

Winter Plant Identification for Pollinator Habitat

Wednesday, February 22, 2023
11am-12pm



Laura Jach Smith
Wisconsin NRCS Pollinator Liaison
Pollinator Partnership

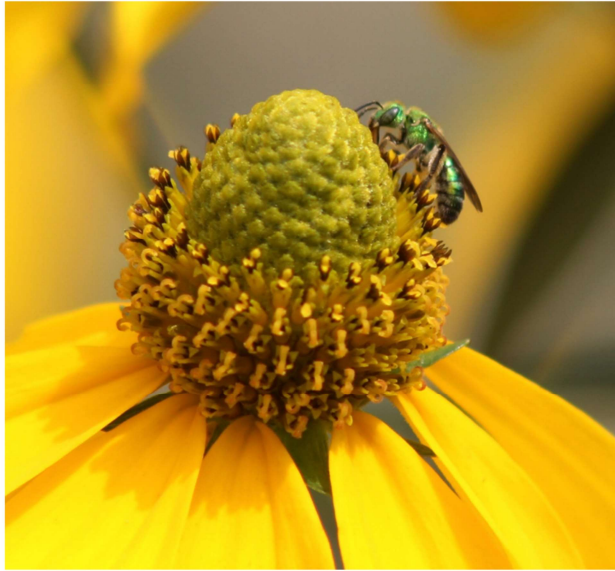




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www.pollinator.org

Pollinator Partnership (P2) is a science based, non-profit conservation organization with the goal of providing protection for pollinators and their ecosystems. Please visit our website, www.pollinator.org, for information on programs, resources, and more.



Pollinator Partnership's
Mission is to promote the
health of pollinators, critical
to food and ecosystems,
through conservation,
education, and research.

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Considering our mission to promote the health of pollinators, our programs work to create habitat, support research in pollinator conservation and promote stewardship through outreach.

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One of our biggest programs that you may be familiar with is Pollinator Week, which is always the third week in June. P2 has a lot of other programs, including Bee Friend Farming, Bee Friendly Gardening, and a lot of resources for landowners, beekeepers, educators, and anyone interested in supporting pollinator conservation.



Outline

Plant ID tools

Plant profiles for common plants

- native species common to WI seed mixes
- common weeds
- early-successional woody trees and shrubs
- invasives

Tips for conducting site assessments for pollinators

This webinar is an introduction to winter plant ID. I've tried to select some of the more common species you'll see if you're out doing site assessments. Of course, this is not an exhaustive list of what you'll find, but rather an introduction.

Plant ID Tools and Resources

Plant ID guides/books

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



A few of my favorites:

- Wildflowers of Wisconsin by Merel R. Black and Emmet J. Judziewicz for forb and legumes, and
- Michigan Trees and the Shrubs and Vines guides by Burton Barnes for woody ID.
- The Prairie Seedling and Evaluation Guide is great, somewhat limited in the species they present, but there is a lot of great information on establishment and evaluation that makes this a great resource AND you can download it for free: <https://secure.iowadot.gov/Irtf/docs/PrairieSeedlingGuide.pdf>

Plant ID Tools and Resources

Useful online resources



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



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



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



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



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



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



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



Here are just a few excellent online resources:

- The Seek app (great in the growing season, but I honestly haven't used it in winter much)
- The Illinoiswildflowers and Minnesotawildflowers websites are EXCELLENT. Many of the pictures used in the following slides today are utilizing their pictures (photos credited).
- Two of the big native plant nurseries in the Midwest are also great (Prairie Nursery and Prairie Moon), simply because they have so many excellent pictures, and some great descriptions of flora-fauna relationships.
- Winter plant ID is way easier if you know the plant in summer, so one sure way to work on your plant ID skills in winter, is to learn the plants in summer, first. Even better, follow the same field/garden/plant through all the seasons.

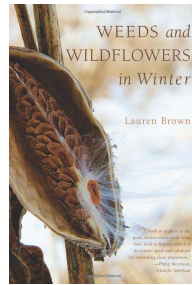
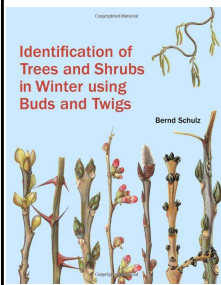
Plant ID Tools and Resources – for WINTER



Winter Identification and Management of Woody Species
Workshop hosted by Riveredge Nature Center in SE Wisconsin



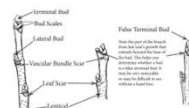
<https://www.youtube.com/watch?v=j1vsFfj01nl>



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

***Photos: Peter Dziuk and Katy Chayka from MinnesotaWildflowers.info

WINTER TREE IDENTIFICATION KEY



<https://www3.uwsp.edu/cnr-ap/leaf/Documents/LEAFWinterTreeIDKey.pdf>

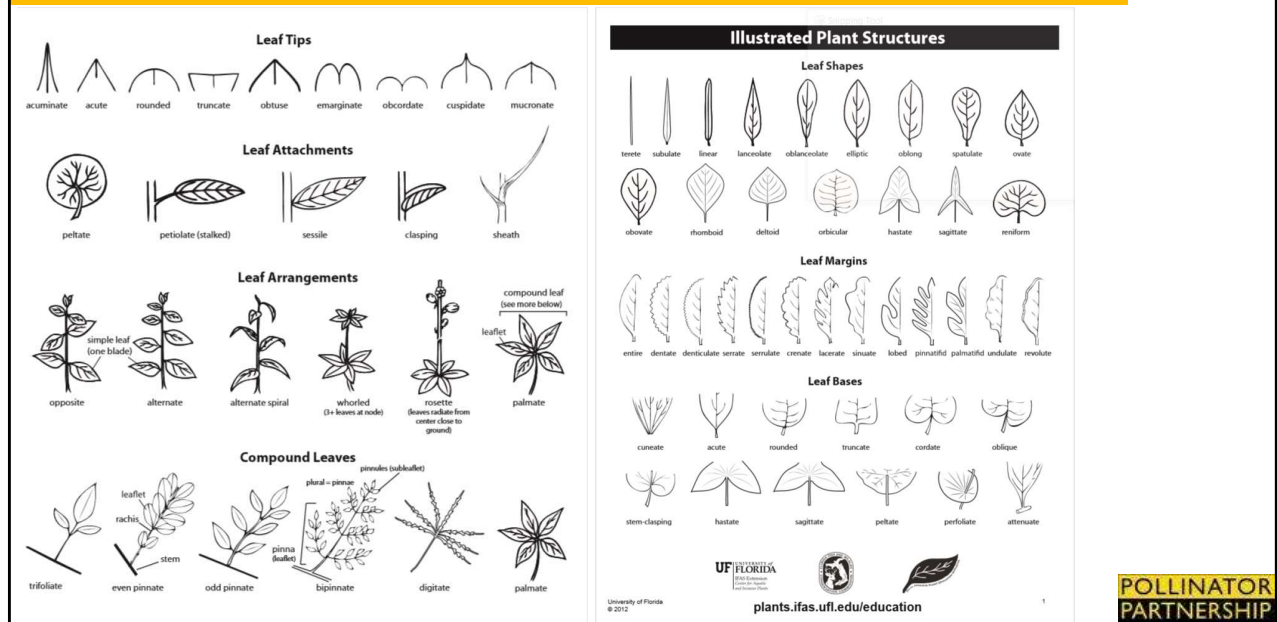
F Winter Tree ID Key ©2014 www.leafprogram.org



Here are some winter-specific resources:

- This Winter Botany video is a presentation by Eric Fuselier from Arkansas. A number of the species are irrelevant to WI, but there are a lot of species that overlap. He provides a great introduction to looking at a variety of clues for winter ID, such as bark, leaves, twigs, fruits, so if you are a beginner to winter plant ID, I'd recommend this video.
- There are a couple books great for twigs and forbs (see slide above for titles)
- Riveredge Nature Center in Newburg, WI, puts on an excellent winter plant ID and management workshop every year. See <https://www.riveredgenaturecenter.org/events/>
- The UW field station and others, (i.e. MacKenzie Center in Wisconsin) also have done winter plant ID trainings.
- The leafprogram put out by the folks at Steven's Point have a great Winter Tree ID key that has some great diagrams and a key for some of the more common trees in Wisconsin.

Getting familiar with botanical terminology



I will be referring to various standard botanical descriptive terms. You can find and download reference charts; and there is almost always some reference chart in your plant ID book.

When thinking about leaf attachments, here are some key terms to know:

- **Petiole:** the structure that attaches the leaf to the stem. Sometimes leaves don't have a petiole, so they are sessile, or stalkless, or sometimes clasping, which means the leaf is hugging or clasping onto the stem.

Leaf arrangements:

- **Opposite** – leaves are attached as pairs, ie. milkweeds and ox-eye sunflower
- **Leaf arrangements** – alternate, branching along the stem is a zigzag pattern
- **Whorled** – groups of 3 or more leaves joined together, whorled around the stem
- **Compound leaves** – leaflets make up one leaf, there can be pinnately compounded, leaves, which is twice compounded leaves

Other terminology:

- **Leaf shape** -- ovate – looks tear-drop shaped
- **Leaf margins** – toothed, on the margin, lobed or serrated
- **Perfoliate** – opposite leaves join around the stem like cupplant

- Hair characteristics of stems – ciliate means hairy

Getting familiar with botanical terminology

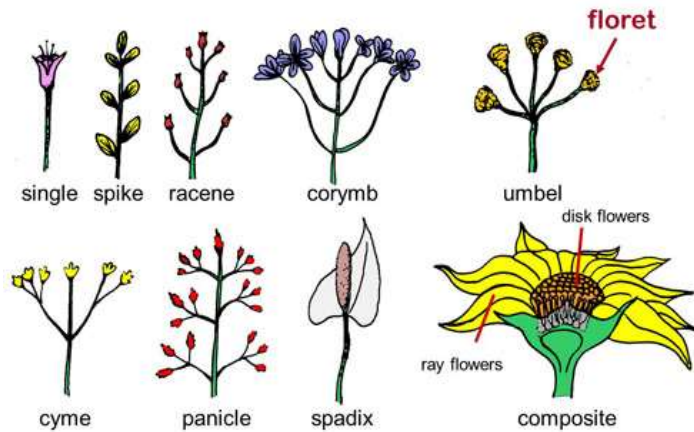


Image credit: worldoffloweringplants.com

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In the winter, the inflorescence is really what stands out and can help you ID plants. While the flowers are gone, the skeleton of the inflorescence, or form of flowers, is often still apparent.

For example, while the flowers are all gone, you might still be able to tell that the florets were arranged in an umbel, or what is remaining of the disk flowers of the composites.

The Species

- native species common to WI seed mixes
- common weeds
- early-successional woody trees and shrubs
- Invasive and noxious weeds

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This webinar reviews common species that are put into CRP and pollinator mixes in Wisconsin. This is nowhere near exhaustive, but I've selected some based on their visibility in winter, and some that are just good to get familiar with because of their importance to pollinators. I show the species in summer first, because knowing some of their identifying characteristics in summer is important for identifying them in winter.

Species are presented in the approximate order that they bloom, from spring through fall. A lot of the earliest spring blooms either decompose or lodge (stems bend over), so that some species are not visible by late fall or winter. For example, some great early-bloomers for pollinators like golden alexander and spiderwort all but disappear in winter and these species would be rather difficult to see in a visual assessment of a field during winter.

Penstemon digitalis foxglove beardtongue

Leaf arrangement is opposite



Penstemon, or foxglove beardtongue

- It blooms during late spring or early summer for about a month
- Can grow up to 3 feet tall, and this is one that really does persist into the winter!
- Notice how the leaves are opposite, and the white flowers occur in an open panicle at the top of each flowering stem
- Seed heads are very distinctive and take on a dark brown to reddish hue in fall
- Seed heads also have a distinctive musky smell – sometimes you can smell this one before you see it!

Penstemon digitalis foxglove beardtongue



- Clusters of upright seed capsules persist into winter and is noticeable amongst the grass stems. The reddish hue has turned mostly brown in these photos, taken in January/February
- The distinct musky smell dissipates as the winter goes along, but still noticeable
- Leaves often persist on the stem in the opposite pattern you can see here
- Often the base of plant retains robust basal rosette of long, obviate leaves into winter months, which turn a purplish red. Basal leaves could be mistaken for English Plantain (a common weed)

Asclepias syriaca common milkweed



- Common milkweed, as its name suggests, is very common, growing in many different environments. It likes disturbance, which is why it is associated with managed fields and roadsides. Sometimes after a burndown from herbicide, common milkweed shoots are one of the first species to appear.
- Individual plants have a single stem, and most often will be found growing clusters, as it reproduces by root. As one of the earlier-blooming milkweeds, it has this cluster of pinkish flowers from early summer through the end of July. Flowers have a wonderful floral perfume smell, and are loved by so many pollinators, like butterflies, bees, beetles, wasps, and hummingbird moths.
- Plants can grow to 6.5 ft. tall, and the leaf arrangement is opposite. Stems produce that milky sap.

Asclepias syriaca common milkweed



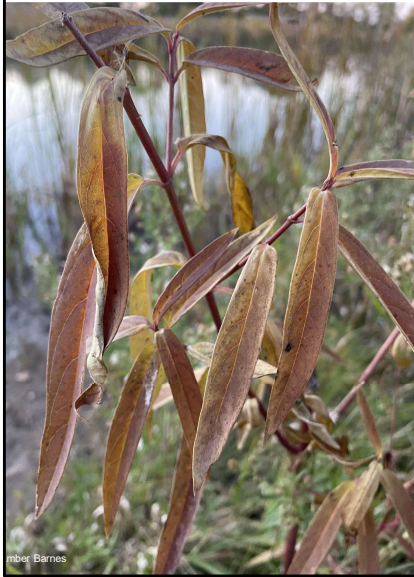
- In late fall, plump tear-shaped seed pods have a warty surface and go from light green to a gold/gray to brown when ripe.
- Milkweed becomes harder to identify as winter progresses, but the split pods usually stay on at least some of the stems
- Common Milkweed drop their leaves in the fall, but usually retain some seedpod casings into winter.
- Casings will be open, gray to black outsides, mottled and whitish on the insides. The milkweed fluff is a definite identifier with the large flat seed attached. They usually blow away through the fall, but often a few get snagged and stick around on the the pods or on vegetation nearby. By late fall and winter, you'll probably only see the open empty pods on stems that are often leafless.

Asclepias incarnata swamp milkweed



- Swamp milkweed is like common milkweed, but as its name implies, it 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 into multiple stems as it grows upward
- Leaves are opposite, narrower, and more lance-shaped from other milkweeds
- Their magenta flower turns into a smooth, tear-shaped seed pod on the terminal of the stem, and turns brown when ripe

Asclepias incarnata swamp milkweed



- In fall, the leaves turn shades of yellow and brown before they drop, and eventually the stem is mostly bare, except for a few of the open seed pods still clinging to tops of the stem.

Asclepias verticillata whorled milkweed



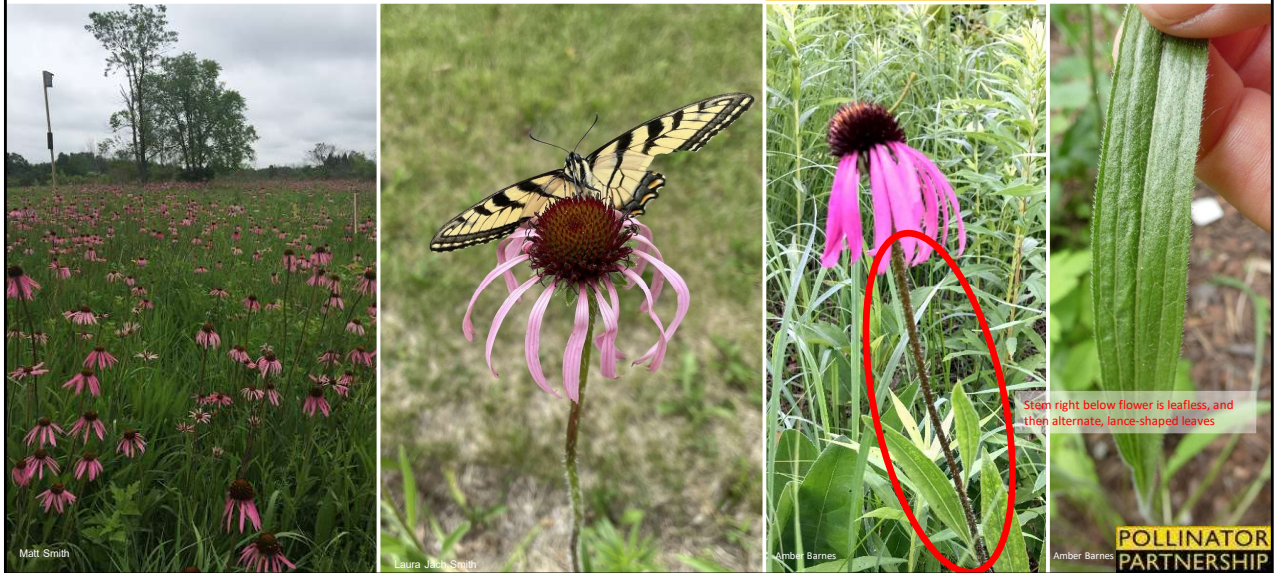
- Whorled milkweed is my favorite, because it's so delicate and monarch caterpillars look like giants when they're feeding on the needle-like leaves.
- It's found in prairies, forest openings, roadsides, old fields – somehow manages to grow within cool-season grasses like smooth brome.
- It grows from slender single-stems and are only about 1-3 ft. tall
- Whorled milkweed is easily distinguished by its leaves which are very narrow and linear in shape; and as its name suggests, the leaves are arranged in whorls around the stem
- The white flowers turn into smooth, and very narrow pods at the top of the stem in September through October. The seeds look a lot like common milkweed, but the pods are just much, much smaller and narrower.

Asclepias verticillata whorled milkweed



- By winter, all the leaves have dropped so you just have the bare stems, but often the open pods persist through the winter. In this old field, the grasses have lodged and become matted and the whorled milkweed is surprisingly easy to see.
- Once you know what you're looking for, the milkweed species are relatively easy to spot in winter, if they haven't lodged with the surrounding vegetation, so winter is actually a pretty good time to spot and assess your milkweed populations. I've found that swamp milkweed is somewhat hard to spot, unless you catch it right during peak bloom, because it blends in with other thick vegetation. Milkweed stems kind of stick out like sore thumbs during the winter, making it easier to see how much Monarch forage you have.

Echinacea pallida pale purple coneflower



- Pale purple coneflower belongs to the Aster family, so it has composite flower heads, with both ray and disc flowers. The flower head is a bunch of tiny individual flowers, with the outer flowers being the ray flowers, and the center the disc flower. The pollen is white, and the pale pink radial flower petals are often drooping (but this should not in itself be used as an identifier)
- As an early-blooming summer species, it is a very important nectar plant for pollinators and is on the Wisconsin threatened species list
- In seed mixes, purple coneflower is more often used because the seed of that species is more readily available.
- You can differentiate Pale purple coneflower from *the* eastern purple coneflower (*Echinacea purpurea*) by the narrow leaves at the base. The stem right below the flower is often leafless, and then there are alternate, lance-shaped leaves, especially at the base

Echinacea pallida pale purple coneflower



- In winter, the spikey-looking conehead persists, and some of the leaves do stay intact, at least enough to identify it.
- Pictured here are the basal leaves (center picture), and the lance-shaped leaves all curled up (right picture), but if you can imagine the leaves straightened out, it is that long narrow leaf that is the unique identifier of the pale purple coneflower.

Echinacea purpurea purple coneflower



- Compared to pale purple coneflower, the eastern purple coneflower is out of the native range in Wisconsin, but it is still a very important nectar plant for our pollinators, and often included in seed mixes now. I wouldn't use it if you are working near remnant sites, but if you are improving a habitat site, purple coneflower is often an acceptable option if you are getting it from a reputable nursery.
- You can differentiate this coneflower from the pale purple by the ovate-shaped leaves that arrange up the entire stem; it also blooms after pale purple. Just when pale purple is ending its bloom is typically when you see the first of purple coneflower blooming.
- It is found in moist prairies, meadows and open woodlands, and adaptable to a lot of environments
- It typically grows to 2-4' tall with stems that have purple streaks
- Its leaves are ovate to broadly-lanceolate with widely spaced teeth

Echinacea purpurea purple coneflower



- In winter, the seed heads form black, rounded, spikey cones atop tall, robust stems that widen slightly before meeting the seed head
- The leaves often remain well enough to identify the ovate shape and differentiate it from pale purple coneflower
- It is a showy winter plant – it retains its shape, stature, and black color throughout winter

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



- Purple and white prairie clovers are very nectar-rich flowers that are a favorite of a lot of pollinators. These are in the Legume family and are also loved by rabbits, so if you have a small pollinator planting in a garden-like setting, you might not see them stick around for long (or use fencing).
- The thimble-shaped flower gives this plant away, along with the finely compound leaves. These plants are also very short in stature, usually only about 1-2 feet, and have multiple stems from the base. Stems are unbranched, hairless, and slightly ridged.

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



Luckily, not much else has that thimble shaped flower head, so by winter, you can still spot these with little effort. Sometimes the seeds stick on, but sometimes the seed starts falling off, or is eaten, and so nothing is left but a whitish spike, which looks like the top part of the black stem.

You can see that the leaves are completely gone by winter, so they are nothing but a stem with the thimbles of seed attached by January-February.

Pycnanthemum spp. Virginia and narrow-leaf mountain mints



Moving on to the Mint family..

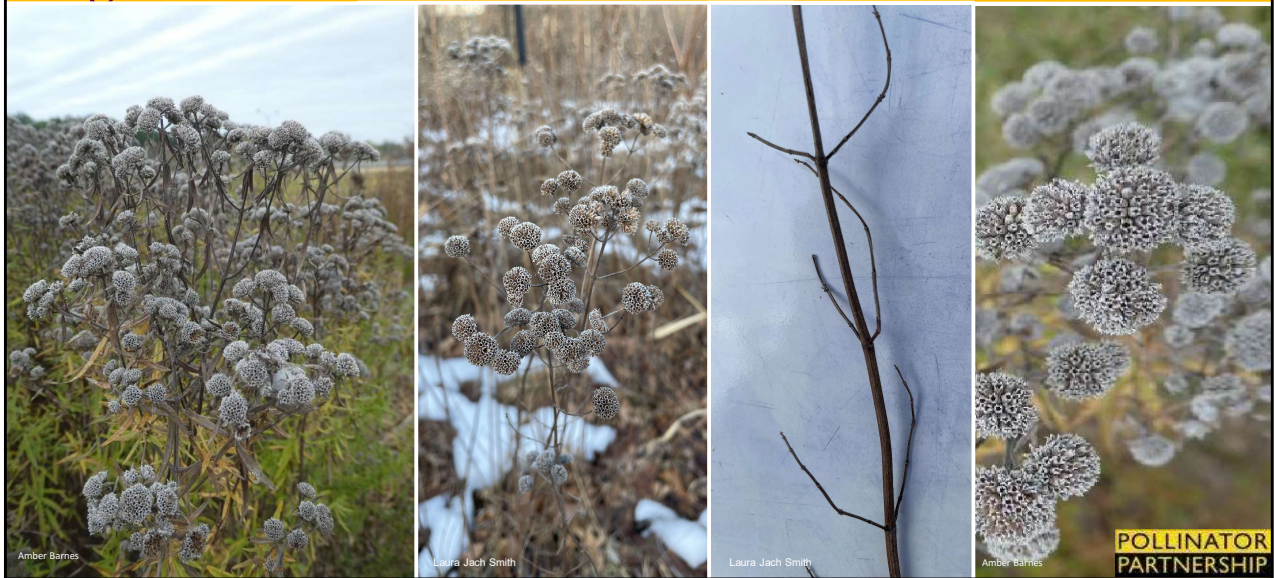
Both Virginia mountain mint and narrow-leaved mountain mint are great ones, and the bees love these.

Characteristic of the mint family – the stems are square, and if you crush the plant, it smells like mint. This smell dissipates as the season changes to winter, but it's a great way to identify plants in the mint family for most of the year.

Leaves are lanceolate, with smooth edges

Flowers form in profuse, somewhat flat-topped, terminal clusters, on a cyme structure which bloom in mid to late summer

Pycnanthemum spp. Virginia and narrow-leaf mountain mints



In fall, the cymes begin to dry and turn a brownish grey. I think they often have a bit of a silvery appearance, especially compared to the drab browns and tans in the surrounding vegetations. Tiny sand-grain sized seeds can be shaken from the tubes clustering in the cyme.

The cymes are persistent through winter and can even sometimes last more than a year. The leaves pretty much all fall by winter, but the square stem and opposite nature of the branching stem make it distinguishable as the mountain mint, most especially because the dried silvery flowers are still attached.

Monarda fistulosa wild bergamot



Monarda (also known as wild bergamot or bee balm)

- Another species that is in the Mint family -- square stem, tends to form large colonies and can even become quite dense with 2-5ft tall plants.
- 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, and loved by butterflies, moths, bumble bees, and even hummingbirds

Monarda fistulosa wild bergamot



- In winter, the seed heads remain and are a globular-shaped cluster of the open-ended tubules from the tubular shaped flowers. Early on, little black seeds the size of sand grains can be shaken out. These seed heads persist through most of the winter, and sometimes even into the next year.
- The square stem is still very evident, and all leaves have fallen, but the flower head is so distinguishable, you don't really need any other identifiers.

Liatris sp. blazing star



Liatris species, or aka blazingstars:

- There are several different blazingstar species that are used in seed mixes, but they all have similar identifiers.
- Several species of blazingstar have dense spikes of flowers, including the dense/marsh (*L. spicata*) and prairie blazingstar (*L. Pycnostachya*)
- Probably the most distinguishing characteristic is the 4" to 18" long terminal flower spikes that produce fluffy, small, but densely, arranged deep purple flower heads. Flowers begin to bloom at the top of the spike and open later below
- The leaves are narrow, and much longer on the bottom part of the stem. As you ascend towards the flower spike, the leaves get remarkably shorter and thinner. The leaves have smooth margins and only slightly hairy.
- As a seedling or during early-season vegetative growth, it may be confused with the common weed horsetail, but leaves are longer at the base, and the leaves get shorter as you move up the stem. Horsetail is also much hairier, and a lighter green. By fall or winter, you can easily distinguish the two because of their vastly different flower arrangement.

Liatris sp. blazing star



- By fall, those flower spikes look like dense fluff spikes, with light brown tufts of hair. Over time, the seeds fly away, and the spikes now look like a bare, elongated part of the stem, with the remaining calyx hanging on. Now they have an especially narrow, spike-like appearance, but they often lose their rigidity, and look somewhat bent and curved by the elements.
- The leaves may disappear, but some hang on in more protected areas, so you can still see the long, lanceolate shapes

Heliopsis helianthoides ox-eye sunflower



- The ox-eye, or sometimes called false sunflower, has these very distinctive opposite leaves, ovate in shape, toothed, and arranged somewhat offset ascending up the stem. They usually grow in clumps, 3-4 ft tall, and flower in mid-late summer.

Heliopsis helianthoides ox-eye sunflower



- In winter, you can see a light brown coneflower shape, typical of composite aster family flowers, stemming from the dark brown stem.
- Seeds will fall, or be eaten by birds, leaving behind a white dimpled disk that persists into winter.
- I found leaves often still attached far into winter and in that characteristic opposite pattern

Ratibida pinnata yellow coneflower



- Yellow coneflower – often times ubiquitous in prairie plantings. While it sometimes is overseeded in plantings, it does have good pollinator value, serving a diversity of native pollinators, especially some of our smaller bees and butterflies.
- It's a species that's easy to establish and not too picky on sight conditions, although tends to be in drier areas.
- The coneheads are of course very distinctive, and the leaves are also – a pinnate shape that is subdivided into deep lobes.

Ratibida pinnata yellow coneflower



- This one is very distinct in winter, as the flower heads are usually standing taller than any surrounding vegetation. They have a grey or brown color, and looks like an elongated disc.
- The seeds have an anise smell when crushed, and hang around through the winter, but eventually fall or become consumed by the birds. Then a little greyish arrowhead or spike remains at the top of the stem.
- The leaves do not always stick around, but often some of the plants have grey, curled up leaves with that unique, deeply-lobed shape.

Rudbeckia hirta black-eyed Susan



Black-eyed Susan is a very common native wildflower, which typically occurs in prairies, fields, open woodlands, and roadsides. It is often one of the first wildflowers to bloom in newly-established seedings, as it is an early successional species and is biennial.

- It is a coarse, hairy plant growing 1-2.5' tall
- Each stem produces a single flower 8 to 20 bright yellow to orange-yellow rays, and the dark brown "eye" in the center
- Its leaves are alternate and feel rough due to its stiff hairs
- Blooms throughout the summer months
- Basal rosettes (center photo) are the first-year growth (note fuzzy leaves) and stem elongation and flowering is second-year growth

Rudbeckia hirta
black-eyed Susan



- In fall and winter, seed cones turn grayish or dark brown when seeds are ripe.
- The flower heads persist into winter and are distinguishable, especially because their bristly stems and leaves also remain relatively intact throughout the winter months.
- They have a somewhat silvery, or light grey hue, and can usually be identified at a distance

Rudbeckia triloba brown-eyed Susan



Brown-eyed Susan

- Short-lived perennial and typically blooms right after *R. hirata*, sometimes continuing until frost with many small coneflowers
- Lanceolate to ovate leaves, and it has many branching reddish stems
- It is typically self-pollinated but still visited by numerous nectar-seeking pollinators and is important for a late-season nectar source
- As black-eyed Susan blooms are waning, then brown-eyed Susans are just starting.
- These plants are taller and almost bushy, and can be quite tall, about 4-5 feet in sunny areas.

Rudbeckia triloba brown-eyed Susan



- Their branching, bushy growth habit is even more apparent in winter and look like spritzes of little copper colored coneheads all over.
- The coneheads persist into winter, and just like the flowers, are smaller compared some of the other composites with coneheads, and have a light brown to almost copper hue to them. Most leaves are gone by winter, and the stems no longer look reddish, but rather a light brown or gold

Black vs. Brown Eyed Susans



Here's are great comparison of black-eyed verses brown-eyed Susans. The left is black, and right is brown-eyed. You don't get a good send of the height here but you can see the obvious different growth habit, where black-eyed Susans have one flower per stem and brown-eyed Susans branch repeatedly and end in a flower head.

Silphium sp. cup plant, prairie dock, rosinweed



Silphiums are large yellow flowers in the aster family and the blooms track the sun just like sunflowers

Cupplant – (photo on left) - 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!

Prairie dock (center photo)

Grows 6-8ft

Very large basal leaves

Rosinweed (photo on right)

- 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
- Leaves are opposite, feel like sandpaper
- Upper and lower leaves are about the same size along the stem

Silphium sp. cup plant, prairie dock



- The *silphiums* still stand tall through the winter. The flower heads and seeds are gone, but often there is some remnant of the leaves that are identifiable. Here you can see the distinct cup-shape from cupplant – that perfoliate leaf that wraps around the stem.
- Prairie dock leaves persist well into the winter, despite being so close to the ground. The tall stems and tough leaves make these identifiable through the winter.

Oligoneuron rigidum stiff goldenrod



- Stiff goldenrod is one of the easier goldenrods to identify because of its stiff stem and big, soft leaves
- 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

Oligoneuron rigidum stiff goldenrod



- Flowers are arranged in flat to rounded clusters at top of plant
- In fall, clusters of tiny fluffy seeds disperse quickly, leaving behind the calyx that looks almost silvery in the sun.
- Tough stems retain leathery, grayish leaves that persist through the winter

Euthamia graminifolia Grass-leaved goldenrod



- Grass-leaved goldenrod is easily distinguished from other goldenrods by its flat-top, smaller flowers, and narrow leaves that look “grass-like”
- Blooms late August/September – it’s one of the later-blooming goldenrods

Euthamia graminifolia Grass-leaved goldenrod



- In winter, the leaves have all degraded or fallen but the remaining calyx and flat-top inflorescence is very apparent. These do blend into the ubiquitous browns, and are a more delicate species, so you must look a little more carefully for this one in winter.

Symphotrichum novae-angliae New England aster



New England Aster - this one is somewhat common, occurring in moist prairies, and ditches along roadways

- 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

Symphotrichum novae-angliae New England aster



The seeds are puffy, tan-colored and persist relatively late into the winter. The clasping leaves are still apparent on the stem, as well as the bushy growth habit of this aster.

Symphotrichum sp.
white heath aster, frost aster, etc.



There are many species of asters that are somewhat difficult to identify even while blooming, so identifying them in winter won't be much easier, although some have growth habits that make them distinguishable. More importantly, identifying a species as a native aster or something else is important for knowing if it has wildlife value

The Species

- native species common to WI seed mixes
- **common weeds**
- early-successional woody trees and shrubs
- Invasive and noxious weeds

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Solidago canadensis Canada Goldenrod



- Canada goldenrod is a common native plant that often becomes weed-like. It is considered native in WI, but since it has clonal, vegetative growth, it *can* become oppressive in a pollinator planting and take over other plants. You will see a lot of pollinators using it from late summer to fall, so unless you have a lot of time and energy to control it, there are worse things to have, so really consider if it's a challenge you'd like to take on before deciding to control it in your planting.
- To ID it in winter, the size is not a good distinguisher because they can have quite a large range in size, from about 1-7 feet, depending on the site conditions.
- Their leaves are very narrow, and curl around the stem in winter. The leaves are stalkless and you may barely be able to see that they were toothed.

Solidago canadensis Canada Goldenrod



- The pappus may likely still be attached on the inflorescence.
- The branching and spreading shape of the flower heads – they have a backward curving shape, and long branches coming from the main stem. Goldenrods can be tricky to ID to species level, even when they are flowering, so winter is a bit more challenging. But if you have a clone of messy, unruly looking plants, with lots of unruly flower heads with their pappus still attached, it's likely the Canadian goldenrod.

Verbascum thapsus common mullein



- Common mullein is very noticeable throughout the winter. They are so obvious in the summer, with their tall single flower spike, it's no surprise that they are apparent in winter too. Their large, thick leaves are often still attached to the stem below the flower spick, but you don't even need the leaves really because the tall, dense brown flower head is so telling, standing dark and tall against the backdrop of the light brown prairie grasses.
- Common mullein is one of the weedy species that does well in dry, disturbed areas so it's most especially common in new establishments. It's a biennial, so it's first year is just a rosette, and it doesn't flower until it's second year. Management isn't too much of a worry, as they usually phase out with more established sites. In the meantime, they do serve quite of few pollinators, being visited by several native bees and flies for nectar and pollen.

Conyza canadensis horseweed



- Horseweed, or sometimes called marehail, is a very common disturbance/ agricultural weed.
- It can get enormously high, reaching easily up to 6 or 7 feet, in which case you know that mowing maintenance wasn't kept up with.
- It's an annual and although it reseeds, it usually phases out as the planting becomes more established and bare ground areas are taken up by the natives. Regular mowing before it goes to seed will keep this weed in check.
- It's often tall, (or will have bolted and gone to seed even if it was mowed and shorter).
- It has white dandelion-like flowers.
- The plant grows from a single, hairy stem and I've confused it with blazingstar seedlings before because the leaves have the same long, narrow, alternate/whorled look up the stem. By flowering time in winter, there is no mistake, as blazingstar doesn't have the branches on the inflorescence and instead the flower spikes. Sometimes the leaves in winter are still attached, having a windswept look if they are still hanging on.

Daucus carota
wild carrot a.k.a Queen Anne's lace



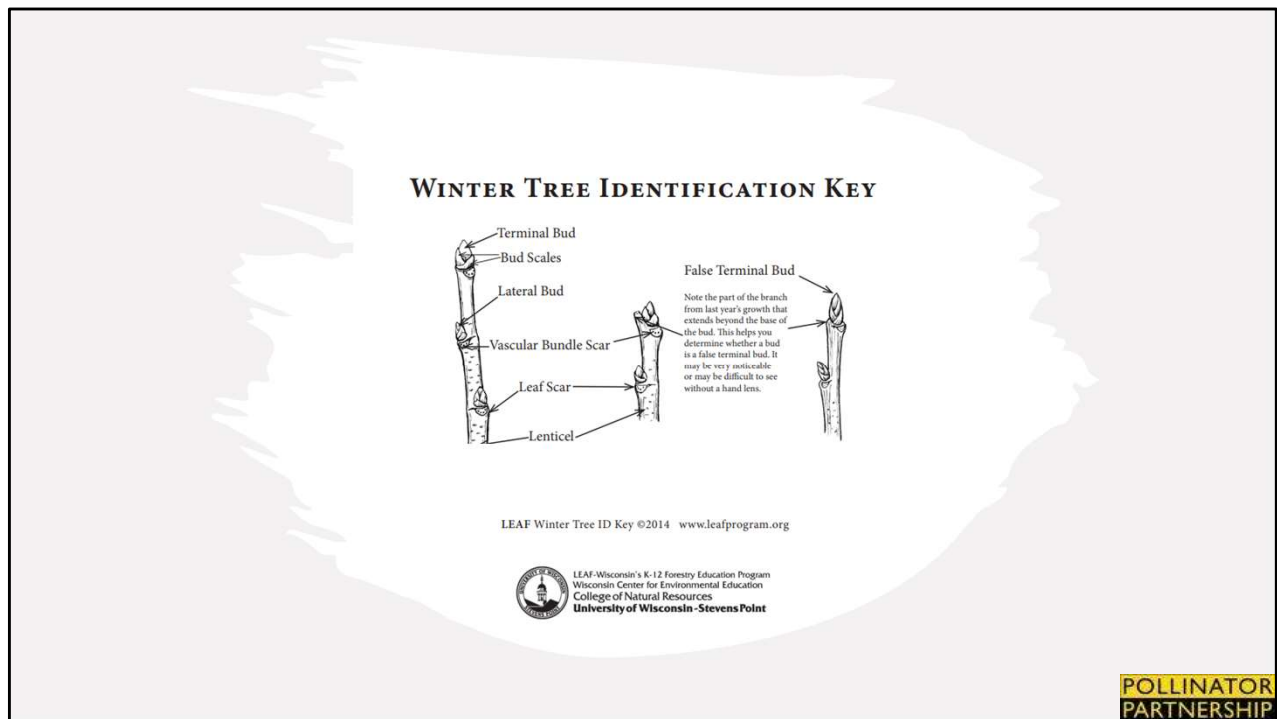
- Queen Anne's Lace, or wild carrot, is a pervasive weed in many pollinator plantings. It's a biennial, and only its second year will flower. It has that white flower head that looks similar to lace. This is because the umbel has umbellets – the umbel has umbels. In other words, the clusters of flowers have clusters of flowers
- The umbel also has a distinctive look of it closing in on itself, kind of tucking itself up for winter.

The Species

- native species common to WI seed mixes
- common weeds
- early-successional woody trees and shrubs
- Invasive and noxious weeds

POLLINATOR
PARTNERSHIP

Whether you have a large open grassland or a small grassland island surrounded by forest you will have woody species popping up even if you are starting a prairie from scratch due to the dispersal vectors of these woody plants (wind, wildlife, root). It is very important to remember that a matrix of woody plants can be a very good thing for wildlife diversity and cover depending on your wildlife goals and the capacity of your site.



Here are some terminology definitions that can be helpful when learning winter tree identification. The LEAF Winter Tree ID Key is used here, from the www.leafprogram.org.

Terminal Bud: The bud formed at the tip of the twig

Bud Scales: Small scale-like structures that are modified leaves covering the bud during its winter dormancy

Lateral Bud: The buds formed on the side of a twig, not the bud at the end of the twig

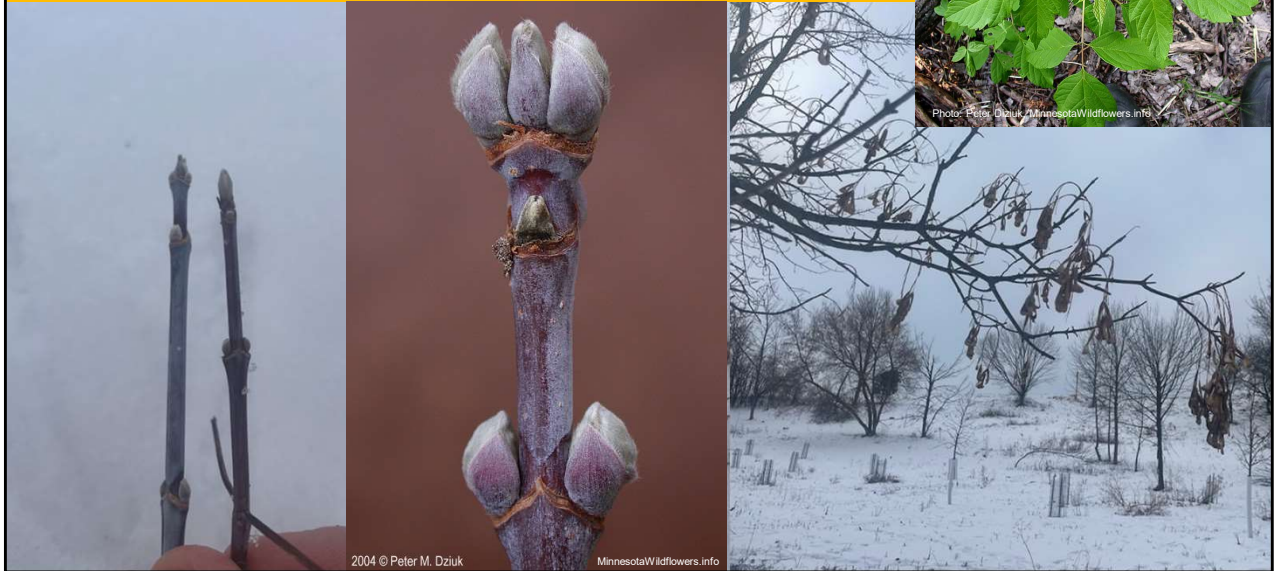
Leaf Scar: A scar left on the twig when the leaf falls

Vascular Bundle Scars: A small mark on a leaf scar indicating a point where a vein from the leaf was once connected with the stem

Lenticel: A small corky area or speck serving as a breathing pore

False Terminal Bud: A lateral bud that assumes the function of the terminal bud. When the growing tip withers or falls away, the closest lateral bud to the twig tip substitutes as a terminal bud

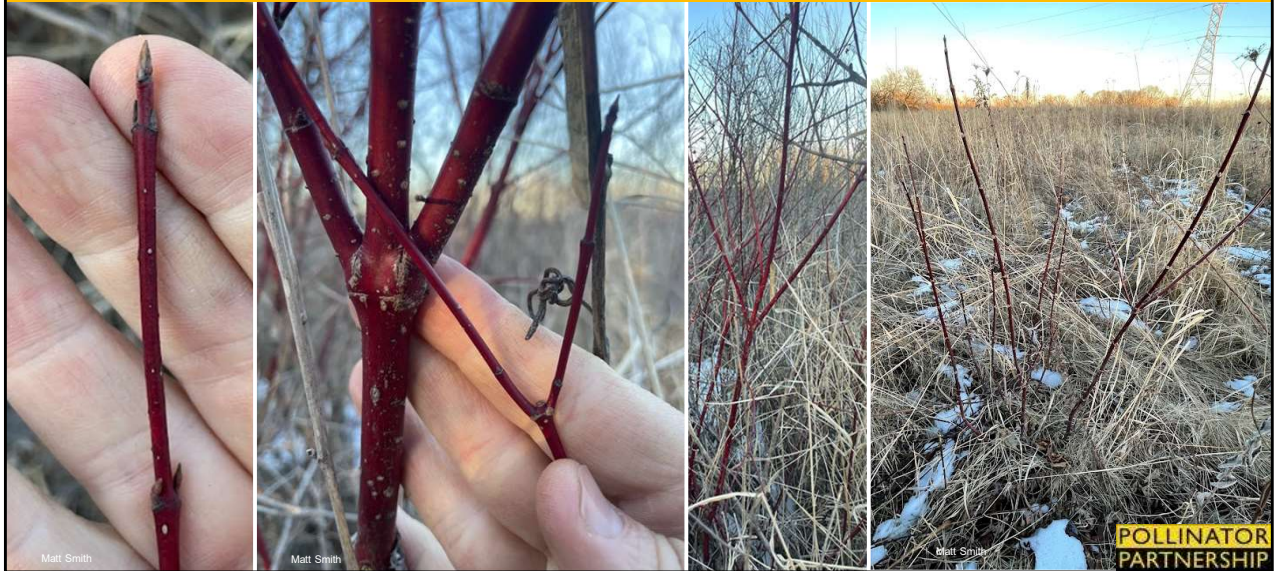
Acer negundo Box elder



Box elder is the black sheep of the maple genus as many people don't even realize it's a maple. This is an early successional tree that often finds its way by wind seed dispersal. If you have box elder in the surrounding landscape, it is very likely you will have them popping up.

- The most distinguishing characteristics are waxy purple new growth and the retention of samaras over winter
- Branching is opposite
- Buds are hoary or white-pubescent and blunt in shape.
- It is shade intolerant, fast growing, thrives in disturbance and often found in bottomlands and fertile soils.

Cornus sericea red osier dogwood



Three common dogwood species are covered here, starting with one of the most noticeable

- Red osier dogwood has a truly vibrant crayon-red color that often pops in a backdrop of dead grass. This redness is directly related to its exposure to sunlight.
- It is very shade intolerant and tolerates open wet to wet-mesic sites.
- Branches have distinctive white corky lenticels noticeable in the center photo.
- Winter buds are pubescent and have two scales.
- Increasing fire frequency will help to phase out this native if you are trying to keep woody plants out of your planting, and mowing alone will can take longer
- With stump-suckering shrubs like red osier and silky dogwood, you can cut the plants during the dormant season to promote more robust and dense new shoots. This is a preferred tactic to reinvigorate old stands of dogwood for bird habitat and food sources, if you are trying to encourage growth of this native

Cornus amomum silky dogwood



- Silky dogwood is found in similar habitats to red osier dogwood - open wet to wet-mesic sites and intolerant to shade.
- The stems are a dark red or burgundy in color with fine hairs on newer tissues
- Branches are very dark red with striped tan and can age into a completely tan color.
- The branching is opposite, and buds are densely hairy. Terminal buds are conical whereas lateral buds are very appressed. Buds have two valvate scales
- Silky dogwood primarily sprouts from its root collar or base.

silky dogwood versus red osier dogwood



- If you are ever confused as to which dogwood red or silky you are looking at, the quickest way to check is to examine the pith. On the left, we have silky (with a brown foamy pith center) and on the right is red osier (with a white pith center).
- Another great attribute to determine a dogwood can be seen on the far-right photo: most dogwoods show a widening of stem diameter towards the set of buds, taking on the look of a vase

Cornus racemosa grey dogwood



- Grey dogwood also shows this widening of the stem at the node in the center photo.
- The buds are opposite and have a hard-to-see fine silky hair. They have 2-4 bud scales.
- It forms dense dome-shaped clonal thickets and spreads through disturbance by its root system
- It is shade intolerant
- You can see these shrub clones from a distance as older wood will have a grey to tan hue and new branches or terminal ends will have a brown to orange color.
- Although dogwood is an excellent native cover you might need more site prep if deciding to seed a prairie because clonal woody plants will take years to remove.

Robinia pseudoacacia Black locust



- If you have black locust, you have a problem.
- It is a clonal tree, but out of native range here, and is commonly found in fencerows.
- As tall as the tree is, roots can be two to three times as long. Roots will sucker and sprout
- This can be commonly confused with the native prickly ash. Black locust new growth is very brown whereas prickly ash is quite grey and has a noticeable red velvet bud. The thorns of black locust are much more intimidating.

The Species

- native species common to WI seed mixes
- common weeds
- early-successional woody trees and shrubs
- invasive and noxious weeds

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Rhamnus cathartica common buckthorn



Common buckthorn - if you are assessing new fields that have just received management, it will most likely establish as a young plant. These photos above will help you identify it in its younger form or suckered form.

- The bark will have a brown to grey metallic color. Stems will be tipped with needle-like thorns instead of terminal buds. Buds will be mostly opposite or subopposite. The buds themselves are a deep purple to brown color and armored with several hairless scales.
- The buds are often appressed or hugging close to the stem.

Rhamnus cathartica
common buckthorn



Here we see the more metallic look to buckthorn bark, with obvious lenticels. Common buckthorn is often confused with choke cherry when it is young, and wild plum when older.

common buckthorn versus black cherry

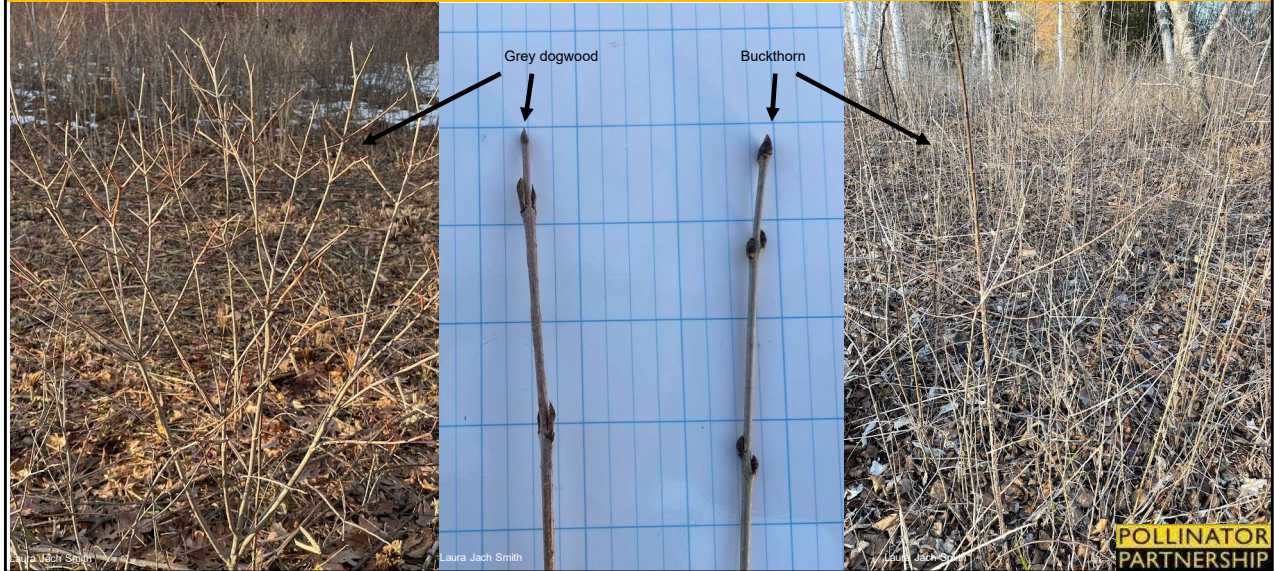
Photos: Peter Dziuk from Minnesota Wildflowers



One of the best immediate tells (buckthorn versus black cherry) is if you scratch the bark, you will reveal an orange inner bark with very long stringy fibers. Cherry has a green inner bark with very bright white tissues. The Minnesota Wildflowers website has excellent photos from Peter Dziuk that compare look-alike species.

When comparing cherry buds to common buckthorn, you will notice first that cherry has no thorns, is alternate, and has dark tipped buds.

grey dogwood versus common buckthorn



Here we can see a comparison of grey dogwood on the left, to common buckthorn on the right. Common buckthorn is easily differentiated by its grey metallic stems, and heavily armored, relatively hairless purple buds.

Elaeagnus umbellata Autumn olive



Autumn olive is very aggressive and will dominate the landscape if left unchecked.

- Buds are alternate and easy to identify at a distance because the plant is often densely suckering from the base with copper to brown indeterminate new growth (or water sprouts), which are so well contrasted to the older grey branches.
- The young stems are completely covered with copper scales. The buds have the same color and texture and appear without a typical armored scale. Buds are often stalked. The leaves are sometimes retained into the winter and have a striking silver underside.
- It has formidable thorns which occur more on new growth
- Young shrubs can be confused with our native soapberry shrub.
- You will find it in full sunlight on dry to mesic sites, and rarely in heavily-shaded sites.

Invasive, biennial mustards

Pastinaca sativa wild parsnip



Garlic mustard and Dame's rocket

- Both are biennials, and in the mustard family
- They have a very similar seedheads, with very slender seed pods, which are left throughout the winter following seed drop.
- They rarely lodge and are good to flag in winter so you can control rosettes or seedlings the following season.
- Dame's rocket will be found in wetter sites with more sun.
- Garlic mustard is more tolerant of shade, and can be found thriving on direr sites.

Wild parsnip has umbel flowers very similar to our native hemlocks; however, this parsnip is found in disturbed upland sites, especially near roadways where the phenology of roadside mowing events can actually encourage its spread.

Phalaris arundinacea reed canary grass



Reed canary grass is common in our agricultural landscapes.

- The ligule is still visible along main stems even in winter
- It is often found lodged in the snow, whereas our native grasses often remain standing throughout the winter
- Because its clonal nature, we can see it in monocultures of the same golden hue. Winter can be an excellent time to scout for populations of reed canary grass and mark it for management



Assessing your site for pollinators

**POLLINATOR
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A few quick words about site assessment for pollinators..



What do pollinators need?

- Diverse, native plants
- Continuous bloom
- Flowers rich in protein and nectar
- Host plants
- Mix: woody, herbaceous, grasses
- Habitat connectivity
- Pesticide-free areas
- Nesting and shelter

**POLLINATOR
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Native plants are going to be the best source of nutrition for our native pollinators. In early spring, flowering trees and shrubs are often the only sources of nectar for our earliest-emerging pollinators.

When creating habitat, it's recommended that you include at least 3 different species of flowering plants for each part of the growing season; spring, summer, and fall. And of course, if you have the space, more types of plants are even better!

Pollinators need nesting and overwintering sites

- ✓ Bare patches of soil
- ✓ Mud/leaves
- ✓ Woody debris
- ✓ Pithy Stems
- ✓ Host plants
- ✓ Leaf Litter



While honey bee hives are an example of what some pollinators need, that example is not representative of all bees, let alone all pollinators.

90% of bee species worldwide are solitary

Of that 90%...

~70% are ground nesting

~30% are cavity nesting

Winter is great time to assess overwintering sites for your pollinators. Pithy stems, leaf litter, brush piles, downed logs, and bare patches of soil are all excellent overwintering and nesting sites for pollinators.

Assessing establishment-year success

- Ideal is .25 to 1.0 native seedlings per sq. ft.
- Winter does not showcase the summer density very well, but highlights habitat structure
- Check for unwanted species to inform management decisions
- Check for refugia from pesticide drift
- Are there overwintering and nesting sites?



Establishment guidelines for seedlings: you'd like to see approx. .25 to 1.0 native seedling per sq. ft. at the end of establishment year

These are photos of the same site, from summer and winter. You can see how the winter shows the bare the soil. Woody growth is a lot easier to see, along with weeds. And even species that weren't spotted earlier in summer because of the thick growth you can sometimes see in the winter.

Assessing habitat post-establishment

- Ideally there are no “gaps in bloom,” i.e., at least three species (diverse in color, type, etc.) blooming at a time, with overlap
- Check for unwanted species to inform next management steps
- Is the habitat reaching the intended goal?



Post-establishment phase (years 2-3)

Monitor your habitat for species that bloom in overlapping succession all season long (ideal is at least every 2 weeks)

A successful pollinator planting will have no gaps in bloom, and at least three different species blooming at a time (diverse in color, type, etc.)

A “gap” in bloom time is considered less than 10% cover is blooming, for more than two weeks

If you have gaps in bloom, it may not support some pollinators and they will move on to other sites in search of more consistent forage

Check for unwanted species (are they invasive or non-invasive? Will they compete with our goals?)

Is the habitat reaching the intended goal? I.e. if intended for Monarch habitat, are there milkweed species? Goal is to have 500+ stems of milkweed species/ac.; >35% cover of nectaring forbs

To support bee habitat: are there pithy stems, are there some bare areas for nesting sites? Is there ample leaf litter or brush piles?

What is the value in assessing in winter? Some of the species are very hard to see in because of all the joe pye that was blooming (in the site pictured above, same site in summer versus winter). If you are not able to get out every 2 weeks throughout the growing season, you might miss something that’s blooming. This wetland for example, had so few swamp milkweeds that I could see throughout summer. In winter, they are a lot more apparent, and I can count a lot more milkweeds compared to the summer.

Downed woody material is also a lot more apparent in winter and a good time to check for

shelter for pollinators

NEWS

Wisconsin NRCS Announces March 17, 2023, Deadline Extension for Conservation Stewardship Program

TOPICS: [WISCONSIN](#) | [CLIMATE](#) | [ENERGY](#) | [WILDLIFE HABITAT](#) | [SOIL HEALTH](#) | [WILDLIFE](#) | [CONSERVATION STEWARDSHIP PROGRAM](#)

PUBLISH DATE: February 16, 2023



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There are a LOT of conservation practices through farm bill programs that support pollinators. Call your local NRCS office and they will help you understand what is available to you.

Your local USDA service center or Farm Bill Biologist will help you make a plan and apply for pollinator programs

Visit the USDA service center locator to find your local service center:
<http://offices.sc.egov.usda.gov/locator/app>

Wisconsin NRCS, Contract, and Partner Staff

Produced: 8/13/2021
 Contact Phil Rivara for updates.
 The most recent map can be found on the WI SharePoint: 110-13-General Administrative
 USDA is an equal opportunity provider, employer, and lender.

Region	County	Staff Name	Position	Contact Info
North	Bayfield			
	Douglas			
	Iron			
	Lincoln			
	Manitowish			
	Marathon			
	Oneida			
	Polk			
	St. Croix			
	Washburn			
Central	Adams			
	Chippewa			
	Clark			
	Grant			
	Jefferson			
	Monroe			
	Portage			
	Shushong			
	Walworth			
	Winnebago			
South	Calumet			
	Franklin			
	Green			
	Kenosha			
	Rock			
	Walke			
	Washington			
	Waukesha			
	Wauwatosa			
	Westchester			
West	Ashtabula			
	Benish			
	Butler			
	Clark			
	Franklin			
	Grant			
	Jefferson			
	Portage			
	Shushong			
	Walworth			

Questions and follow-up

- Email me with any questions, regarding today's material OR for support with your pollinator habitat planning or outreach events

Laura Jach Smith:

ljs@pollinator.org

Wisconsin NRCS Pollinator Liaison



For a wealth of pollinator related information and resources, check out www.pollinator.org

For general pollinator related questions, please reach out to info@pollinator.org

For corporate or municipal partnership opportunities, please contact Reed Lievers, reed@pollinator.org

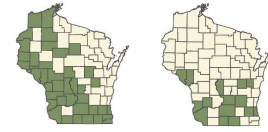
For pollinator habitat planning or outreach assistance, please contact Kaleigh Obrock (ko@pollinator.org), who will record your request and connect you with other P2 staff, partners, or resources that may be able to provide you with assistance.

Extra slides

(not covered in live presentation)

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
- Know your soil/moisture/light conditions
- Learn invasive/noxious weeds



POLLINATOR
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And here are some general tips for plant ID. This sounds obvious, but just knowing what it isn't can get you a long way. Use deductive reasoning! Get to know a few species *really well*.

- If you know what it isn't, then you have already gotten somewhere and are further along to figuring out what your new plant is. You have to start somewhere, and learning 20 plants in one sitting probably isn't the best way, but pick say, 5 plants to learn, really really well. Follow them through all the seasons. Plant ID in winter is hard, and a lot of it, especially for the forbs, is based on what the plant looks like in the growing season.

- **Use county range maps to narrow your search.**

- If you're doing an assessment, know where you are! These maps aren't 100% accurate, as sometimes a species just isn't reported to or observed to make it on the maps, but for many species they are very helpful to know where they are and aren't.

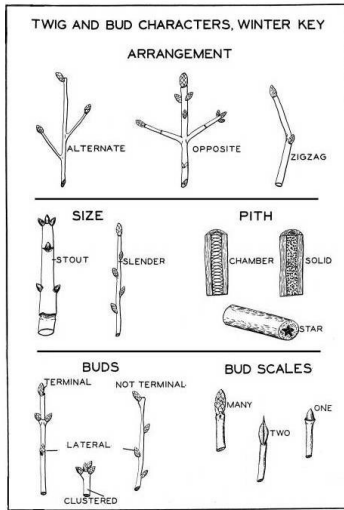
- **Learn plant families to narrow your search**

- If you know what family you're in – you're already partway there. For example, a stem that produces a milky sap puts you in the milkweed family whereas a square stem puts you in the mint family

- **Know the soil/moisture/light conditions you are in**

Again, this helps you know what it isn't, or what it's more likely to be. It can also help you know why a plant that is typically 4ft tall is only 1 ft tall if it's a mesic species that's managed to grow on a sandy hill

- **Learn invasive/noxious weeds – I'll have a few examples today, but if there are any plants to know, it's the ones that you know shouldn't be there because if you don't do something, pretty soon you'll have that invasive take over**



<http://bhort.bh.cornell.edu/tree/plate2.jpg>

**POLLINATOR
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Zizia aurea golden Alexanders



Golden alexanders - this isn't as common as it should be in seed mixes. It is one of the earliest forbs to bloom in spring is an excellent species for pollinators.

It grows 2½' tall, forming occasional lateral stems depending on how much light there is

1. The leaves are compound and oddly-pinnate with 3 or 5 leaflets, or twice compound, or the leaflet has leaflets.
2. Flowers are: Flat to slightly rounded compound umbels that are about 2-3" across, and consists of about 12 umbellets.

Zizia aurea golden Alexanders



In late summer, the seeds ripen into capsules on the flower umbel and turn a rusty brown color. At this point, the green vegetative part of the plant really senesces and becomes very difficult to see.

See here in this picture....it looks like mostly goldenrod, but a few month earlier it was a sea of bright yellow from the golden alexander. Once you have the search pattern for it, you can see the brown umbels are scattered around about 2-3ft height.

By winter, the seeds have often dropped, or in more protected areas might still be attached but are now a light grey color.

The compound leaves are still apparent, but grey and shriveled up. The striations of the carrot-family stems are apparent.

Overall, you probably won't see this species unless you know it's in the seed mix and you're really looking for it.

Zizia aurea golden Alexanders versus look-alikes



Some of the common plants you'll see in the carrot family are still relatively easy to tell apart in the winter.

Here on the left in the umbel from golden Alexander, compared to Queen Anne's Lace. Wild parsnip is a much larger plant (often 4-5+ feet tall) with a larger flower cluster (to 8 inches across), duller, somewhat greenish-yellow flowers, once-compound leaves with up to 15 leaflets, and it blooms later, typically just emerging when Golden Alexanders are in full bloom.

Melilotus officinalis White/yellow sweet clover



White and yellow sweet clover will always be present, especially the year following a burn. You will find yellow sweet clover doing better than white on sandy sites; however both can reach over 6 feet in height and occupy the same area competitively. In winter the standing dead stems lack any seed but they stand tall above most other vegetation with brittle wispy ends. It is often found in multiple trunks and a good reminder to be on top of maintenance mowing and spot mowing.

Rubus sp.
Wild raspberry



Assorted raspberries will make their way into prairies and savannas, both new and old. They often will show up even following a burn. They are common in disturbed sites. We can see how glabrous the stems are being void of hairs. A very definitive attribute are thorns that have the symmetry of an isosceles triangle. Another look alike at this stage is multiflora rose which has thorns in the shape of a wave which really grab.

They can be aggressive in patches that shade out other native plants. They belong on the landscape, however there is not the greatest social tolerance for them especially if they are invading an already established herbaceously diverse native grassland or woodland. I would most certainly make sure to remove this plant before any seeding efforts as it will cast too much shade limiting seedling establishment.

Lonicera sp.
Asian honeysuckle



While we have native honeysuckle throughout the state, you will rarely find them growing alongside the invasive honeysuckle. Invasive honeysuckles thrive in disturbance and limit other vegetation through densely shade.

Young stems will have a hollow pith between nodes. Buds are opposite with sharp scales.

The bark is tan to light grey and is often tattering in long strips.

Eutrochium sp.
joe pye weeds



Joe pye weed is another great pollinator plant in the Aster family, prefers moderate to wet soils, so it's common in wet areas

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 and the flowers are on flat clusters.

Eutrochium sp. joe pye weeds



Like a lot of the plants in the aster family, the fluffy papyrus remains intact through part of fall. By winter, they've all flown or fallen off, so just the skeleton of the flower cluster remains. The whorled eaves are often still attached, which is a great identifier, along with how tall the plant is. For spotted joy-pye, the spots that used to be purple turn a greyish brown color, so the plant is relatively easy to recognize. From a distance though, the stems and flower bracts are very hard to see, so they really just blend in and can't see much until you are almost right next to it.

Fraxinus sp.
Ash



Ash is in a unique situation right now with the emerald ash borer. Some survivor trees and seedlings are still on our landscape in southern Wisconsin due to successful seeding and the tree's ability to coppice or stump sucker. Seedlings might naturally be occurring in fields at the time of an installation or site prep. The buds are very pubescent and brown, fuzzy to the touch. If you have this plant on wetland margins, it would be a good idea to cut it every 10 years and keep it on the landscape.