichum laeve smooth blue aster

- Typically occurs in prairies, rocky glades, dry open woods.
- Grows 1½–3' tall, branches on the upper part of the plant
- Alternate leaves occur along the entire length of these stems, are oblong to ovate, and become gradually smaller in size toward the top of the plant
- Both lower and upper leaves clasp their stems.
- Small flowers with violet blue to purple (sometimes white) rays and yellow center disks appear in open, loose, panicle-like clusters in the fall



**POLLINATOR
PARTNERSHIP**

Symphotrichum novae-angliae

New England aster

- Aster family, this one is somewhat common, which occurs in moist prairies
- Leafy plant typically growing 3-6' tall with a robust, upright habit, leaves have a distinctive clasp along the stem
- Features a profuse bloom of daisy-like flowers, can range from purple to pink in color, blooms late summer through fall



Photo credit: Laura Jach-Smith



Amber Barnes



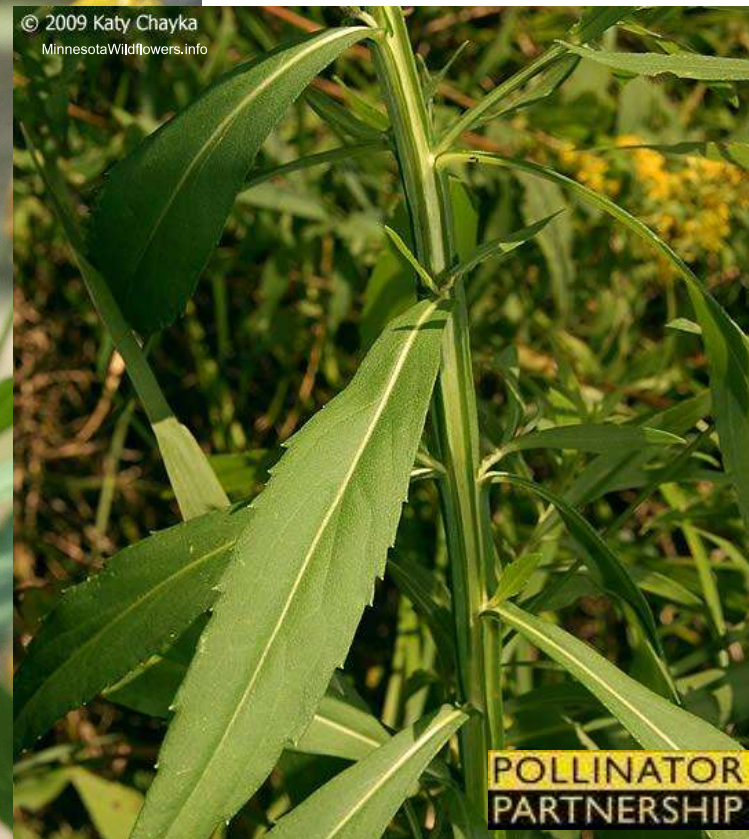
Amber Barnes



**POLLINATOR
PARTNERSHIP**

Helenium autumnale common sneezeweed

- Aster family
- Likes wetter soils,
- Basal leaves wither by flowering time, but the base of the stem leaf extends down the stem, creating a “wing” that extends down to the next leaf and beyond
- Late blooming species, September - October



Big Bluestem

Andropogon gerardii



Perennial warm-season grass, 4-6 ft. tall

Sun: full

Soil moisture: dry, medium, moist

Tolerates: most soils

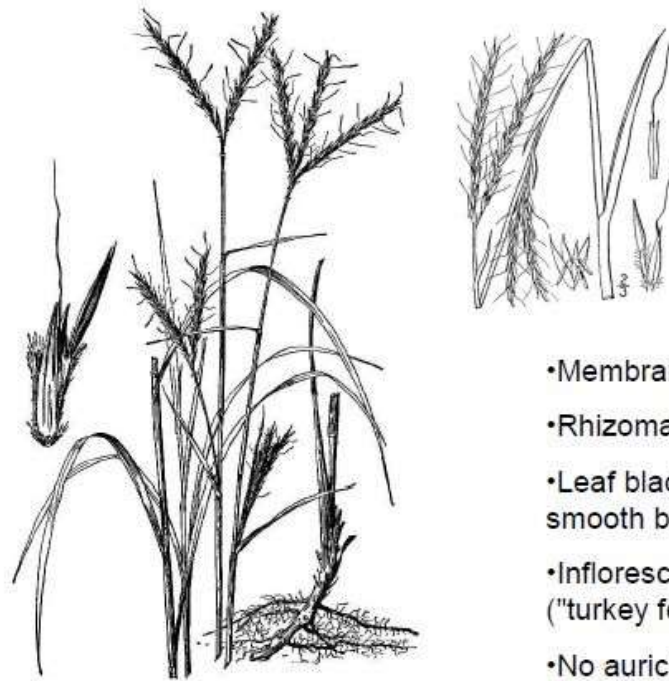
Bloom Period: **August - October**

Pollinators: wind pollinated, but native bees use bunch grasses for nesting sites and overwintering

Larval host to: several types of skipper butterflies feed on the foliage

**POLLINATOR
PARTNERSHIP**

Big Bluestem



- Membranous ligules
- Rhizomatous roots
- Leaf blades are flat, with coarse hairs; smooth below leaf, rough above
- Inflorescence: purplish, 3-parted flower ("turkey foot") with paired spikelets
- No auricles

Indiangrass

Sorghastrum nutans



Perennial warm-season grass, 6 ft. tall

Sun: full to partial

Soil moisture: dry to medium

Fun facts: Bunch grasses provide important structure and nesting habitat for native bees and a food source and nesting material for birds

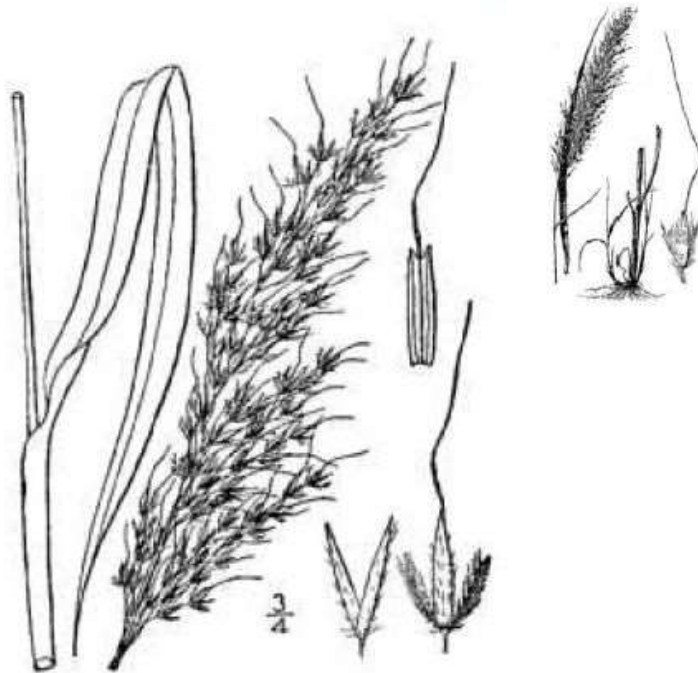
Bloom Period: August - September

Pollinator value: grasses are wind pollinated, but native bees use bunch grasses for nesting sites and overwintering

Larval host: Pepper and salt skipper butterfly

**POLLINATOR
PARTNERSHIP**

Indian grass



- Ligules: Small and membranous; verticle projections located on both sides of the ligule

- Short rhizomes; strong bunch grass

- Leaf blades: stiff, straight leaves arising from stems at acute angles

- Inflorescence: dense, golden-yellowish lance-shaped panicles; paired spikelets

- Auricles prominent, pointed

Switchgrass

Panicum virgatum



© 2010 Katy Chayka

Perennial warm-season grass, 3-6 ft. tall, rhizomatous

Sun: full to partial

Soil moisture: dry, medium, moist

Fun facts: Native grasses provide important structure and nesting habitat for native bees and a food source and nesting material for birds

Bloom Period: **July - September**

Pollinator value: grasses are wind pollinated, but native bees use bunch grasses for nesting sites and overwintering

Larval host: to several skipper species

**POLLINATOR
PARTNERSHIP**

Switchgrass



- Ligules: fringe of hairs with a dense mat of hairs extending onto the upper leaf surface
- Roots fibrous and rhizomatous
- Leaf blades long and flat; v-shaped patch of hair on upper surface of leaf blade near stem
- Inflorescence: tear-drop spikelets borne in open panicles
- No auricles

Little bluestem

Schizachyrium scoparium



Photo credit: Peter Dziuk, Minnesota Wildflowers

2004 © Peter M. Dziuk

Perennial warm-season grass, 2-3 ft. tall

Sun: full

Soil moisture: dry to medium

Fun facts: Blue-green color in summer turns to copper and red tones in fall; color and structure remains all winter; seeds are a great food source for songbirds

Bloom Period: August - October

Pollinator value: grasses are wind pollinated, but native bees use bunch grasses for nesting sites and overwintering

Larval host to: several skipper butterflies

**POLLINATOR
PARTNERSHIP**

Little bluestem



- Ligules prominent, membranous, clawlike; 0.5-2mm

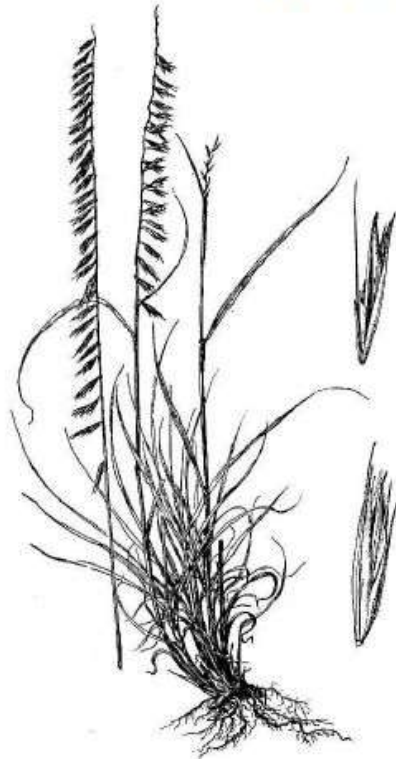
- Rhizomatous roots

- Leaf blades slightly folded; leaf sheaths flattened and hairless

- Inflorescence: spikelets fuzzy and fluffy white

- No auricles

Side Oats Grama



- Ligules are membranous with a very short fringe of hairs
- Rhizomatous roots
- Leaf blades are flat with stiff hairs along the edges
- Inflorescence: short, one-sided spikes which hang downward along stalk

Rye



- Small membranous ligules, sometimes torn on the edges
- Fibrous roots, bunching
- Leaf blade margins rough; sheath round, smooth, and split with overlapping margins
- Auricles small and without hairs