Common Plant Families of the Chicago Region

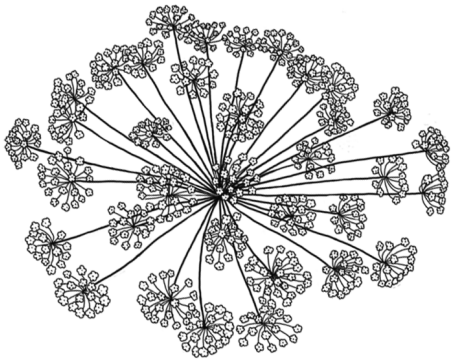
Field Museum - Keller Science Action Center

Apiaceae

Parsley Family (formerly Umbelliferae)

Globally:
418 genera / 3257 species
Chicago Region:
32 genera / 46 species
(19 non-native)

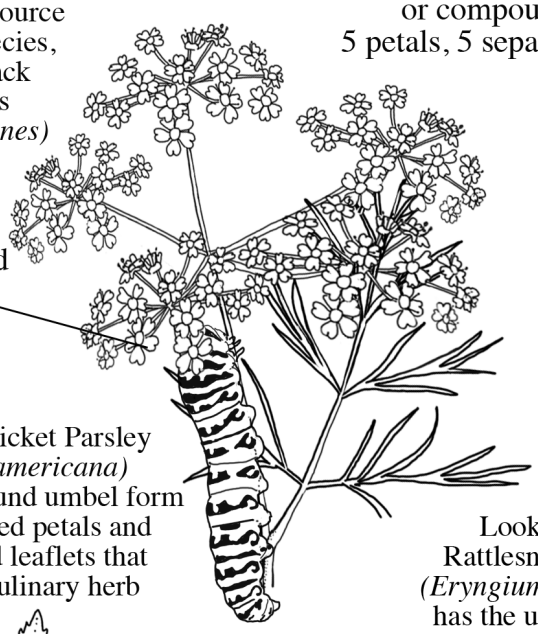
Alternate leaves, usually compound or dissected; hollow, furrowed stems; aromatic, sometimes with irritating oils; small flowers in either single or compound umbels; 5 petals, 5 sepals and 5 stamens



Great Angelica *(Angelica atropurpurea)* has smooth purplish stems, finely-toothed leaves, globular umbels, and is found in moist sites. Can you tell that this is a compound umbel - an umbel made up of many separate umbels?

Important food source for butterfly species, especially Black Swallowtails *(Papilio polyxenes)*

Leaves usually highly dissected and pinnately compound

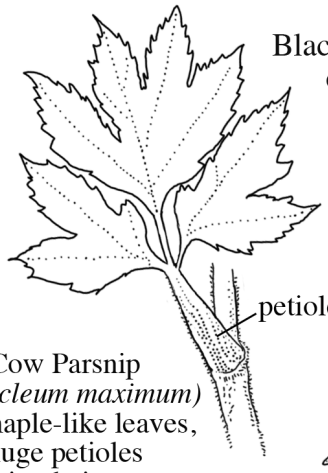


Black Swallowtail caterpillar

Wild Dill or Thicket Parsley *(Perideridia americana)* Notice the compound umbel form with heart-shaped petals and finely dissected leaflets that resemble the culinary herb

Look closely! Rattlesnake Master *(Eryngium yuccifolium)* has the umbel habit of this family but has silver-green, sawtooth-edged straplike leaves, not compound ones like the others

Yellow Pimpernel *(Taenidia integerrima)* is easily confused with Golden Alexanders - note the smooth-edged leaflets!

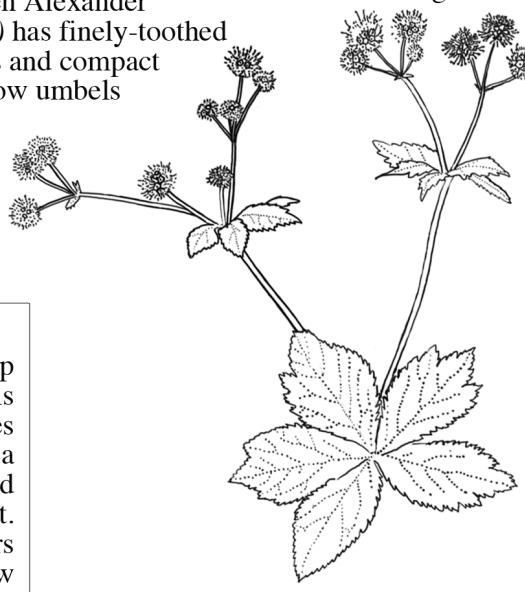


petiole

Cow Parsnip *(Heracleum maximum)* has maple-like leaves, huge petioles sheathing hairy stems, giant white umbels

The tiny Harbinger of Spring *(Erigenia bulbosa)* is very rare in our region

Moisture-loving Golden Alexander *(Zizia aurea)* has finely-toothed leaflets and compact yellow umbels



Clustered Black Snakeroot *(Sanicula odorata)* is a common native woodland species

Invasive Alert!

Use caution when handling during restoration activities; gloves and long sleeves are essential! Some genera are very poisonous: ***Conium, Cicuta.*** Some have irritating oils that will cause painful skin rashes: ***Heracleum, Pastinaca, Angelica***

Wild Parsnip *(Pastinaca sativa)* is a non-native species that may cause a severe rash if touched in the sunlight. (Notice: extra pairs of leaflets, yellow umbels and lobed and toothed leaves)

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Common Plant Families of the Chicago Region

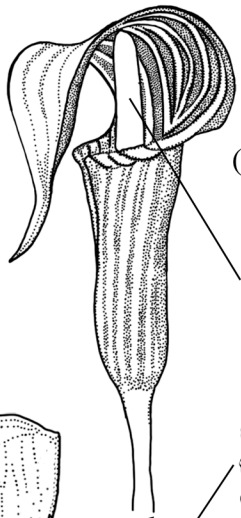
Field Museum - Keller Science Action Center

Globally:
117 genera / 3314 species
Chicago Region:
6 genera / 8 species
(2 non-native)

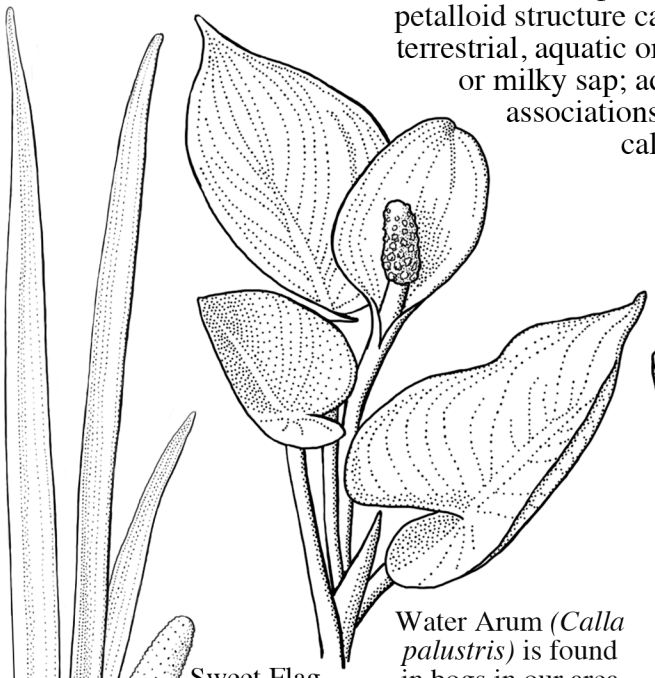
Araceae

Arum Family

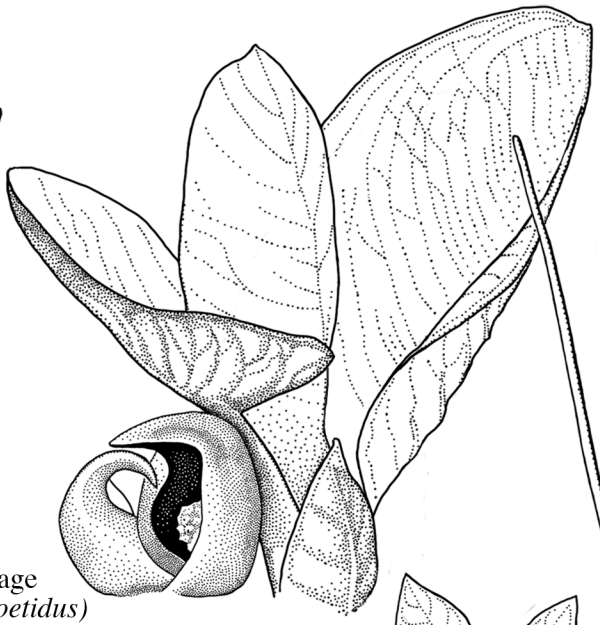
Monocots with columnar inflorescences called a spadix, often surrounded by a leafy or petalloid structure called a spathe; perennial herbs or vines; terrestrial, aquatic or epiphytic (in the tropics), with watery or milky sap; adventitious roots with mycorrhizal associations; no root hairs; tissues contain calcium oxalate crystals



Many arums have 'imperfect' flowers with the male and female parts growing on different parts of the plant, or ripening at different times to prevent self-pollination

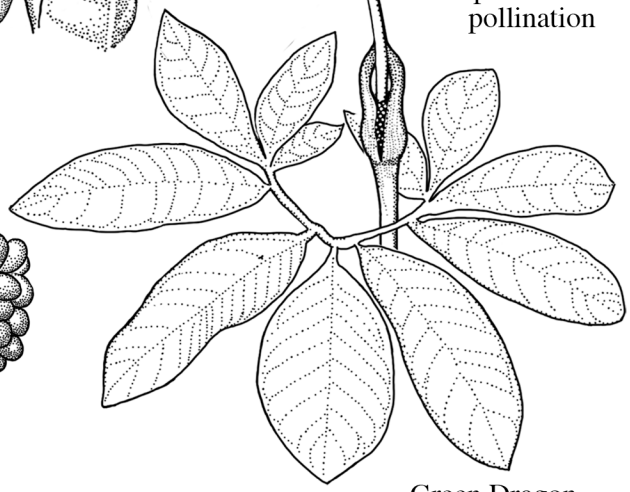


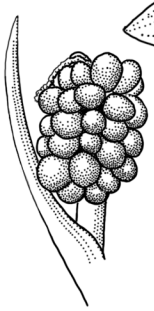
Water Arum *(Calla palustris)* is found in bogs in our area



Sweet Flag *(Acorus americanus)* Look carefully among the cattails for this fragrant-leaved beauty

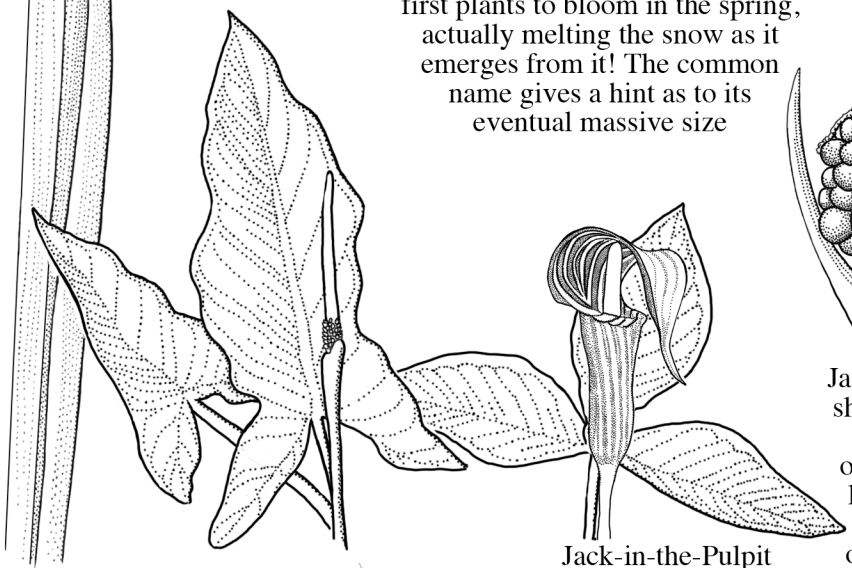
Skunk Cabbage *(Symplocarpus foetidus)* means 'connected fruits' and 'rotten smell'. It is one of the first plants to bloom in the spring, actually melting the snow as it emerges from it! The common name gives a hint as to its eventual massive size





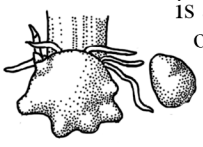
Jack-in-the-Pulpit's shiny red fruits are similar to those of Green Dragon; look for them in late summer or early autumn!

Green Dragon *(Arisaema dracontium)* is an uncommon cousin of Jack-in-the-Pulpit



Arrow Arum *(Peltandra virginica)* is found in bogs, ponds and marshes in shaded, shallow waters

Jack-in-the-Pulpit *(Arisaema triphyllum)* is typical of floodplain woodlands



Fleshy corms store starches and sugars for the next growing season

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Common Plant Families of the Chicago Region

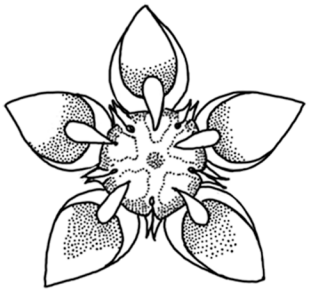
Field Museum - Keller Science Action Center

Asclepiadaceae

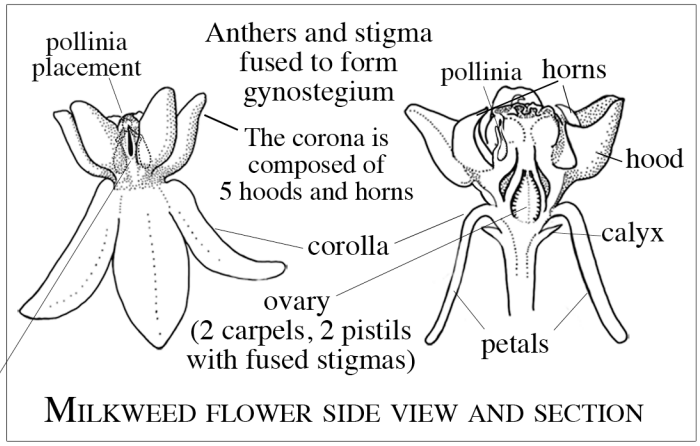
Milkweed Family (formerly Apocynaceae)

Globally:
410 genera /
5556 species
Chicago Region:
3 genera (2 non-native) /
19 species (4 non-native)

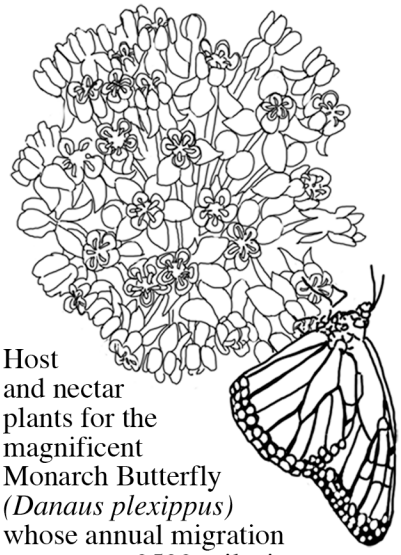
Most have milky sap that contains toxic cardiac glycosides; provide food or nectar sources for many species of helpful insects



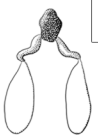
Flowers may be pink, purple, white, green, bright orange or yellow; umbels erect or drooping



MILKWEED FLOWER SIDE VIEW AND SECTION



Host and nectar plants for the magnificent Monarch Butterfly *(Danaus plexippus)* whose annual migration spans over 2500 miles!

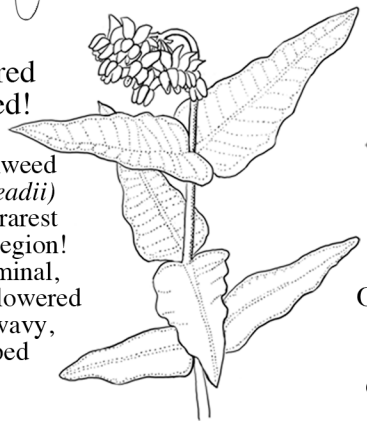


Five sets of pollinia in the gynostegium, hiding inside V-shaped slits on the side. Insects looking for nectar can get legs trapped in the slits!

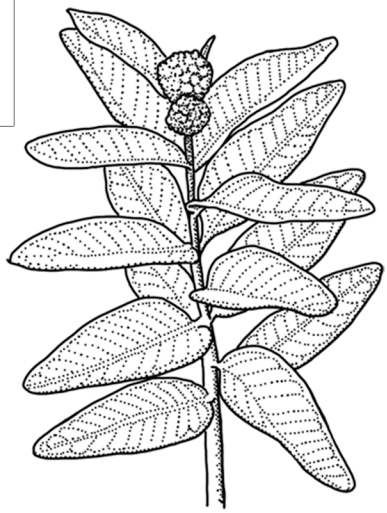
Note appressed corolla and no horns on flowers of Green Milkweed (*A. viridiflora)*

Endangered milkweed!

Mead's Milkweed *(Asclepias meadii)* is one of the rarest plants in our region! Note the terminal, nodding, few-flowered umbel, and wavy, lance-shaped leaves

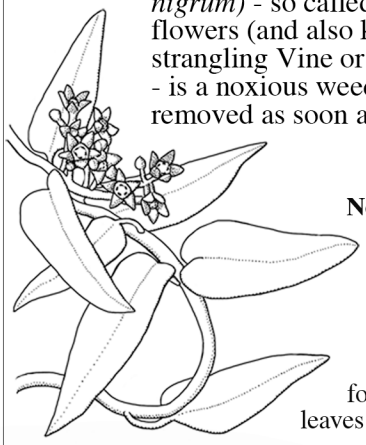


Our beautiful Poke Milkweed *(Asclepias exaltata)* with wide-spaced, delicate, drooping umbels is our only woodland milkweed; one of the earliest to bloom



Leaves wide or narrow, wavy-margined or smooth, often but not always opposite; stiff or thin-textured, leaf bases clasping, petiolate or sessile

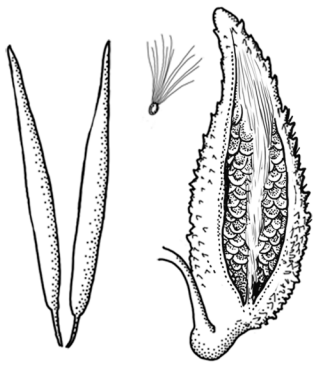
Invasives alert!
Black Swallow Wort *(Vincetoxicum nigrum)* - so called for its dark-colored flowers (and also known as Dog-strangling Vine or Climbing Milkweed) - is a noxious weed and should be removed as soon as it is discovered!



Vincetoxicum nigrum

Non-invasive Lookalike:
Blue Vine *(Ampelamus laevis)* native farther south in the state, may be mistaken for Black Swallow Wort: look for opposite, heart-shaped leaves, white or cream flowers

Whorled Milkweed *(Asclepias verticillata)* may be seen in sandy, dry or dolomitic prairies. Its delicate white flowers are some of the smallest of the family in our area



Pods smooth or barbed, thin or fat; seeds all have silky parachutes which help them disperse in the wind

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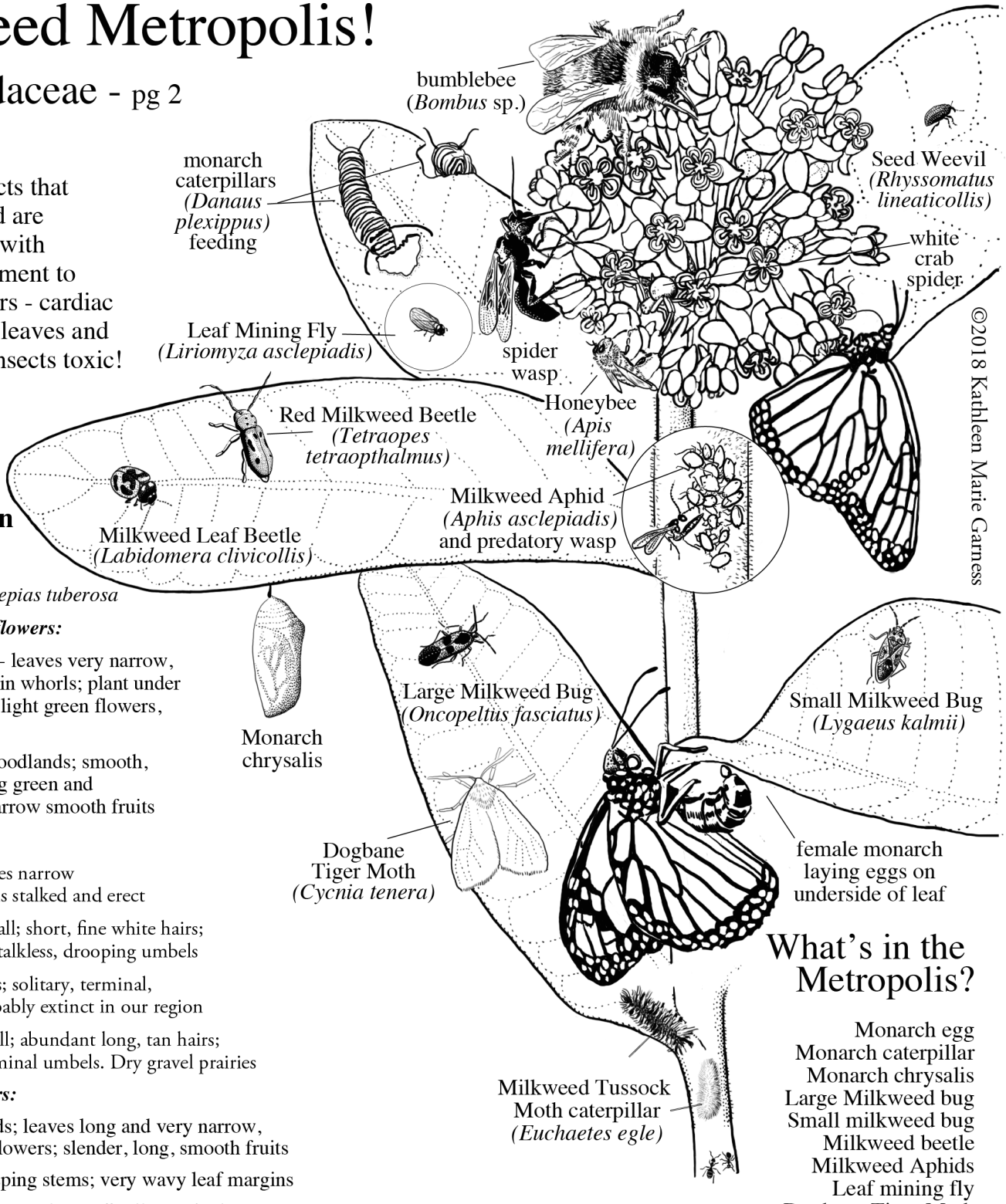
Milkweed Metropolis!

Asclepiadaceae - pg 2

Many of the insects that feed on milkweed are brightly colored with orange or red pigment to warn off predators - cardiac glycosides in the leaves and stems make the insects toxic!



Color guide to Chicago Region milkweeds:

Orange flowers: *Asclepias tuberosa*

White to light green flowers:

Asclepias verticillata - leaves very narrow, almost grass-like and in whorls; plant under 18" tall; tiny white to light green flowers, smooth narrow fruits

Asclepias exaltata: woodlands; smooth, broad leaves, drooping green and white umbels; long narrow smooth fruits

Green flowers:

Asclepias hirtella,: Leaves narrow (5-10mm wide) umbels stalked and erect

A. viridiflora: 12-36" tall; short, fine white hairs; two or more axillary, stalkless, drooping umbels

A. meadii: sessile leaves; solitary, terminal, drooping umbels; probably extinct in our region

A. lanuginosa: 6-10" tall; abundant long, tan hairs; solitary, drooping, terminal umbels. Dry gravel prairies

Pink or purple flowers:

A. incarnata: Wetlands; leaves long and very narrow, short petioles; small flowers; slender, long, smooth fruits

A. amplexicaulis: clasping stems; very wavy leaf margins

A. purpurascens: deep purple, ~36" tall; terminal, often multiple, umbels

A. sullivantii: bright pink midveins; sessile, upright leaves (no petioles); light pink flowers

A. ovalifolia: very rare; flowers yellow, greenish or purple-tinged; plant pubescent

A. syriaca: common milkweed; pink, cream-colored, or purplish flowers; plants tall, sturdy, coarse

(Two other native species, *A. perennis* and *A. quadrifolia,* are probably extirpated)

What's in the Metropolis?

Monarch egg
Monarch caterpillar
Monarch chrysalis
Large Milkweed bug
Small milkweed bug
Milkweed beetle
Milkweed Aphids
Leaf mining fly
Dogbane Tiger Moth
Milkweed Tussock Moth
Parasitic Wasps
Seed Weevil
Ants
Bees
Tachnid fly (parasite on monarch caterpillars, etc)

"All I am saying is that there is also drama in every bush, if you can see it." - Aldo Leopold

What else can you think of that might live here?

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Common Plant Families of the Chicago Region

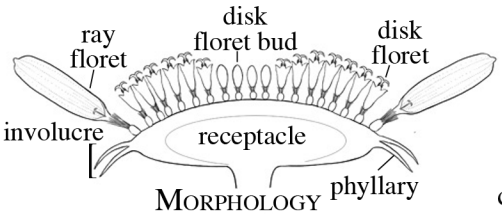
Field Museum - Keller Science Action Center

Globally: 1911 genera / over 32,900 species
Chicago Region: 105 genera (53 non-native)/ 323 species (142 non-native)

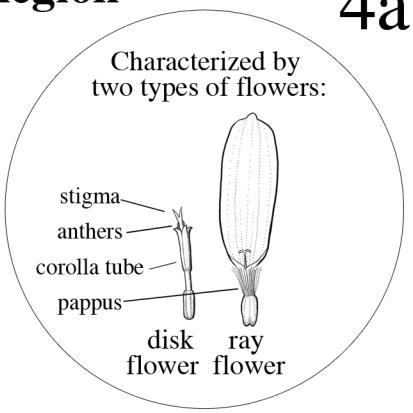
Asteraceae

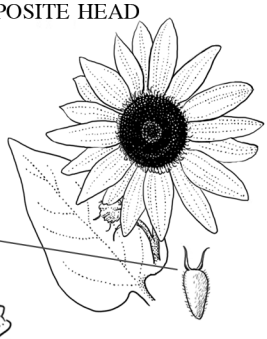
Aster/Sunflower Family
(some texts use Compositae)

One of the most species-rich flowering plant families in the world. The heads are composed of an abundance of two types of flowers: disk florets, ray florets or a combination of the two. In different species these may be either fertile or sterile



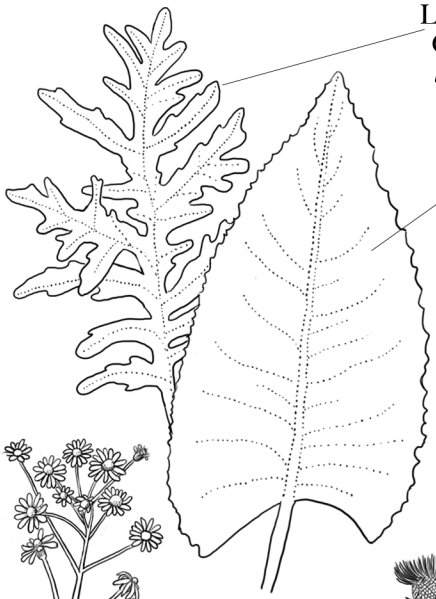
MORPHOLOGY OF TYPICAL COMPOSITE HEAD





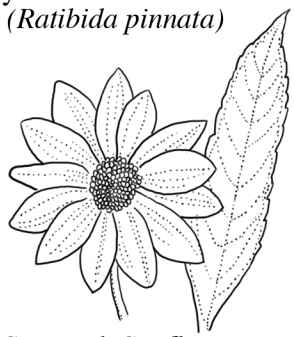
Annual Sunflower *(Helianthus annuus)* Notice its awn-shaped pappus

Note the 'bald spot' at the top of the yellow-petaled Grey-headed Coneflower! *(Ratibida pinnata)*



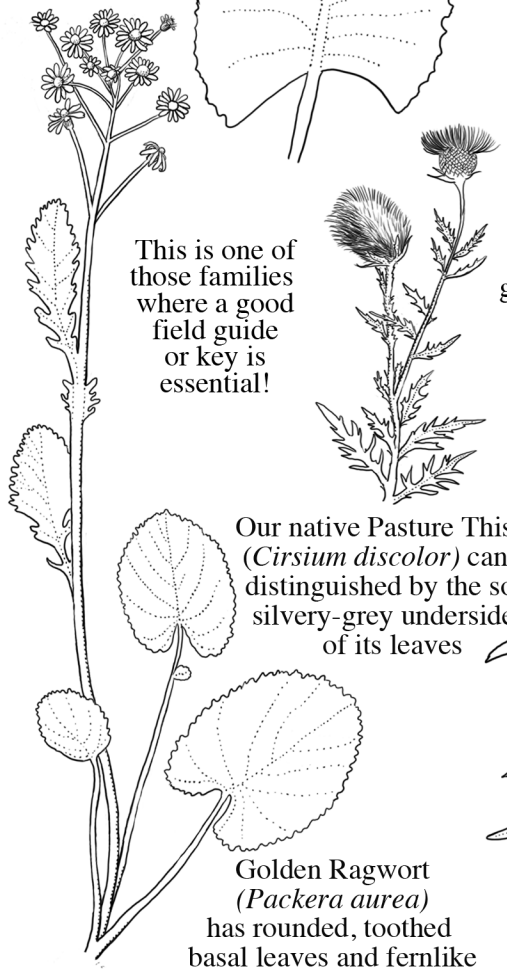
Lacy, sandpapery leaves of Compass Plant *(Silphium laciniatum)* and the foot-wide leaves of Prairie Dock *(Silphium terebinthinaceum)* are often indicators of good remnant prairie!

The fuzzy Black-Eyed Susan (*Rudbeckia hirta)* occupies many different habitats: woodland edges, savannas, prairies, yards. Note the dark brown cone-shape center with ray flowers along the edge. (The genus *Rudbeckia* honors one of the teachers of Carl Linnaeus, the 'father of botany')



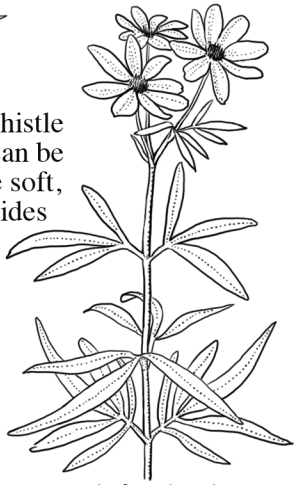
Sawtooth Sunflower *(Helianthus grosseserratus)* has a yellow center and long, lance-shaped leaves, with or without noticeable teeth; native but can be aggressive

The native Pale Purple Coneflower *(Echinacea pallida)* has reflexed, narrow pink petals. An elongated receptacle gives the flower head its distinctive cone shape



This is one of those families where a good field guide or key is essential!

Our native Pasture Thistle (*Cirsium discolor)* can be distinguished by the soft, silvery-grey undersides of its leaves



Look for the three- to five-parted leaves on Tall Coreopsis *(Coreopsis tripteris)*

Golden Ragwort *(Packera aurea)* has rounded, toothed basal leaves and fernlike leaves along the stem

Invasives alert!

Field Thistle *(Cirsium arvense)* clusters of purple flowers, smooth stems

Musk Thistle *(Carduus nutans)*

Spotted knapweed (*Centaurea stoebe)*

Bull Thistle *(Cirsium vulgare)*

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 [503] version 2 11/2018 with special thanks for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Asteraceae page two:
- a variety of forms!

L. spicata pappus and seed

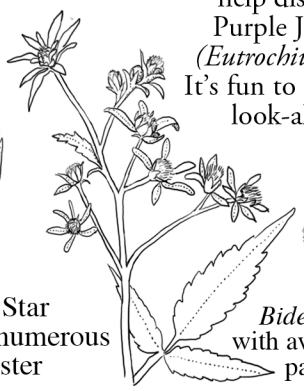
The stems of Marsh Blazing Star *(Liatris spicata)* do not have any hairs and the phyllaries are appressed, so the base of the flowers feels smooth.

Its look-alike cousin, Prairie Blazing Star (*Liatris pycnostachya),* has phyllaries that flare out, making the flowers look crowded and bristly

Rough Blazing Star *(Liatris aspera)* has numerous flowers per cluster

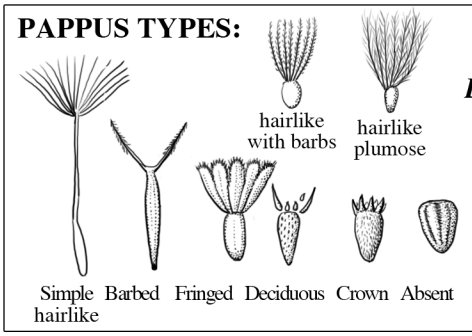
Savanna Blazing Star *(Liatris scariosa* var. *nieuwlandii)* has very long peduncles and often sends out flowering branches after the main stem has finished blooming!

Whorls of four to five leaves help distinguish this Purple Joe Pye Weed *(Eutrochium purpueum).* It's fun to learn to ID the look-alike species!



Bidens seed with awn-shaped pappus

PAPPUS TYPES:

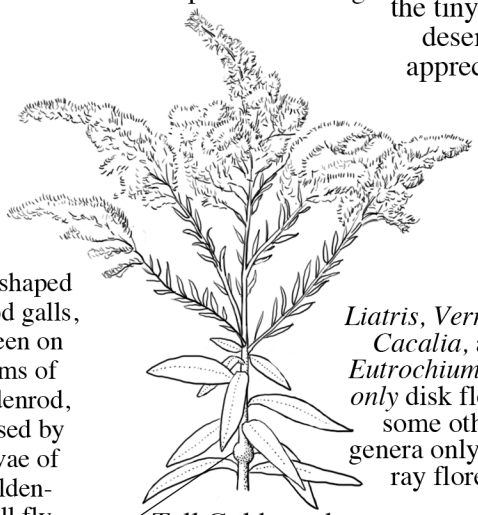


Did You Know?
The pappus is an extension of the achene, or seed, which helps it travel away from the parent plant

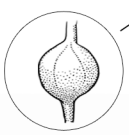
Prairie Indian Plantain (*Arnoglossum plantagineum,* formerly *Cacalia plantaganea)* has parallel-veined leaves like its plantain namesake; the tiny creamy-green flowers deserve a closer view to appreciate their complexity

Notice the winged petioles and heart-shaped, softly hairy lower leaves in Drummond's Aster *(Symphyotrichum drummondii)*

Common Tickseed *(Bidens frondosa)* has inconspicuous ray florets, prominent phyllaries, and seeds with little barbs that stick to clothes and fur to spread their range



Marble-shaped goldenrod galls, often seen on the stems of tall goldenrod, are caused by the larvae of the golden-rod gall fly



Liatris, Vernonia, Cacalia, and *Eutrochium* have *only* disk florets; some other genera only have ray florets

Stiff Goldenrod *(Oligoneuron rigidum)* has a stiff, upright stem and large yellow flower heads in flat or rounded inflorescences

Tall Goldenrod *(Solidago altissima)* is clonal, spreading by long underground runners. It can grow into very large patches that can crowd out other plants

Ironweed (*Vernonia fasciculata)* is so named for its very tough roots and stems. Its purple-red flower clusters are distinctive!

Our dainty White Lettuce *(Prenanthes alba)* can grow tall in shaded woodlands. Its pink tubular flowers are actually heads made up of six to eight ray florets!

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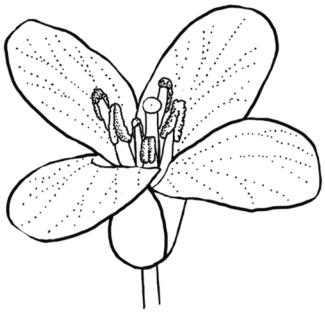
Brassicaceae

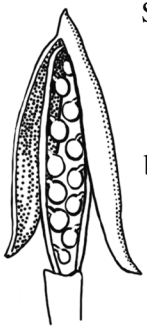
Crucifer, Cress or Mustard Family (Formerly Cruciferae)

Globally: 372 genera / 4060 species
Chicago Region: 46 genera (35 non-native) / 98 species (74 non-native)

Flowers with four petals arranged in a 'cross'; important human food source; noted for pungent, bitter, peppery or mustard-like juice

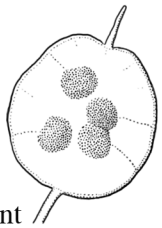


Typical cress flower: Flowers regular, four parted, usually six stamens; note four long stamens and two short stamens

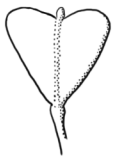


Seed pods split open from both sides to expose a clear center membrane. They come in many different shapes but always radiate around the center stem

silique



Money Plant *(Lunaria annua)* is common in gardens, sometimes escapes

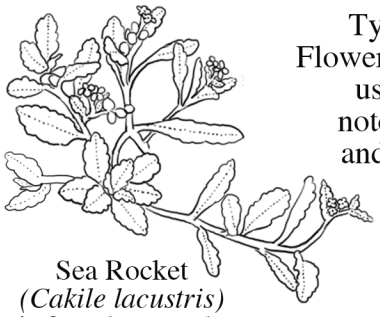


Capsella capsule

SOME OF THE MANY CAPSULE FORMS

Lepidium silicle

Violet Cress *(Iodanthus pinnatifidus)* is rare in our wooded floodplains (pinnatifid = featherlike; note the 'fringes' at the leaf bases!)

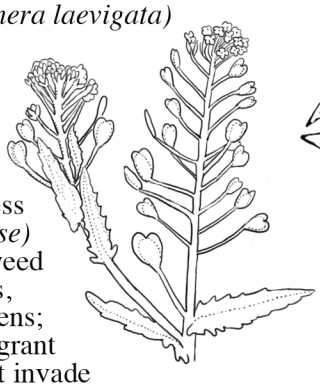


Sea Rocket *(Cakile lacustris)* is found on sandy lakeshores; listed as threatened in IL

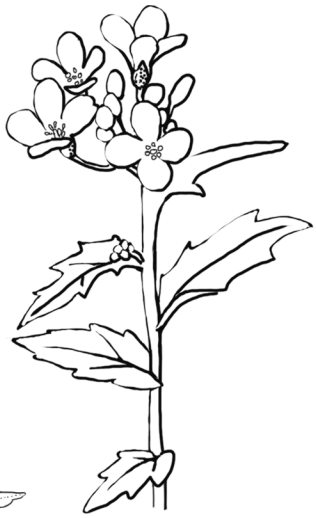
Typical mustard leaf *(Sinapis arvensis)*

Toothwort *(Dentaria laciniata)*

Smooth Bank Cress *(Boechera laevigata)*



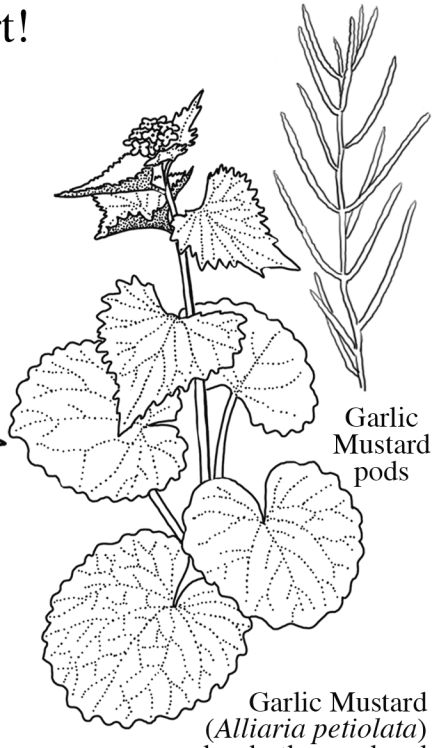
Field Pennycress *(Thlaspi arvense)* is a common weed of waste places, neglected gardens; a European migrant that doesn't yet invade our quality natural areas. Note the heart-shaped pods!



Spring Cress *(Cardamine bulbosa)* is one of five native *Cardamines* in our area

Invasive Alert!

Dame's Rocket *(Hesperis matronalis)* Look for pink and white forms; similar to *Phlox paniculata*, but the four petals give it away



Garlic Mustard pods

Garlic Mustard (*Alliaria petiolata*) has both round and triangular leaves with toothed margins. Each plant can produce several thousand seeds each season!

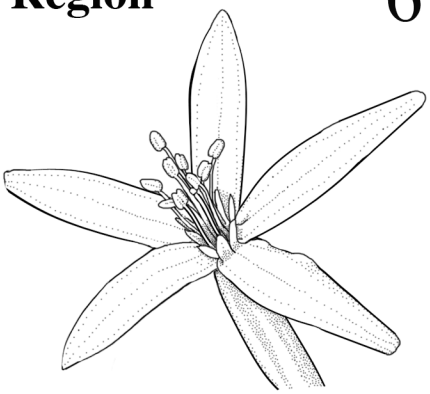
Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum

Caryophyllaceae

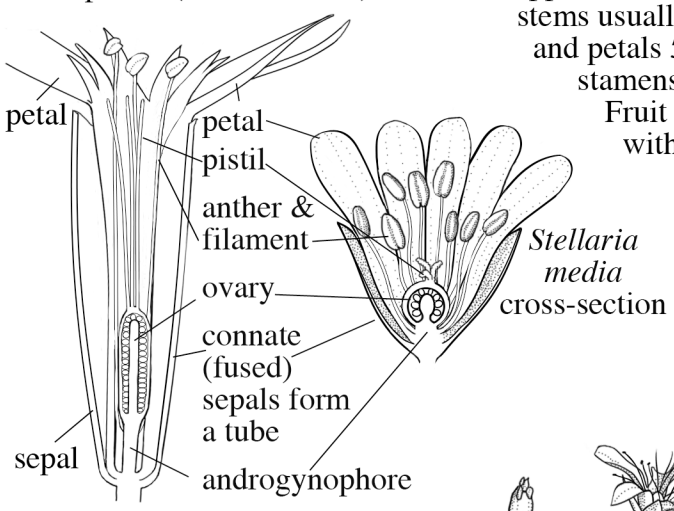
Pink Family

Globally:
91 genera / 2,456 species
Chicago Region:
20 genera (14 non-native)/
58 species (42 non-native)

Opposite or whorled, simple, entire leaves; stems usually swollen at the nodes; sepals and petals 5 (rarely 4), or petals absent; stamens 5 or 10, along the sides. Fruit is a loculicidal capsule with wind-dispersed seed



Silene regia, Royal Catchfly, is a state-endangered species (the similar Fire Pink has notched petals)



Stellaria media cross-section

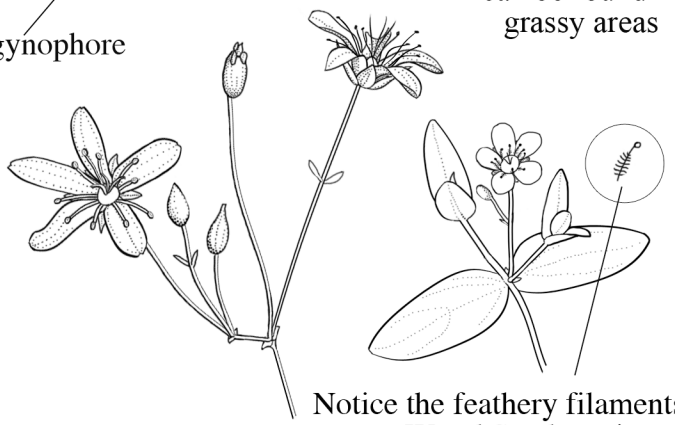
Cross section of royal catchfly (*Silene regia*) showing fused sepals and androgynophore.

Silene's tube-shaped flowers are attractive to hummingbirds and butterflies

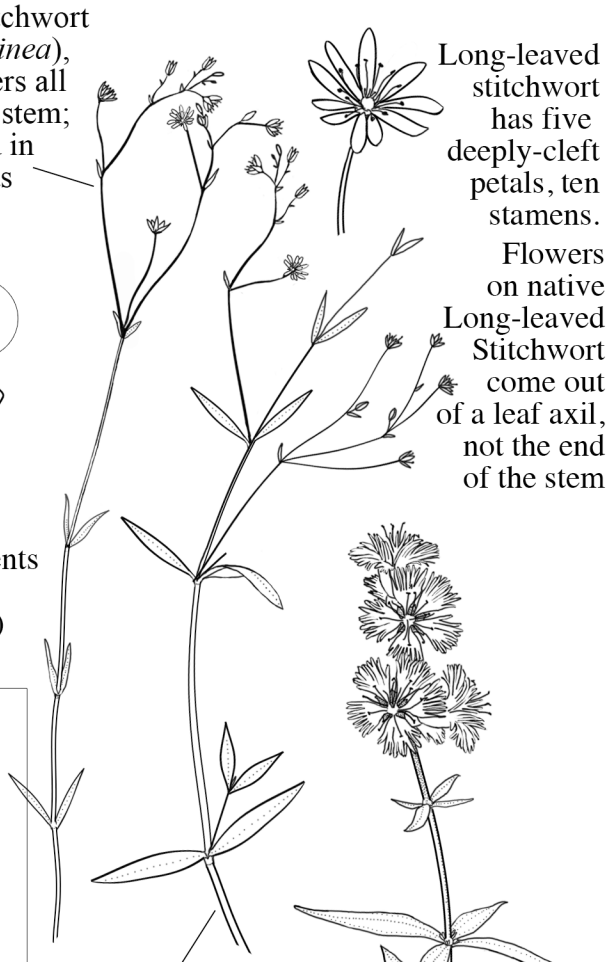
Weedy non-native Grass-leaved Stitchwort (*Stellaria graminea*), right, has flowers all terminal on the stem; can be found in grassy areas

Long-leaved stitchwort has five deeply-cleft petals, ten stamens.

Flowers on native Long-leaved Stitchwort come out of a leaf axil, not the end of the stem



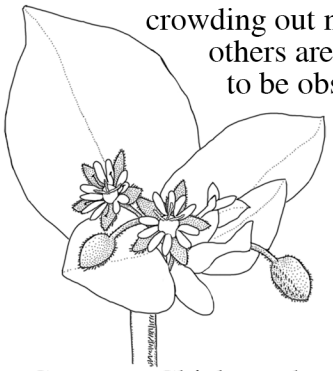
Notice the feathery filaments on Wood Sandwort! (*Moehringia lateriflora*)



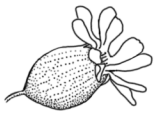
Long-leaved Stitchwort (*Stellaria longifolia*) prefers moist remnant habitats

Invasives? or just symptomatic of disturbance?

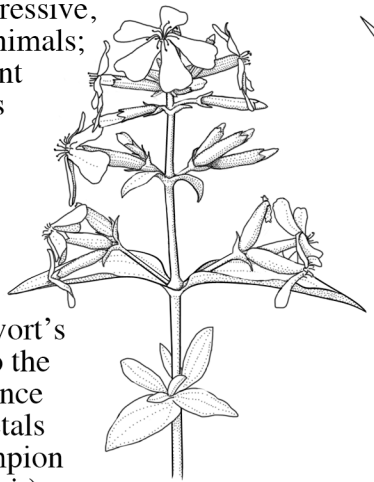
some non-native species are aggressive, crowding out native plants & animals; others are not; it's important to be observant about this



Common Chickweed (*Stellaria media*) has a single, distinct line of hairs running along one side of the stem!



Compare soapwort's slender tube to the puffy appearance and divided petals of Bladder Campion (*Silene vulgaris*) flower, above



Soapwort (*Saponaria officinalis*)

Starry Campion (*Silene stellata*), right, has fringed white petals, prominent nodes

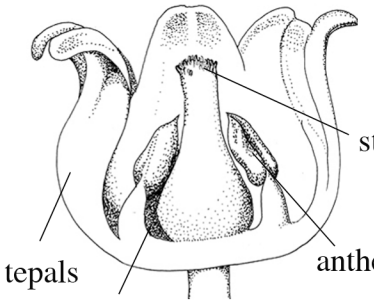
Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum

Globally:
18 genera / 746 species
Chicago Region:
6 genera (1 non-native)/
9 species (1 non-native)

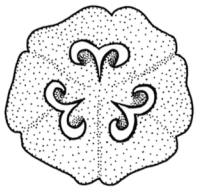
Convallariaceae

Mayflower Family

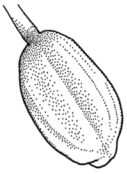
Monocots with two or three sepals and petals, four or six stamens, fruit a berry or capsule



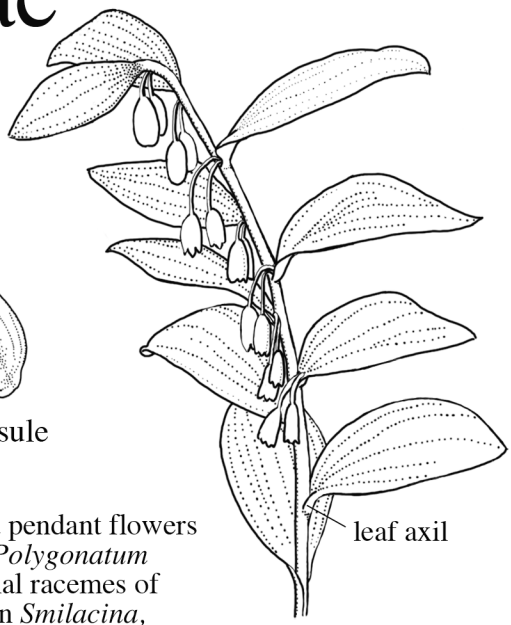
Convallaria berry and cross-section



ovary cross-section



capsule

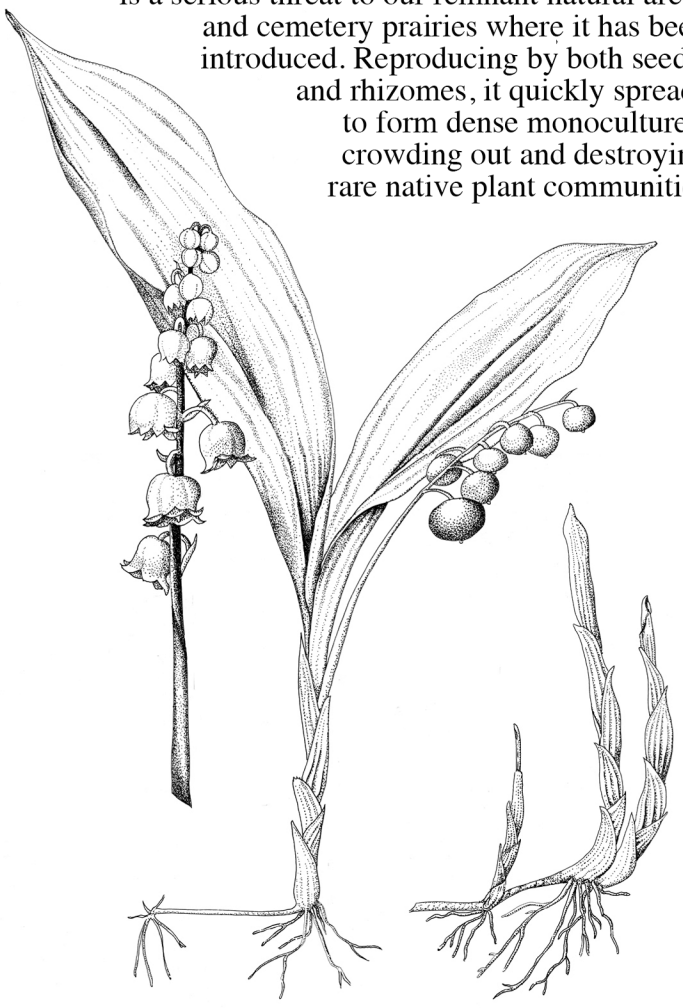


Note usually-paired pendant flowers at leaf axils in *Polygonatum* versus the terminal racemes of starry flowers in *Smilacina, Clintonia*, and *Maianthemum*

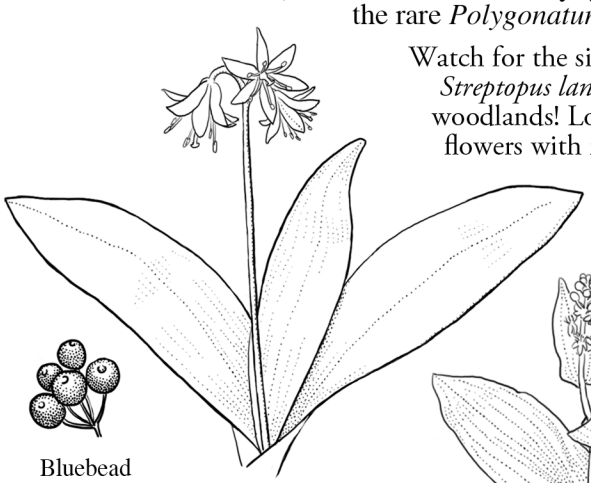
Smooth Solomon's Seal (*Polygonatum biflorum)*
(If the leaf axils are hairy, you may have the rare *Polygonatum pubescens!)*

Invasive Alert!

Lily of the Valley (*Convallaria majalis*) is a serious threat to our remnant natural areas and cemetery prairies where it has been introduced. Reproducing by both seeds and rhizomes, it quickly spreads to form dense monocultures, crowding out and destroying rare native plant communities



Watch for the similar but rarer *Streptopus lanceolatus* in rich woodlands! Look for pinkish flowers with recurved petals



Bluebead fruits are in a panicle

Bluebead *(Clintonia borealis)* so called from the blue color and shape of the fruiting capsules. Note basal leaves!

Tiny, rare. white-flowered Canada Mayflower (*Maianthemum canadense*) has only *four* tepals

Smilacina racemosa raceme, with many flower clusters per branch

Starry False Solomon's Seal (*Smilacina stellata*) has a single cluster of flowers atop its foliage - contrast with *Smilacina racemosa*

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Common Plant Families of the Chicago Region

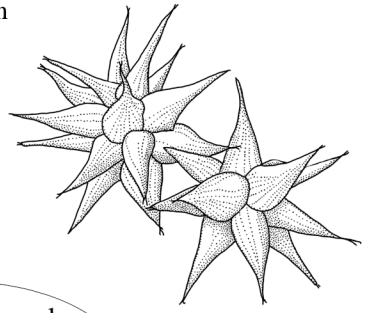
The Field Museum - Department of Environment, Culture and Conservation

Cyperaceae

Sedge Family

Grasslike monocots with (usually) triangular stems, and leaves that have closed sheaths. Common in wetlands

Globally:
110 genera / 5784 species
Chicago Region:
18 genera / 252 species
(18 non-native)



Common Bur Sedge (*Carex grayi*) looks like the spiky heads of a medieval mace!

This large and complex family requires patience and close observation - but learning a few key characters will speed you on your way to learning them!

Achenes (seeds) enclosed in a sac; flowers often imperfect: *Carex*

Achenes exposed, flowers mostly perfect: 18 other genera in our region

Let's look at the Common Wood Sedge (*Carex blanda*) flower:

Stigmas on female flowers

bracts

The shapes of floral scales also help identify species

ovary

bract

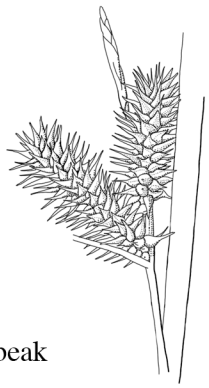
Subtle but important differences in the size and shape of achenes help tell the species apart

Cx. blanda achene

Cx. lupulina achene

beak

Sac (AKA perigynium): notice the 'beak'! Some sacs are very inflated, like balloons



Common Hop Sedge (*Cx. lupulina*)

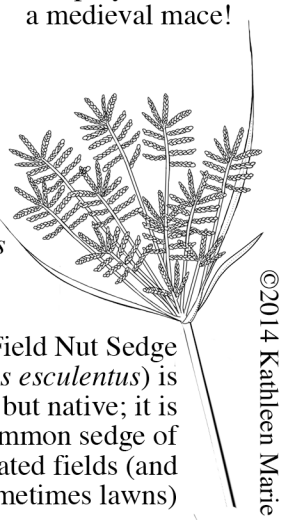
Compare anther morphology with those of grasses!

stamens

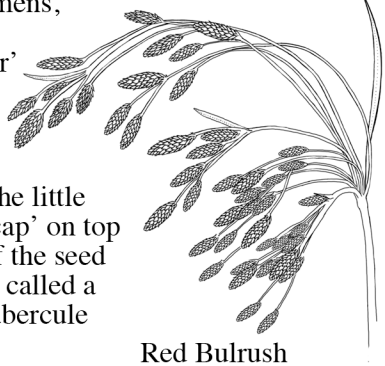
ovary

Eleocharis palustris flower; notice both ovary and stamens, making this a 'perfect flower'

Eleocharis palustris spike



Field Nut Sedge (*Cyperus esculentus*) is weedy but native; it is a common sedge of cultivated fields (and sometimes lawns)



Red Bulrush *Scirpus pendulus* (pendulous means 'drooping')

male stamens with pollen

'Perfect' flowers have both male and female parts; 'imperfect' flowers have only one or the other

Windblown pollen from the staminate spikes floats onto the pistillate flowers, resulting in pollination and seed production

The little 'cap' on top of the seed is called a tubercule

Eleocharis palustris seed

Leaves often form an 'M' in cross-section

Ligule fused to leaf blade in sedges, separate in grasses

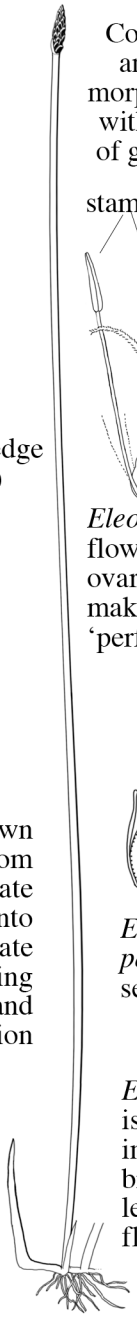
closed sheath

Leaves arranged in whorls of three

Sedge stems are triangular in cross-section leading to the saying: "Sedges have edges"

Carex romance is complicated! Some male and female flowers are on the same spike, some male and female flower spikes are on the same plant, and some are on different plants altogether!

Carex blanda fertile culm with seeds and flowers; vegetative culms do not produce seed heads, just leaves



Marsh Spike Rush (*Eleocharis palustris*)

Eleocharis is noted for inconspicuous, bractlike basal leaves, terminal flower spike

Did you know? Ancient Egyptians made paper from the stems of *Cyperus papyrus*, the Papyrus Sedge! (But sadly, habitat loss is pushing it to the brink of extinction in its native African range)

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

Field Museum - Keller Science Action Center

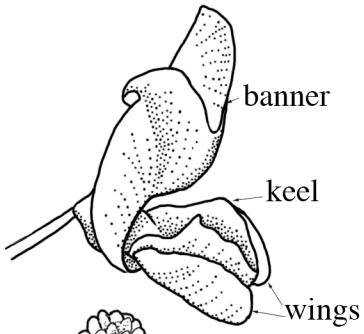
Fabaceae

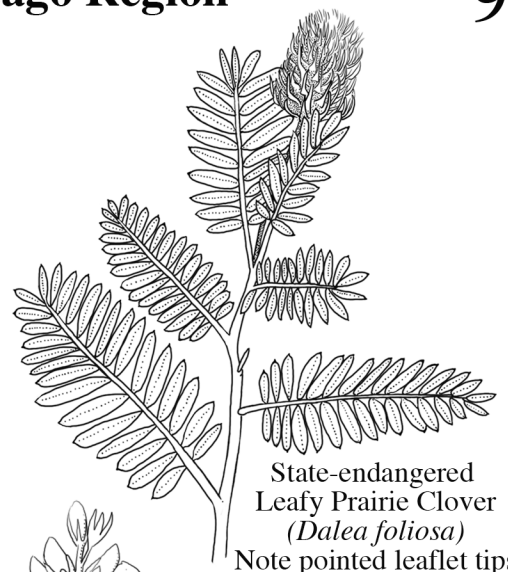
(some authors use Leguminosae)
Legume or Bean Family

Globally: 946 genera / 24,505 species
Chicago Region: 40 genera (22 non-native)/ 121 species (69 non-native)

Key nitrogen-fixing plants, valuable food sources; third largest plant family, regionally

Flowers are distinctive: many are irregular, with 5 petals: one broad 'banner' petal, 2 'wing' petals (one on each side of the banner), and 2 lower 'keel' petals that join to make a 'boat' shape; leaves may be palmate, pinnate or trifoliolate; often pinnately compound

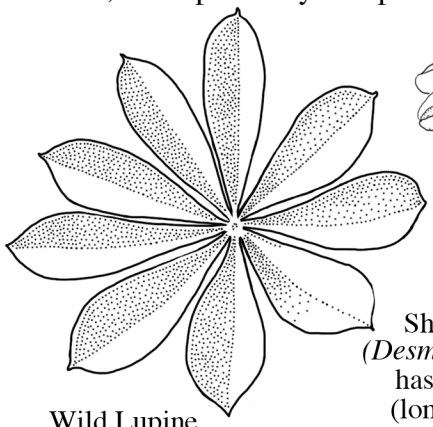




State-endangered Leafy Prairie Clover *(Dalea foliosa)* Note pointed leaflet tips

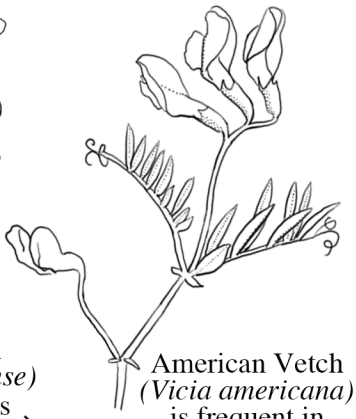
Purple Prairie Clover *(Dalea purpurea)* may be found in dry to mesic prairies; also look for its wider-leaved cousin, White Prairie Clover! *(Dalea candida)* This and a few other species have flowers different from the illustration above, but they're also in the pea family

Round-Headed Bush Clover *(Lespedeza capitata)* is characteristic of dry prairies

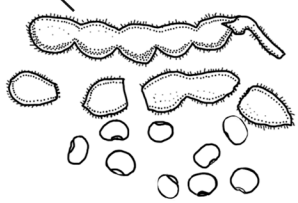


Wild Lupine *(Lupinus perennis* var. *occidentalis)* loves sandy areas, is the only host plant to the endangered Karner Blue Butterfly

Showy Ticktrefoil *(Desmodium canadense)* has distinctive pods (loments) which split into units (articles) and have hooked hairs that attach to clothing or fur, as an aid to colonizing new territories

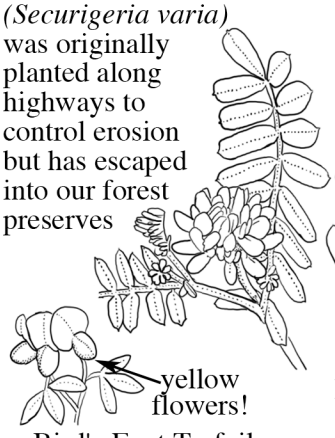


American Vetch *(Vicia americana)* is frequent in remnant prairies!



Invasives alert!

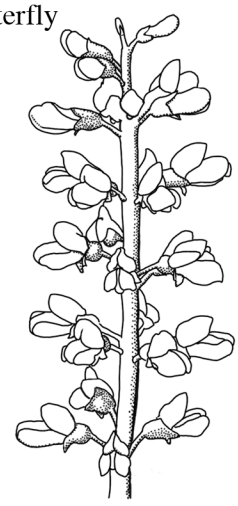
Pink-flowered Crown Vetch *(Securigeria varia)* was originally planted along highways to control erosion but has escaped into our forest preserves



Bird's-Foot Trefoil *(Lotus corniculatus)*

Watch for thorns on Black Locust! *(Robinia pseudoacacia)*

White Sweet Clover *(Melilotus albus)* was planted as cattle forage



White Wild Indigo *(Baptisia lactea)* formerly had a wide range but is rare now

Canada Milkvetch *(Astragalus canadensis)*

Upland Hog Peanut *(Amphicarpaea bracteata)* is a frequent woodland understory plant

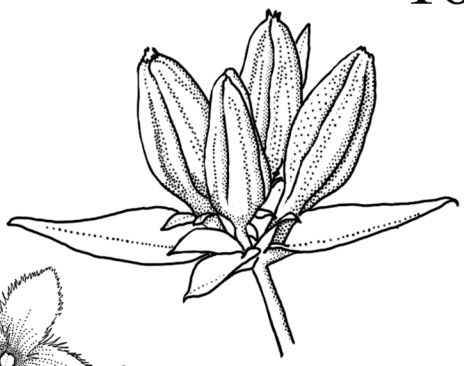
Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

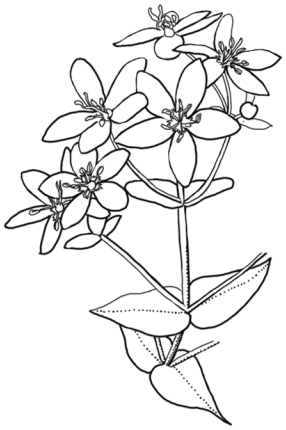
Gentianaceae

Gentian Family

Globally:
96 genera /1682 species
Chicago Region:
7 genera (1 non-native)/
19 species (3 non-native)

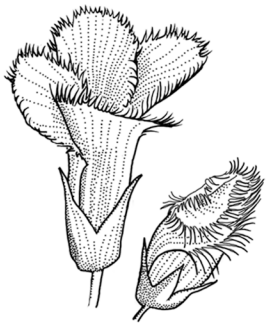
Herbaceous; mycorrhizal roots; petals and ovaries in 4s or 5s; economically important in medicine and horticulture





The rare Rose Pink *(Sabatia angularis)* is found on calcareous pond shores and in sandy or acidic prairies; keep an eye out for other Sabatia too!

The tiny Screw-Stem *(Bartonia virginica)* flowers are only 1/8" long! Look for it in sphagnum bogs, mossy, acidic sand flatwoods



Startlingly clear blue, fall-blooming, rare Fringed Gentian *(Gentianopsis crinita)*

Small Fringed Gentian *(Gentianopsis virgata)* is occasional in calcareous fens. Corolla sides are more fringed than tips, lower leaves more lanceolate than oval

White or cream-colored Yellowish Gentian *(Gentiana alba)*, beautiful blue Bottle Gentian *(Gentiana andrewsii)* and Soapwort Gentian *(Gentiana saponaria)* are all similar in shape but not color or size. *G. alba* usually has much larger 'bracts' (the uppermost pair of leaves) just below the inflorescence, stiff cilia along leaf margins

American Columbo flower - note 'beard' on petals!

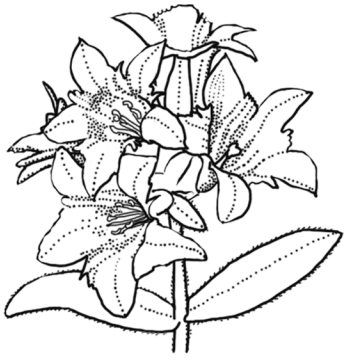
Ovaries and petals in 4s: *Frasera caroliniensis, Gentianopsis virgata, Gentianopsis crinita*; all others in 5s

Stiff Gentian *(Gentianella quinquefolia)* only opens its blooms in full sun; one of our later-blooming gentians; prefers calcareous soil

Prairie Rose Gentian *(Sabatia campestris)* is now extirpated from our area

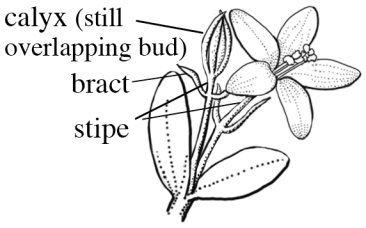
American Columbo *(Frasera caroliniensis)*

American Columbo grows up to 7 feet tall, and has a deep tap root. Its greenish-white to cream-colored, purple-spotted flowers are probably pollinated by short-tongued bees but are also a nectar source for other kinds of bees, skippers, and wasps. Flowering individuals are rare; shaded populations may consist mostly of non-flowering rosettes. It will live as a basal rosette for a long time (up to 30 years!), and die after flowering. It prefers drier, calcareous upland woodlands and savannas



Downy Gentian *(Gentiana puberulenta)* is characteristic of remnant mesic to dry prairie; look for the pair of bracts that are just below each calyx, a minute fringe of stiff cilia along the leaf margin

Non-native but not invasive: good to know the difference!



Showy Centaury *(Centaurium pulchellum)* is non-native, frequent in our area. (Note stipe between bracts and calyx, and smaller, rounded leaves)

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Common Plant Families of the Chicago Region

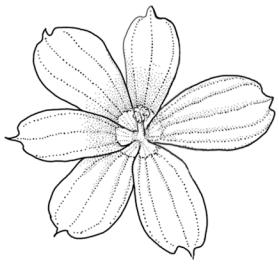
Field Museum - Keller Science Action Center

Globally:
80 genera / 2315 species
Chicago Region:
5 genera / 16 species
(9 non-native)

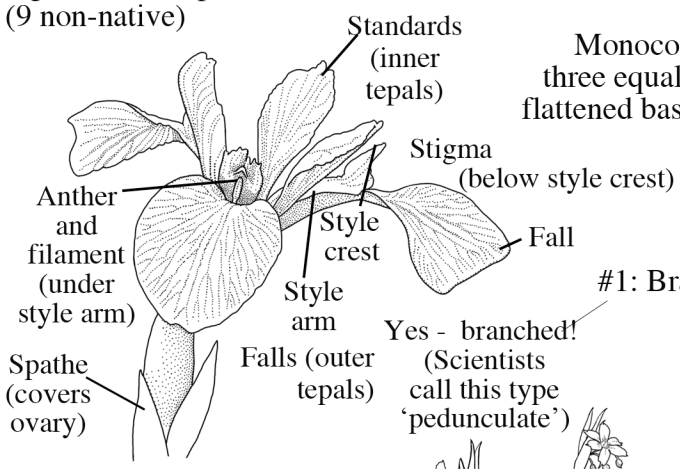
Iridaceae

Iris Family

Monocots with two whorls of three equal or unequal tepals each, flattened bases, parallel-veined leaves



Sisyrinchium flowers come in many colors: intergrading from white through blue to purple!

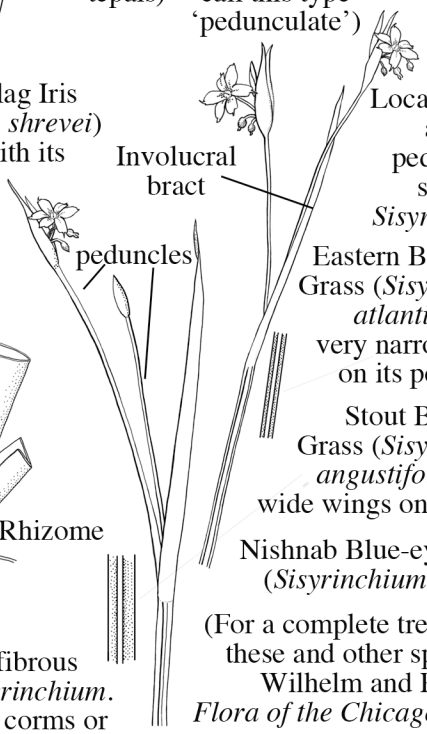


The native Blue Flag Iris (*Iris virginica* var. *shrevei*) graces wetlands with its purple flowers in early summer

This tiny Iris cousin is our lovely Blue-eyed Grass! Flattened leaf fans are the giveaway that this is an Iris, not a grass. Here's a little visual guide to telling these apart:

#1: Branched flower stems - or not?

Yes - branched! (Scientists call this type 'pedunculate')



Locally, there are three pedunculate species of *Sisyrinchium*:

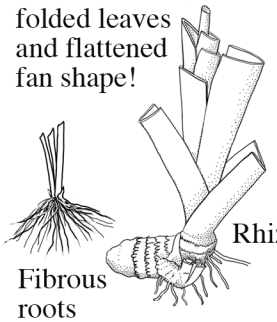
Eastern Blue-eyed Grass (*Sisyrinchium atlanticum*) has very narrow wings on its peduncles;

Stout Blue-eyed Grass (*Sisyrinchium angustifolium*) has wide wings on its stem;

Nishnab Blue-eyed Grass (*Sisyrinchium strictum*)

(For a complete treatment of these and other species see Wilhelm and Rericha's *Flora of the Chicago Region)*

Notice the folded leaves and flattened fan shape!



Some irises have fibrous roots, such as *Sisyrinchium*. Others grow from corms or rhizomes, such as your garden iris

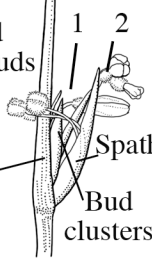
No? So now we have to look more closely at the base of the sheath that encloses the flower buds:

There are three unbranched species of *Sisyrinchium*. (Scientists call this arrangement 'sessile,' meaning that the buds attach directly to the stem)

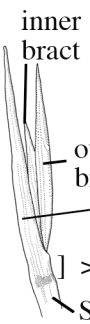
#2: Is the spathe free at the base or almost? (less than 2mm of connection at the most)

Not free? If the base of the spathe is connected for more than 2mm (such a *tiny* difference, we know!) it's Mountain Blue-eyed Grass (*Sisyrinchium montanum*) (Also look for an outer bract *much* longer than the inner one!)

Yes? #3: How many pairs of bracts and clusters of buds do you see?



Two clusters? Is there an extra bract? That's Common Blue-eyed Grass (*Sisyrinchium albidum*)



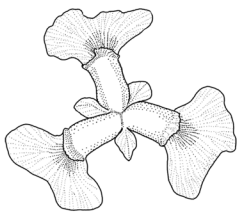
S. montanum detail showing bracts

Sisyrinchium albidum habit

Sisyrinchium campestre

Just one flower cluster inside that little spathe? You found the very rare Prairie Blue-eyed Grass (*Sisyrinchium campestre*), found - rarely - in dry prairies

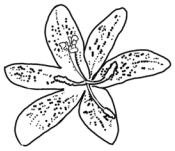
Pretty... but some are invasive!



The yellow *Iris pseudacorus* is symptomatic of degraded wetlands. Its vegetation is identical to that of *Iris virginica* when not in flower.

Dwarf Iris (*Iris pumila*), Bearded Iris (*Iris germanica*) and Spring Crocus (*Crocus vernus*), are not invasive but occasionally are found in abandoned homesites

Bearded Iris (*Iris germanica*) can can range in color from white to almost black!



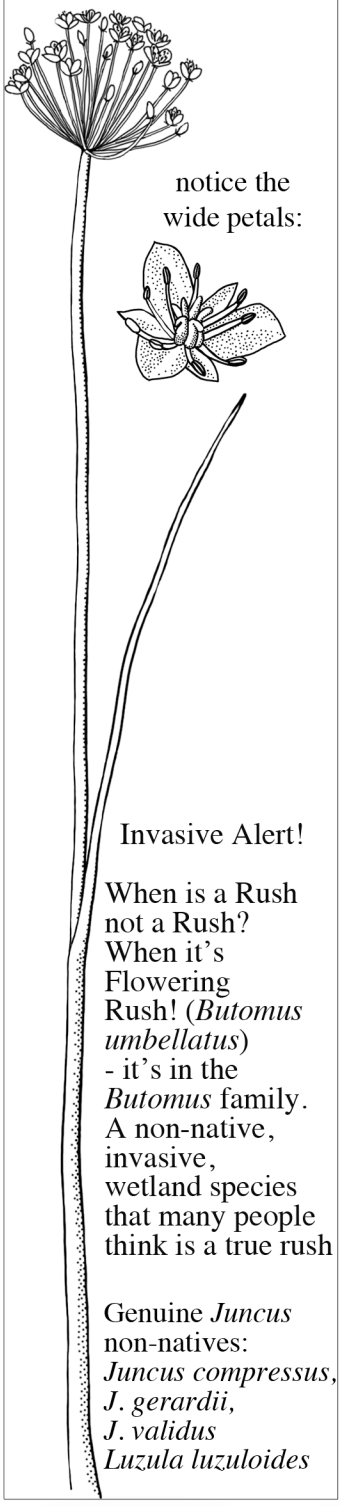
Blackberry Lily (*Belamcanda chinensis* - note orange flowers!), *Crocus*, Dwarf Iris and German Iris are not usually pesty

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

Globally:
8 genera / 506 species
Chicago Region:
2 genera / 32 species
(4 non-native)

Juncaceae

Rush Family
Monocots with six tepals,
six stamens, three carpels;
grows from rhizomes



notice the wide petals:

Invasive Alert!

When is a Rush not a Rush? When it's Flowering Rush! (*Butomus umbellatus*) - it's in the *Butomus* family. A non-native, invasive, wetland species that many people think is a true rush

Genuine *Juncus* non-natives:
Juncus compressus,
J. gerardii,
J. validus
Luzula luzuloides

Plants completely glabrous (smooth, not hairy): capsules many-seeded: *Juncus*

Look for the subtle differences in length of pedicels; number and arrangement of flowers!

Grass-leaved Rush (*Juncus marginatus*)

Common Rush (*Juncus effusus*) unfortunately isn't so common anymore

Joint Rush (*Juncus nodosus*)

Plants densely hairy, almost appearing cobwebby: *Luzula*

luzula detail

Baltic Rush flower - note the spiral stigmas!

Rush stem: notice the solid pith in cross-section

Some rush stems are round, others are oval or somewhat flattened

Note variation in height of plants from one species to another and differences in presentation of flowers

Do they branch? Do they come out of a leafy bract? Where?

Bristly globes on Torrey's Rush! (*Juncus torreyi*)

Short-headed Rush (*Juncus brachycephalus*) likes wet habitats with some limestone in the soil layer

Path Rush (*Juncus tenuis*)

The salt-tolerant Lakeshore Rush (*Juncus balticus*) can be found in many different wet habitats

Common Wood Rush *Luzula multiflora*

Aside from the 'true' rushes (plants in the genus *Juncus*, many plants have "rush" in their name. These include the bullrushes, the wood rushes, scouring rush, and others. Botanists prefer scientific rather than common names, to avoid confusion. Other misnamed rushes: Dark Green Rush is not a *Juncus* but a *Scirpus* (in Cyperaceae). Scouring Rush is *Equisetum;* Spike Rush is *Eleocharis* in Cyperaceae

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, The Field Museum

Common Plant Families of the Chicago Region

Field Museum - Keller Science Action Center

Lamiaceae

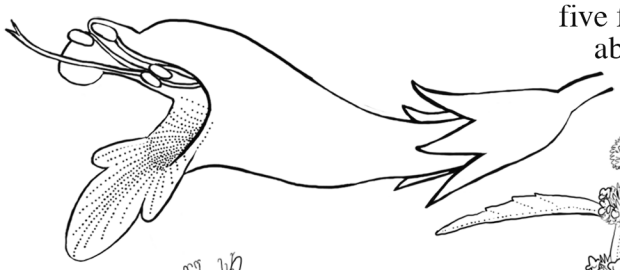
Mint Family (formerly Labiatae)

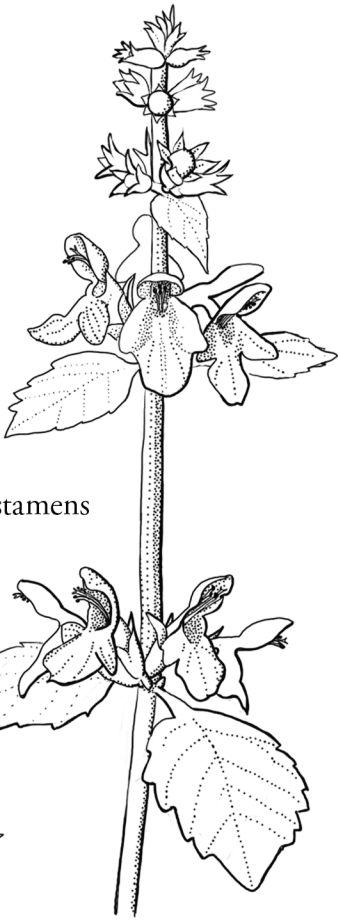
Globally:
245 genera / 7,886 species
Chicago Region:
36 genera (19 non-native)/
103 species (54 non-native)

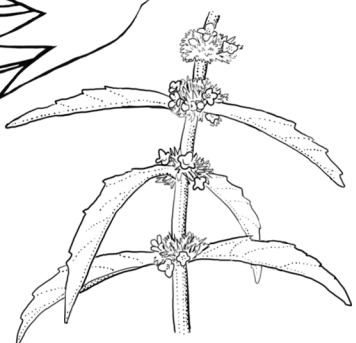
Characterized by opposite leaves, square, often pubescent stems, and glands that contain fragrant volatile oils

Four stamens - two long, two short, five fused petals with two lobes above, three lobes below; five fused sepals

nutlet showing four carpels



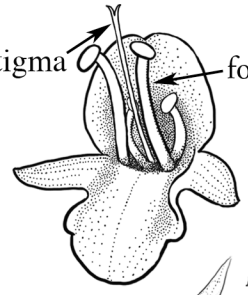




Water Horehound
(Lycopus americanus)
loves wet, sunny prairie

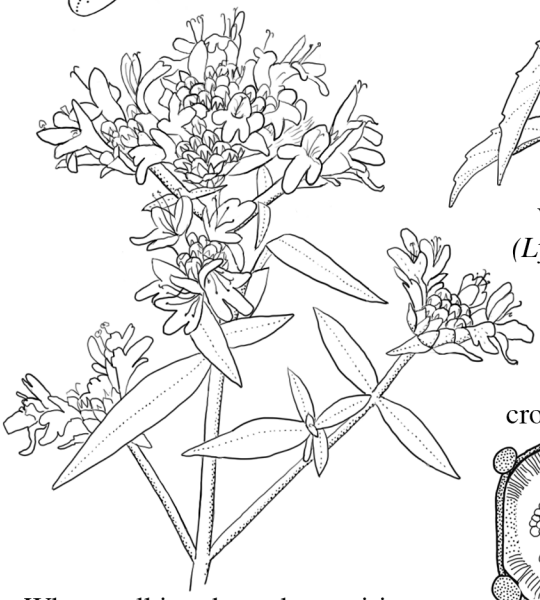
stigma

four stamens



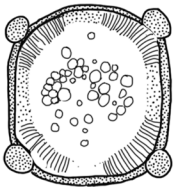
stigma and four-sectioned ovary

Smooth Hedge Nettle
(Stachys tenuifolia)
showing flower clusters emerging from leaf axils, often typical for many mints

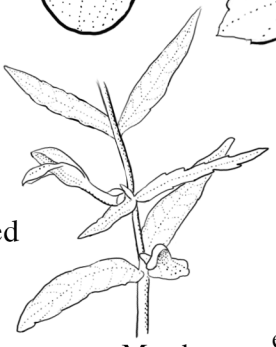


When walking through a prairie full of Common Mountain Mint *(Pycnanthemum virginianum),* look for its small, smooth, fragrant leaves and tall smooth stems

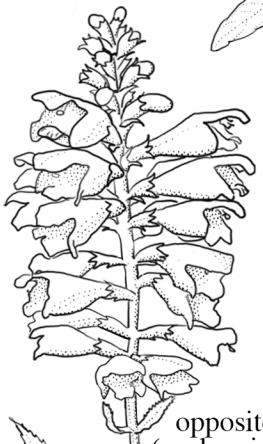
stem cross-section:



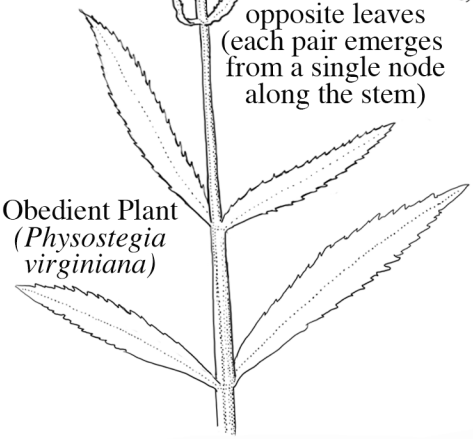
feel the square stems with 'bundles' along the sides



Marsh Scullcap
(Scutellaria galericulata)



opposite leaves (each pair emerges from a single node along the stem)

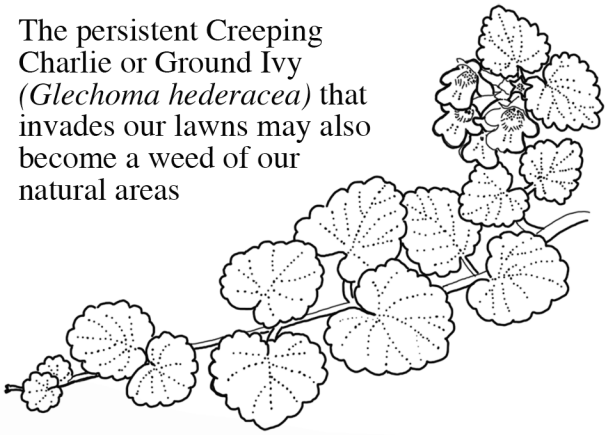


Obedient Plant
(Physostegia virginiana)

Wild Bergamot, also known as Bee Balm (*Monarda fistulosa*). Fistulose = hollow or reed-like, referring to the hollow elongated flowers

Invasive Alert!

The persistent Creeping Charlie or Ground Ivy *(Glechoma hederacea)* that invades our lawns may also become a weed of our natural areas



Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Common Plant Families of the Chicago Region

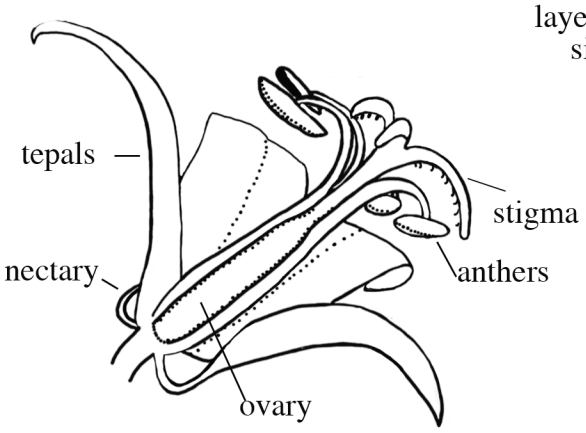
Field Museum - Keller Science Action Center

Globally:
18 genera / 746 species
(family is still undergoing revision)
Chicago Region:
3 genera (1 non-native)/
9 species (5 non-native)

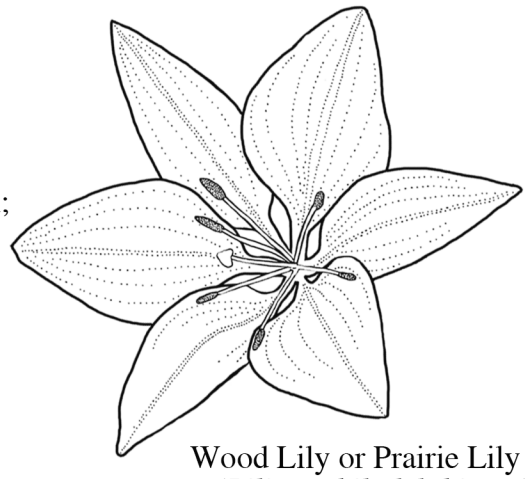
Liliaceae

Lily Family

Monocots, characterized by two layered whorls of three tepals each; six stamens; a superior ovary; and a three-lobed or three-branched stigma

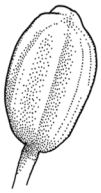


FLOWER CROSS-SECTION

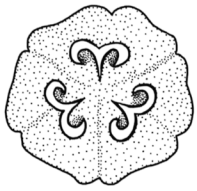


Wood Lily or Prairie Lily *(Lilium philadelphicum)* has upright, orange, (usually single) flowers, alternate leaf arrangement

Note recurved tepals, pendant flowers and whorled leaves in Michigan Lily *(Lilium michiganense)*



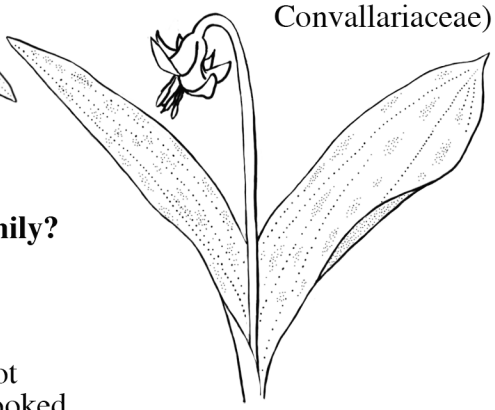
capsule splits open along seams when ripe, to scatter beautiful brown seeds



ovary cross-section

- note how it is divided into three sections? Those are called ***locules,*** which just means 'little place' in Latin (the language used for most scientific names)

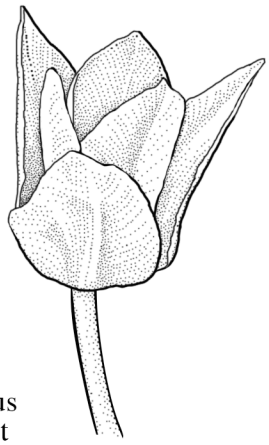
(Some botanical authorities include *Medeola*, *Streptopus*, and *Clintonia* in the Lily family. We have those in the Convallariaceae)



White Trout Lily *(Erythronium albidum)* is so called because its mottled leaves resemble a trout's speckled skin

Yellow Trout Lily (*Erythronium americanum*) has yellow flowers

Tulips are in the Lily family too!



Seldom escaping from their garden beds, and often not long-lived, tulips are native to Turkey and other countries in Asia. A gift to the Dutch back in the 1500s, they were a status symbol of the Ottoman Empire. When botanist Carolus Clusius wrote the first major book on tulips in 1592, they became so popular that bulbs were regularly stolen from his garden!

What happened to the Lily family?

Earlier scientists put together as a family a bunch of unrelated groups that each had retained a few basic characters of a monocot ancestor and thus superficially looked alike. Advances in DNA analysis have helped this generation of scientists learn much more about plants' connections to one another and their ancient ancestry. So a lot of species that were on our last Lily family page have been reassigned to the Convallariaceae and other plant families. Research is still ongoing, as it should be. Some scientists theorize that monocots are possibly descended from early aquatic plants

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

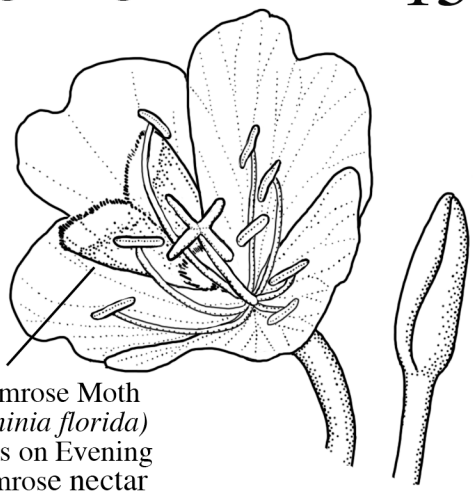
for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Onagraceae

Evening Primrose Family

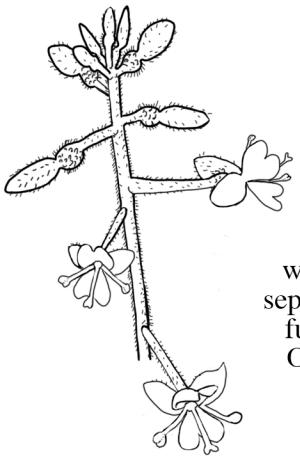
Globally:
45 genera / 832 species
Chicago Region:
9 genera (2 non-native)/
38 species (12 non-native)

Characterized by the presence of a cross-shaped stigma, pollen grains connected by sticky threads and a well-developed hypanthium; floral parts usually in fours

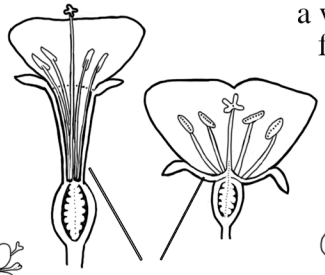


Primrose Moth *(Schinia florida)* feeds on Evening Primrose nectar

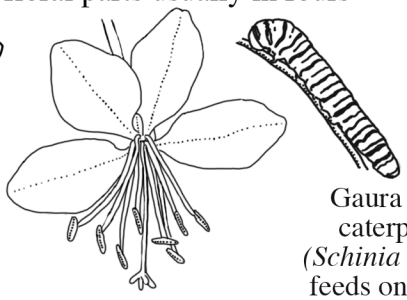
The yellow-flowered Common Evening Primrose *(Oenothera biennis)* is part of a taxonomic group that often confounds even the experts!



Enchanter's Nightshade *(Circaea canadensis)* has two notched white petals, two sepals, and two stamens. Notice the curled 'sticktights' that help its seeds travel quite a distance on the fur of mammals helping it establish new colonies! Despite its name, it is not poisonous. Its opposite, heart-shaped leaves are very rich in tannin

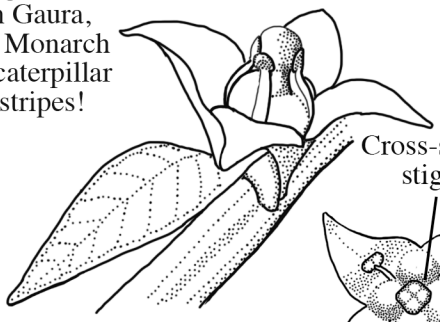


Hypanthium: A floral structure in which the bases of the sepals, petals and stamens fuse together; in most Onagraceae it appears as tube-shaped



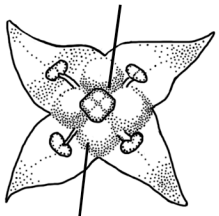
Common Gaura *(Gaura longiflora)* is a lovely native with pinkish flowers in late summer, and tall (4'-6') stems covered with short, curly white hairs. The pistil and stamens hang down, while the petals point upward

Gaura Moth caterpillar *(Schinia gaurae)* feeds on Gaura, resembles Monarch butterfly caterpillar with its stripes!

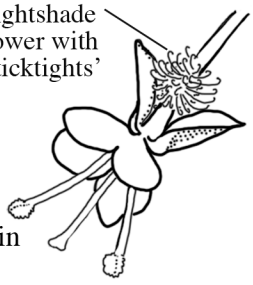


False Loosestrife (*Ludwigia polycarpa*)

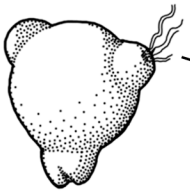
Cross-shaped stigma



The square shape of *Ludwigia* ovaries give it its nickname, 'seedbox'!



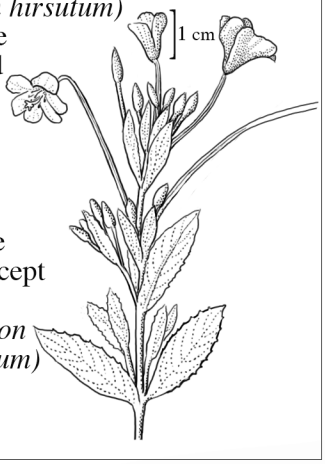
Enchanter's Nightshade flower with 'sticktights'



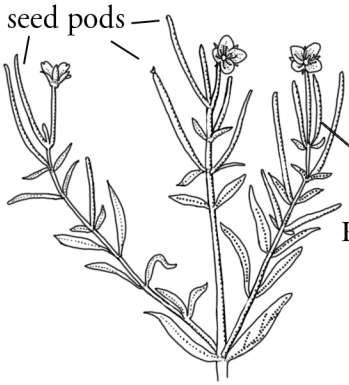
Sample *Epilobium* pollen - see the characteristic sticky threads?

Invasive Alert:

Non-native Hairy Willow Herb *(Epilobium hirsutum)* has become widespread here; note petals more than 1 cm long distinguish from native species, except Fireweed *(Chamaerion angustifolium)*

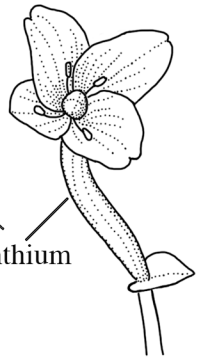


seed pods

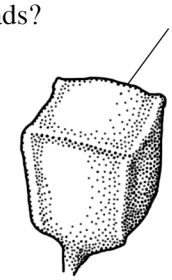


Cinnamon Willow Herb *(Epilobium coloratum)* may be found in wet places like their willow namesakes; note pods, full of fluffy seeds, forming right after blooming

Hypanthium



Cinnamon Willow Herb flower



'Seedbox'

Also called 'Rattlebox,' note alternate leaves of *Ludwigia alternifolia*

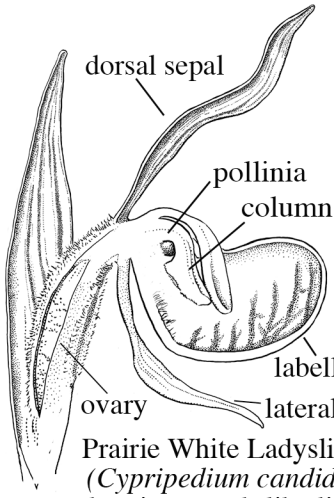
Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;
 [fieldguides.fieldmuseum.org] [503] version 2 11/2018
for the inspiration of Barbara and George Birmingham, stewards; Patricia Armstrong, Wild Ones; and botanical review by Gerould Wilhelm, Ph.D., Conservation Research Institute

Orchidaceae

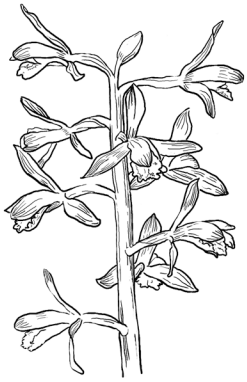
Globally:
899 genera / 27,801 species
Chicago Region:
17 genera / 1 adventive
47 species/ 2 adventive

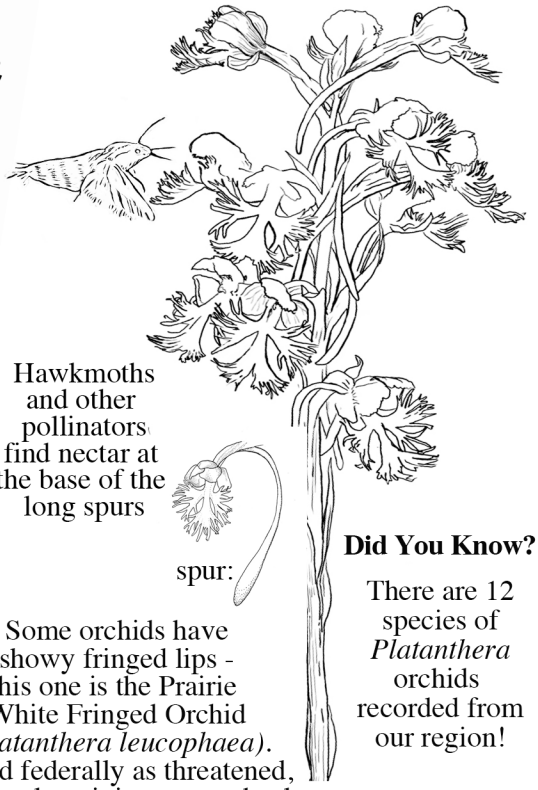
Orchid Family
Monocots; one of the largest plant families; definitely the most diverse in terms of flower shapes

Characterized by very tiny seeds lacking endosperm; the fusion of the stamens (male reproductive parts) and carpels (female parts) into the column; and usually the presence of a showy lip (labellum)



Prairie White Ladyslipper *(Cypripedium candidum)* showing pouch-like lip that directs insects back to the pollinia; Please never dig wild orchids: they need their fungal connections to grow and will die if dug up!





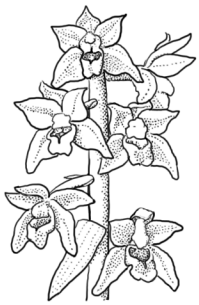
Hawkmoths and other pollinators find nectar at the base of the long spurs

Some orchids have showy fringed lips - this one is the Prairie White Fringed Orchid *(Platanthera leucophaea)*. Listed federally as threatened, it is slowly gaining a comeback, thanks to dedicated volunteers who hand-pollinate each year!

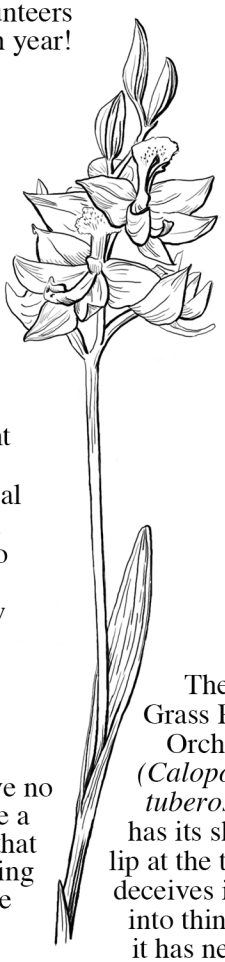
Did You Know?

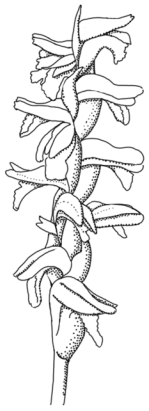
There are 12 species of *Platanthera* orchids recorded from our region!

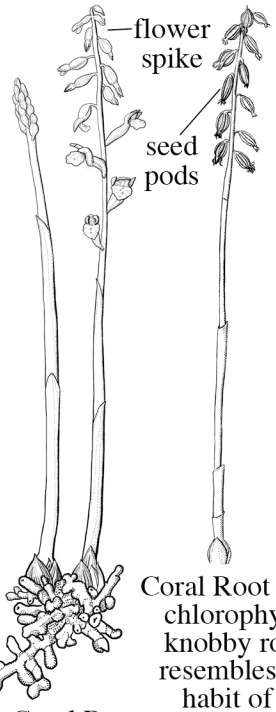
Helleborine Orchid *(Epipactis helleborine)* came here from Europe; look for its black and green flowers, sometimes tinged with white, pink or purple



Putty Root Orchid *(Aplectrum hyemale)* has its seasons backwards! It produces its flower spike in the spring and a dark green and white striped leaf in the fall







Orchids are dependent on mycorrhizal fungi in the soil to sprout and grow

Purple Twayblade Orchid *(Liparis liliifolia)* is sometimes seen in woodlands and prairie edges

Nodding Ladies' Tresses *(Spiranthes cernua)* is probably the commonest orchid here; there are eight *Spiranthes* species in our region, some very fragrant; most summer or fall blooming!

Autumn Coral Root *(Corallorhiza odontorhiza)*

Coral Root orchids have no chlorophyll, and have a knobby root system that resembles the branching habit of coral, hence their name

The Grass Pink Orchid *(Calopogon tuberosus)* has its showy lip at the top and deceives insects into thinking it has nectar!

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

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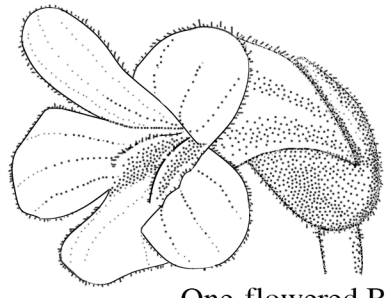
Orobanchaceae

Broomrape Family

Globally:
89 genera / 1613 species
Chicago Region:
8 genera / 18 species
(all native)

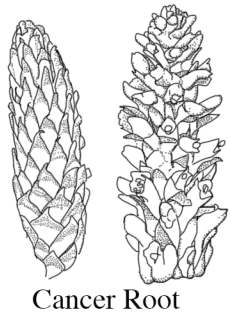
Root parasites without chlorophyll or hemiparasites with chlorophyll; flowers perfect, irregular, ovary superior with terminal style; fruit a many-seeded, two-valved capsule



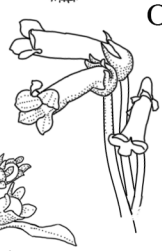
One-flowered Broomrape (*Orobanche uniflora*)

This tiny parasite, Blue Hearts (*Buchnera americana*) was Morton Arboretum botanist Floyd Swink's favorite plant!

Indian Paintbrush (*Castilleja coccinea*) may be found in alkaline prairies and fens. It takes its name from its brilliantly-colored bracts! The inconspicuous flower is actually the yellowish-green structure *above* each bract. Look for the rounded calyx lobes, protruding corolla with a helmet-shaped upper lip, and the stigma which protrudes out from the modest flower tube

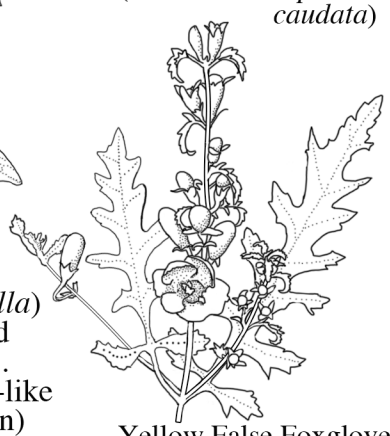


Cancer Root *(Conopholis americana)* is parasitic on oak roots; look for it in flower in remnant oak woodlands in late May or early June. Before the flowers open it looks much like a little white pinecone!



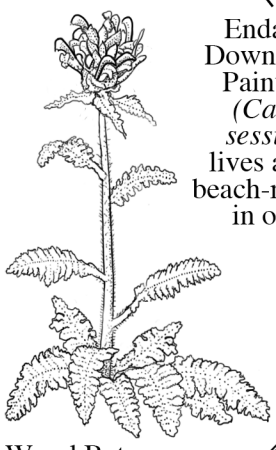
Clustered Broomrape *(Orobanche fasciculata)* is parasitic on the roots of Dune Wormwood (*Artemisia campestris caudata*)

Mullein Foxglove (*Dasistoma macrophylla*) lives in Bur Oak and White Oak savannas. (Notice entire, not fern-like leaves, as in its cousin)

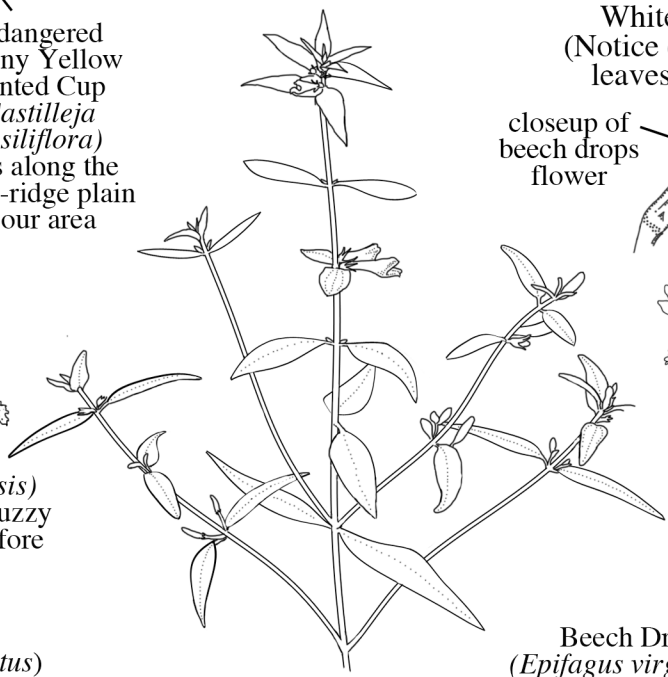


Yellow False Foxglove (*Aureolaria grandiflora* var. *pulchra*) is parasitic on the roots of oak trees, and a valuable nectar source to a vast number of insects. Look for it in remnant oak savannas and in the beach-ridge plain

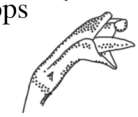
Endangered Downy Yellow Painted Cup *(Castilleja sessiliflora)* lives along the beach-ridge plain in our area



Wood Betony *(Pedicularis canadensis)* has alternate leaves, fuzzy stems, and blooms before the end of July

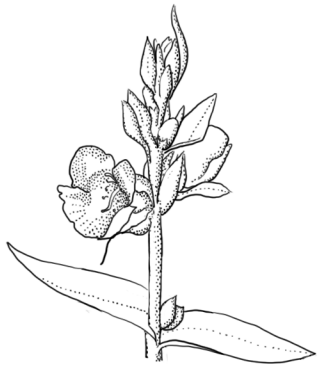


Look for rare Cow Wheat (*Melampyrum lineare)* in sandy habitats; mesic beech forests near the lake in our eastern region



closeup of beech drops flower

Beech Drops *(Epifagus virginiana)* are always parasitic on beech trees in remnant American Beech forests *(Fagus grandifolia)*



The uncommon annual, purple Eared False Foxglove *(Agalinis auriculata)* is a state-listed species in IL, IN, and MI; look for the reddish-bronze edges of its leaves

Fen Betony (*Pedicularis lanceolatus*) has smooth stems, opposite or sub-opposite leaves, and blooms *after* the end of July. Tends to prefer wetter and more alkaline habitats than its cousin, Wood Betony

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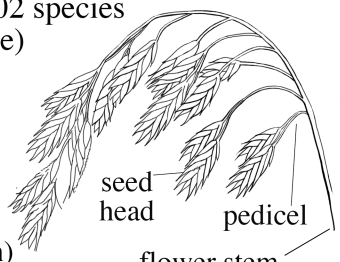
Poaceae

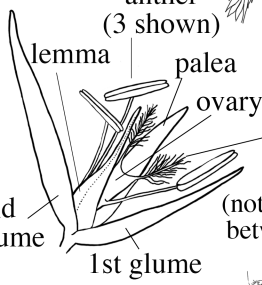
Grasses Family (formerly Gramineae)

Globally:
759 genera / 11,554 species
Chicago Region:
102 genera / 302 species
(135 non-native)

Monocots with usually inconspicuous flowers; one of the most important food sources for humans and lifestock. The second-largest plant family in our region

Grass spikelet anatomy:

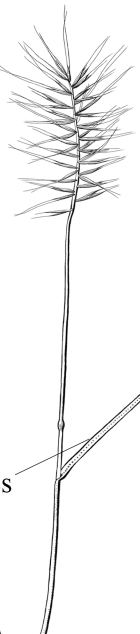


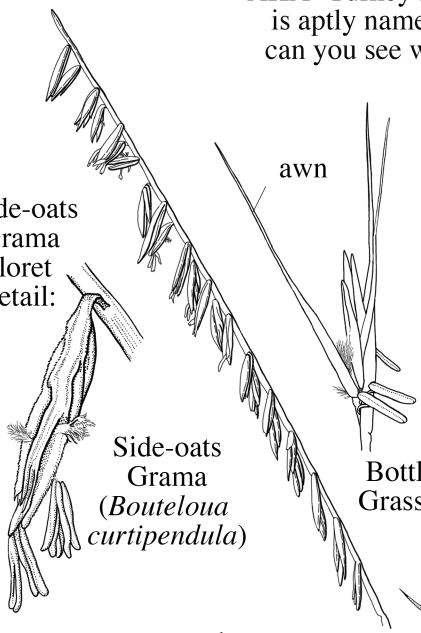


(notice 'T'-shaped connection between anther and filament)

Kalm's Brome (*Bromus kalmii*) is distinctive for its oat-like appearance; is fairly rare

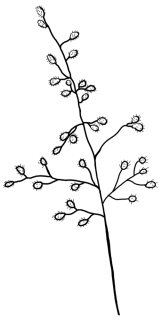
Big Bluestem (*Andropogon gerardii*) AKA 'Turkey Foot' is aptly named - can you see why?



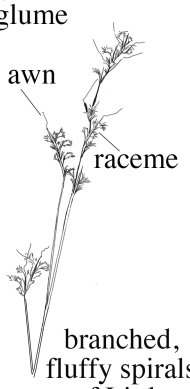


Side-oats Grama (*Bouteloua curtipendula*)

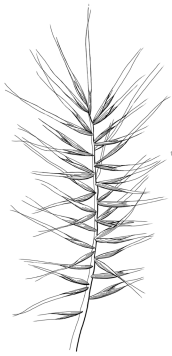
Bottlebrush Grass flower



Leiberg's Panic Grass (*Dichanthelium leibergii*)



branched, fluffy spirals of Little Bluestem (*Schizachyrium scoparium*)

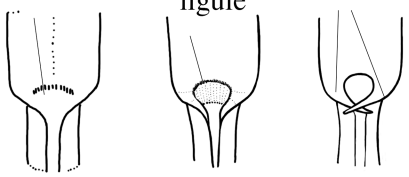


Bottlebrush Grass (*Hystrix patula*)

Virginia Wild Rye (*Elymus virginicus*)

non-native Timothy-grass (*Phleum pratense*)

There are four forms of seed heads: panicle (branching); raceme; spike (unbranched, with uniformly spaced spikelets); and spike-like panicle (unbranched, with uniformly spaced spikelets)



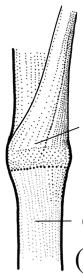
Different shapes and textures of ligules and auricules are just two ways to tell the many different grasses apart!

sheathing grass blades arise from the nodes

node

culm (stem)

fibrous roots can reach down several feet!



Grasses co-evolved with grazing animals. One of grasses' adaptations was development of meristem tissue at the base of the plant, so that it will keep growing - from the base up!

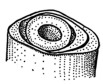
(each leaf grows out of a node)

stolon

rhizome and roots

Bottlebrush Grass (*Hystrix patula*)

Grass stem cross-section: (mostly hollow; but solid at the nodes)



Porcupine Grass (*Hesperostipa spartea*) seed and awn (life size!)

Invasive Alert!

Reed Canary Grass (*Phalaris arundinacea*) is a tall, very invasive, coarse grass that creates dense stands, crowding out valuable native species. (It is ubiquitous in degraded wetlands.) Depending on the season, the flower head can appear loose, as on the left, or a much more compact head, almost like Timothy.grass. There are no auricles. To tell it from other grasses, look for the distinctive white, papery membrane that often looks long and ragged.

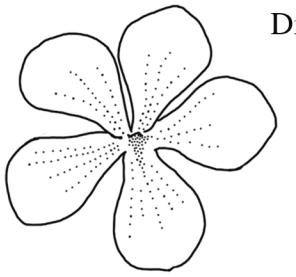
Common Reed (*Phragmites australis*) is even taller, with dense, plume-like heads. Common along roadsides in wet ditches

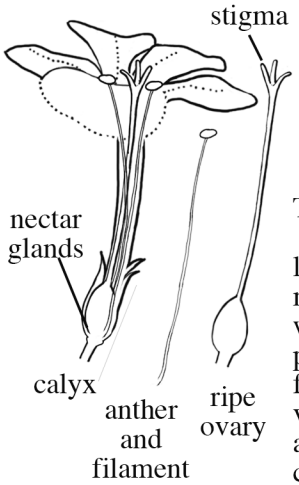
Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, the Field Museum;

Polemoniaceae

Globally:
30 genera / 455 species
Chicago Region:
4 genera / 12 species
(5 non-native)

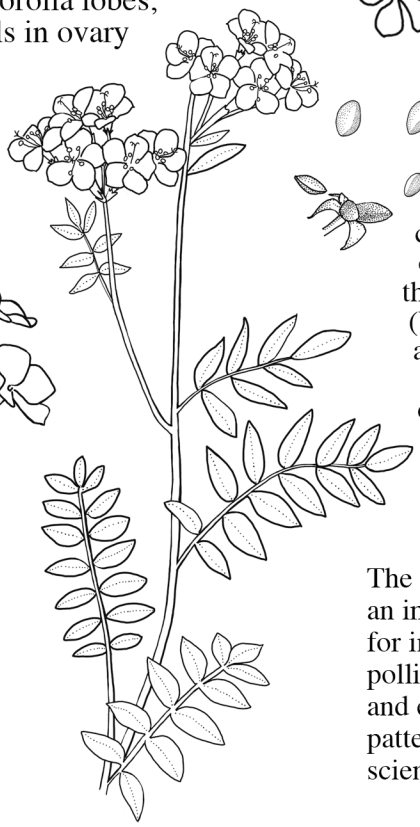
Phlox Family
Dicots with 5 united sepals,
5 united petals;
5 stamens that alternate
with the corolla lobes;
3 carpels in ovary



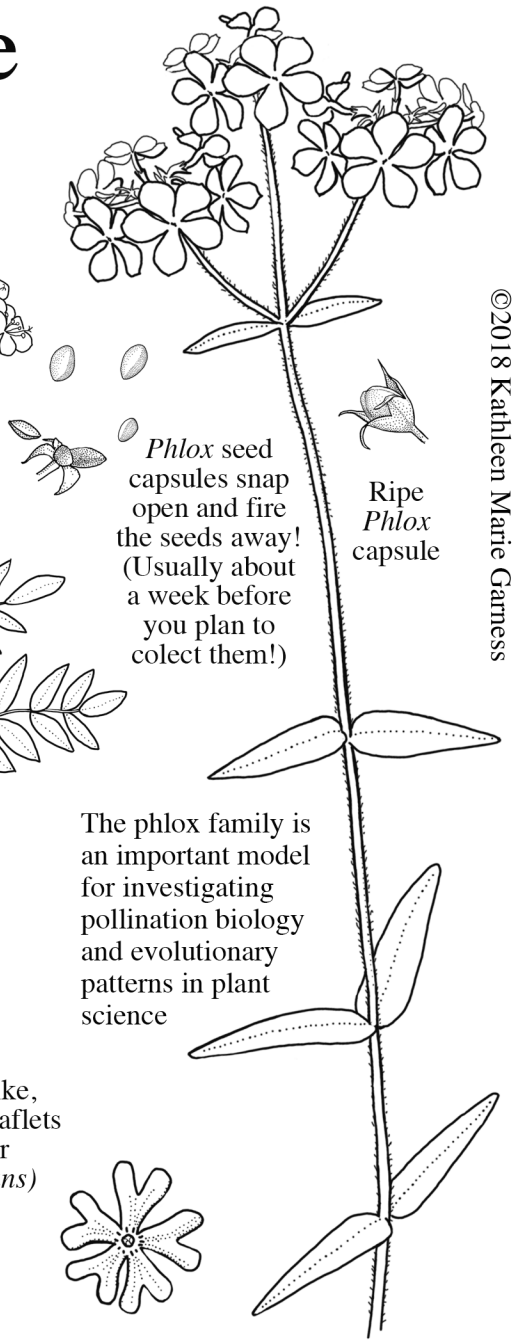


Tube-like flowers contain life-giving nectar for long-tongued bees, moths and butterflies, which in turn, pollinate our flowers, vegetables and fruit crops!

Marsh Phlox
(Phlox glaberrima)
has lanceolate leaves and smooth (glabrous) stems; is frequent in wet prairies, marshes



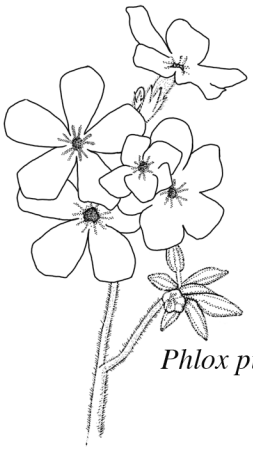
Notice the ladder-like, pinnately-arranged leaflets in Jacob's Ladder
(Polemonium reptans)



Phlox seed capsules snap open and fire the seeds away! (Usually about a week before you plan to colect them!)

Ripe *Phlox* capsule

The phlox family is an important model for investigating pollination biology and evolutionary patterns in plant science

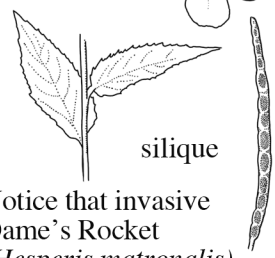


Downy Phlox
(Phlox pilosa)
gets its name from the fine hairs on stems and leaves
(pilose = hairy)

Phlox pilosa

Invasives and look-alikes:

Only 4 petals in Dame's Rocket!

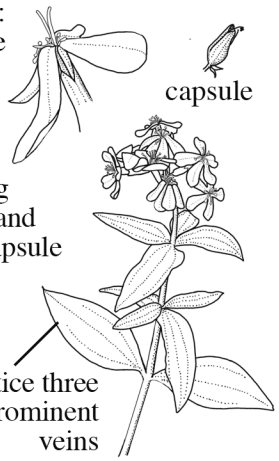


Notice that invasive Dame's Rocket *(Hesperis matronalis)* has only 4 petals and the leaves are alternate. The fruit is a long silique, not a capsule

Garden phlox

Native much further south but extensively hybridized for the garden trade, *Phlox paniculata* cultivars tend to crowd out native species so we'd rather not see them in our preserves. (Key: Leaves > 1/2" wide)

Soapwort: Notice the reflexed flowers, divided petals, protruding stamens, and narrow capsule



Soapwort
(Saponaria officinalis)

Each petal in Sand Phlox *(Phlox bifida)* is deeply divided (bifid) up the center

Sweet William Phlox *(Phlox maculata)* can be recognized by the tiny purple spots on the stems

Our common Woodland Phlox *(Phlox divaricata)* usually finishes blooming by mid-June. Flowers are blue to purple; stem is softly hairy

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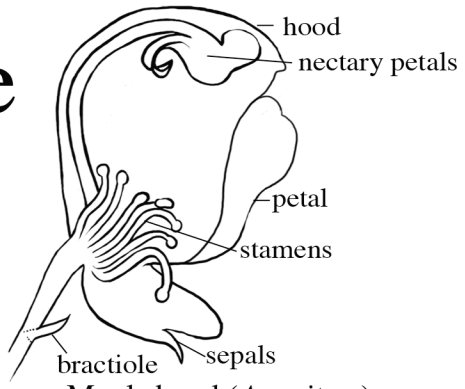
Globally:
65 genera / 2,377 species
Chicago Region:
24 genera (8 non-native) /
64 species (24 non-native)

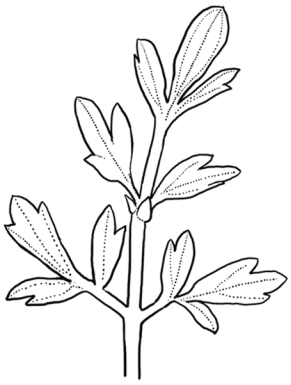
Ranunculaceae

Buttercup Family

Frequently laciniate or lobed leaves, numerous stamens surrounding many fused carpels

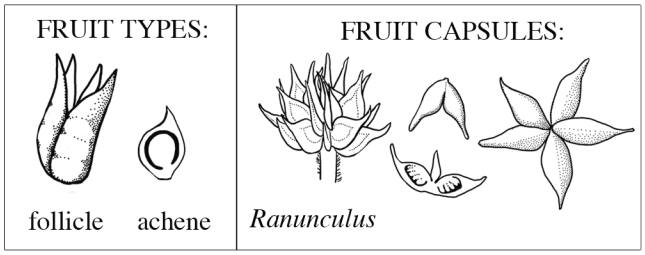


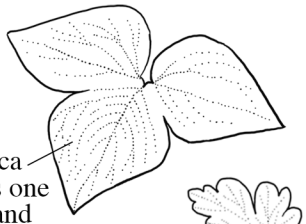
Monkshood (*Aconitum*)

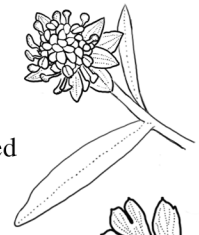

Early Buttercup
(Ranunculus fascicularis)


Swamp Buttercup *(Ranunculus septentrionalis)* has bold, waxy yellow flowers in springtime in moist remnant woods


Wood Anemone *(Anemone quinquefolia)* has 5-9 white, petal-like sepals, sharply pointed, usually 5-lobed leaves

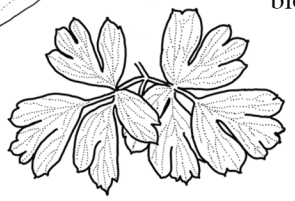


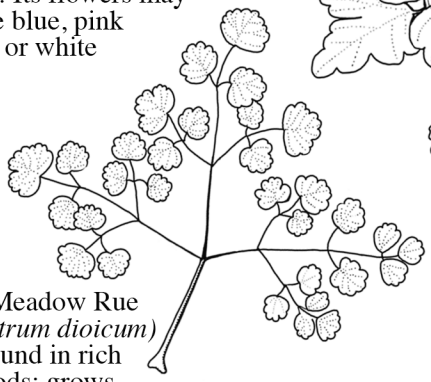

Sharp-Lobed Hepatica *(Hepatica acutiloba)* is one of our earliest woodland blooms! Its flowers may be blue, pink or white


Small-Flowered Buttercup *(Ranunculus abortivus)* with 1/4" flowers, has five green sepals, five yellow petals; rounded, basal-lobed leaves below and oblong leaves above; common in our woodlands

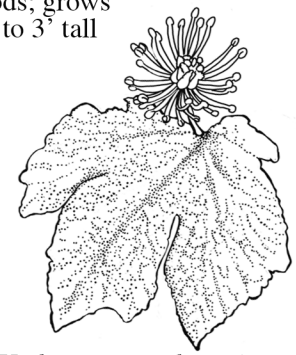

Columbine *(Aquilegia canadensis)* with its red and yellow spurred flowers, is a favorite nectar source of hummingbirds! Find it on slopes, cracks in limestone walls and other undisturbed habitats

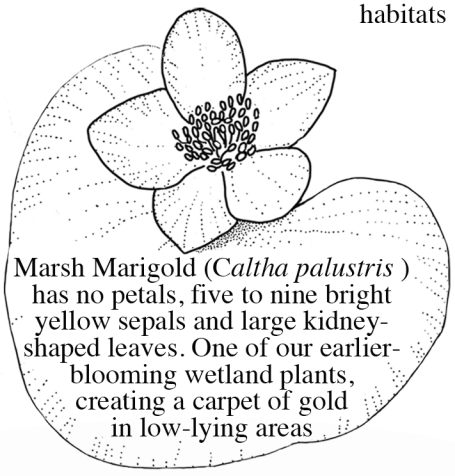

The tiny Rue Anemone *(Anemonella thalictroides)* is similar to False Rue Anemone *(Enymion biternatum)* but differs by having 3 compound whorled leaves just below the flower, 5-10 petal-like sepals, and fruit with one seed


False Rue Anemone (*Enymion biternatum* - also known as *Isopyrum biternatum)* tends to form large colonies in rich woods. It may easily be confused with Rue Anemone: look for 5 white sepals, leaflets divided twice into threes

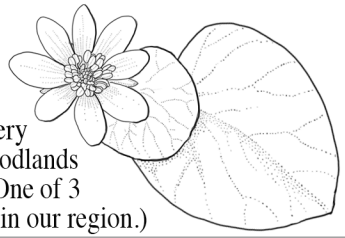

Early Meadow Rue *(Thalictrum dioicum)* is found in rich woods; grows up to 3' tall


Goldenseal fruit


Goldenseal *(Hydrastis canadensis)* with leaf, flower and fruit. The flower has no petals, only deciduous sepals and many stamens that just *look* like fine petals surrounding a central cluster of pistils


Marsh Marigold (*Caltha palustris*) has no petals, five to nine bright yellow sepals and large kidney-shaped leaves. One of our earlier-blooming wetland plants, creating a carpet of gold in low-lying areas

Invasives Alert!

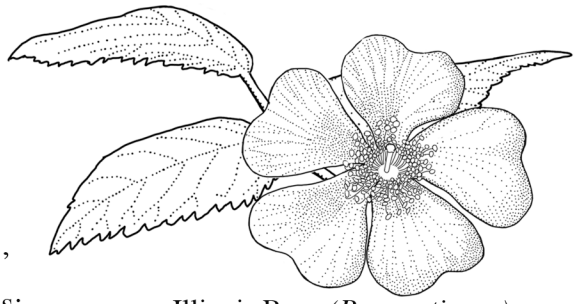

Lesser Celandine *(Ficaria verna)* has 1" flowers with 8-12 glossy yellow petals; is very invasive in our woodlands and floodplains! (One of 3 species of *Ficaria* in our region.)

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project, Rebecca Collings and Laura Milkert, Field Museum

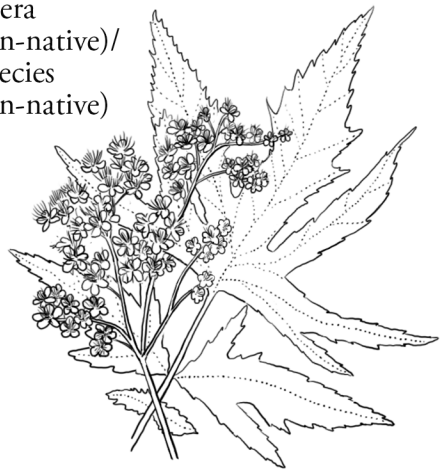
Globally:
104 genera / 4,828 species
Chicago Region:
32 genera
(10 non-native)/
183 species
(74 non-native)

Rosaceae

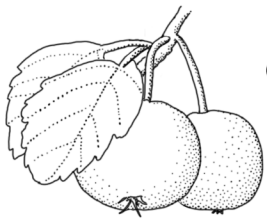
Rose Family
Worldwide distribution:
herbs, shrubs, trees; of great economic importance;
FLOWERS radially symmetrical, petals and sepals often in 5s, many spirally-arranged stamens;
LEAVES alternate or arranged spirally; sometimes compound; mostly serrated margins; paired stipules; STEMS frequently have prickles or thorns



Illinois Rose *(Rosa setigera)* is notable for its height (up to 12' tall) and leaves with usually only three leaflets



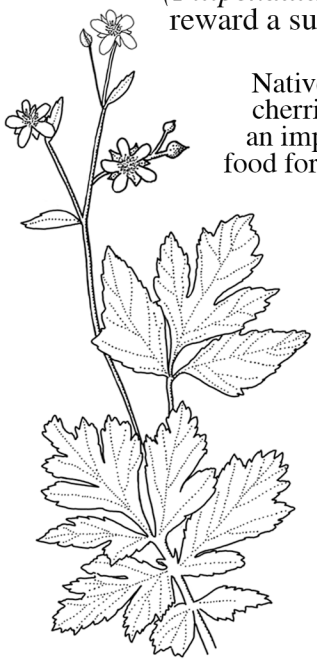
Fluffy pink panicles of state-endangered Queen of the Prairie *(Filipendula rubra)* may reward a summer foray!



Notice the shallowly-lobed leaves of Prairie Crabapple (*Malus ioensis)*. The fruit of apple and crabapple trees are called 'pomes' from a very old French word for apple

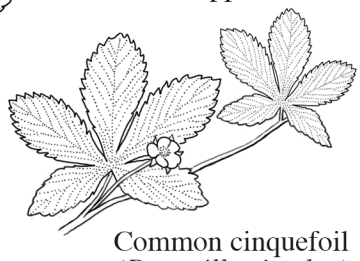
The seeds of Wild Strawberry (*Fragraria virginiana)* are achenes; the entire fruit is called an 'accessory fruit' because not all of the flesh comes from the developed ovary

Native wild cherries are an important food for wildlife



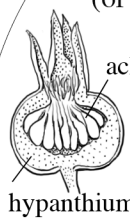
White Avens *(Geum canadense)*

Small birds can get tangled in the sticky seeds of Tall Agrimony *(Agrimonia gryposepala)* or some of its other 'stick-tight'-producing cousins!



Common cinquefoil *(Potentilla simplex)* is recognized by 5 leaflets and sprawling habit

FRUIT MAY BE:
a drupe (or aggregate of drupelets); a pome; a single (or aggregate of) achenes; or a follicle



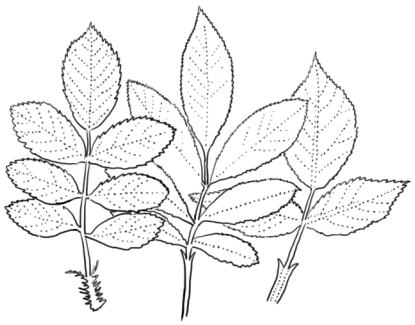
Meadowsweet *(Spiraea alba)* produces a cluster of 5 sturdy follicles for its seeds

The rose hip is an aggregate of achenes surrounded by a fleshy hypanthium

Black Raspberry *(Rubus occidentalis)* fruit is a cluster of drupelets

Invasives Alert!

Multiflora Rose can be distinguished from Illinois' native roses by its feathery fringes on the narrow stipules found at the base of each leaf stalk. Compare to the 'winged' stipules of native *Rosa setigera* and the narrow stipules of *Rosa palustris*



Multiflora Rose *(R. multiflora)* Swamp Rose *(R. palustris)* Illinois Rose *(R. setigera)*

Feathery seed heads and fern-like leaves on early-blooming Prairie Smoke *(Geum triflorum)*

There are almost two dozen species of hawthorn in our area; this drawing shows Downy Hawthorn *(Crataegus mollis)* with its sharp sturdy thorns

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

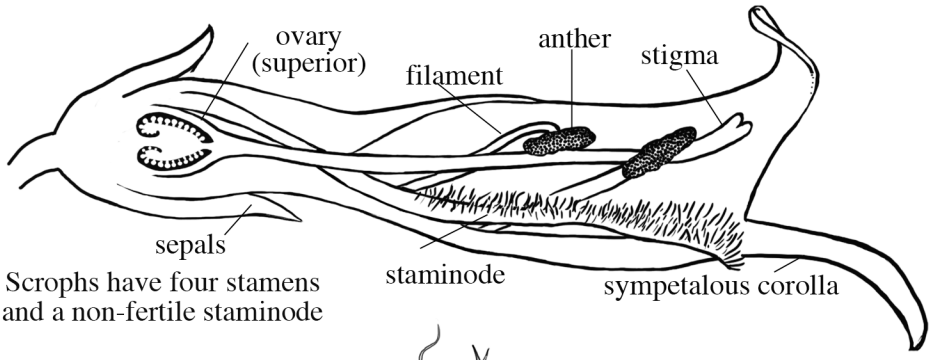
Globally:
76 genera / 1576 species
Chicago Region:
21 genera (9 non-native) /
62 species (35 non-native)
(DNA analysis is causing many revisions to this family)

Scrophulariaceae

Veronica/Snapdragon Family

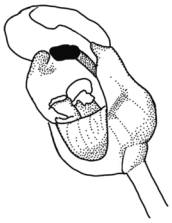
Very diverse, with many leaf and flower forms; most flowers are tubular with parts in 4s, 5s or 8s

Two-lipped appearance



Scrophs have four stamens and a non-fertile staminode

Often, curving stamens for best pollen placement



Eastern Figwort (*Scrophularia marilandica)* has tiny green-brown flowers in panicles; 5' tall plants!

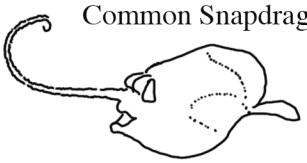
Did you know?

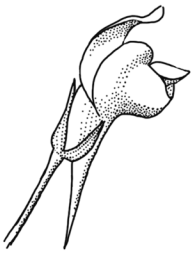
One of the many ways early botanists told flowering plant families apart was to note whether the ovaries (where seeds are produced) are 'superior' (above the attachment of the petals, sepals, and stamens), or 'inferior' (which just means below where the petals and related parts are attached).
In the Scrophulariaceae, the ovary is above the petal attachment!

Penstemon digitalis capsules

Capsules, of two carpels, (many tiny seeds in each) split along the seams between the cells

Common Snapdragon fruit:

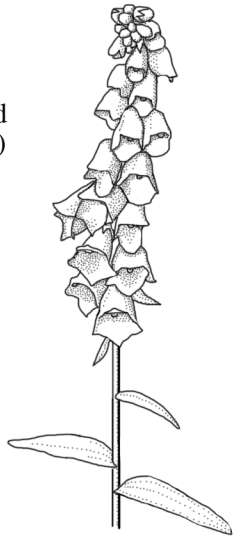




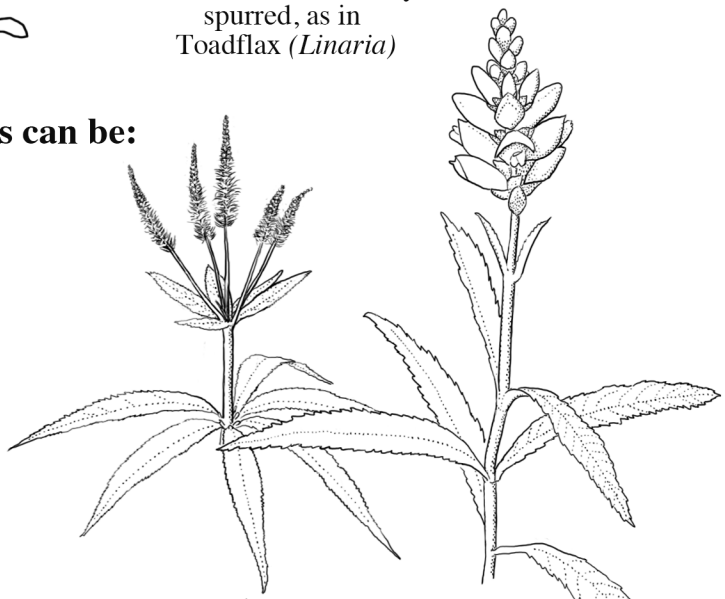
Flowers occasionally spurred, as in Toadflax *(Linaria)*

White Turtlehead (*Chelone glabra*) capsules

Leaves can be:



alternate, as in the common garden Foxglove, *Digitalis grandiflora*



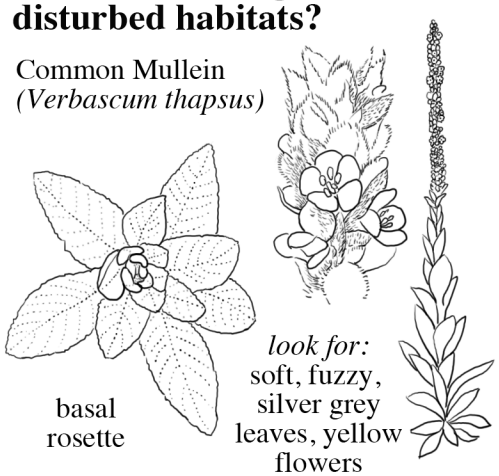
Note the candelabra-like panicles and ***whorled leaves*** of Culver's Root *(Veronicastrum virginicum)*

All leaves arise from nodes on the stem.
One leaf, one node = alternate;
two leaves, one node = opposite;
three or more leaves per node = whorled

opposite: White Turtlehead *(Chelone glabra)* is larval host to Baltimore Checkerspot butterfly

Invasive? or a sign of disturbed habitats?

Common Mullein *(Verbascum thapsus)*



basal rosette

look for: soft, fuzzy, silver grey leaves, yellow flowers

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;

Violaceae

Violet Family
Dicots with spurred flowers, three-carpeled ovaries; rosette or leafy stems; species easily hybridize

Globally: 25 genera / 885 species
Chicago Region: 2 genera / 26 species (5 non-native)

Spur: short and blunt in most, long and curved in *V. labradorica*, long and straight in *V. rostrata*

spur
sepal
stamens
beard (assists as 'a landing platform' during pollination)

Self-pollinating cleistogamous flowers are a 'backup' reproduction system!

Their leaves are an important food for frittilary butterflies!

Not just 'violet', their flowers can be any combination of purple, blue, green, white or yellow!

Viola sororia is our common, native yard violet

When is a violet not a violet? When it is 2' tall Green Violet, *Hybanthus concolor*, whose closest relative is a Central American tree!

Note how small *Hybanthus concolor's* flowers are relative to the size of the plant!

unripe seed pod

Hybanthus flower

When ripe, pods stand erect on their stem; the seed pod splits open. But the sides hold the seeds tight. Then the sides tighten further and fire the seeds out!

Little waxy elaisomes on some violet seeds are delicious to ants, who 'plant' the seeds in their nests!

Upright, state-endangered *V. canadensis* has white flowers, smooth, papery or absent stipules

Yellow flowers, upright habit point to *Viola pubescens*

Habits *are* important - tall and upright? Basal rosette? Creeping or upright, single or clustered leafy stems?

Stipules - those paired leafy bracts at the base of leaves - are important! Note: smooth, jagged or feathery?

More 'stemmy' violets: *V. labradorica* has a multistemmed, prostrate habit; flat pale blue flowers. *V. striata* has white or cream flowers

Notice the differences!

V. pedata flower

Viola pedatifida flower

V. pedatifida and *V. pedata* have deeply dissected palmate leaves; *V. pedata* has a more pansy-like flower with bright orange stamens

Look for the glabrous triangle leaf in *V. missouriensis*

The bottom half of *V. subsinuata* is often deeply dissected

Rare *Viola sagittata* may have gently lobed or smooth leaf bases - loves wet, acidic sandy prairies

Non-native, but not invasive:
Johnny-jump-up *(Viola tricolor)* seldom invades natural areas but may be found in old homesites adjacent to them

The word 'tricolor' ('tri' = 3) celebrates its rich combination of blue, purple and yellow

Produced by: Kathleen Garness; John and Jane Balaban, North Branch Restoration Project; Rebecca Collings and Laura Milkert, Field Museum;
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Common Plant Families of the Chicago Region

Field Museum - Keller Science Action Center

GLOSSARY

Achene: A small, dry, indehiscent fruit with a single seed that is attached to the ovary wall at a single point. [*Ranunculaceae*; *Rosaceae*]

Adventitious: Structures or organs developing in an unusual position, as roots originating on the stem.

Alternate: Referring to leaves borne singly at a node, compare to opposite and whorled. [*Scrophulariaceae;Onagracaeae*]

Androecium: the staminate (male) portions of the flower [*Caryophyllaceae*]

Androgynophore: A stalk that is elevated above the point of perianth attachment and supports the androecium and gynoecium [*Caryophyllaceae*]

Anther: The expanded, pollen-bearing, portion of the stamen. [*Liliaceae*; *Scrophulariaceae*]

Axil: The upper angle formed between the junction of a leaf and stem. [*Convallariaceae; Lamiaceae*]

Axillary: Positioned in or arising from an axil.

Calcareous: Soil containing calcium carbonate (CaCo3) and having a basic pH reaction. [*Orchidaceae*]

Calyx: The outer perianth whorl (outer floral envelope); collective term for all of the sepals of a flower. [*Asclepiadaceae, Caryophyllaceae*]

Carpel: A floral organ that contains ovules in angiosperms. It is either borne separately or a unit of a compound pistil. [*Orchidaceae; Lamiaceae*]

Clasping: Wholly or partly surrounding the stem**.**

Compound: Referring to a leaf separated into two or more distinct leaflets. [*Apiaceae*]

Connate: Fused or united to a similar plant part [*Caryophyllaceae*]

Corm: A short, solid, vertical underground stem with thin papery leaves. [*Araceae*]

Corolla: The inner perinath whorl (floral envelope); collective name for all of the petals of a flower. [*Asclepiadaceae*; *Scrophulariaceae*]

Dehiscence: The ability of a plant part to split along a seam in order to release its contents, such as seeds, pollen or spores. Indehiscent structures rely on other mechanisms - such as decay or being eaten – to spread their contents.

Drupe: A fleshy or pulpy fruit in which the inner portion of the ovary wall is hard or stony. [*Rosaceae*]

Drupelets: A small drupe, as in the individual segments of a raspberry fruit. [*Rosaceae*]

Endosperm: The nutritive tissue surrounding the embryo of a seed derived from the fusion of a sperm cell with the polar nuclei of the embryo sac. [*Orchidaceae*]

Filament: The stalk of the stamen that supports the anther. [*Scrophulariaceae, Caryophyllaceae*]

Follicle: A dry, dehiscent fruit composed of a single carpel and opening along a single side, as a milkweed pod. [*Asclepiadaceae, Ranunculaceae*; *Rosaceae*]

Inflorescence: The flowering part of a plant; a flower cluster; the arrangement of the flowers on the flowering axis.

Involucres: A whorl of bracts subtending a flower or flower cluster. [*Asteraceae*]

Laciniate: Cut into narrow, irregular lobes or segments. [*Asteraceae; Apiaceae*]

Lobed: Bearing lobes which are cut less than half way to the base or midvein.

Locule: a cavity or space within an ovary, fruit, or anther [*Caryophyllaceae*]

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Loculicidal: Pertaining to a capsule which splits along the back seam of each locule, thus opening directly into the cavity [*Caryophyllaceae*]

Gynoecium: the pistil or collective pistils of a flower; the female portions of a flower as a whole [*Caryophyllaceae*]

Monocot: A group of angiosperms with a single cotyledon. Most monocots have parallel veins, flower parts in multiples on three and a fibrous root system. [*Orchidaceae*]

Mycorrhizal: A symbiotic association of fungi and the roots of specific plants. [*Orchidaceae*]

Opposite: Referring to leaf arrangement when leaves are borne across from one another at the same node; compare to alternate and whorled. [*Scrophulariaceae*; *Lamiaceae*]

Ovary: The expanded basal portion of the pistil that contains the ovules. [*Araceae*; *Asclepiadaceae*; *Caryophyllaceae, Lilaceae*; *Lamiaceae*]

Palmate: lobed, veined, or divided from a common point, like the fingers of a hand. [*Fabaceae*]

Panicle: A branched, racemose inflorescence with flowers maturing from the bottom upwards. [*Asteraceae*; *Rosaceae; Scrophulariaceae*]

Pedicel: The stalk of a single flower in an inflorescence, or of a grass spikelet.

Peduncle: The stalk of a solitary flower or of an inflorescence. [*Asteraceae*]

Perianth: Collective term for the calyx and corolla.

Petals: one member of the inner floral envelope (corolla) of a typical flower; usually white or colored. [*Lamiaceae, Caryophyllaceae*]

Petiolate: A plant with a petiole.

Petiole: A leaf stalk. [*Apiaceae*; *Asteraceae*]

Phyllary: An involucral bract of the Asteraceae Family. [*Asteraceae*]

Pinnate: Resembling a feather, as in a compound leaf with the leaflets arranged on opposite sides of an elongated axis. [*Apiaceae*; *Fabaceae*]

Pistil: The female reproductive organ of a flower, typically consisting of a stigma, style, and ovary. [*Onagraceae*]

Pubescent: Covered with short, soft hairs.

Raceme: An unbranched, elongated inflorescence with pedicellate flowers maturing from the bottom upwards. [*Convallariaceae*]

Recurved: curved backward. [*Liliaceae*]

Reflexed: bent backward or downward.

Sepal: One part of the outer floral envelope (calyx) that is typically leafy and green. [*Asclepiadaceae*; *Ranunculaceae*]

Sessile: Attached directly, without a supporting stalk, as a leaf without a petiole.

Spike: An unbranched, elongated inflorescence with sessile or subsessile flowers or spikelets maturing from the bottom upwards.

Stamen: The pollen-bearing, male reproductive organ of a flower, normally consisting of a filament and anther. [*Araceae*; *Brassicaceae*; *Lamiaceae, Caryophyllaceae*]

Staminode: A sterile stamen that does not produce pollen but which may be part of the flower's strategy for attracting pollinators. Sometimes they produce nectar or are very showy. [*Scrophulariaceae, Orchidaceae*]

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Stigma: The portion of the pistil that is receptive to pollen. [*Liliaceae*; *Scrophulariaceae; Lamiaceae*]

Sympetalous: With the petals united, at least at the base. [*Scrophulariaceae*]

Tepal: A segment of a perinath that is not differentiated into calyx and corolla; or sepal or a petal. [*Liliaceae*]

Terminal: positioned at the summit, or end [*Caryophyllaceae*]

Trifoliate: Having leaves divided into three similar parts [*Fabaceae; Gentianaceae*]

Umbel: A flat-topped or convex inflorescence with the pedicels arising more or less from a common point, like the struts of an umbrella. [*Apiaceae*; *Asclepiadaceae*; *Liliaceae*]

Whorled: Referring to leaves arranged in whorls; three or more leaves arising from a node. [*Liliaceae*; *Scrophulariaceae*]

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Sources

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Wilhelm, Gerould and Rericha, Laura. 2017. *Flora of the Chicago Region - A Floristic and Ecological Synthesis*. Indiana Academy of Science.

Zomlefer, Wendy B. 1994. *Guide to Flowering Plant Families*. Chapel Hill: The University of North Carolina Press.

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