

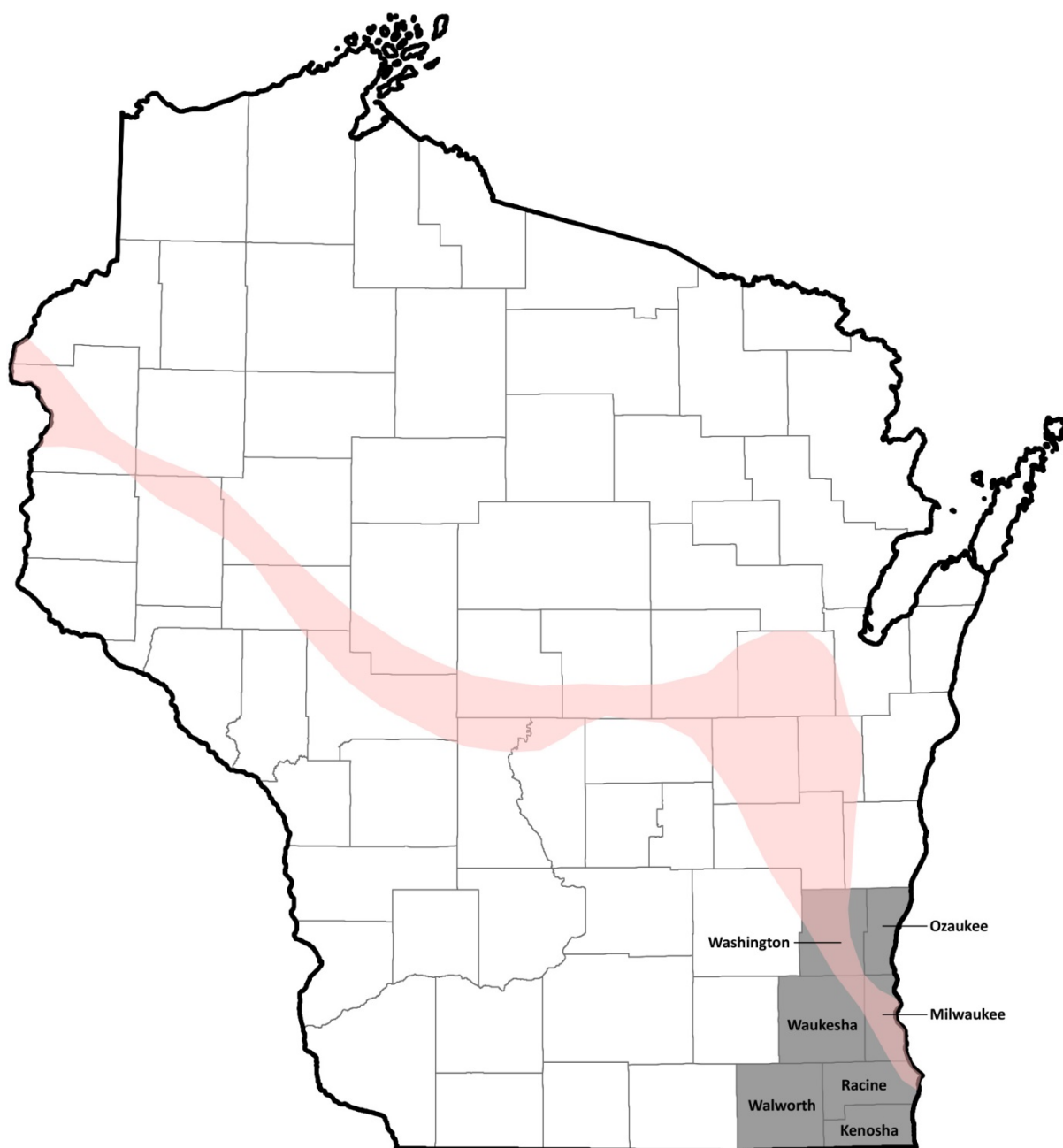
KEY TO THE VASCULAR PLANT SPECIES, NATIVE AND NATURALIZED, OF THE SOUTHEASTERN WISCONSIN REGION

**Compiled by Dr. Lawrence Leitner and Ms. Kristi Sherfinski
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INTRODUCTION

This key covers the area comprised by the following seven counties—Milwaukee, Racine, Kenosha, Ozaukee, Washington, Waukesha, and Walworth. The greater Milwaukee area, the largest metropolitan area in Wisconsin, occurs within this area. Despite this fact, the flora of the southeastern Wisconsin is quite diverse. The Tension Zone runs northwest to southeast through the area, crossing through Washington, Ozaukee, Milwaukee, and Racine counties. The Tension Zone is a climactic zone which divides Wisconsin into a northern hardwoods-conifer forest floristic province and a southern prairie-oak forest floristic province (SEWRPC Planning Report No. 42, 1997). Because of this Tension Zone, the flora of the Region represents a microcosm of the entire state. The Region contains every plant community listed in the “Vegetation of Wisconsin” (Curtis, 1959), except for the boreal forest and the sand barren community types. In addition, the Kettle Moraine State Forest is located along the western edge of the Region. This area contains many examples of glacial features formed as a result of the last glaciation event—the Wisconsin Stage—that occurred about 11,000 years ago (SEWRPC Planning Report No. 42, 1997).

This is a draft document that was compiled by Dr. Lawrence Leitner and Ms. Kristi Sherfinski while working for the Southeastern Wisconsin Regional Planning Commission (SEWRPC). It encompasses all vascular species that are native or that have become naturalized in the southeastern Wisconsin region, as defined above, according to their records at the time this key was written in 2012. This document is currently in draft form and is not an official publication of SEWRPC and should not be referenced as such. It has been tested by the authors but we wish to have it further tested by users before removing its draft status. Please feel free to send your comments or edits to Ms. Sherfinski at ksherfinski@wi.rr.com. None of this work would have been possible without the work of our predecessors, and the support of SEWRPC. These works are [referenced](#) at the end of this document.



This key covers southeastern Wisconsin and includes the following counties--Washington, Ozaukee, Waukesha, Milwaukee, Walworth, Racine, and Kenosha counties. The Tension Zone is shown in pink (adapted from Curtis, 1959).

KEY TO VASCULAR PLANT GROUPS

1. Plants without flowers or seeds, reproducing by spores borne in sporangia on leaves or specialized structures [PTERIDOPHYTES—FERNS AND FERN-ALLIES](#)
1. Plants normally reproducing by seeds containing an embryo, via cones or flowers 2
 2. True flowers not produced; seeds borne on surface of a scale or partially embedded in a fleshy disk; never enclosed in a fruit; plants without styles, stigmas, or perianths; all woody—trees and shrubs; leaves narrow, needle-like or scale-like, mostly evergreen; seeds exposed, not borne in a closed structure [GYMNOSPERMS](#)
 2. Plants typically bearing flowers at the proper season and reproducing by stamens and pistils, the latter producing seeds; perianth definitely present; true flowers with stamens and pistils; ovules enclosed in ovary of flower, which at maturity become seeds within fruit ..
..... [ANGIOSPERMS](#)

KEY TO PTERIDOPHYTE FAMILIES: FERNS AND FERN-ALLIES

1. Leaves narrow, sessile, 1-veined, simple, linear or oval; sporangia borne in cones 2
 2. Leaves small, scale-like, whorled, united to form toothed sheaths at conspicuous nodes (joints) on grooved, usually hollow stems [EQUISETACEAE](#)
 2. Stems leafy, solid, not conspicuously jointed or grooved; leaves spirally arranged or in four rows, not whorled 3
 3. Cones terminal, more-or-less 4-angled; sterile leaves with inconspicuous ligule present at base; plants small, creeping, moss-like [SELAGINELLACEAE](#)
 3. Cones terete, or sporangia borne in axils of vegetative leaves and not forming a cone; sterile leaves without ligules at base; plants trailing, but not moss-like [LYCOPODIACEAE](#)
1. Leaves broad, petiolate, often compound, with several branching veins; sporangia never in cones (Ferns) 4
 4. Sporangia borne in a stalked terminal spike or loose panicle [OPHIOGLOSSACEAE](#)
 4. Sporangia borne in clusters (sori) on backs of ordinary or modified foliar leaves, or in pod-like divisions of modified leaves 5
 5. Sporangia densely crowded, short-stalked, globose [OSMUNDACEAE](#)
 5. Sporangia in sori on backs or margins of leaves [POLYPODIACEAE](#)

KEY TO PTERIDOPHYTE GENERA

- SELAGINELLACEAE [Selaginella](#)
- EQUISETACEAE [Equisetum](#)
- LYCOPODIACEAE [Lycopodium](#)
- OSMUNDACEAE [Osmunda](#)

OPHIOGLOSSACEAE

1. Sterile leaf simple, entire, undivided, rather unfern-like; veins netted; fertile portion an undivided spike or spikes; sporangia sessile, in two rows..... *Ophioglossum pusillum*
1. Sterile leaves lobed, compound, and/or much dissected; veins merely forked; fertile portion much branched; the numerous sporangia short-stalked [*Botrychium*](#)

POLYPODIACEAE

1. Sori marginal on leaf edges..... 2
2. Frond blades kidney-shaped, dichotomously branched at base, each frond with 5-9 pinnately divided pinnae on one side..... *Adiantum pedatum*
2. Frond blades not kidney-shaped or dichotomously branched at base 3
3. Fertile and sterile leaves very dissimilar 4
4. Sterile blades simple, pinnatifid to 1-pinnate at base *Onoclea sensibilis*
4. Sterile blades 1-pinnate-pinnatifid *Matteuccia struthiopteris*
3. Sterile and fertile fronds similar 5
5. Fronds robust, about 1 m high..... *Pteridium aquilinum*
5. Fronds delicate, less than 0.25 m long 6
6. Leafstalks wiry, dark-colored; pinnules jointed at base *Pellaea glabella*
6. Leafstalks weak, mostly greenish; pinnules not jointed at base *Cryptogramma stelleri*
1. Sori not marginal..... 7
7. Fronds simple, entire, heart-shaped at base, glabrous; apex often rooting..... *Camptosorus rhizophyllus*
7. Fronds never simple and entire; apex never rooting 8

8. Sori linear, oblong, or crescent-shaped 9
9. Fronds leathery, evergreen, blades linear-oblong, less than 8 cm wide; rachis wiry, glossy, darkish throughout *Asplenium platyneuron*
9. Fronds thin, not leathery, deciduous; blades ovate, more than 8 cm wide; rachis greenish..... 10
10. Adaxial grooves of costae shallow, not decurrent into rachis groove; stems moderately long creeping; blades 1-pinnate-pinnatifid.....*Deparia acrostichoides*
10. Adaxial grooves of costae deep, decurrent into rachis groove; stems short-creeping to erect; blades 1-pinnate to 2-pinnate-pinnatifid.....[*Athyrium*](#)
8. Sori round or nearly so; neither linear nor crescent-shaped..... 11
11. Fronds evergreen, leathery, pinnate; pinnae spinulose-serrate, asymmetrically 1-lobed at base with lobes aimed distally; indusia absent*Polystichum acrostichoides*
11. Fronds various, but never with pinnae having a distinct, distally aimed basal lobe; indusia present or absent 12
12. Fronds pinnately dissected, evergreen, rarely more than 20 cm in length.....
..... *Polypodium virginianum*
12. Fronds not as above, often greater than 20 cm long 13
13. Indusium hood-like or arched, attached by a broad base at the midrib side of the sorus; fronds with or without bulblets[*Cystopteris*](#)
13. Indusium either absent or attached at its middle, circular to reniform, and more-or-less concealing the sporangia beneath; fronds never with bulblets 14
14. Blades deltoid, nearly as broad as long or even broader 15
15. Rachis not herbaceous-winged; lower pinnae stalked
..... *Gymnocarpium dryopteris*
15. Rachis wholly or mostly herbaceous-winged; lower pinnae sessile.....
..... [*Phegopteris*](#)
14. Blades obviously longer than broad 16

16. Blade stalks essentially scaleless; blades deciduous, the upper surfaces thinly to densely ciliate on the major veins; rhizomes slender, mostly less than 5 mm in diameter..... *Thelypteris palustris*
16. Blade stalks remotely to more often densely scaled; blades mostly evergreen, ciliate above; rhizomes thick, stout[Dryopteris](#)

KEY TO GYMNOSPERM FAMILIES

1. Leaves opposite or whorled, scale-like or needle-like..... [CUPRESSACEAE](#)
1. Leaves alternate or in fascicles, needle-like or linear 2
2. Fleshy “cone” (aril), red, berrylike, and open at one end exposing solitary seed; leaves flattened, linear, sharp-pointed, with strongly decurrent bases, evergreen, appearing 2-ranked; low shrubs.....[TAXACEAE](#)
2. Plants not as above; seeds situated on woody scales which are aggregated into a dry, woody cone; leaves evergreen (except *Larix*); trees [PINACEAE](#)

KEY TO GYMNOSPERM GENERA

CUPRESSACEAE

1. Oblong-ovoid cones woody or leathery, overlapping scales eventually separating; leaves scale-like, 2-ranked, opposite and appressed; leafy twigs flattened; trees..... *Thuja occidentalis*
1. More-or-less fleshy berrylike cones, indehiscent, green, commonly turning bluish; leaves opposite or whorled, not obviously 2-ranked, a combination of needle-like and scale-like; leafy twigs not flattened; trees and shrub [Juniperus](#)

PINACEAE

1. Leaves needle-like, all or mostly grouped in definite clusters (fascicles) on short shoots 2
2. Needles grouped into fascicles of 2-5; evergreen; cones more than 2 cm long[Pinus](#)

- 2. Leaves deciduous, crowded and numerous on short lateral shoots; cones less than 2 cm long.....*Larix laricina*
- 1. Leaves flattened or 4-sided, alternate, not in definite clusters 3
 - 3. Leaves flattened, rounded at apex, distinctly short-stalked on narrow base*Tsuga canadensis*
 - 3. Leaves more-or-less 4-sided, sharp-pointed, sessile on persistent peg-like base (stigmata) ...
.....[*Picea*](#)
- TAXACEAE..... *Taxus canadensis*

KEY TO ANGIOSPERM FAMILY GROUPS

1. Leaves mostly parallel veined; one cotyledon; floral parts typically in threes; herbaceous species (all non-woody); except in rare cases, all leaves are simple and entire; bases of leaves often form sheath around stem [MONOCOTS](#)
1. Leaves mostly netted-veined; two cotyledons; floral parts typically in 4s and 5s; includes both herbaceous and woody species; leaves toothed or entire, simple or compound; no leaf sheath around stem [DICOTS](#)

KEY TO MONOCOT FAMILIES

1. Plants minute, without distinct stems or leaves; floating or suspended aquatics; rarely flowering [LEMNACEAE](#)
1. Plants with stems, leaves, or both; terrestrial to aquatic, but not freely floating or suspended in water column 2
 2. Plants usually 1-2 m tall, with numerous small pistillate flowers in dense, brown, cylindrical spikes up to 20 cm long, terminating the stem; perianth reduced to slender white bristles; leaves flat [TYPHACEAE](#)
 2. Plants not as above 3
 3. Inflorescence specialized—a very dense, thick spike (spadix) in which flowers are embedded in a fleshy axis; stems rarely 1 m tall..... 4
 4. Leaves long, smooth, light green, sword-like; spadix appearing lateral..... [ACORACEAE](#)
 4. Leaves large, wide, often divided into leaflets; spadix subtended by a hood-like spathe .. [ARACEAE](#)
 3. Inflorescence not a spadix; stems various sizes 5
 5. Flowers subtended by imbricate scales; perianth absent or much reduced, scale-like... 6
 6. Cauline leaves 2-ranked, sheaths open on side opposite blade; culms usually hollow between nodes, terete (never 3-angled); fruit a grain (caryopsis) [POACEAE](#)
 6. Cauline leaves (if present) 3-ranked, sheaths continuous around stem; culms often triangular and solid; fruit a nutlet or achene.....[CYPERACEAE](#)
 5. Flowers not subtended by imbricate scales; perianth often present..... 7
 7. Plants aquatic; small, numerous, linear to oblong leaves in whorls, or long (to 2 m), ribbonlike leaves emanating from a basal tuft; flowers imperfect [HYDROCHARITACEAE](#)
 7. Plants not with the above combination of characteristics 8
 8. Corollas absent, or, if present, much reduced in size; plant without broad green leaves 9

- 9. Perianth of small brownish or greenish tepals; leaves terete; flowers perfect 10
 - 10. Inflorescence in spike-like raceme, loose to dense; tepals greenish, herbaceous, blunt; fruit a 1-2-seeded follicle [JUNCAGINACEAE](#)
 - 10. Inflorescence a cyme; tepals firm, brownish, often sharp-pointed, hard and scale-like; fruit a many-seeded capsule..... [JUNCACEAE](#)
- 9. Perianth wanting, or if present, much reduced in size and greenish; stems often branched; leaves flat, not terete; plants aquatic, submersed or emergent 11
 - 11. Plants emergent (at least the flowers and fruits); inflorescence a spherical head, staminate or pistillate, scattered along a leafy stem; lower pistillate flowers producing a bur-like fruit; leaf not differentiated into blade and sheath....
..... [SPARGANIACEAE](#)
 - 11. Flowering and fruiting portions submersed (leaves may be floating); inflorescence not as above 12
 - 12. Flowers and fruits solitary in axils of paired or whorled leaves; leaves with conspicuous sheaths at bases; margins minutely spinulose to coarsely toothed; flowers imperfect..... [NAJADACEAE](#)
 - 12. Flowers and fruits clustered or in narrow, cylindrical spikes; leaves alternate (opposite in *Zannichellia*), sheathed or sheathless; leaf margins entire or wavy; flowers perfect (except in *Zannichellia*) [POTAMOGETONACEAE](#)
- 8. Corollas present; plants typically with broad green leaves 13
 - 13. Plants vines, but without tendrils; flowers small, imperfect, in loose panicles; leaves broad, strongly ribbed, alternate, heart-shaped; fruit a 3-winged capsule
..... [DIOSCOREACEAE](#)
 - 13. Plants not as above 14
 - 14. Flowers imperfect; stamens 9 or more (flowers perfect with 6-9 stamens in *Alisma*); leaves broad; scapes with numerous branches; fruit an achene
..... [ALISMACEAE](#)
 - 14. Flowers perfect; stamens to 6 15
 - 15. Ovary superior..... 16

16. Plants strictly aquatic; flowers numerous in dense, elongated inflorescence [PONTEDERIACEAE](#)
16. Plants terrestrial; flowers relatively few 17
17. Stamens 6 or absent (4 in *Maianthemum*); sepals and petals colored alike, or, if sepals green, then petals colored [LILIACEAE](#)
17. Sepals not colored like petals; petals blue; stamens 3, 5, or 6 [COMMELINACEAE](#)
15. Ovary inferior 18
18. Stamens 1 or 2; flowers very irregular; sepals and petals three, the lower petal a definite lip [ORCHIDACEAE](#)
18. Stamens 3 or more; flowers $\pm$ regular 19
19. Stamens 6; stems terete; plants pubescent or, if glabrous, the perianth tube elongate [AMARYLLIDACEAE](#)
19. Stamens 3; plants glabrous; stems strongly wing-flattened [IRIDACEAE](#)

KEY TO MONOCOT GENERA

ACORACEAE *Acorus americanus*

ALISMATACEAE

1. Pistils in single whorl on small, flat receptacle; flowers perfect; inflorescence a panicle; leaves unlobed [Alisma](#)
1. Pistils in several series, forming a dense, globose head; receptacle large; uppermost flowers mostly staminate; inflorescence in verticels; leaves unlobed or sagittate [Sagittaria](#)

AMARYLLIDACEAE *Hypoxis hirsuta*

ARACEAE

1. Leaves palmately compound; fruit red [Arisaema](#)
1. Leaves simple; fruit not red 2
 2. Leaves hastate or sagittate, with long, acute basal lobes; spathe and spadix elongate.....
..... *Peltandra virginica*
 2. Leaves rounded or cordate at base, never sharply hastate; spadix short..... 3
 3. Leaves cordate, blades to 15 cm long; spathe open, white, on long peduncle; plant not odoriferous..... *Calla palustris*
 3. Leaves rounded, to 0.5 m long; greenish to purple-brownish-spotted spathe encloses spadix; short peduncle, or sessile; strong skunk-like odor *Symplocarpus foetidus*

COMMELINACEAE

1. Stamens 5 or 6, filaments villous; corolla regular; petals uniform in size; flowers several in cymes from narrow leaf-like bracts; 4-20 cm long *Tradescantia ohiensis*
1. Stamens 3; filaments glabrous; corolla irregular; petals dimorphic, 2 large and blue, 1 small and white; flowers 1-few in cymes from folded spathe-like bracts less than 3 cm long
..... *Commelina communis*

CYPERACEAE

1. Achene enclosed in a sac (perigynium), the style protruding through terminal opening; flowers imperfect..... [Carex](#)
1. Achene not enclosed in perigynium; flowers perfect (except *scleria*) 2
 2. 2 distinct kinds of spikelets—the pistillate ones with single flower or achene, the staminate ones with several flowers; achene hard, bony ± spherical, whitish [Scleria](#)
 2. Spikelets essentially alike; achene not as above 3
 3. Scales of spikelets 2-ranked and laterally compressed; spikelets several-many 4
 4. Stems terete, hollow, appearing jointed; inflorescence axillary; achenes beaked, subtended by bristles..... *Dulichium arundinaceum*

4. Stems $\pm$ 3-angled, solid, not appearing jointed; inflorescence terminal; achenes beakless, without bristles [*Cyperus*](#)
3. Scales spirally imbricate; spikelets solitary to many..... 5
5. Inflorescence an erect terminal spikelet, not surpassed by involucre bract..... 6
6. Achene with tubercle; scales of spikelet similar; plants leafless [*Eleocharis*](#)
6. Achene without tubercle; lowermost scale of spikelet $\pm$ prolonged into a callus tip; plants often with short leaf blades 7
7. Scales blackish or lead colored; achene about 3 mm long, subtended by numerous long silky bristles..... [*Eriophorum spissum*](#)
7. Scales brownish or yellowish; achene less than 2 mm long, subtended by 6 bristles ..
..... [*Scirpus*](#)
5. Inflorescence of several spikelets, or, if single, then surpassed by involucre bract..... 8
8. Flowers 1-3, perfect; basal (empty) scales 3 or more..... 9
9. Styles 2-cleft, the basal portion persistent as distinct beak on achene; bristles often present [*Rhynchospora*](#)
9. Styles 3-cleft; bristles none [*Cladium mariscoides*](#)
8. Basal (empty) scales 0-2, or perfect flowers few-many, or both 10
10. Style persistent as minute, brown, bulbous tubercle or beak on achene; leaves capillary; perianth bristles none; body of achene 0.7-0.9 mm long.....
..... [*Bulbostylis capillaris*](#)
10. Styles deciduous; perianth bristles present or none; achenes various, but without beaks; leaves (if present) flat..... 11
11. Inflorescence of 1-several crowded spikelets appearing lateral, with an erect involucre bract appearing as a continuation of the culm..... [*Scirpus*](#)
11. Inflorescence appearing terminal 12
12. Base of style slender, not enlarged; bristles present; achenes various 13

13. Perianth bristles 8 or fewer, short, curled, not silky..... [Scirpus](#)
13. Perianth bristles numerous, long, straight, silky [Eriophorum](#)
12. Base of style slightly enlarged; bristles none; achenes white, surface reticulate or papillate 14
14. Perianth absent; achenes white, surface reticulate or papillate..... [Fimbristylis](#)
14. Perianth present; achenes other *Lipocarpa micrantha*
- DIOSCOREACEAE *Dioscorea villosa*
- HYDROCHARITACEAE
1. Leaves cauline, opposite or whorled, to 2 cm long; anthers usually 9..... [Elodea](#)
1. Leaves basal or essentially so, ribbon-like, greatly elongated (typically longer than 10 cm); anthers usually 2 *Vallisneria americana*
- IRIDACEAE
1. Leaves ≥ 6 mm wide; stems wingless; flowers 4+ cm long; stigmas petaloid; sepals and petals dissimilar (sepals larger, $\pm$ recurved) [Iris](#)
1. Leaves to 6 mm wide; stems winged; flowers about 1 cm long; stigmas filiform; sepals and petals similar [Sisyrinchium](#)
- JUNCACEAE
1. Plants pubescent or pilose with long, soft hairs, especially on leaves; leaf blades flat, some to 10 mm wide; capsules 3-seeded..... [Luzula](#)
1. Plants glabrous; blades flat, or more often terete or strongly revolute, never more than 5 mm wide; capsules many-seeded..... [Juncus](#)

JUNCAGINACEAE

1. Leaves alternate, mostly cauline, each with a terminal pore; raceme subtended by bracts; follicles widely spreading; seeds 2; stamens 6, pistils 3*Scheuchzeria palustris*
1. Leaves all basal (or nearly so), with conspicuous sheath and without terminal pore; pistils 3 or 6; follicles erect; raceme slender, bractless[*Triglochin*](#)

LEMNACEAE

1. Roots none[*Wolffia*](#)
1. Roots present, developing from underside of flattened thallus 2
 2. Thallus with 3 or more roots; lower surface purple*Spirodela polyrhiza*
 2. Thallus (not especially flattened) with single root; lower surface green or purple[*Lemna*](#)

LILIACEAE

1. Leaves small, scale-like, yellowish or brownish, subtended by short filiform branchlets up to 2 cm long and 0.25 cm wide*Asparagus officinalis*
1. Leaves normal, or withered by flowering time 2
 2. Leaves cauline 3
 3. At least some leaves whorled 4
 4. Plants 4-20 dm tall; flowers large, tepals reddish or orange[*Lilium*](#)
 4. Plants much smaller; flowers smaller, yellowish, white or maroon, but not orange.... 5
 5. Leaves in 2 whorls; flowers yellowish; persistent woolly flocculence on lower part of plant; sepals and petals similar *Medeola virginiana*
 5. Leaves in 1 whorl; flowers white or maroon; sepals green; plants glabrous ... [*Trillium*](#)
3. Leaves not whorled 6
 6. Leaves sessile or perfoliate 7

- 7. Leaves perfoliate; tepals yellow.....*Uvularia grandiflora*
- 7. Leaves merely sessile; flowers other 8
 - 8. Flowers light pink with dark pink spots; leaves fringed with fine hairs.....*Streptopus roseus*
 - 8. Flowers white or greenish-yellow; leaves entire 9
 - 9. Flowers many, white, in terminal raceme or panicle; fruit a red berry...[*Smilacina*](#)
 - 9. Flowers 1-4, greenish-yellow, on axillary peduncles; fruit a blue-black berry[*Polygonatum*](#)
- 6. Leaves with petioles..... 10
 - 10. Plants trailing or erect herbs or vines, often with supporting tendrils in leaf axils; leaves netted-veined, many, with distinct petioles; flowers several-many, umbellate, greenish-yellow, unisexual; plants dioecious[*Smilax*](#)
 - 10. Plants short, no tendrils; leaves parallel-veined, usually 2, petioles short or nearly absent; flowers few, in racemes, white, perfect, with 2 petals and 2 sepals*Maianthemum canadense*
- 2. Leaves all basal..... 11
 - 11. Flowers large (often more than 5 cm long), often double; tepals orange*Hemerocallis fulva*
 - 11. Flowers usually much smaller, never double, not orange..... 12
 - 12. All parts of plant (especially leaves) strongly onion-scented; leaves linear or broad (if broad, then withering by flowering time); flowers in umbel subtended by involucre bract which envelops all buds.....[*Allium*](#)
 - 12. Plant without onion-scent; leaves present at flowering time; flowers other 13
 - 13. Leaves broad 14
 - 14. Flower solitary; tepals white or bright yellow; done blooming by mid-May; fruit a capsule[*Erythronium*](#)
 - 14. Flowers few to many, white or pale yellow, more persistent; fruit a berry..... 15

15. Fruit a blue berry; flowers 3-6, without distinct scent; leaves 2-5; tepals pale yellow; inflorescence an umbel *Clintonia borealis*
15. Fruit a reddish berry; flowers very fragrant; leaves 2; tepals united, cup-shaped, white; flowers few to many; inflorescence a raceme...*Convallaria majalis*
13. Leaves linear..... 16
16. Inflorescence a panicle; flowers showy, cream white; leaves with coarse fibers emanating from margins; mature plants when in flower more than 1 m tall
.....*Yucca flaccida*
16. Inflorescence a raceme; flowers smaller, less showy white to blue or greenish; leaves entire; plants usually smaller than 1 m 17
17. Flowers and fruits sessile, or on pedicels to 5 mm long; perianth to 10 mm long 18
18. Tepals separate; scape covered with sticky dark glands just below inflorescence.....*Tofieldia glutinosa*
18. Tepals united for at least part of their length; scape without sticky glands 19
19. Flowers white, 5-10 mm long; leaves leathery*Aletris farinosa*
19. Flowers blue, less than 6 mm long; leaves not leathery.....
..... *Muscari botryoides*
17. Flowers and fruits on pedicels 5 mm and more long; perianth usually greater than 8 mm long..... 20
20. Flowers deep blue; plant to 16 cm tall*Scilla sibirica*
20. Flowers white, greenish, or if pale blue, then plants with leaves to 6 dm long. 21
21. Styles 3; tepals with conspicuous dark gland on inner side
.....*Zigadenus elegans*
21. Style 1; tepals without dark gland 22

22. Perianth white, with conspicuous green median stripe; inflorescence less than 1 dm long; flowers 20 or fewer in raceme; flowers not subtended by filiform bracts..... *Ornithogalum umbellatum*

22. Perianth blue or bluish-white, without green median stripe; inflorescence often more than 1 dm long; flowers subtended by filiform bracts; flowers 20 more*Camassia scilloides*

NAJADACEAE [*Najas*](#)

ORCHIDACEAE

1. Lip a large, showy, inflated pouch, 1.5 cm or more long..... [*Cypripedium*](#)

1. Lip not inflated, not pouch-like..... 2

2. Leaves opposite on stem, paired, heart-shaped, sessile *Listera cordata*

2. Leaves alternate, basal, or apparently absent..... 3

3. Inflorescence of small white flowers in a dense spirally twisted raceme [*Spiranthes*](#)

3. Inflorescence not obviously spirally twisted raceme..... 4

4. Lip obviously bearded 5

5. Flowers not resupinate [*Calopogon*](#)

5. Flowers resupinate (lip twisted 180 degrees so it is lowermost) 6

6. Flowers several; single leaf grass-like, often poorly developed at flowering time; leaf-like bracts not present..... *Arethusa bulbosa*

6. Flower solitary; broad solitary leaf; prominent leaf-like floral bract
.....*Pogonia ophioglossoides*

4. Lip not bearded 7

7. Plant without chlorophyll (i.e., saprophytes), leafless; stems red, yellow, brown, or purplish, but not green [*Corallorhiza*](#)

7. Plants with normally green-colored stems and leaves 8

- 8. Lip with definite spur at base..... 9
 - 9. Leaves cauline 10
 - 10. Lip long, forked (twice as long as spur, which is almost concealed); spur a thick, short, rounded pouch, 2-3 mm long; leaves several (3 or more) *Habenaria viridis*
 - 10. Spur slender, 7-11 mm long, longer than lip; or lip not toothed at apex; leaves 1-2 [*Platanthera*](#)
- 9. Leaves all basal, 1 or 2, clasping, shining 11
 - 11. Leaf 1; lip less than 1 cm long, deeply 3-lobed, white with purple spots..... *Amerorchis rotundifolia*
 - 11. Leaves usually 2; lip more than 1 cm long, entire; flowers showy, bicolored; large foliaceous bracts *Orchis spectabilis*
- 8. Lip at most slightly swollen, but not with a spur 12
 - 12. Leaves cauline, present at flowering time 13
 - 13. Leaf 1; perianth less than 4 mm long..... [*Malaxis*](#)
 - 13. Leaves numerous, alternate, clasping; perianth 7-10 mm long *Epipactis helleborine*
 - 12. Leaves basal, or absent at flowering time 14
 - 14. Single large basal leaf (10-15 cm long), developing in fall and over-wintering, then withering before flowering time *Aplectrum hyemale*
 - 14. Leaves 2-several, present at flowering time..... 15
 - 15. Inflorescence a densely-flowered cylindrical spike; flowers white; leaves many, with network of distinct white veins, evergreen..... *Goodyera pubescens*
 - 15. Inflorescence of few flowers in a loose raceme; flowers greenish, purplish, or yellowish; leaves 2, not evergreen, not white-veined..... [*Liparis*](#)

POACEAE

Key To Tribes

1. Inflorescence a single, terminal spike, with spikelets sessile or subsessile along opposite sides of the rachis in two rows (bilateral); spikelets oriented broad-side to the rachis [*Triticeae*](#)
1. Inflorescence not as above; may be spike-like, but short panicle branches will be visible within the spike; or if bilateral, spikelets oriented narrow-side to the rachis (*Lolium perenne*) ...
..... 2
2. Grass with 2 spikelets per node, at least one of which is stalked, the stalked spikelet may be sterile or absent; the fertile spikelets have basal sterile florets; callus of floret usually pubescent or bearded; inflorescences comprised of racemes in various arrangements
..... [*Andropogoneae*](#)
2. Grass with 1 spikelet per node, if 2 or more spikelets per node, then spikelets not stalked; inflorescences various..... 3
3. Ligule composed of a fringe of hairs, or a membrane with small hairs on top, or a membrane with a fringe of hairs behind it (pseudoligule), or ligule completely absent..... 4
4. Inflorescence made up of compound racemes with spikelets all on one side of the rachis (unilateral) 5
5. Two or more spikelets at each node of the raceme; spikelet has a single basal sterile or male floret, in the form of a sterile lemma opposite and equal in length to the upper glume with a reduced palea; fertile lemmas 4 mm or less long; fertile lemmas with 5 veins on back..... [*Paniceae*](#)
5. One spikelet at each node of the raceme; spikelet lacking a basal sterile floret; fertile lemmas 5 mm or more long; fertile lemmas with 3 veins on back [*Cynodonteae*](#)
4. Inflorescence a panicle (may be spike-like but not with spikelets all on one side of the rachis)..... 6
6. Spikelets consist of a single, fertile floret (a fertile floret has both anthers and stigmas or a developing seed), but may have additional sterile or male florets above, below, or adjacent to the fertile floret 7
7. Fertile lemma with 3 terminal awns, the middle awn 5 mm long or greater; inflorescence an open to closed linear panicle [*Aristideae*](#)

7. Fertile lemma with awns one or none; inflorescences various 8
 8. Spikelet has a single basal sterile or male floret, in the form of a sterile lemma opposite and equal in length to the upper glume with a reduced palea; sterile (visible) lemma has 5 or more veins on the back AND/OR the grass has a spiny or bristly involucre below the spikelets [*Paniceae*](#)
 8. Sterile florets absent; grass lacks any kind of involucre below the spikelets; lemma with 3 or fewer veins on back OR has a long, terminal awn at least 5 mm long 9
 9. Ligules absent or a minute membrane up to 0.5 mm long; lemmas with long, terminal awns 5 mm or more long; lemma 5.5-7 mm long..... [*Stipeae*](#) (*Oryzopsis*)
 9. Ligules a hairy fringe or a ciliolate membrane, usually over 0.5 mm long; lemmas awnless, or if with an awn, then lemma is less than 4 mm long [*Eragrosteae*](#)
6. Spikelets consist of 2 or more fertile florets, but may have additional sterile florets above or adjacent to the fertile florets 10
 10. Glumes longer than the spikelet; the upper glume 2.5-3 times the length of the adjacent fertile lemma; principle lemma awn 5 mm long or longer... [*Danthoniaceae*](#)
 10. Glumes shorter than the spikelet; the upper glume equal to or less than the length of the adjacent fertile lemma; largest (lower) lemmas lacking awns or at most 2 mm long..... 11
 11. Large, colonial grass at least 1.5 m tall; fertile lemmas 9-13 mm long; leaf blades cauline and deciduous at the ligule; both upper and lower glumes not keeled (i.e., rounded in cross-section)[*Arundineae*](#) (*Phragmites*)
 11. Smaller, tufted grasses less than 1 m tall; fertile lemmas less than 4 (4.1) mm long; leaf blades not cauline or deciduous; at least the upper glume and usually the lower glume keeled (i.e., folded in half) [*Eragrosteae*](#)
3. Ligule composed of a membrane, lacking hairs..... 12
 12. Spikelets consist of a single, fertile floret (a fertile floret has both anthers and stigmas or a developing seed); but may have additional sterile or male florets above, below, or adjacent to the fertile floret) 13
 13. At least the upper glume present; if lower glume absent, then the upper glume is more than a third of the length of the spikelet 14

14. Lower glume is 0 to 0.75 times the length of the upper glume and generally triangular in shape; spikelet has a single basal sterile floret in the form of a sterile lemma with a reduced palea; the sterile lemma is opposite and equal in length to the upper glume (or sometimes the fertile lemma); if sterile lemma has an awn, then it is terminal [Paniceae](#)
14. Lower glume 0.5 to 1.2 times the length of the upper glume; sterile florets absent, or if present, then spikelet with either 2 basal sterile florets or with one basal sterile floret with a dorsal awn 15
15. Fertile lemmas with 3 veins AND the glumes shorter than the spikelet, up to 0.75 the length of the adjacent fertile lemma; if glumes equal to or slightly longer than the spikelet, then the glumes each have terminal awns [Eragrostae](#)
15. Fertile lemmas with 4-7 veins, OR if 3 veins or if veins indistinct, then at least the upper glume equal to or longer than the spikelet and glumes lacking awns..... 16
16. Lemmas with long, terminal awns that are 5 -200 mm long [Stipeae](#)
16. Lemmas with awns dorsal, subterminal, or absent 17
 17. Lemmas rounded on back, shiny, thickened or leathery compared to the glumes; lemma awns absent; glumes with whitish margins; inflorescence an open panicle.....[Stipeae](#) (*Milium*)
 17. Lemmas rounded or keeled and of the same texture as the glumes or thinner than the glumes; lemma awns present or absent; glumes and inflorescences various..... [Aveneae](#)
13. Both the upper and lower glumes absent or obscure, although the upper glume may be up to a third of the length of the spikelet 18
18. Upper and lower glumes rudimentary; floret callus minutely pilose; lemma awns present; all florets perfect; florets with 2 anthers .. [Brachyelytreae](#) (*Brachyelytrum*)
18. Upper and lower glumes completely absent; floret callus not evident and not pilose; lemma awns present or absent; male and female florets on separate branches of the inflorescence OR perfect florets that are strongly flattened; florets with 0, 3, or 6 anthers.....[Oryzeae](#)
12. Spikelets consist of 2 or more fertile florets (may have additional sterile florets above or adjacent to the fertile florets) 19

19. Spikelets with only 2-3 fertile florets; glumes usually equal to or longer than the lowest floret; lemma awns often present, the principal lemma awn dorsal, occurring about 0.2-0.66 of the way up the back of the lemma [Aveneae](#)
19. Spikelets usually with 3 or more fertile florets; glumes usually shorter than the lowest floret; lemma awns, if present, are always terminal or subapical..... 20
20. Size of lowest fertile lemmas greater than 7 mm long (sometimes 6 mm in *Bromus secalinus* and *Bromus racemosus*) 21
21. Callus of floret with a short beard of straight hairs, 1-2 mm long; leaves 1-2 mm wide, involute or folded.....[Meliceae](#) (*Schizachne*)
21. Callus of floret glabrous or not evident; leaves usually wider and flat 22
22. Tip of lemmas with two teeth (may be fused), usually with a subapical awn arising from between the teeth; the tip of the mature grain pubescent.....
..... [Bromeae](#)
22. Tip of lemma not toothed, with awn absent or strictly terminal (arising from the tip of the lemma); the tip of the mature grain glabrous..... [Poeae](#) (*Festuca*)
20. Size of lowest fertile lemmas 7 mm long or shorter..... 23
23. Lemmas with 7 prominent veins that are parallel at the tip of the lemma 24
24. Inflorescence composed of compound racemes; plants creeping; sheaths open for most of their length..... [Poeae](#) (*Sclerochloa*)
24. Inflorescence composed of linear to open panicles; erect perennials; sheaths of leaves closed almost their entire length [Meliceae](#)
23. Lemmas with 3 or 5 veins 25
25. Fertile lemmas with 5 veins and usually a cobwebby base; leaf tips boat-shaped.....[Poeae](#)
25. Fertile lemmas with 3 veins (look near tip of lemma when counting veins) and base with or without hairs, but not cobwebby; leaf tips various..... 26
26. Inflorescence a spike-like panicle; 2-3 fertile florets per spikelet; lemmas with or without awns, if awned, then terminal and up to 0.4 mm long
..... [Aveneae](#) (*Koeleria macrantha*)

26. Inflorescences not a spike-like panicle, composed of unilateral racemes; lemmas with or without awns, if awned, then subapical between two teeth and up to 1.6 mm long..... [Eragrosteae](#)

Andropogoneae

1. Male and female inflorescences separate, with a male inflorescence at the top of the plant and female inflorescences in the form of ears on the stalk of the plant; cauline leaves 20 to 100 mm wide *Zea mays*
1. Male and female spikelets in the same inflorescence; leaves cauline or not, of various widths 2
2. Two fertile, stalked spikelets of different lengths at each node of the inflorescence; callus and glumes of spikelet with long, silky, white hairs that are 2 to 4 times the length of the spikelet; inflorescence of sub-digitate racemes *Miscanthus sacchariflorus*
2. One fertile, sessile spikelet and one sterile or male, stalked spikelet at each node of the inflorescence; inflorescences various 3
3. One fertile, sessile spikelet and the sterile spikelet in the form of a 1-2 empty pedicels; inflorescence an open panicle tipped with racemes; fertile spikelets with a bearded callus (i.e., has long straight hairs of more or less the same length); ligule and auricles cartilaginous.....*Sorghastrum nutans*
3. One fertile, sessile spikelet and the sterile spikelet a stalked, reduced floret or appendage; inflorescences various; callus of fertile spikelets glabrous to pilose but not bearded; ligule membranous (although may be ciliate on top) and auricles absent 4
4. Inflorescence an open to closed panicle with branches tipped with racemes; leaves cauline[Sorghum](#)
4. Inflorescence a collection of linear or of digitate racemes; leaves mostly basal 5
5. Inflorescence consisting of digitate racemes; the stalked reduced floret male and almost as large as the fertile floret.....*Andropogon gerardii*
5. Inflorescence a collection of racemes that is more or less linear; the stalked floret sterile, consisting of 1-2 glumes only and appears to be a hairy appendage
.....*Schizachyrium scoparium*

Aveneae

1. Fertile lemma 7 mm long or greater 2
2. Two to three fertile florets per spikelet; fertile lemmas 14 mm long or greater [Avena](#)
2. Only one fertile floret per spikelet; fertile lemmas 7-12 mm long 3
 3. Sterile floret present beneath fertile floret; sterile floret with dorsal awn 10-20 mm long, fertile floret with shorter dorsal awn; inflorescence an open panicle *Arrhenatherum elatius*
 3. Sterile florets absent; lemma awn absent; inflorescence a spike-like panicle; a plant of beaches and dunes *Ammophila breviligulata*
1. Fertile lemma less than 7 mm long..... 4
 4. Inflorescence of compound, unilateral racemes borne from a central axis..... *Beckmannia syzigachne*
 4. Inflorescences spike-like to open panicles 5
 5. Spikelets with two basal, sterile florets beneath a single fertile floret (sterile florets of *Phalaris arundinacea* much reduced, 0.5-2 mm long)..... 6
 6. Twisted, dorsal awns on sterile lemmas, 6-9 mm long; upper glume 3-5 times the length of the fertile lemma..... *Anthoxanthum odoratum*
 6. Sterile lemmas lacking any kind of awn; upper glume 1.2-1.6 times the length of the fertile lemma..... 7
 7. Inflorescence an open panicle with spreading to drooping branches; basal florets slightly longer than the fertile floret above and with pectinate hairs along their edges *Hierochloe odorata*
 7. Inflorescence a compact spike-like panicle (branches may be slightly spreading when in flower); basal florets sterile and much reduced (0.5-2 mm long) and may be bearded [Phalaris](#)
 5. Spikelets with 1-3 fertile florets and no basal sterile florets..... 8
 8. Spikelets with 2 or 3 fertile florets each 9
 9. Inflorescence a compact, spike-like panicle; ligule a membrane less than 1 mm long; lemmas with 3 veins; lemmas with or without awns *Koeleria macrantha*

9. Inflorescence a closed to open panicle; ligule a membrane 1.5 mm long or greater; lemmas with 5 veins (but may be indistinct); lemmas with or without awns 10
10. Lemmas with awns arising from near the base of the lemma, only visible upon dissection of spikelet; glumes equal to or longer than the florets.....
..... *Deschampsia caespitosa*
10. Lemmas lacking awns; glumes shorter than the florets 11
11. Callus at base of florets bearded, with long straight hairs one third to one half the length of the lemma; upper and lower glumes elliptic; florets articulated above the glumes, leaving empty glumes behind when mature..... *Trisetum melicoides*
11. Callus at base of florets not bearded; upper glume obovate (i.e., wedge shaped), wider than the linear lower glume; florets articulated below the glumes, glumes falling with the mature seeds [*Sphenopholis*](#)
8. Spikelets with only 1 fertile floret each 12
12. Spikelets nearly sessile in a compact, spike-like panicle 13
13. Upper and lower glumes awned at the tip, awns 1-2 mm long; lemmas lacking awns; articulated above the glumes..... *Phleum pratense*
13. Upper and lower glumes lacking awns; lemmas with awns arising from less than half way up from the base of lemma (may need to dissect the spikelet to see it); articulated below the glumes (i.e., glumes fall with spikelet when mature)
..... [*Alopecurus*](#)
12. Spikelets on pedicels in a more or less open panicle 14
14. Inflorescence an open panicle with whorled branches, or with very long, spreading panicle branches; lemmas lacking awns; lemmas less than 2.5 mm long..... [*Agrostis*](#)
14. Inflorescence an open to closed panicle; lemmas with awns; lemmas 2.5 mm or greater..... 15
15. Callus at base of floret bearded with hairs more than half the length of the lemma; 3 anthers per floret..... [*Calamagrostis*](#)
15. Callus at base of floret glabrous; only 1 anther per floret..... [*Cinna*](#)
- Aristideae*** [*Aristida*](#)

Arundineae *Phragmites australis*

Brachyelytreae *Brachyelytrum erectum*

Bromeae [*Bromus*](#)

Cynodonteae

1. Tufted grass of dry habitats; inflorescence of compound, dangling, unilateral racemes; fertile lemmas 5-7 mm long, with 1-3 awns; upper glume 1-1.1 times the length of the adjacent lemma [*Bouteloua*](#)

1. Rhizomatous grass of wet habitats; inflorescence of compound, erect, unilateral racemes; fertile lemmas 6-12 mm long, lacking awns, although the glumes may be awned instead; upper glume 1.5 times the length of the adjacent lemma *Spartina pectinata*

Danthonieae *Danthonia spicata*

Eragrosteae

1. Ligule a fringe of hairs and lacking a membrane 2

2. Only 1 fertile floret per spikelet 3

3. Callus of floret with a beard of hairs more than half the length of the lemma; a rhizomatous perennial; leaves 5-12 mm wide *Calamovilfa longifolia*

3. Callus of floret without a beard; tufted annuals or perennials; leaves generally less than 5 mm wide 4

4. A creeping annual with a spike-like panicle; florets articulated below the glumes *Heleochloa schoenoides*

4. Upright annuals or perennials with open panicles or panicles that are included in the uppermost leaf sheath; florets articulated above the glumes [*Sporobolus*](#)

2. Two or more fertile florets per spikelet 5

5. Size of fertile lemmas 3.6 mm long; lemmas often have a small awn (0.5 mm long) from between two teeth; callus of floret pubescent *Triplasis purpurea*
5. Size of fertile lemmas 2.8 mm long or less; lemmas lacking awns; lacking pubescent callus [Eragrostis](#)
1. Ligule a membrane, or a membrane with small hairs on top (may need 30X magnification to see) 6
6. Inflorescence composed of unilateral, digitate racemes; two spikelets arising from each node; 2-3 fertile florets per spikelet *Eleusine indica*
6. Inflorescences otherwise; only one spikelet per node 7
7. Number of fertile florets 6-11 per spikelet *Diplachne acuminata*
7. Only 1 fertile floret per spikelet [Muhlenbergia](#)

Meliceae

1. Lemmas lacking awns; callus of floret lacking a definite beard [Glyceria](#)
1. Lemma with subapical awn, 12-20 mm long; callus of floret with a definite beard *Schizachne purpurascens*

Oryzeae

1. Inflorescence a panicle with perfect spikelets; sheaths and leaf blades scabrous; fertile lemmas with 5 veins; 3 anthers per floret [Leersia](#)
1. Inflorescence of male and female spikelets on separate branches of the same panicle; sheaths and leaf blades not scabrous; fertile lemmas with 3 veins; 6 anthers per floret [Zizania](#)

Paniceae

1. Inflorescence a spike-like panicle; spikelets with an involucre composed of a spiny bur or of long bristles at the base 2
2. Involucre a spiny bur that covers most of the spikelets *Cenchrus longispinus*

2. Involucre of 1-8 long bristles that are located just below the spikelets..... [Setaria](#)
1. Inflorescence an open panicle or a collection of racemes; spikelets lacking a specialized involucre 3
3. Inflorescence a collection of racemes, with 2-4 spikelets per node of the inflorescence 4
 4. Racemes of inflorescence with spikelets weakly unilateral (spikelets crowded along the rachis); lemmas usually awned; ligule absent [Echinochloa](#)
 4. Racemes of inflorescence strongly unilateral (spikelets neatly packed on one side of a leafy, 1+ mm wide, rachis); lemmas lacking an awn; ligule a membrane or a membrane with short hairs on top..... 5
 5. Racemes digitate; rachis merely scabrous on margins..... [Digitaria](#)
 5. Racemes arising from a central axis; rachis very pubescent on surface .. *Eriochloa villosa*
3. Inflorescence an open panicle, with definite panicle branches present 6
 6. Ligule a membranous collar without hairs, 1-1.5 mm tall; lower glume less than 0.5 mm long or absent; spikelets narrow; panicle branches turn a pinkish color when mature [Leptoloma cognatum](#)
 6. Ligule absent, or composed of a combination of hairs and membranes, ranging from 0.1 to 4.2 mm long; spikelets usually ovate; lower glumes various; panicle branches remain green when mature (except for *Panicum capillare*) 7
 7. Panicles forming at the top of the culms after midsummer; upper florets falling off the panicle at maturity and/or not plump; spikelets glabrous and pointed at their tip [Panicum](#)
 7. Panicles forming at the top of the culms in late spring, with additional panicles arising from the lower and middle cauline nodes in summer and fall; upper florets plump and not falling off the panicle at maturity; leaves often with a pseudoligule of hairs 1-5 mm long behind the first ligule (visible at 30X magnification); spikelets with at least some pubescence at their margins (except for sometimes *D. depauperatum*); spikelets rounded at their tip..... [Dichanthelium](#)

Poeae

1. Spikelets in pairs at each node, one fertile spikelet and one sterile fan-like spikelet; inflorescence a spike-like panicle *Cynosurus cristatus*
1. Only one fertile spikelet at each node 2
2. Inflorescence a bilateral raceme of sessile spikelets, the spikelets oriented with their narrow edge toward the rachis; only 1 glume present on the outer side of the spikelet
..... *Lolium perenne*
2. Inflorescence not a bilateral raceme; two glumes present on spikelet 3
3. Inflorescence a compound, unilateral raceme; a tufted, mat-forming annual; tips of lemmas obtuse..... *Sclerochloa dura*
3. Inflorescence a more or less open panicle with panicle branches evident; plants tufted or not, annual or perennial; tips of lemmas acute or obtuse 4
4. Spikelets clumped together at the ends of naked panicle branches; lemmas 4-7 mm long, with or without a short awn; leaf sheaths keeled and often closed; ligule a membrane 2-8 mm long *Dactylis glomerata*
4. Spikelets not clumped together at the ends of naked panicle branches; lemmas of various lengths, with or without an awn; leaf sheaths open (keeled or not); ligule a membrane of varying lengths 5
5. Callus of florets with a crinkly, woolly pubescence (except for *Poa annua* and *Poa compressa*, which may be glabrous); fertile lemmas (2.0) 2.5-4 mm long, keeled (i.e., midvein more prominent than side veins and somewhat folded in half); lemma awns absent..... [*Poa*](#)
5. Callus of florets glabrous; fertile lemmas of varying lengths, not keeled; lemma awns may be present, if so, then terminal 6
6. Fertile lemmas 1.7-2.5 mm long, tips obtuse and erose (i.e., ragged); apex of lower and upper glumes obtuse *Puccinellia distans*
6. Fertile lemmas 3.0 mm long or greater, tips acute or obtuse; apex of at least the upper glume acute..... 7
7. Florets with three anthers each; plant a perennial, with the previous year's dead sheaths visible at the base of the plant [*Festuca*](#)

7. Florets have only one anther each; plant an annual, lacking dead sheaths from a previous year.....*Vulpia octoflora*

Stipeae

1. Fertile lemmas 2.5-4 mm long; lemma awns lacking *Milium effusum*
1. Fertile lemmas 5-25 mm long; lemma awns present, 10-200 mm long..... 2
2. Glumes the same length as the spikelet; lemma awns less than 25 mm long [*Oryzopsis*](#)
2. Glumes longer than the spikelet; lemma awns 25 mm long or greater [*Stipa*](#)

Triticeae

1. Three spikelets per node, with 1-3 of the spikelets fertile; rachis breaking up at maturity [*Hordeum*](#)
1. One or two spikelets per node, both fertile; rachis persistent after spikelets have fallen 2
2. Nodes spaced apart along rachis; two spikelets per node, both fertile; glumes absent or reduced to short bristles; lemmas with long, straight awns, 10-40 mm long, that spread horizontally away from the rachis *Hystrix patula*
2. Nodes packed close together so that spikelets overlap; 1-2 spikelets per node; glumes present; lemma awns various..... 3
3. Two spikelets per node of the rachis (each spikelet with 1-6 (12) florets each)..... [*Elymus*](#)
3. One spikelet per node of the rachis (each spikelet with 2-12 florets each)..... 4
4. Perennial wild grasses; seeds falling at maturity [*Elymus*](#) (*Agropyron*, *Elytrigia*)
4. Annual cereal crops escaped from cultivation; persistent seeds 5
5. Lemmas and both glumes with awns; lower and upper glumes with 1 vein; glumes linear, less than 3.3 mm wide *Secale cereale*
5. Lemmas and/or glumes may or may not have awns; lower and upper glumes with 5-7 veins; glumes ovate, over 3.5 mm wide *Triticum aestivum*

PONTEDERIACEAE

1. Leaves lanceolate to ovate, $\pm$ cordate, basal, emergent, more than 1 cm wide; flowers blue, clustered in a dense inflorescence; fruit 1-seeded..... *Pontederia cordata*
1. Stem leafy; leaves linear, submersed, less than 1 cm wide; flowers yellow, solitary; fruit many-seeded..... *Zosterella (Heteranthera) dubia*

POTAMOGETONACEAE (ZOSTERACEAE)

1. Leaves opposite or whorled, submersed; flowers all axillary, unisexual; stamen 1
..... *Zannichellia palustris*
1. Leaves all or chiefly alternate (uppermost sometimes opposite); flowers in terminal spike or cluster; flowers perfect..... 2
2. Flowers several to many in a panicle spike; perianth of 4 tepals; fruit $\pm$ sessile; leaves linear to ovate..... [*Potamogeton*](#)
2. Flowers 2; perianth none; fruit on long pedicels; leaves stiff, filiform..... *Ruppia cirrhosa*

SPARGANIACEAE [*Sparganium*](#)

TYPHACEAE [*Typha*](#)

KEY TO DICOT FAMILIES

1. Plants woody (or at least semi-woody); stems persisting through winter and growing next season; trees, shrubs, and woody vines [WOODY DICOTS](#)
1. Plants herbaceous (i.e., not woody); above ground parts usually not persisting through winter and growing again next season [HERBACEOUS DICOTS](#)

KEY TO WOODY DICOTS

1. Leaves opposite or whorled 2
 2. Leaves simple [Key A](#)
 2. Leaves compound [Key B](#)
1. Leaves alternate 3
 3. Leaves simple [Key C](#)
 3. Leaves compound [Key D](#)

Key A. Leaves Opposite or Whorled; Simple

1. Plants much reduced, semi-parasitic chiefly on spruce species; ordinary roots lacking; leaves minute, scale-like, semi-circular, about 1 mm wide, connate; fruit an ovoid one-seeded berry, about 3 mm long.....*Arceuthobium pusillum*
1. Plants of normal size, not with the above combination of characteristics 2
2. Leaves lobed..... 3
3. Leaves pinnately lobed (many leaves may not be lobed); low shrubs; fruit a berry.....
.....[*Symphoricarpos*](#)
3. Leaves palmately lobed; trees and upright shrubs; fruit dry or fleshy..... 4
4. Leaf blades less than 20 cm long; shrubs or trees; fruit a samara or berry 5
5. Petioles with stipules and glands, or, if without, then the lower surface densely pubescent; fruit a drupe; shrubs[*Viburnum*](#)
5. Petioles without stipules and glands; fruit a samara; trees or tall shrubs [*Acer*](#)
4. Leaf blades greater than 20 cm long; leaves with long tapering tips, usually in whorls of three; fruit a long capsule; large tree *Catalpa speciosa*
2. Leaves not lobed 6
6. Climbing, creeping, or prostrate vines..... 7
7. Climbing vines 8
8. Aerial rootlets present; fruit a capsule *Euonymus fortunei*
8. Aerial rootlets absent; fruit a berry [*Lonicera*](#)
7. Prostrate, creeping, or mat-forming vines 9
9. Leaves entire (or slightly undulate) 10
10. Leaves and young stems strongly pubescent; fruit a black berry... *Lonicera japonica*
10. Leaves and stems glabrous, or nearly so; stems slightly woody; fruit not as above11
11. Leaf bases cordate or rounded; fruit a red berry; flowers white

.....	<i>Mitchella repens</i>
11. Leaf bases narrow or cuneate; fruit a follicle; flowers violet	<i>Vinca minor</i>
9. Leaves crenate or serrate	12
12. Leaves rounded-oval, crenate; branches brownish pubescent; stems slender, creeping, slightly woody	<i>Linnaea borealis</i>
12. Leaves oblanceolate, strongly toothed; branches glabrous	13
13. Leaves opposite; stems with longitudinal ridges, giving a square effect in cross-section	<i>Euonymus</i>
13. Leaves in false whorls; stems terete	<i>Chimaphila umbellata</i>
6. Upright trees or shrubs	14
14. Leaves entire	15
15. Leaves 15-50 cm long, with long tapering tips; fruit a long capsule; flowers showy; tree	<i>Catalpa speciosa</i>
15. Leaves less than 15 cm long; fruits and flowers not as above; shrubs	16
16. Leaves and twigs covered with silvery or rusty scales	<i>Shepherdia canadensis</i>
16. Leaves and twigs without silvery or rusty scales	17
17. Twigs flattened; leaves $\pm$ sessile, leathery, persistent	<i>Kalmia polifolia</i>
17. Branchlets not flattened; leaves with distinct petioles; deciduous	18
18. Leaves often in whorls of 3; flowers and fruit a globose head; lateral buds embedded in bark	<i>Cephalanthus occidentalis</i>
18. Leaves strictly opposite; flowers and fruit not as above; lateral buds axillary	19
19. Bark loose, peeling; fruit a berry	20
20. Twigs closely branched, very slender; one bundle scar	<i>Symphoricarpos</i>
20. Twigs not closely branched, of medium thickness; 3 bundle scars	

.....	<u>Lonicera</u>
19. Bark smooth, tight; fruit various.....	21
21. Leaves with lateral veins running $\pm$ parallel with margin and meeting near apex.....	<u>Cornus</u>
21. Leaves with lateral veins running to margin, not running to apex.....	22
22. Lower leaf surface (especially midrib) scurfy, rusty-brown, woolly, or glandular; leaf margin often finely toothed; fruit a drupe	<u>Viburnum</u>
22. Leaves not as above; fruit a berry or a capsule	23
23. Fruit a berry; corolla campanulate, bright yellow; a multi-stemmed shrub	<i>Ligustrum vulgare</i>
23. Fruit a capsule; corolla salver-form or funnel-form, white or pale yellow; reaches small tree size	<i>Syringa reticulata</i>
14. Leaf margins serrate or dentate	24
24. Petiole bases of opposite leaves joined by a distinct transverse line	25
25. Buds embedded beneath petiole base, not axillary	<i>Philadelphus coronarius</i>
25. Buds axillary, not embedded	26
26. Decurrent, ciliate ridge from transverse line connecting petiole bases; fruit a capsule	<i>Diervilla lonicera</i>
26. Decurrent ridge, as above, absent.....	<u>Viburnum</u>
24. Petiole bases of opposite leaves without distinct transverse line	27
27. Some of twigs and branchlets ending in $\pm$ sharp spines or thorns; inner bark yellow; fruit a dark berrylike drupe	<i>Rhamnus cathartica</i>
27. Plants unarmed; inner bark other; fruit not as above.....	<u>Euonymus</u>

Key B. Leaves Opposite or Whorled; Compound

1. Leaflets three 2
 2. Climbing or twining vine; fruit a plumose achene *Clematis virginiana*
 2. Small upright trees or tall shrubs (not climbing or twining); fruit a three-lobed inflated capsule *Staphylea trifolia*
1. Leaflets usually more than three 3
 3. Leaves palmately compound; fruit a leathery capsule with a single large, shiny, nut-like seed [*Aesculus*](#)
 3. Leaves pinnately compound; fruit not as above 4
 4. Stems climbing; leaflets 9-11; flowers large, showy, red; fruit a capsule, 8-12 cm long *Campsis radicans*
 4. Erect trees or shrubs; leaflets various; flowers and fruit not as above 5
 5. Pith very large; bark with large, raised, corky lenticels; white flowers in cymes; fruit berry-like; shrubs [*Sambucus*](#)
 5. Pith small; lenticels not raised; flowers inconspicuous; fruit a samara; trees 6
 6. Leaflets 3-5 (9), lobed or coarsely toothed; twigs often with glaucous bloom; fruit a double samara *Acer negundo*
 6. Leaflets 5-11, ± entire or finely toothed; twigs not glaucous; fruit a single samara [*Fraxinus*](#)

Key C. Leaves Alternate; Simple

1. Leaves lobed..... 2
2. Climbing or twining vines..... 3
 3. Leaves with one or more lateral lobes; fruit a red berry; semi-woody
..... *Solanum dulcamara*
 3. Leaves palmately lobed and veined; fruit dark; woody..... 4
 4. Tendrils present; fruit a berry; leaves toothed, with distinct lobes [*Vitis*](#)
 4. Tendrils wanting; fruit a drupe; leaves peltate, entire, with indistinct lobes
..... *Menispermum canadense*
2. Trees or shrubs, erect or prostrate 5
5. Leaves palmately lobed and veined..... 6
 6. Petiole bases hollow, so that axillary buds are wholly covered; bark of trunk exfoliating in large patches; fruit a globose cluster of achenes *Platanus occidentalis*
 6. Petiole bases not hollow, and axillary buds not hidden; fruit and bark not as above 7
 7. Lower surface of leaves densely white-tomentose *Populus alba*
 7. Lower leaf surfaces not white-tomentose..... 8
 8. Older bark close, not peeling; plants often armed [*Ribes*](#)
 8. Older bark separating in numerous thin layers; plants unarmed..... 9
 9. Leaves and twigs glandular-clammy; fruit an aggregate *Rubus odoratus*
 9. Leaves and twigs not as above; fruit an inflated pod *Physocarpus opulifolius*
5. Leaves pinnately lobed 10
10. Leaves with three main veins from near base, usually with 1-few lateral lobes 11
11. Lobes entire; leaves and bark spicy-aromatic; bark of branchlets smooth, green; fruit a drupe *Sassafras albidum*

11. Lobes serrate; leaves without spicy odor; bark of branchlets not green fruit other	12
12. Sap milky; lobes rounded or pointed; plants unarmed; fruit a multiple (an aggregation of drupelets)	Morus
12. Sap not milky; lobes pointed; plants often armed; fruit a pome	<i>Pyrus communis</i>
10. Leaves with one large main vein (midrib), variously lobed	13
13. Leaves pinnately lobed, with three or more lobes per side	14
14. Leaves 10-20 cm long; buds clustered at end of twigs; unarmed trees; fruit an acorn	Quercus
14. Leaves 4-10 cm long; buds not clustered; fruit a pome; shrubs, or small trees, often armed	Crataegus
13. Leaves not pinnately lobed (or up to three lobes per side).....	15
15. Leaves with truncate apex; flowers large, green-yellow-orange; large unarmed trees	<i>Liriodendron tulipifera</i>
15. Leaves not truncate; flowers not as above; shrubs or small trees, often armed	Crataegus
1. Leaves not lobed	16
16. Leaves entire	17
17. Leaves evergreen, leathery, often revolute.....	18
18. Low, creeping, prostrate shrubs	19
19. Lower leaf surfaces glaucous	Vaccinium
19. Lower leaf surfaces green	<i>Arctostaphylos uva-ursi</i>
18. Stems erect	20
20. Lower leaf surfaces covered with dense woolly, rusty-brown hairs	<i>Ledum groenlandicum</i>
20. Leaves white on lower surface.....	<i>Andromeda glaucophylla</i>

17. Leaves deciduous, not especially leathery nor revolute.....	21
21. Leaves and young twigs covered with silvery and/or brown scales; often thorny; fruit drupe-like	<i>Elaeagnus</i>
21. Plants not with above combination of characteristics	22
22. Leaves with 3-7 large veins from base	<i>Celtis occidentalis</i>
22. Leaves with midrib only	23
23. Vine or lax shrub	24
24. Leaves ovate, bases often cordate or lobed	<i>Solanum dulcamara</i>
24. Leaves oblong or lanceolate with cuneate bases	<i>Lycium barbarum</i>
23. Erect shrub or tree	25
25. Twigs and leaves with milky sap; plants armed; fruit a large, greenish multiple.....	<i>Maclura pomifera</i>
25. Stems and leaves without milky sap; plants armed or not.....	26
26. Stems armed with sharp stipular spines (1-3 per fascicle); leaves in fascicles; fruit a red berry	<i>Berberis</i>
26. Stems unarmed; fruit not as above	27
27. Base of petioles hollow, covering the lateral buds; bark very fibrous and leathery (twigs easily twisted without breaking)	<i>Dirca palustris</i>
27. Petiole bases not hollow, buds axillary; bark not at above	28
28. Lateral veins running parallel to leaf margins and ending near apex	<i>Cornus alternifolia</i>
28. Lateral veins breaking up prior to reaching leaf margins, not running to apex.....	29
29. Pith of twigs chambered	<i>Nyssa sylvatica</i>
29. Pith continuous	30

30. Stipules small, spine-like; fruit a red berry	<i>Ilex verticillata</i>
30. Stipules and fruit not as above	31
31. Buds with single scale	<i>Salix</i>
31. Buds with two or more scales.....	32
32. Leaf blades larger (8-20 cm long).....	33
33. Leaves ovate to lanceolate; flowers regular; stamens 15-50; fruit a fleshy pome	<i>Pyrus communis</i>
33. Leaves heart-shaped; flowers irregular and pea-like; stamens 10; fruit a dry pod	<i>Cercis canadensis</i>
32. Leaf blades small (1-10 cm long).....	34
34. Petioles 1-4 cm long.....	<i>Nemopanthus mucronatus</i>
34. Petioles less than 1 cm long, or leaves sessile	35
35. Lower surface of leaves with yellow resinous dots	<i>Gaylussacia baccata</i>
35. Lower surface of leaves not as above	36
36. Branchlets greenish or reddish and minutely white-speckled or hairy, or buds subglobose and spreading; fruit a berry	<i>Vaccinium</i>
36. Branchlets not as above; fruit a drupe	<i>Rhamnus</i>
16. Leaves usually toothed, not entire	37
37. Plants armed	38
38. Twigs and branches with branched spines; inner bark yellow; fruit a red berry	<i>Berberis</i>
38. Twigs and branches with thorns; bark and fruit not as above	39
39. Petioles with glands near base of blade; fruit a drupe.....	<i>Prunus</i>

39. Petioles without glands; fruit a pome.....	40
40. Thorns on twigs and branches, without lateral buds	<i>Crataegus</i>
40. Thorns on branches only; thorns usually with leaves or with lateral buds	<i>Pyrus communis</i>
37. Plants unarmed	41
41. Climbing vines; fruit an orange capsule (aril)	<i>Celastrus</i>
41. Shrubs or trees, not climbing; fruit not as above	42
42. Stems low (1-2 dm tall), only semi-woody; leaves persistent, leathery, glossy	43
43. Leaves oval, with wintergreen flavor; fruit a red berry	<i>Gaultheria</i>
43. Leaves oblanceolate, without wintergreen flavor; fruit a capsule	<i>Chimaphila umbellata</i>
42. Stems taller (greater than 2 dm tall), woody; leaves deciduous, not particularly glossy or leathery	44
44. Leaves with 3-5 nearly equal main veins from base	45
45. Low shrub, much branched; fruit a capsule.....	<i>Ceanothus americanus</i>
45. Trees or tall shrubs; fruit not as above	46
46. Sap milky; fruit a fleshy multiple.....	<i>Morus</i>
46. Sap not milky; fruit not as above	47
47. Leaves long, tapered to a point; pith usually chambered; bark with conspicuous corky ridges; fruit a drupe.....	<i>Celtis occidentalis</i>
47. Leaves $\pm$ as long as broad, cordate; pith continuous; bark without corky ridges; fruit a small nut with attached wing-like leaf	<i>Tilia americana</i>
44. Leaves with one main vein (midrib).....	48
48. Buds distinctly stalked.....	49

49. Leaves crenate-dentate to wavy, bases oblique; buds sickle-shaped, woolly; fruit a 2-celled woody pod; flowers produced in fall..... *Hamamelis virginiana*
49. Leaves serrate to wavy, bases equal; buds club-shaped, not woolly, often $\pm$ sticky; fruit a small nutlet in persistent cone-like structures[Alnus](#)
48. Buds not stalked..... 50
50. Leaf bases unequal; leaves 2-ranked, mostly doubly-serrate; fruit a small, round samara [Ulmus](#)
50. Leaf bases $\pm$ equal; leaves and fruit not as above 51
51. Buds naked; fruit a berry-like drupe [Rhamnus](#)
51. Buds scaly; fruit not as above 52
52. Buds covered by a single scale.....[Salix](#)
52. Buds covered by two or more scales 53
53. Leaves coarsely dentate or serrate, but never doubly serrate..... 54
54. Leaves short, broad..... 55
55. Petioles flattened, or marginal teeth incurved; not armed; fruit a capsule[Populus](#)
55. Petioles not flattened; marginal teeth not incurved; often armed; fruit a pome[Crataegus](#)
54. Leaves elongated 56
56. Terminal buds clustered; bark rough; fruit an acorn..... [Quercus](#)
56. Buds not clustered; bark smooth or not; fruit a 4-valved prickly bur
..... 57
57. Leaves oblong-ovate, usually less than 2 times longer than wide, without slender points on teeth; buds long, sharp-pointed; terminal bud present; bark smooth, gray; bud with two triangular nuts.....
..... *Fagus grandifolia*

57. Leaves oblong-lanceolate, usually at least 2 times longer than wide, with slender points on teeth (often incurving); buds ovate, blunt; terminal bud absent; bark brown, rough, furrowed; bur with 1-3 nuts .
.....*Castanea dentata*
53. Leaves not coarsely toothed, but finely serrate, doubly serrate, or crenate 58
58. Leaf bases broad, cordate, or nearly truncate..... 59
59. Petioles with glands near leaf blade [*Prunus*](#)
59. Petioles eglandular..... 60
60. Leaf margins evenly toothed; leaves in more than two ranks 61
61. Leaves broadly triangular; petioles flattened; large tree
.....*Populus deltoides*
61. Leaves not triangular; petioles not flattened; shrubs or small trees 62
62. Leaves 1-4 cm long; fruit a berrylike pome [*Amelanchier*](#)
62. Leaves 5-8 cm long; fruit a pome..... *Pyrus communis*
60. Leaves unevenly toothed, mostly doubly-toothed, and 2-ranked
..... 63
63. Branches of mature trees with corky ridges..... *Ulmus thomasii*
63. Corky ridges absent..... 64
64. Bark often peeling off in thin papery layers; lenticels elongated horizontally; fruit a small samara in cone-like catkins; branches with short spurs bearing two leaves or crowded leaf scars, terminated by a single bud [*Betula*](#)
64. Bark never peeling in rolls; lenticels, fruit, and buds not as above; branches without short spurs 65
65. Leaves ovate to ovate-oblong, hairy, not tapered to a point; twigs with bristle hairs; shrubs; fruit a nut within a husk ..[*Corylus*](#)

65. Leaves much longer than broad, pointed; leaves and twigs $\pm$ glabrate; large shrubs or small trees; fruit not as above..... 66
66. Bark smooth, blue-gray, "muscle;" leaves with lateral veins unbranched; buds with flattened sides; fruit a nutlet with a bractlike appendage *Carpinus caroliniana*
66. Bark rough, shredding; lateral veins of leaves branched near margins; buds terete; fruit a nutlet enclosed in an inflated hoplike sac *Ostrya virginiana*
58. Leaf bases acute or tapering 67
67. Petioles with glands, or, if not, then midrib with dense brown hairs; fruit a drupe [*Prunus*](#)
67. Petioles eglandular; midribs hairless; fruit not as above..... 68
68. Terminal buds long, sharp-pointed, resinous; leaves glabrous; fruit a capsule; first scale of lateral buds anterior..... [*Populus*](#)
68. Terminal bud absent, or, if present, then blunt, non-resinous; leaves glabrous or not; fruit not as above; first bud scale not anterior.. 69
69. Upper midrib of leaf with dark glands; fruit a berry-like pome..... *Aronia X prunifolia*
69. Midribs eglandular; fruit not as above 70
70. Lower leaf surface gland-dotted or scurfy..... 71
71. Leaves leathery, persistent; lower leaf surfaces scurfy; fruit a capsule *Chamaedaphne calyculata*
71. Leaves deciduous, not leathery; lower surface with yellow resin dots; fruit berry-like *Gaylussacia baccata*
70. Lower leaf surfaces not as above..... 72
72. Twigs stout, 3-5 mm in diameter; branches often with stout spurs; fruit a pome; small trees or tall shrub *Pyrus communis*
72. Twigs slender; branches and fruit not as above; shrubs 73

- 73. Fruit dry, a capsule or follicle..... [Spiraea](#)
- 73. Fruit fleshy..... 74
 - 74. Branchlets finely white-speckled or hairy, green or reddish
.....[Vaccinium](#)
 - 74. Branchlets not as above, usually gray or brown..... 75
 - 75. Stipules small, sharp, persistent, $\pm$ black; fruits red
.....*Ilex verticillata*
 - 75. Stipules not as above; fruits dark purple [Rhamnus](#)

Key D. Leaves Alternate; Compound

1. Leaves bi- or tri-pinnately compound..... 2
 2. Leaflets entire; plants unarmed..... *Gymnocladus dioica*
 2. Leaflets toothed; plants armed with prickles or stout thorns 3
 3. Stems prickly, somewhat woody; fruit small, black, drupe-like; leaflets often lobed or irregularly serrate; plants 4-9 dm tall *Aralia hispida*
 3. Trees, armed with stout branched thorns (except in cultivated varieties); leaflets unlobed; fruit a legume *Gleditsia triacanthos*
1. Leaves once compound 4
 4. Leaflets three 5
 5. Stipules present; plants often prickly; leaflets often more than three 6
 6. Stipules adnate to petiole at least ½ its length; fruit a hip [*Rosa*](#)
 6. Stipules not adnate; fruit an aggregate [*Rubus*](#)
 5. Stipules absent; plants unarmed 7
 7. Short shrub or climbing vine with numerous aerial rootlets; fruit a white berry; leaf margin usually with one or two indistinct teeth *Rhus radicans*
 7. Upright shrub with no aerial rootlets; fruit a round samara; leaves entire or crenulate ...
..... *Ptelea trifoliata*
 4. Leaflets more than three 8
 8. Leaves palmately compound 9
 9. Stems unarmed; vine, trailing or often climbing by branched tendrils..... [*Parthenocissus*](#)
 9. Stems armed; plants not climbing 10
 10. Stems biennial; fruit an aggregate [*Rubus*](#)
 10. Stems perennial; fruit berry-like *Acanthopanax sieboldianus*

8. Leaves pinnately compound	11
11. Lateral buds hidden under base of petioles	12
12. Leaflets small, 1-5 cm long; fruit dry.....	13
13. Leaflets about 1 cm long, silky-pubescent; a low unarmed shrub (3-10 dm tall) with shreddy bark; flowers yellow; fruit a head of achenes	<i>Potentilla fruticosa</i>
13. Leaflets 2-5 cm long, not silky-pubescent; trees or shrubs, armed; flowers not as above; fruit a legume.....	14
14. Leaflets entire; twigs with stipular spines	<i>Robinia</i>
14. Leaflets ± serrate or crenate; twigs and/or trunk with stout branched thorns (except in cultivated variety)	<i>Gleditsia triacanthos</i>
12. Leaflets larger, 5-10 cm long; fruit fleshy	<i>Rhus</i>
11. Lateral buds evident, not hidden.....	15
15. Plants armed	16
16. Paired stipular spines; tall shrub; leaflets dotted with pellucid glands; wood yellow; fruit a fleshy follicle with spicy citrus odor	<i>Zanthoxylum americanum</i>
16. Stipules absent; sprawling shrubs; pellucid glands wanting; wood not yellow; fruit not as above.....	17
17. Stipules adnate ½ length of petiole or more; leaflets evenly serrate; fruit a hip.....	<i>Rosa</i>
17. Stipules not adnate; leaflets unevenly coarsely toothed; fruit an aggregate	<i>Rubus</i>
15. Plants unarmed	18
18. Leaflets entire	19
19. Leaflets subtended by stipels.....	<i>Amorpha</i>
19. Stipels wanting.....	20

20. Leaflets about 1 cm long, silky; a low, dense shrub; flowers yellow; fruit a head of achenes*Potentilla fruticosa*
20. Leaflets five or more cm long, not silky; a tall shrub; flowers not as above; fruit a small whitish drupe*Rhus vernix*
18. Leaf margins not entire 21
21. Leaflets with glands on basal teeth; fruit a twisted samara with seed in center; leaflets many (11-41); twigs very stout; leaves with rank odor when crushed
.....*Ailanthus altissima*
21. Leaflets without glands; fruit, leaflets, and twigs not as above 22
22. Stipules present (if they are deciduous, then buds are red); leaves not glandular-hairy 23
23. Leaves coarsely serrate; terminal bud present; small trees or tall shrubs; fruit red, fleshy.....[*Sorbus*](#)
23. Leaves doubly serrate; terminal bud absent; low shrubs; fruit a capsule.....
.....*Sorbaria sorbifolia*
22. Stipules absent; buds not red; leaves often glandular-hairy; trees; fruit a nut
..... 24
24. Pith chambered; husk of nut indehiscent.....[*Juglans*](#)
24. Pith solid; husk dehiscing [*Carya*](#)

KEY TO HERBACEOUS DICOT FAMILIES

1. Plants prostrate; stems thick, fleshy, succulent, with prominent spines [CACTACEAE](#)
1. Plants not as above 2
2. Aquatic plants, floating on or submerged in water (and sometimes growing on muddy or sandy shores) 3
3. Leaves entire or finely toothed 4
4. Blades roundish, cordate at base 5
5. Leaves peltate *Nelumbo lutea*
5. Leaves not peltate 6
6. Flowers large, solitary, white or yellow [NYMPHAEACEAE](#)
6. Flowers smaller, in umbel, bright yellow *Nymphoides peltata*
4. Blades neither cordate nor peltate 7
7. Floating leaves spatulate; leaves small, opposite; flowers minute, unisexual, sessile, 1-3 in axils; fruit 4-lobed, notched at apex *Callitriche palustris*
7. Leaves never spatulate; plants not with above combination of characteristics 8
8. Leaves alternate [Polygonum](#)
8. Leaves opposite; flowering stems prostrate, creeping, or floating; flowers sessile, apetalous *Ludwigia palustris*
3. Leaves, or most of them, deeply lobed or divided 9
9. Leaves finely dissected, often bearing small bladders; fruit a capsule; flowers yellow, purple, or pink [Utricularia](#)
9. Most leaves finely dissected but not bladder-bearing; flowers green, yellow, or white 10
10. Flowers white or yellow, solitary 11

11. Leaves alternate; petals 5; sepals 3	<i>Ranunculus</i>
11. Leaves opposite, the upper ones lanceolate, toothed; heads radiate, rays 6-10	<i>Bidens</i>
10. Flowers small, green or whitish	12
12. Flowers green, minute; leaves alternate or whorled	13
13. Leaves simple, entire	<i>Hippuris vulgaris</i>
13. Leaves not entire.....	14
14. Leaves all dissected into rather rigid divisions; fruit one-seeded	<i>Ceratophyllum</i>
14. Upper leaves sometimes merely pectinate; fruit 4-lobed.....	HALORAGIDACEAE
2. Plants terrestrial, not floating or submerged in water; if growing at edge of water, then perfectly erect.....	15
15. Leaves compound, with few to many leaflets; or lobes divided to midrib or base	16
16. Leaves all basal, i.e., plants without leafy stems	17
17. Leaves 2-cleft; flowers white; fruit a capsule	BERBERIDACEAE
17. Leaflets three or more; flowers white or not; fruit other.....	18
18. Leaflets three; flowers regular or irregular.....	19
19. Leaflets entire; flowers regular	20
20. Leaves with long sheathing petioles; inflorescence a terminal raceme.....	<i>Menyanthes trifoliata</i>
20. Leaves without long sheathing petioles; flowers in axillary peduncles.....	<i>Oxalis</i>
19. Leaflets not entire; flowers and stamens various.....	21
21. Flowers papilionaceous; stamens 10.....	FABACEAE
21. Flowers regular; stamens numerous	ROSACEAE

18. Leaflets numerous; flowers irregular.....	FUMARIACEAE
16. Plants with stems bearing one or more leaves.....	22
22. Flowers borne in dense heads on a common receptacle surrounded or subtended by an involucre of bracts; fruit an achene; stipules none	ASTERACEAE
22. Flowers and plants not as above	23
23. Flowers in umbels; petals 5; stamens 5; ovary inferior	24
24. Leaf sheaths prominent; fruit dry	APIACEAE
24. Leaf sheaths not as above; fruit a berry	ARALIACEAE
23. Flowers not in umbels, or, if so, then flowers not with above combination of characteristics	25
25. Corolla papilionaceous; fruit a legume; leaves alternate	FABACEAE
25. Corolla not papilionaceous; fruit not a legume; leaves alternate or not	26
26. Stems bearing a single leaf, a pair of opposite leaves, or a single whorl of leaves	27
27. Sepals 4; petals 4; fruit a pod; leaflets 3 or 5, toothed.....	Dentaria
27. Sepals 6; petals small, gland-like; fruit berry-like	BERBERIDACEAE
26. Stems with two or more alternate leaves, or two or more pairs of opposite leaves	28
28. Leaves (mostly) opposite	29
29. Leaves pinnate or pinnately lobed.....	30
30. Flowers blue or white; fruit a capsule	31
31. Corolla regular; stamens 5	HYDROPHYLLACEAE
31. Corolla 2-lipped; stamens 4	SCROPHULARIACEAE
30. Flowers yellow or pink	VALERIANACEAE

- 29. Leaves palmately lobed, or digitate, or trifoliate; apetalous; fruit an achene 32
- 32. Flowers small, green, unisexual; leaves digitately divided into 5-11 serrate, acuminate divisions [CANNABINACEAE](#)
- 32. Flowers and leaves not as above; sepals petaloid [RANUNCULACEAE](#)
- 28. Leaves alternate 33
- 33. Stems climbing; flowers purple (white); leaves ovate or hastate, often 3-lobed [SOLANACEAE](#)
- 33. Stems erect, not climbing; plants otherwise not as above 34
- 34. Corolla blue, white, or red; petals united; leaves pinnate or pinnately lobed; fruit a capsule 35
- 35. Leaflets entire; style one [POLEMONIACEAE](#)
- 35. Leaflets toothed or lobed; styles two, or 2-parted ... [HYDROPHYLLACEAE](#)
- 34. Corolla or separate petals, or petals one or more; leaves and fruit various 36
- 36. Flowers spurred 37
- 37. Stamens numerous; fruit of follicles [RANUNCULACEAE](#)
- 37. Stamens 6; fruit a capsule [FUMARIACEAE](#)
- 36. Flowers not spurred 38
- 38. Leaflets three, obcordate, entire; fruit a capsule; flowers yellow or violet [Oxalis](#)
- 38. Leaflets not obcordate, and plants otherwise not with above combination of characteristics 39
- 39. Leaves with stipules 40
- 40. Flowers small, green, unisexual; leaves digitately divided into 5-11 serrate, acuminate divisions *Cannabis sativa*

- 40. Flowers pink, white, yellow, or purple, and plants otherwise not as above 41
- 41. Flowers small, pink; leaves pinnate, the leaflets incised; plants pubescent, annual.....*Erodium cicutarium*
- 41. Flowers yellow, white or purple, and plants not otherwise as above..... 42
- 42. Leaflets entire; fruit a legume.....[FABACEAE](#)
- 42. Leaflets toothed or lobed; fruit other..... 43
- 43. Stamens and petals perigynous [ROSACEAE](#)
- 43. Stamens and petals hypogynous, or flowers unisexual and plants dioecious [RANUNCULACEAE](#)
- 39. Leaves without stipules..... 44
- 44. Petals and sepals three each; flowers minute, axillary; annuals with pinnate leaves..... *Floerkea proserpinacoides*
- 44. Petals and sepals four or more, or absent; or, sepals united; plants otherwise not as above..... 45
- 45. Sepals two, falling as flower opens; plants with milky or yellowish juice; stamens numerous; fruit a capsule [PAPAVERACEAE](#)
- 45. Sepals 4 or 5; juice watery; stamens and fruit various 46
- 46. Petals and sepals each four; fruit a pod..... 47
- 47. Leaves trifoliolate; stamens 6 or more, exserted [CAPPARIDACEAE](#)
- 47. Leaves not trifoliolate; stamens 6, 4 long, 2 short [BRASSICACEAE](#)
- 46. Petals 5, or petals none; sepals 5 (4); fruit an achene or follicle, rarely a berry 48

48. Stamens and petals hypogynous; sepals free.....	
.....	<u>RANUNULACEAE</u>
48. Stamens and petals perigynous; sepals united at base	
.....	<u>ROSACEAE</u>
15. Leaves simple, sometimes lobed (if so, lobes not divided to midrib or base); leaves rarely absent or reduced to scales.....	49
49. Stems not climbing or twining; tendrils wanting.....	50
50. Plants parasitic or saprophytic, lacking chlorophyll; leaves reduced to scales; fruit a capsule	51
51. Flowers regular	<u>Monotropa</u>
51. Flowers irregular	<u>OROBANCHACEAE</u>
50. Plants green, normally possessing chlorophyll, not noticeably parasitic or saprophytic	52
52. Plants without leafy stems, or stems below ground; flower stalks leafless, or with a single leaf, or pair, or whorl of leaves subtending the inflorescence.....	53
53. Leaves modified: either funnel-shaped or covered with glandular, sticky hairs; petals 5; fruit a capsule; insectivorous bog plants	54
54. Leaves large, pitcher-like; flowers solitary, large, russet, nodding	<i>Sarracenia purpurea</i>
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 - 158. Ovary inferior[Lobelia](#)
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 - 159. Fruit a 2-celled capsule; seeds numerous.....[SCROPHULARIACEAE](#)
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 - 162. Leaves conspicuously lobed 163
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 - 167. Calyx lobed more than 3, and plants not as above 168
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 - 173. Stamens 10 (5); ovary 5-lobed, each lobe becoming a 1-
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179. Corolla regular, not split; stamens free	CAMPANULACEAE
178. Ovary superior; flowers not red or blue	180
180. Calyx spurred, petaloid; flowers axillary; plants smooth, succulent	Impatiens
180. Calyx not spurred nor petaloid; plants not as above	181
181. Flowers in spikes or racemes; fruit a smooth capsule	Verbascum
181. Flowers axillary or in cymes; fruit a berry or spiny capsule	SOLANACEAE
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seeded, dehiscent *Penthorum sedoides*
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193. Sepals united (at least below); plant not as above.....	194
194. Leaves mostly basal, ± hairy, blades roundish and cordate at base; flowers in a panicle	<i>Heuchera richardsonii</i>
194. Leaves mostly cauline, and plants not otherwise as above	195
195. Astipular; leaves ± thick; plants glabrous; stamens free .	Sedum
195. Stipules present; leaves not succulent; plants ± pubescent.....	196
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196. Stamens free; plants pubescent, but hairs not stellate	Geum
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197. Tendrils present; fruit spiny or bristly; leaves palmately lobed	CUCURBITACEAE
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200. Milky juice; petals 5, united; fruit a follicle; seeds with silky hairs.....	

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200. Watery juice; apetalous; sepals 4, petaloid; stamens numerous; fruit an achene..... *Clematis virginiana*
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201. Plants normally green, with chlorophyll; not parasitic; leaves of normal shape and size 202
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203. Corolla rotate; fruit a red berry; watery juice.....*Solanum dulcamara*

KEY TO HERBACEOUS DICOT GENERA

ACANTHACEAE *Ruellia humilis*

AIZOACEAE *Mollugo verticillata*

AMARANTHACEAE

1. Leaves alternate [*Amaranthus*](#)

1. Leaves opposite *Froelichia gracilis*

APIACEAE

1. Cauline leaves and bracts of inflorescence with stiff spines; basal leaves simple, unlobed; flowers in dense bracted heads *Eryngium yuccifolium*

1. Plants not as above 2

2. Ovary and fruit pubescent, papillose, or bristly, or upper stem and peduncles pubescent, or both 3

3. Bristles strongly hooked; leaves palmately compound or deeply lobed [*Sanicula*](#)

3. Bristles only weakly hooked; leaves pinnate or deeply divided 4

4. Leaves pinnate; leaflets narrow, less than 1 cm wide 5

5. Bracts subtending rays over 15 mm long and pinnate *Daucus carota*

5. Bracts simple, less than 15 mm long *Torilis japonica*

4. Leaves 3-compound; leaflets over 1 cm wide 6

6. Plants small; rays of umbel 1-7; fruit club-shaped, at least 0.5 mm long [*Osmorhiza*](#)

6. Plants large; rays of umbel 15 or more; fruit broadly elliptic, flat .. *Heracleum lanatum*

2. Ovary and fruit smooth, glabrous; upper stems glabrous, or at most finely pubescent 7

- 7. Cauline leaves once-pinnately compound with 5 or more flat leaflets..... 8
 - 8. Flowers yellow; stem and leaves finely pubescent..... *Pastinaca sativa*
 - 8. Flowers white; stem and leaves glabrous..... 9
 - 9. Leaflets entire or remotely toothed; fruit 4-5.5 mm long, strongly flattened *Oxypolis rigidior*
 - 9. Leaflets toothed continually; fruit 1.5-3 mm long, rounded or not 10
 - 10. Leaflets of cauline leaves less than 3 times longer than broad; teeth very irregular; fruit 1.5-2 mm long *Berula erecta*
 - 10. Leaflets 4-10 times longer than wide; numerous uniform fine teeth; fruit 2-3 mm long..... *Sium suave*
- 7. Cauline leaves trifoliolate, or palmate, or more than once-compound, or deeply lobed, or finely dissected 11
 - 11. Leaves finely dissected, and plants bearing vegetative bulblets..... *Cicuta bulbifera*
 - 11. Leaves not as finely dissected, or fine but bulblets wanting..... 12
 - 12. Cauline leaves twice-compound; stem not grooved (may be finely ridged); flowers yellow *Polytaenia nuttallii*
 - 12. Cauline leaves more than twice-compound; stem grooved; flowers various 13
 - 13. Cauline leaves finely divided, less than 5 mm wide 14
 - 14. Ultimate leaflets very slender, entire, linear (less than 1 mm wide); ripe fruit aromatic..... 15
 - 15. Petals white; rays of umbel 8-14 *Carum carvi*
 - 15. Petals green; rays of umbel 17-50 *Anethum graveolens*
 - 14. Ultimate leaflets more oblong, about 1-5 mm wide and less than 5 times longer than wide, often toothed..... 16
 - 16. Umbellets subtended by large bractlets much wider than thickness of rays .. 17
 - 17. Bractlets blunt or rounded; umbel rays 1-4; leaves ternate; a low herb

.....	<i>Erigenia bulbosa</i>
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18. Stems strongly angled, minutely pubescent at base, unspotted; sheath at least partly densely pubescent; fruit 3 times longer than wide	
.....	<i>Anthriscus sylvestris</i>
18. Stems ± terete, glabrous, red-purple spotted; sheaths glabrous; fruit less than 2 times longer than wide.....	<i>Conium maculatum</i>
16. Umbellets with bractlets scarcely broader than the thickness of rays	19
19. Styles 1.3-2 mm long; fruit strongly flattened, with 3 prominent ribs.....	
.....	<i>Conioselinum chinense</i>
19. Styles less than 1.3 mm long; fruit rounded, with 5 prominent ribs.....	
.....	<i>Aethusa cynapium</i>
13. Leaves with leaflets less than 1 cm wide, entire or toothed	20
20. Cauline leaves with 3 leaflets which may be deeply lobed	21
21. Leaflets ± sessile, glabrous; fruit less than 7 mm long; stems slender.....	
.....	<i>Cryptotaenia canadensis</i>
21. Leaflets all on distinct petiolules, pubescent; fruit 8-12 mm long; stems stout ...	
.....	<i>Heracleum lanatum</i>
20. Leaves with more than 3 leaflets.....	22
22. Leaflets entire; flowers yellow.....	<i>Taenidia integerrima</i>
22. Leaflets serrate; flowers yellow or white	23
23. Petals white; plants very stout with terete purple stems; heads rounded	
.....	<i>Angelica atropurpurea</i>
23. Plants small, or not with above characteristics	24
24. Petals yellow	25
25. Leaflets ± pubescent	<i>Pastinaca sativa</i>

- 25. Leaflets glabrous 26
- 26. Central flower and fruit of each umbellet ± sessile; fruit with prominent ribs, not winged [Zizia](#)
- 26. Central flower of umbellet pedicelled; fruit with distinct thin wings.....
..... *Thaspium trifoliatum*
- 24. Petals white 27
- 27. Leaflets with veins directed to sinuses [Cicuta](#)
- 27. Leaflets with veins directed into teeth *Aegopodium podagraria*

APOCYNACEAE

- 1. Leaves evergreen; stems trailing; flowers axillary, solitary, blue *Vinca minor*
- 1. Leaves deciduous; stems erect; flowers several, pink or whitish..... [Apocynum](#)

ARALIACEAE

- 1. Upright woody shrub *Acanthopanax sieboldianus*
- 1. Lower herbaceous plants 2
- 2. Leaves alternate; fruit black..... [Aralia](#)
- 2. Leaves usually in a whorl of three; fruit red or yellowish..... [Panax](#)

ARISTOLOCHIACEAE *Asarum canadense*

ASCLEPIADACEAE

- 1. Stems erect or decumbent, not twining [Asclepias](#)
- 1. Stems twining..... *Cynanchum nigrum*

ASTERACEAE

1. Heads composed wholly of perfect flowers with ligulate corollas only; leaves alternate (or sometimes all basal); stems often with milky juice 2
2. Pappus none; involucre bracts about 8; heads numerous; achenes 20-30-nerved; tall branched annuals with ovate, $\pm$ toothed or lobed leaves; flowers yellow *Lapsana communis*
2. Pappus present; plants otherwise not with above combination of characteristics 3
3. Pappus composed of scales, or of scales and bristles 4
4. Flowers yellow; pappus double, with outer scales and inner bristles.....*Krigia biflora*
4. Flowers blue; pappus a short crown of numerous small scales*Cichorium intybus*
3. Pappus consisting entirely of bristles 5
5. Pappus plumose; leaves linear ("grass-like").....[*Tragopogon*](#)
5. Pappus not plumose; leaves not at all grass-like 6
6. Heads usually several on each stem; leaves not all basal..... 7
7. Leaves usually lobed and often $\pm$ prickly; achenes $\pm$ flattened; flowers blue or yellow 8
8. Heads small, usually about 0.6 cm wide; flowers yellow, fewer than 50 per head; achenes filiform-beaked, or, if merely narrowed at apex, then flowers blue.....[*Lactuca*](#)
8. Heads larger, about 1.3 cm-5 cm wide; flowers yellow; achenes truncate at apex, not beaked; more than 50 flowers per head.....[*Sonchus*](#)
7. Achenes cylindric or prismatic; leaves and flowers various 9
9. Flowers whitish or purplish; heads drooping[*Prenanthes*](#)
9. Flowers yellow; heads erect..... 10
10. Leaves entire to toothed, not lobed[*Hieracium*](#)
10. Leaves lobed.....[*Crepis*](#)

6. Heads solitary; leaves all basal..... [*Taraxacum*](#)
1. Heads composed of both ray and disk flowers, or of disk flowers only; leaves alternate, opposite, basal, or whorled; juice not milky..... 11
11. At least lower leaves opposite or whorled 12
12. Flowers not showy (rays absent); male and female flowers in separate heads; staminate heads uppermost in racemes; pistillate flowers solitary in axils of leafless bracts, becoming bur-like or nut-like at maturity; leaves lobed or dissected [*Ambrosia*](#)
12. Staminate and pistillate flowers in same heads, or flowers perfect; heads usually showy; leaves simple, lobed, or divided; rays usually present 13
13. Plants annual, very foul-smelling; conspicuous oblong glands among phyllaries; leaves pinnatifid or bi-pinnatifid into very narrow segments *Dyssodia papposa*
13. Annuals or perennials, not particularly foul-smelling; phyllaries glandular or not; leaves various..... 14
14. Involucres of 2 distinct series of phyllaries, very dissimilar..... 15
15. Plants entirely aquatic, with weak stems; submersed leaves whorled and finely dissected; achenes with awns longer than body..... *Megalodonta beckii*
15. Plants terrestrial or paludal; stems firm, $\pm$ erect; leaves simple or dissected, mostly opposite; awns shorter than body..... 16
16. Achenes usually with conspicuous, smooth marginal wings; pappus absent, inconspicuous, or of 2 awns; rays present [*Coreopsis*](#)
16. Achenes wingless; pappus of 2-6 retrorsely barbed awns; rays present or not 17
17. Rays present, yellow or not; achenes with long slender beaks..... *Cosmos bipinnatus*
17. Rays yellow, or absent; achenes beakless [*Bidens*](#)
14. Involucres not of 2 distinct and dissimilar series of phyllaries 18
18. Rays yellow, or more than 3 mm long, or both 19

19. Disk flowers sterile; leaves sessile or perfoliate	<u>Silphium</u>
19. Disk flowers fertile; leaves petiolate or sessile (never perfoliate)	20
20. Rays persistent, fertile; leaves dentate, ovate, all opposite; larger leaves on petioles at least 2.5 cm long; involucre bracts ± obtuse	<i>Heliopsis helianthoides</i>
20. Rays deciduous, sterile; leaves opposite on petioles less than 2.5 cm long, or if longer, then uppermost leaves are alternate; bracts usually acute.....	<u>Helianthus</u>
18. Rays absent, or less than 3 mm long and white (i.e., not yellow)	21
21. Pappus composed of numerous capillary bristles; involucre and phyllaries longer than wide	<u>Eupatorium</u>
21. Numerous capillary bristles wanting; involucre and phyllaries about as wide as long.....	22
22. Leaves pinnately lobed or divided	<i>Polymnia canadensis</i>
22. Leaves undivided.....	23
23. Pappus present, consisting of sepals	<u>Galinsoga</u>
23. Pappus absent.....	<i>Iva xanthifolia</i>
11. Leaves all alternate or basal	24
24. Rays yellow or orange	25
25. Pappus of numerous capillary bristles.....	26
26. Disk large, at least 2 cm wide; phyllaries at least 5 mm wide; leaves ovate, densely tomentose beneath, at least 5 cm wide	<i>Inula helenium</i>
26. Disks, phyllaries, and leaves not as above	27
27. Involucre with phyllaries in 1 series, occasionally with minute bracts at base; blooms till mid-July	<u>Senecio</u>
27. Involucre with phyllaries imbricate in several series; blooms mid-July onward	<u>Solidago</u>

25. Pappus absent, or if present, composed of a low crown, or scales, awns, or a few short teeth 28
28. Leaves deeply lobed or divided 29
29. Principal leaves basal; phyllaries more than 5 mm wide; disk at least 2 cm across....
.....[Silphium](#)
29. Cauline leaves well developed; phyllaries less than 5 mm wide; disk to 2 cm across
..... 30
30. Leaves often with more than 6 major lobes or divisions, leaves up to 5 cm long; rays 20 or more.....*Anthemis tinctoria*
30. Leaves usually with fewer than 6 major lobes or divisions, the larger ones 5 or more cm long; rays usually fewer than 20..... 31
31. Achenes flattened, with winged margins; disk higher than broad; rays subtended by chaffy bracts.....[Ratibida](#)
31. Achenes distinctly square in cross-section, not winged; disk no longer than broad; rays not subtended by chaffy bracts[Rudbeckia](#)
28. Leaves entire or toothed, but not lobed or divided 32
32. Leaves nearly all basal.....[Silphium](#)
32. Cauline leaves well developed 33
33. Phyllaries very sticky; leaves clasping, toothed*Grindelia squarrosa*
33. Phyllaries not sticky; leaves clasping or not..... 34
34. Rays mostly 3-toothed at apex; leaves not clasping; stems winged or not, leaf bases decurrent[Helenium](#)
34. Rays entire (not toothed), or, if toothed, then leaves clasping..... 35
35. Stems winged, leaf bases decurrent.....*Verbesina alternifolia*
35. Stems wingless 36
36. Receptacle flat or convex, disk clearly broader than high; lower leaves usually opposite[Helianthus](#)

36. Receptacle conic or $\pm$ cylindric, disk about as broad as high; leaves not opposite	<i>Rudbeckia</i>
24. Rays not yellow, or absent	37
37. Rays present, exceeding the involucre.....	38
38. Leaves deeply lobed, divided, or compound	39
39. Rays purplish	<i>Ratibida</i>
39. Rays white	40
40. Heads small, to 4 mm wide; involucre to 5 mm high; rays usually 5.....	41
41. Inflorescence a flat-topped corymb; leaves pinnately divided into numerous small divisions	<i>Achillea</i>
41. Inflorescence a cyme, not flat; leaves merely pinnately divided	<i>Parthenium integrifolium</i>
40. Heads larger, greater than 4 mm wide; involucre at least 5 mm high; rays 5 or more.....	42
42. Ultimate leaf divisions $\pm$ rounded or lanceolate, toothed.....	<i>Chrysanthemum</i>
42. Leaves very finely dissected into linear segments.....	43
43. Plants strongly malodorous; receptacle chaffy	<i>Anthemis cotula</i>
43. Plants not foul-smelling (often with pleasant odor); receptacle naked.....	<i>Matricaria</i>
38. Leaves entire or toothed (or wavy), but not lobed or divided	44
44. Pappus of numerous capillary bristles	45
45. Rays fewer than 60, in 1 series; involucre with phyllaries in 3-5 unequal series....	<i>Aster</i>
45. Rays more than 60, in 2 or more series; involucre with phyllaries in 1 series...	46

46. Rays minute (less than 3 mm long), about equaling the pappus; leaves numerous *Conyza canadensis*
46. Rays conspicuous (more than 3 mm long); leaves few to several..... [Erigeron](#)
44. Pappus consisting of a low crown of teeth or scales, or absent..... 47
47. Rays at least 3 cm long, reddish or purple; disk at least 1.5 cm across... [Echinacea](#)
47. Rays to 2 cm long, white, pink, or purplish; disk less than 1.5 cm across (or, rays white and disk to 2 cm across)..... 48
48. Leaves ovate, or serrate, at least 4 cm wide, the lower ones petiolate, the upper ones sessile/clasping 49
49. Receptacle chaffy, achenes subtended by chaffy scales; phyllaries ovate.....
..... *Parthenium integrifolium*
49. Receptacle naked, achenes not subtended by scales; phyllaries ± linear
..... [Chrysanthemum](#)
48. Leaves linear, lanceolate, or suborbicular, entire to toothed, less than 4 cm wide..... 50
50. Leaves linear, subentire; rays fewer than 11, to 5 mm long [Achillea](#)
50. Leaves various; rays 11 or more, greater than 5 mm long 51
51. Leaves all entire; heads numerous; disks to 10 mm wide
..... *Boltonia latisquama*
51. Leaves various; heads solitary on long peduncles; disks usually at least 10 mm across [Chrysanthemum](#)
37. Rays absent, or minute and not exceeding the involucre..... 52
52. Spines of involucre hooked 53
53. Pappus present; corollas present; prickles all ascending; male and female flowers in same heads [Arctium](#)
53. Pappus absent and corolla absent; prickles spreading; male and female flowers in separate heads..... *Xanthium strumarium*

52. Spines on involucre awl-shaped, not hooked	54
54. Marginal disk corollas enlarged, irregular, ray-like; phyllaries often spine-tipped or with fringe of hairs along each side	Centaurea
54. Marginal disk corollas not ray-like; phyllaries not as above.....	55
55. Leaves spiny, or involucre spiny, or both.....	56
56. Pappus bristles absent or of chaffy scales	<i>Echinops sphaerocephalus</i>
56. Pappus of numerous capillary bristles.....	57
57. Pappus bristles plumose, each bristle with fine hairs	Cirsium
57. Pappus simple	Carduus
55. Neither leaves nor involucre spiny	58
58. Pappus of numerous capillary bristles.....	59
59. Plants often densely woolly-pubescent; phyllaries scarious or hyaline, white or brown-tinged	60
60. Cauline leaves reduced, differing greatly from basal rosette.....	Antennaria
60. Cauline leaves well developed; basal leaves absent, small, or similar to cauline leaves.....	61
61. Plants dioecious, perennial, without balsam scent	<i>Anaphalis margaritacea</i>
61. Plants monoecious, or flowers perfect; annual or biennial; often balsam-scented.....	Gnaphalium
59. Plants with or without tomentum; phyllaries herbaceous.....	62
62. Flowers rose, reddish-violet, or yellow.....	63
63. Flowers yellow; phyllaries all of 1 series and $\pm$ equal.....	Senecio
63. Flowers rose or reddish-violet; phyllaries in more than 1 series, of different lengths	64

64. Flowers rose; basal leaves present at flowering time; cauline leaves linear to lanceolate; inflorescence a spike, much longer than broad [*Liatris*](#)
64. Flowers reddish-violet; basal leaves absent at flowering time; cauline leaves broader, lanceolate; inflorescence a rounded corymb *Vernonia fasciculata*
62. Flowers white, whitish, or straw-colored 65
65. Involucres to 4 mm high; stems at least sparsely hairy [*Erigeron*](#)
65. Involucres at least 4 mm high; stems glabrous or sparsely pilose 66
66. Leaves, peduncles, and phyllaries puberulent or strigillose, and conspicuously resin-dotted; inflorescence of one to several clusters at ends of branches; phyllaries strongly striate-nerved *Kuhnia eupatorioides*
66. Plants glabrous to $\pm$ pilose, resin dots wanting; inflorescence various; phyllaries scarcely striate-nerved if at all 67
67. Phyllaries in 2-5 series of different lengths; leaves linear, with scabrous margins [*Aster*](#)
67. Phyllaries in 1 series of same length; leaves various, but never scabrous on margins 68
68. Pappus bristles fine, smooth; leaves lanceolate to ovate; thin; outer corollas 5-parted, pistillate *Erechtites hieracifolia*
68. Pappus bristles coarse; leaves lanceolate to ovate, deltoid, or reniform, thickish; outer corollas 2-4-parted or toothed, perfect 69
69. Leaves deltoid, hastate, strongly toothed *Hasteola suaveolens*
69. Leaves not as above [*Cacalia*](#)
58. Pappus absent, or if present, composed of awns, or a low crown of scales or teeth, but never of capillary bristles 70
70. Receptacle chaffy; phyllaries ovate, herbaceous, without scarious margins *Parthenium integrifolium*

70. Receptacle naked; phyllaries linear to lanceolate, with scarious margins 71
71. Leaves simple, more than 4 cm wide.....[Chrysanthemum](#)
71. Leaves simple or divided, blades or divisions less than 4 cm wide 72
72. Heads bright yellow, numerous, in flat-topped inflorescence; leaves bipinnatifid, more than 10 cm long [Tanacetum](#)
72. Heads not bright yellow; inflorescence not flat-topped; leaves simple or divided, less than 10 cm long..... 73
73. Heads few to numerous in spikes, racemes, or panicles; receptacle $\pm$ flat; disk less than 5 mm across; plants often aromatic, but not pineapple-like[Artemisia](#)
73. Heads solitary to numerous in a cyme or corymb; receptacle conic; disk greater than 5 mm across; plants pineapple-scented
..... *Matricaria matricarioides*

BALSAMINACEAE..... [Impatiens](#)

BERBERIDACEAE

1. Spiny shrubs; fruit a red berry; leaves clustered in fascicles [Berberis](#)
1. Unarmed herbs; fruits and leaves not as above 2
2. Leaves 3-compound; flowers yellow-green in terminal panicle; petals 4, small, gland-like.....
..... *Caulophyllum thalictroides*
2. Leaves simple; flowers solitary, white; petals 6-8 3
3. Leaves 7-9-lobed; berry yellowish-green, pulpy, 4-5 cm long*Podophyllum peltatum*
3. Leaves 2-cleft; fruit an obconic capsule, 1.5-2 cm long..... *Jeffersonia diphylla*

BORAGINACEAE

1. Corolla irregular, blue; stamens exserted, unequal; hispid-pubescent.....*Echium vulgare*

1. Corolla regular, of various colors; stamens included, equal..... 2
2. Nutlets bearing barbed prickles; flowers blue, red, or white; pubescent..... 3
3. Nutlets divergent, covered with short prickles..... [Cynoglossum](#)
3. Nutlets erect, prickly on margins 4
4. Fruiting pedicels recurved; style shorter than nutlets.....*Hackelia virginiana*
4. Fruiting pedicels erect; style longer than nutlets*Lappula squarrosa*
2. Nutlets not prickly; flowers various 5
5. Receptacle conical; corolla yellow; pubescent*Amsinckia lycopsioides*
5. Receptacle flat; flowers various, pubescent or not 6
6. Plants glabrous; corolla blue, tubular *Mertensia virginica*
6. Plants pubescent 7
7. Scar of nutlet large, concave; plants coarsely pubescent; leaves wide..... [Symphytum](#)
7. Nutlets smooth, glossy; nutlet scar small, flat; leaves various 8
8. Corolla salverform, lobes spreading 9
9. Racemes without bracts; corolla blue or white [Myosotis](#)
9. Racemes with bracts, each with a flower; corolla yellow or white [Lithospermum](#)
8. Corolla tubular 10
10. Corolla greenish-white *Onosmodium hispidissimum*
10. Corolla blue..... [Anchusa](#)

BRASSICACEAE

1. Petals yellow or orange..... 2
2. All leaves unlobed 3

3. Plants glabrous	4
4. Stem leaves clasping	5
5. Leaves entire, obtuse	<i>Conringia orientalis</i>
5. At least some leaves toothed or at least wavy-edged	<i>Brassica</i>
4. Stem leaves not clasping	6
6. Basal leaves present at flowering time	<i>Arabis</i>
6. Basal leaves absent (or inconspicuous) at flowering time	<i>Rorippa</i>
3. Plants at least partially pubescent	7
7. At least some stem leaves clasping	8
8. Fruit linear (at least 1 cm long); basal leaves present	<i>Arabis</i>
8. Fruit ± ovoid (less than 1 cm long); basal leaves absent	<i>Camelina</i>
7. Leaves not clasping	9
9. Fruit linear	<i>Erysimum</i>
9. Fruit ± ovoid	10
10. Fruit as long as broad; pubescence of many-pronged hairs	<i>Alyssum alyssoides</i>
10. Fruit clearly longer than broad (but not linear); leaves loosely pubescent	<i>Draba</i>
2. At least lower leaves lobed or pinnate	11
11. Foliaceous bracts subtending pedicels in lower part of inflorescence	<i>Erucastrum gallicum</i>
11. Pedicels without bracts	12
12. Petals to 5 mm long	13
13. Only basal leaves and lower cauline leaves lobed or divided	<i>Arabis</i>

- 13. All leaves (except occasionally the uppermost) lobed or divided 14
 - 14. Leaf lobes rounded, $\pm$ oval, the terminal much larger than the laterals; plants glabrous.....*Barbarea vulgaris*
 - 14. Lobes acute, longer than broad, terminal ones similar to laterals; plants glabrous or pubescent 15
 - 15. Leaves divided 2 or 3 times; plants minutely pubescent with forked hairs, and/or glandular [*Descurainia*](#)
 - 15. Leaves once or twice divided; eglandular; glabrous or pubescent with simple hairs..... 16
 - 16. Fruit linear, 5 or more times longer than broad; style very short.....[*Sisymbrium*](#)
 - 16. Fruit round or oblong, less than 5 times longer than wide; style obvious
.....[*Rorippa*](#)
- 12. Petals more than 5 mm long..... 17
 - 17. Leaves confined to lower half of stem.....*Diploaxis muralis*
 - 17. Leaves present throughout stem..... 18
 - 18. Basal leaves often present; glabrous or remotely hispid below; upper leaves with at least 1 pair of lobes.....*Barbarea vulgaris*
 - 18. Basal leaves absent or strongly withered at flowering time; glabrous or pubescent; upper leaves toothed, but not lobed..... 19
 - 19. Fruit short (up to 1 cm long), $\pm$ round, with beak $\frac{1}{2}$ total length
.....*Rapistrum rugosum*
 - 19. Fruit elongate, more than 1 cm long 20
 - 20. Fruit hispid, or leaves clasping; glabrous [*Brassica*](#)
 - 20. Fruit not hispid; leaves not clasping; plants not glabrous 21
 - 21. Petals pale yellow with dark veins; fruit long-beaked, strongly contracted at intervals..... *Raphanus raphanistrum*

21. Petals yellow, without dark veins; fruit at most weakly contracted; beak present or not 22
22. Fruit widely spreading, $\pm$ beakless, to 1 mm broad; sepals to 4 mm long [*Sisymbrium*](#)
22. Plants not as above [*Brassica*](#)
1. Petals not yellow or orange (white, greenish, pink, purple, or absent) 23
23. Leaves deeply palmately divided or with 3 leaflets [*Dentaria*](#)
23. Leaves not 3-divided 24
24. Petals pink or purple 25
25. At least lower cauline leaves pinnately lobed or dissected 26
26. Plants $\pm$ glabrous; lower leaves clasping; pedicels to 10 mm long; fruit slender (about 1 mm thick) *Iodanthus pinnatifidus*
26. Plants at least sparsely rough-hairy; leaves not clasping; pedicels more than 10 mm long; fruits more than 1 mm thick *Raphanus raphanistrum*
- [Note: The garden radish, *Raphanus sativus*, with pink to purple corollas, may occasionally be found as a persistent escape from cultivation.]
25. No cauline leaves lobed or dissected 27
27. Plants $\pm$ glabrous 28
28. Plants succulent, leaves thick, $\pm$ spatulate [*Cakile*](#)
28. Plant not as above 29
29. Upper leaves clasping, lanceolate, $\pm$ entire; pedicels at least 10 mm long... [*Arabis*](#)
29. Upper leaves not clasping, $\pm$ ovate, $\pm$ serrate; pedicels less than 10 mm long *Iodanthus pinnatifidus*
27. Plants at least partially pubescent (especially leaves or base) 30
30. Lower and middle cauline leaves opposite and cordate on long petioles *Lunaria annua*

30. Leaves alternate or basal, cordate or petiolate, but not both	31
31. Cauline leaves fewer than 10, ± ovate, entire to ± toothed; petals less than 1.5 cm long.....	<i>Cardamine</i>
31. Cauline leaves more than 10, acuminate to ovate, entire to serrulate; petals at least 1.5 cm long	<i>Hesperis matronalis</i>
24. Petals white, greenish, or absent.....	32
32. At least upper leaves sessile and clasping	33
33. All cauline leaves pinnately compound; plants semi-aquatic, rooting at nodes	<i>Nasturtium officinale</i>
33. Leaves not all pinnately compound; plants terrestrial	34
34. Fruit linear, at least 5 times longer than wide.....	<i>Arabis</i>
34. Fruit not linear, up to twice as long as wide.....	35
35. Plants glabrous.....	36
36. Upper leaves perfoliate, scarcely longer than wide	<i>Lepidium perfoliatum</i>
36. Upper leaves clasping, but not perfoliate, more than twice as long as wide...	37
37. Fruit broadest at base, less than 5 mm long; inflorescence a corymb-like raceme	<i>Cardaria</i>
37. Fruit nearly orbicular, flat, greater than 5 mm long at maturity; inflorescence a simple raceme	<i>Thlaspi arvense</i>
35. Plants at least partially pubescent	38
38. Stem leaves unlobed; pedicels densely pubescent	<i>Lepidium</i>
38. Leaves lobed or unlobed; pedicels ± glabrous.....	39
39. Basal leaves deeply pinnately divided; cauline leaves much reduced, pinnate or entire; fruit deltoid	<i>Capsella bursa-pastoris</i>

39. Basal leaves absent at flowering time; cauline leaves well developed, entire to toothed, more than 1 cm wide; fruit $\pm$ round [*Cardaria*](#)
32. No leaves clasping 40
40. Plants aquatic, submersed leaves finely dissected *Armoracia lacustris*
40. Plants terrestrial; leaves not as above 41
41. Cauline leaves absent, or, if present, then lobed, pinnatifid, or pinnately compound 42
42. Cauline leaves wanting, or lowest leaves 2- or 3-pinnate 43
43. Fruit sub-orbicular; upper leaves simple to lobed [*Lepidium*](#)
43. Fruit $\pm$ linear; all leaves 2- or 3-pinnate [*Descurainia*](#)
42. Lowest leaves once-pinnate 44
44. Petals more than 6 mm long 45
45. Leaves pinnately compound, lobes of upper leaves linear, those of lower leaves sub-orbicular [*Cardamine*](#)
45. Leaves lyrate-pinnatifid, the terminal lobes much larger than the lateral ones; upper and lower leaves generally similar *Raphanus raphanistrum*
44. Petals to 5 mm long 46
46. Plants semi-aquatic, rooting at nodes; stems succulent; petals about 4 mm long *Nasturtium officinale*
46. Plants not aquatic (though they may grow in wetlands); stems slender, not especially succulent; petals to 4 mm long [*Cardamine*](#)
41. Most cauline leaves simple, without deep lobes 47
47. Leaves narrowed to $\pm$ sessile bases, but not distinctly petioled or cordate 48
48. Fruit less than twice as long as wide 49
49. Fruit strongly ascending or closely appressed to axis, densely pubescent; stems and leaves densely pubescent *Berteroa incana*

49. Fruit wide-spreading, pedicels at nearly right angle to axis, glabrous or pubescent; stems and leaves various 50
50. Petals unlike, the outer pair much larger than the inner pair; fruit 5-9 mm long; flowers 5-10 mm wide *Iberis umbellata*
50. Petals similar, all alike; fruit and flowers various 51
51. Plants glabrous or minutely pubescent with simple hairs.....[*Lepidium*](#)
51. Plants pubescent with forking or stellate hairs 52
52. Pedicels less than twice as long as fruit; fruit circular, to 4 mm long; plants densely stellate-pubescent*Alyssum alyssoides*
52. Pedicels more than twice as long as fruit; fruit elliptic, to 3 mm long; plants finely hairy..... *Lobularia maritima*
48. Fruit more than twice as long as wide 53
53. Fruit to 1.8 cm long; plant not leafy above middle; early growing, dying back by mid-May[*Draba*](#)
53. Fruit more than 1.8 cm long; plants leafy throughout, and persistent through growing season [*Arabis*](#)
47. Leaves distinctly petiolate, rounded or cordate at base 54
54. Stem leaves simple to nearly pinnatifid; fruit ovoid, to 6 mm long
.....*Armoracia rusticana*
54. Stem leaves sub-entire to $\pm$ toothed; fruit more than 6 mm long 55
55. Cauline leaves $\pm$ cordate, petioles at least 5 mm long; petals less than 7 mm long; fruiting pedicels stout *Alliaria petiolata*
55. Cauline leaves not both cordate and on 5 mm-long petioles; petals more than 7 mm long; fruiting pedicels slender 56
56. Cauline leaves fewer than 10, $\pm$ ovate, $\pm$ entire; petals less than 1.5 cm long.....[*Cardamine*](#)

56. Cauline leaves more than 10, ± lanceolate, toothed; petals at least 1.5 cm long..... *Hesperis matronalis*

CACTACEAE *Opuntia humifusa*

CALLITRICHACEAE *Callitriche palustris*

CAMPANULACEAE

1. Leaves sessile, clasping, cordate; flowers axillary, solitary, sessile *Specularia perfoliata*

1. Leaves petioled or tapering at base; flowers in terminal inflorescence..... [*Campanula*](#)

CANNABINACEAE

1. Erect herbs; pistillate flowers in spikes..... *Cannabis sativa*

1. Stems twining; pistillate flowers in catkin-like clusters *Humulus lupulus*

CAPPARIDACEAE

1. Petals notched; pod ± sessile on pedicel; stamens more than 6..... *Polanisia graveolens*

1. Petals not notched; pod long-stipitate on pedicel; stamens 6 *Cleome hassleriana*

CAPRIFOLIACEAE

1. Plants trailing, small; leaves evergreen *Linnaea borealis*

1. Plants much larger, erect or climbing shrubs, or herbs; leaves deciduous 2

2. Herbs, not woody..... [*Triosteum*](#)

2. Woody shrubs, erect or twining..... 3

3. Leaves pinnately compound [*Sambucus*](#)

3. Leaves simple 4

- 4. Flowers in cymes [Viburnum](#)
- 4. Inflorescence other 5
- 5. Leaves serrate; fruit a capsule *Diervilla lonicera*
- 5. Leaves entire; fruit fleshy..... 6
- 6. Flowers $\pm$ regular; fruit a berry-like drupe with 2 seeds..... [Symphoricarpos](#)
- 6. Flowers irregular; fruit a berry..... [Lonicera](#)

CARYOPHYLLACEAE

- 1. Stipules present, conspicuous..... 2
- 2. Apetalous; leaves elliptic, densely red-dotted; fruit one-seeded; styles 2-cleft (or none); stigmas 2 *Paronychia canadensis*
- 2. Petals present, shorter than sepals; leaves linear, not red-dotted; fruit a several-seeded capsule; styles and stigmas 3 or 5 *Spergularia media*
- 1. Stipules wanting..... 3
- 3. Sepals separate 4
- 4. Petals obviously notched or deeply divided, so as to appear as 10 5
- 5. Styles 3-4 (6); capsules ovoid..... [Stellaria](#)
- 5. Styles 5; capsules ovoid to cylindric..... 6
- 6. Leaves ovate, most at least 2 cm wide *Myosoton aquaticum*
- 6. Leaves various, but less than 1 cm wide..... [Cerastium](#)
- 4. Petals entire or toothed, but not notched or cleft 7
- 7. Inflorescence umbellate; styles 3 *Holosteum umbellatum*
- 7. Inflorescence a cyme, or flowers solitary; styles 3 or more 8

- 8. Styles, sepals, and petals 4-5 *Sagina procumbens*
- 8. Styles 3; sepals and petals various [*Arenaria*](#)
- 3. Sepals at least partially fused..... 9
 - 9. Sepals united $\frac{1}{4}$ to $\frac{1}{2}$ length (thus, free tips prominent), 3.5-5.5 cm long, and densely pilose..... *Agrostemma githago*
 - 9. Sepals fused $\frac{1}{2}$ length or more, glabrous or not and less than 3 cm long 10
 - 10. Calyx subtended by closely appressed bracts..... *Dianthus armeria*
 - 10. Bracts absent or not closely appressed 11
 - 11. Styles 2; flowers perfect..... 12
 - 12. Calyx less than 5 mm long..... [*Gypsophila*](#)
 - 12. Calyx at least 7 mm long *Saponaria officinalis*
 - 11. Styles 3-5, or flowers staminate 13
 - 13. Flowers unisexual (plants dioecious); styles 5-6..... *Lychnis alba*
 - 13. Flowers perfect; styles various 14
 - 14. Styles 3; flowers white (pink) [*Silene*](#)
 - 14. Styles 5; flowers red or purplish [*Lychnis*](#)
- CERATOPHYLLACEAE..... [*Ceratophyllum*](#)
- CHENOPODIACEAE
 - 1. Leaves puberulent; stems villous, especially above middle *Kochia scoparia*
 - 1. Stems and leaves glabrous..... 2
 - 2. Leaves linear, entire, usually spinulose at tip 3
 - 3. Leaves well-developed with strong spine tips at least 0.5 mm long *Salsola kali*

- 3. Leaf tips less than 0.5 mm long..... 4
 - 4. Leaves flat *Corispermum americanum*
 - 4. Leaves fleshy, $\pm$ terete *Suaeda calceoliformis*
- 2. Leaves not spine-tipped, linear or not, entire or not 5
 - 5. Flowers imperfect, the pistillate ones enclosed between a pair of broad, deltoid bracteoles..... [Atriplex](#)
 - 5. Flowers perfect; bracteoles wanting 6
 - 6. Leaves lanceolate, coarsely toothed; calyx broadly circular-winged *Cycloloma atriplicifolium*
 - 6. Leaves various, but not both lanceolate and coarsely toothed; calyx not as above..... *Chenopodium*

CISTACEAE

- 1. Petals 5, yellow; stellate pubescence; style short [Helianthemum](#)
- 1. Petals 3, greenish or red; style none; pubescence not stellate [Lechea](#)

CONVOLVULACEAE

- 1. Plants leafless, parasitic, not green; twining; corollas small [Cuscuta](#)
- 1. Plants with chlorophyll and normal leaves, not parasitic; twining or not; corollas funnelform to campanulate 2
 - 2. Stigmas 2, linear to fusiform; calyx with pair of subtending sepal-like bracts [Convolvulus](#)
 - 2. Stigma one, capitate; calyx without sepal-like bracts [Ipomoea](#)

- CRASSULACEAE [Sedum](#)

CUCURBITACEAE

1. Stems and leaves glabrous; fruit an inflated, spiny, 4-seeded pod dehiscing at apex *Echinocystis lobata*

1. Stem and leaves $\pm$ pubescent; fruit 1-seeded, 3-10 in a clump, indehiscent *Sicyos angulatus*

DIPSACACEAE [*Dipsacus*](#)

DROSERACEAE [*Drosera*](#)

ERICACEAE

1. Plants herbaceous, saprophytic, lacking chlorophyll; stems bearing reduced scale-like leaves; sepals and vegetative parts reddish-maroon *Pterospora andromedea*

1. Plants at least semi-woody; normally green (not saprophytic); leaves and flowers normal 2

2. Leaves linear, most at least 7 times longer than wide, revolute *Andromeda glaucophylla*

2. Leaves oblong to ovate, revolute or not 3

3. Leaves strongly revolute, with dense rusty woolly tomentum below, dark green above *Ledum groenlandicum*

3. Leaves not as above 4

4. Leaves with numerous scurfy scales *Chamaedaphne calyculata*

4. Leaves never scurfy (may be glandular or hairy) 5

5. Fruit fleshy; leaves deciduous or evergreen; ovary inferior 6

6. Leaves evergreen; a small trailing semi-shrub [*Gaultheria*](#)

6. Leaves deciduous; upright shrubs, large or small 7

7. Leaves with numerous yellow resin dots beneath *Gaylussacia baccata*

7. Yellow glands absent [*Vaccinium*](#)

- 5. Fruit dry; leaves evergreen; ovary superior 8
- 8. Low erect shrub; leaves opposite, strongly whitened beneath; corolla pink
..... *Kalmia polifolia*
- 8. Trailing shrub; leaves alternate, not whitened beneath; corolla white
..... *Arctostaphylos uva-ursi*

EUPHORBIACEAE

- 1. Flowers in cup-shaped, calyx-like involucre; sepals much reduced; sap milky 2
- 2. Leaves opposite, oblique at base [*Chamaesyce*](#)
- 2. Leaves alternate or opposite, not oblique at base [*Euphorbia*](#)
- 1. Flowers not in cup-shaped involucre; calyx of 3-5 sepals; sap watery 3
- 3. Pubescence of stellate hairs *Croton texensis*
- 3. Pubescence of simple hairs, or glabrous *Acalypha rhomboidea*

FABACEAE

- 1. Plants woody (trees or shrubs) 2
- 2. Leaves simple, entire, sub-orbicular; flowers pink *Cercis canadensis*
- 2. Leaves compound; flowers pink or other 3
- 3. Shrubs; flowers in racemes; petals 4 or 5 4
- 4. Twigs, petioles, and fruit hispid; petals 5; pods linear, several-seeded *Robinia hispida*
- 4. Plants not hispid; corolla of 1 purple petal; pods short, 1- or 2-seeded [*Amorpha*](#)
- 3. Trees; petals 5 6
- 6. Leaves odd-pinnate, 5-17 leaflets; flowers white; stipules spiny *Robinia pseudoacacia*
- 6. Leaves 1- or 2-pinnate; leaflets and flowers other than above; stipules not spiny 7

7. Leaflets ovate, entire; flowers pinkish-white in racemes; unarmed	
.....	<i>Gymnocladus dioicus</i>
7. Leaflets oval to lanceolate, remotely toothed; flowers small, green-yellow, in axillary spikes; long spines on trunk and branches (except on cultivated variety)	
.....	<i>Gleditsia triacanthos</i>
1. Herbs (not woody)	8
8. Leaves even-pinnate, or leaflets only 2	9
9. Flowers papilionaceous; leaves ending in tendrils	10
10. Style terete, with tuft of hairs near apex.....	<i>Vicia</i>
10. Style flattened, pubescent along 1 side.....	<i>Lathyrus</i>
9. Flowers in globose heads, not papilionaceous; tendrils wanting.....	11
11. Leaves pinnate; flowers yellow.....	<i>Cassia fasciculata</i>
11. Leaves bipinnate; flowers not yellow	12
12. Plants ± glabrous; flowers greenish-white, petals distinct; unarmed; pods flat	
.....	<i>Desmanthus illinoensis</i>
12. Plants (including 4-angled pods) armed with recurved prickles; flowers rose; corolla funnelform	<i>Schrankia nuttallii</i>
8. Leaves not even-pinnate.....	13
13. Leaves trifoliolate.....	14
14. Leaflets toothed	15
15. Flowers in long racemes	<i>Melilotus</i>
15. Flowers capitate	16
16. Pods straight; stamens adherent to corolla.....	<i>Trifolium</i>
16. Pods curved or coiled; stamens free.....	<i>Medicago</i>
14. Leaflets entire	17

17. Fruit a loment.....	18
18. Pods 1- to several-jointed; leaflets stipellate; flowers purple or white .. <i>Desmodium</i>	
18. Pods of a single 1-seeded joint; leaflets without stipels; flowers purplish or yellow-white <i>Lespedeza</i>	
17. Fruit a legume	19
19. Leaflets stipellate; style glabrous; plants twining; flowers purplish or white <i>Amphicarpa bracteata</i>	
19. Leaflets not stipellate; plants not with above combination of characteristics	20
20. Flowers in dense heads; pods small, 1-6-seeded <i>Trifolium</i>	
20. Flowers whitish (yellow) in racemes; pods inflated <i>Baptisia</i>	
13. Leaves with 5 or more leaflets.....	21
21. Leaves punctate; corolla not papilionaceous	22
22. Pods covered with hooked prickles; flowers whitish..... <i>Glycyrrhiza lepidota</i>	
22. Pods without hooked bristles; flowers various.....	23
23. Corolla of 1 petal; stamens 10 <i>Amorpha</i>	
23. Corolla of 5 petals; stamens 5..... <i>Petalostemum</i>	
21. Leaves not punctate; corolla papilionaceous	24
24. Leaflets 5-11.....	25
25. Flowers yellow, in umbels..... <i>Lotus corniculatus</i>	
25. Flowers not yellow, borne in axillary or terminal racemes	26
26. Stems twining/climbing; leaves pinnately compound; leaflets 5-7 (3), ovate; flowers in axillary racemes <i>Apios americana</i>	
26. Stems erect; leaves palmately compound; leaflets 7-11, oblanceolate; flowers in terminal racemes <i>Lupinus perennis</i>	

- 24. Leaflets 11-31 27
- 27. Plants hoary-pubescent; flowers in terminal racemes *Tephrosa virginiana*
- 27. Plants strigose to glabrous; flowers in umbel-like heads or axillary racemes 28
- 28. Flowers racemose; pods neither 4-angled nor jointed [*Astragalus*](#)
- 28. Flowers umbellate; pods linear, 4-angled and jointed *Coronilla varia*

FUMARIACEAE

- 1. Plant a climbing biennial vine; corollas spongy *Adlumia fungosa*
- 1. Herbs ± erect; corollas not spongy 2
- 2. Leaves basal; corollas white [*Dicentra*](#)
- 2. Leaves cauline; corollas yellow, pink, or purple 3
- 3. Flowers yellow or pinkish; capsules linear, several-seeded [*Corydalis*](#)
- 3. Flowers deep purple; pods roundish, 1-seeded *Fumaria officinalis*

GENTIANACEAE

- 1. Corolla tube much shorter than lobes *Sabatia angularis*
- 1. Corolla tube as long as or longer than lobes 2
- 2. Corolla bright pink *Centaurium pulchellum*
- 2. Corolla blue, purplish, yellowish, or white 3
- 3. Pedicels distinctly longer than flowers; flowers 4-merous; corolla lobes fringed
..... [*Gentianopsis*](#)
- 3. Pedicels none, or much shorter than flowers; flowers 5-merous; corolla lobes entire 4
- 4. Flowers small (1-2.5 cm long) on short pedicels *Gentianella quinquefolia*

4. Flowers relatively large (2.5-4.3 cm long), $\pm$ sessile[Gentiana](#)

GERANIACEAE

1. Leaves palmately veined and lobed or divided; stamens 10 (5)..... [Geranium](#)
1. Leaves pinnately veined and dissected; stamens 5*Erodium cicutarium*

HALORAGIDACEAE

1. Leaves whorled; stamens 4-8; fruit 4-lobed[Myriophyllum](#)
1. Leaves alternate; stamens 3-4; fruit 3-angled*Proserpinaca palustris*

- HIPPURIDACEAE *Hippuris vulgaris*

HYDROPHYLLACEAE

1. Lower leaves opposite; flowers solitary on short pedicels; stamens included*Ellisia nyctelea*
1. Leaves alternate; flowers arranged in a scorpid cyme; stamens exserted[Hydrophyllum](#)

HYPERICACEAE

1. Petals yellow; leaves various.....[Hypericum](#)
1. Petals pink or greenish-purple; leaves oval*Triadenum fraseri*

LAMIACEAE

1. Calyx with distinct crest or callosity on upper side.....[Scutellaria](#)
1. Calyx not as above 2
2. Plants prostrate, with flowering branches ascending; stems retrorsely pubescent; leaves entire, punctate, ovate, glabrous, less than 1 cm long; corollas purplish..... *Thymus praecox*
2. Plants without the above combination of characteristics 3

3. Corollas $\pm$ regular, with $\pm$ equal lobes.....	4
4. Leaves not entire.....	5
5. Plants strongly aromatic; corollas not white; fertile stamens 4.....	Mentha
5. Plants hardly aromatic; corollas white; fertile stamens 2	Lycopus
4. Leaves $\pm$ entire	6
6. Flowers 1-3 in axils of leaf-like bracts, bluish; stamens long exerted from tube and curved downward; calyx campanulate.....	<i>Trichostema brachiatum</i>
6. Flowers 4 or more in cymes terminating branches, whitish or purple; stamens exerted with straight filaments; calyx tubular	7
7. Leaves broadly ovate, less than twice as long as wide, obtuse.....	<i>Origanum vulgare</i>
7. Leaves linear to lance-ovate, more than twice as long as wide, acute	<i>Pycnanthemum virginianum</i>
3. Corollas strongly irregular, bilabiate (or upper lip absent in <i>Teucrium</i> and <i>Ajuga</i>)	8
8. Upper lip of corolla essentially absent.....	9
9. Leaves lanceolate, coarsely toothed, acute, rounded at base; distinct petioles; plants more than 3 dm tall; flowers pink-purple.....	<i>Teucrium canadense</i>
9. Leaves oblong to ovate, entire or shallowly toothed, sessile or the lower ones with a broad petiole; stems less than 3 dm tall; corollas blue or purple	Ajuga
8. Corollas distinctly 2-lipped.....	10
10. Upper lip hood-like	11
11. Calyx tube with more than 10 strong nerves.....	12
12. Plants creeping, rooting at nodes; leaves coarsely toothed, reniform, less than 5 cm long.....	<i>Glechoma hederacea</i>
12. Plants erect; leaves much longer than broad, toothed, greater than 5 cm long	13

13. Inflorescence bracts with nerves ending in long teeth; calyx with 4 small lobes and 1 large lobe *Dracocephalum parviflorum*
13. Inflorescence bracts not ending in long teeth; calyx $\pm$ regular..... 14
14. Fertile stamens 4..... 15
15. Stems densely pubescent; corollas whitish with purple spots; calyx teeth linear *Nepeta cataria*
15. Stems glabrous to pubescent; corollas yellowish or purplish; calyx teeth deltoid [*Agastache*](#)
14. Fertile stamens 2..... 16
16. Calyx scarcely bilabiate [*Monarda*](#)
16. Calyx strongly bilabiate 17
17. Flowers numerous, sessile, crowded into dense axillary clusters or terminal spikes..... [*Blephilia*](#)
17. Flowers few to several, $\pm$ pedicellate, in loose or $\pm$ crowded axillary or terminal inflorescence [*Salvia*](#)
11. Calyx tube with up to 10 strong nerves 18
18. Flowers solitary or clustered in terminal spikes or racemes, the inflorescence $\pm$ leafless 19
19. Flower clusters densely crowded into thick spikes; calyx strongly bilabiate; floral bracts strongly ciliate..... *Prunella vulgaris*
19. Plants not as above 20
20. Flowers clustered, each cluster subtended by a conspicuous bract; spikes of interrupted whorls of small flowers [*Stachys*](#)
20. Spikes continuous, loosely flowered; flowers 1.5-3.5 cm long..... *Physostegia virginiana*
18. Flowers clustered in axils of foliaceous bracts; inflorescence appearing leafy... 21
21. Leaves palmately 3-5-divided *Leonurus cardiaca*

21. Leaves coarsely toothed, not divided	22
22. Leaves sessile/clasping, reniform or ovate and petiolate, less than 1.5 times longer than broad; calyx lobes not spine-tipped	23
23. Corolla soft yellow, lips streaked with red.....	<i>Lamiastrum galeobdolon</i>
23. Corollas pinkish or purplish.....	<i>Lamium</i>
22. Leaves various, more than 1.5 times longer than broad; calyx tubes spine-tipped or not	24
24. Calyx lobes not spine-tipped; flower clusters stalked on peduncles at least 2 mm long; flowers on distinct pedicels	<i>Ballota nigra</i>
24. Flowers and clusters sessile; calyx lobes spine-tipped	25
25. Stems coarsely hirsute with retrorse hairs	<i>Galeopsis tetrahit</i>
25. Stems densely covered with fine hairs	<i>Leonurus cardiaca</i>
10. Upper corolla lip not hood-like, and usually shorter than lower	26
26. Leaves numerous, ± linear, ± entire, sessile; flowers in dense, compacted flat heads.....	<i>Pycnanthemum virginianum</i>
26. Plants not with above combination of characteristics	27
27. Fertile stamens 4.....	28
28. Plants densely soft-pubescent; leaves ± ovate, coarsely toothed	<i>Nepeta cataria</i>
28. Plants ± glabrous; leaves ± entire	<i>Satureja</i>
27. Fertile stamens 2.....	29
29. Calyx scarcely bilabiate	30
30. Flowers sessile in dense head-like clusters; flowers not fringed.....	<i>Monarda</i>
30. Flowers with distinct petioles, in loose racemes; flowers fringed	<i>Collinsonia canadensis</i>

29. Calyx strongly bilabiate	31
31. Flowers numerous, sessile, in dense axillary clusters or terminal spikes.....	<i>Blephilia</i>
31. Flowers few to several, pedicellate, in loose or crowded axillary or terminal inflorescence.....	32
32. Calyx tube swollen on 1 side, less than 4 mm long; corollas much reduced; flower clusters axillary	<i>Hedeoma</i>
32. Calyx tube not swollen, greater than 5 mm long; corollas showy; flower clusters terminal	<i>Salvia</i>
LENTIBULARIACEAE	<i>Utricularia</i>
LIMNANTHACEAE	<i>Floerkea proserpinacoides</i>
LINACEAE.....	<i>Linum</i>
LOBELIACEAE	<i>Lobelia</i>
LYTHRACEAE	
1. Calyx cylindrical; petals 6 (5-7).....	<i>Lythrum</i>
1. Calyx campanulate; petals 4 or 5	2
2. Flowers small, one per axil; petals 4; capsules 2- to 4-celled; plants herbaceous	<i>Ammania coccinea</i>
2. Flowers large (2 cm in diameter) in axillary clusters; petals 5; plants semi-shrubby.....	<i>Decodon verticillata</i>
MALVACEAE	
1. Calyx without bractlets at base.....	<i>Abutilon theophrasti</i>

1. Calyx subtended by 3 or more separate bracts 2
2. Bractlets 3 [Malva](#)
2. Bractlets at least 6..... 3
3. Carpels and styles 5, forming in fruit a single capsule; pistil of 5 united carpels; bractlets narrowly linear [Hibiscus](#)
3. Carpels and styles more than 15, in fruit in a ring of 1-seeded sections around central axis; pistil consisting of more than 15 united carpels; bractlets triangular 4
4. Stem covered with dense velvety gray hairs; petals less than 2.5 cm long; carpels less than, or equal to, 20 [Althaea](#)
4. Stem with scattered hairs; petals more than 3 cm long; carpels 20 or more *Alcea ficifolia*

MENYANTHACEAE

1. Flowers in racemes; leaves 3-foliolate, crowded towards base of flowering stem; petioles long, sheathing..... *Menyanthes trifoliata*
1. Leaf blades cordate; leaves simple, floating; flowers in umbel-like cluster *Nymphoides peltata*

NELUMBONACEAE *Nelumbo lutea*

NYCTAGINACEAE [Mirabilis](#)

NYMPHAEACEAE

1. Leaves elliptic, peltate, slimy *Brasenia schreberi*
1. Leaves with basal cleft, not peltate, not slimy..... 2
2. Leaves elliptic to sub-orbicular, longer than wide; perianth yellow [Nuphar](#)
2. Leaves orbicular; flowers white *Nymphaea odorata*

ONAGRACEAE

1. Two notched white petals, 2 sepals, and 2 stamens [*Circaea*](#)
1. Flowers with 4 petals (5, 0); sepals 4-6 (2); stamens 4-12 2
 2. Fruit indehiscent; flowers pink [*Gaura*](#)
 2. Fruit a many-seeded capsule opening by valves or a pore; petals various 3
 3. Flowers not yellow; seeds with tuft of silky hairs [*Epilobium*](#)
 3. Seeds without hairs; petals various colors 4
 4. Hypanthium conspicuously extended beyond ovary into a tube [*Oenothera*](#)
 4. Hypanthium scarcely extended [*Ludwigia*](#)

OROBANCHACEAE

1. Flowers of 2 kinds, staminate and pistillate [*Epifagus virginiana*](#)
1. Flowers all perfect, complete 2
 2. Flowers in thick scaly spikes; plants glabrous [*Conopholis americana*](#)
 2. Flowers solitary in racemes; glandular puberulent [*Orobanche*](#)

OXALIDACEAE..... [*Oxalis*](#)

PAPAVERACEAE

1. Flowers white [*Sanguinaria canadensis*](#)
1. Flowers not white 2
 2. Leaves 3-dissected; capsules long, slender [*Eschscholtzia californica*](#)
 2. Leaves pinnatifid; capsules various 3

- 3. Flowers red or pink; juice milky; capsules globose..... [Papaver](#)
- 3. Flowers yellow; juice yellow; capsules linear*Chelidonium majus*

PHRYMACEAE..... *Phryma leptostachya*

PHYTOLACCACEAE*Phytolacca americana*

PLANTAGINACEAE..... [Plantago](#)

POLEMONIACEAE

- 1. Leaves opposite, simple, entire; corolla salverform [Phlox](#)
- 1. Leaves alternate, simple or compound, entire or toothed; corolla various..... 2
 - 2. Leaves simple, entire; corolla pink, salverform*Collomia linearis*
 - 2. Leaves odd-pinnately compound; leaflets toothed; corolla blue..... *Polemonium reptans*

POLYGALACEAE [Polygala](#)

POLYGONACEAE

- 1. Leaves linear, soon deciduous; flowers racemose, solitary in axils of bracts.....
..... *Polygonella articulata*
- 1. Leaves not linear; flowers racemose or not, often not solitary 2
 - 2. Tepals 6, the inner 3 much enlarged and valve-like in fruit [Rumex](#)
 - 2. Tepals 4 or 5 (6), all in single series; never enlarged as above 3
 - 3. Tepals 4, flowers remote along the slender inflorescence axis; achenes beaked
..... [Polygonum](#)
 - 3. Tepals 5 (6); flowers remote or aggregated; achenes not beaked..... 4

- 4. Most leaves petiolate and cordate 5
 - 5. Plants erect, smooth; flowers in small racemes *Fagopyrum esculentum*
 - 5. Plants sprawling, trailing, or twining, often pubescent, sometimes prickly; flowers in elongate racemes..... [*Polygonum*](#)
- 4. Leaves tapering to sessile or petioled bases..... 6
 - 6. Achenes 3-winged, twice as long as perianth; basal leaves very large and wide, with fleshy petioles *Rheum rhaponticum*
 - 6. Achenes not winged, less than twice as long as perianth; basal leaves not as above (often absent) [*Polygonum*](#)

PORTULACACEAE

- 1. Leaves several, clustered at base of stem, terete; flowers rose; capsule papery
..... *Talinum rugospermum*
- 1. Leaves, flowers, and fruit not as above 2
 - 2. Leaves 2, elongated; petals pink or white; capsule 3- to 8-seeded..... *Claytonia virginica*
 - 2. Leaves numerous, thick, fleshy, spatulate; capsules many-seeded *Portulaca oleracea*

PRIMULACEAE

- 1. Lobes of corolla reflexed; stamens exserted, connivent, forming a cone; leaves basal
..... *Dodecatheon meadia*
- 1. Lobes erect or spreading, not reflexed; leaves not all basal 2
 - 2. Plants small, scapose, acaulescent *Androsace occidentalis*
 - 2. Stems leafy 3
 - 3. Leaves alternate *Samolus valerandi*
 - 3. Leaves opposite or whorled 4
 - 4. Flowers white; leaves near stem apex..... *Trientalis borealis*

4. Flowers yellow or scarlet (blue); stems leafy..... 5
5. Flowers yellow [*Lysimachia*](#)
5. Flowers scarlet, rarely blue *Anagallis arvensis*

PYROLACEAE

1. Plants without chlorophyll (saprophytes); leaves reduced to scales [*Monotropa*](#)
1. Plants with chlorophyll and normal leaves 2
 2. Flowers umbellate; styles very short or obsolete; leaves alternate or nearly whorled; plants semi-woody *Chimaphila umbellata*
 2. Flowers solitary or in racemes; styles elongate; all leaves nearly all basal; plants herbaceous 3
 3. Flower solitary; fruit opening from top down *Moneses uniflora*
 3. Flowers in $\pm$ symmetrical racemes; fruit opening from base upward [*Pyrola*](#)

RANUNCULACEAE

1. Vines; leaves all opposite *Clematis virginiana*
1. Herbs; leaves not opposite 2
 2. Leaves simple, entire, linear, 2 mm or more wide; 1-flowered scape with elongate receptacle *Myosurus minimus*
 2. Leaves simple or compound, but not linear, less than 2 mm wide; inflorescence various.... 3
 3. Flowers irregular, strongly spurred 4
 4. Flowers reddish, with 4-5 elongated spurs *Aquilegia canadensis*
 4. Flowers blue or purple with one conspicuous spur *Consolida ajacis*
 3. Flowers regular, not spurred 5

- 5. Cauline leaves opposite or whorled..... 6
 - 6. Leaves 3-compound; leaflets less than 3 cm long, as broad as long, shorter than petiolules..... *Anemonella thalictroides*
 - 6. Leaves deeply dissected; if compound, then leaflets more than 3 cm long, petiolules $\pm$ absent..... [*Anemone*](#)
- 5. Leaves alternate, or all basal..... 7
 - 7. Flowers yellow, or leaves simple and unlobed, or plants aquatic..... 8
 - 8. Leaves alike, unlobed; petals absent, sepals yellow, petaloid *Caltha palustris*
 - 8. Leaves deeply cleft or compound; sepals green; petals yellow (white)..... 9
 - 9. Leaves dissected, basal; receptacle an elongated cylinder; achenes hairy, with long beaks *Ceratocephalos testiculatus*
 - 9. Leaves various; receptacle globose to cylindric; achenes not hairy nor long-beaked..... [*Ranunculus*](#)
 - 7. Flowers not yellow; plants terrestrial; leaves 3-lobed or 3-compound 10
 - 10. Plants scapose, leaves all basal; flowers solitary 11
 - 11. Leaves pubescent, 3-lobed but not 3-compound; sepal-like bracts green; sepals white, pink, or blue [*Hepatica*](#)
 - 11. Leaves glabrous, 3-compound; sepals white, petaloid..... *Coptis trifolia*
 - 10. Plants with cauline leaves; basal leaves present or absent; flowers 1-several 12
 - 12. Flowers solitary or few, terminal or axillary 13
 - 13. Leaves simple, deeply lobed; sepals 3, petaloid; fruit of red berries in a dense head; flowers on short stout peduncles *Hydrastis canadensis*
 - 13. Leaves compound, leaflets broadly ovate and coarsely lobed; fruit of 4 separate follicles; flowers on elongate slender peduncles *Isopyrum biternatum*
 - 12. Flowers numerous in terminal racemes or panicles..... 14
 - 14. Flowers greenish in terminal panicles; fruit an achene..... [*Thalictrum*](#)

14. Flowers whitish, in racemes; fruit not an achene..... 15
15. Fruit white or red, berry-like; plants less than 1 dm tall; racemes relatively short.....[Actaea](#)
15. Fruit a follicle; plants greater than 1 m tall; racemes elongated.....
.....*Cimicifuga racemosa*

ROSACEAE

1. Leaves opposite; petals, sepals 4; fruit a blackish drupe.....*Rhodotypos scandens*
1. Leaves alternate or basal; petals and sepals not 4; fruit various 2
2. Woody trees or shrubs, or a thorny bramble 3
3. Leaves compound; plants often conspicuously armed..... 4
4. Stems biennial, $\pm$ armed (rarely completely smooth); leaves 3-compound or palmately compound; fruit a fleshy aggregate of drupelets; flowers usually white.....[Rubus](#)
4. Stems perennial; smooth or armed; leaves pinnately compound; fruit various, but not as above; flowers white, pink, or yellow 5
5. Corolla pink (white, yellow), at least 2 cm wide; stems typically $\pm$ armed; stipules adnate to petiole; fruit a fleshy red or orange hip[Rosa](#)
5. Corolla white or yellow, less than 2.5 cm wide; stems unarmed; stipules free; fruit a fleshy pome, dry follicle, or achenes 6
6. Petals yellow, 6-11 mm long; leaflets 5-7, entire, less than 6 mm broad; fruit a hairy achene; flowers few in each inflorescence.....*Potentilla fruticosa*
6. Petals white, less than 5 mm long; leaflets 12-23, toothed, greater than 10 mm wide; fruit a pome or follicle; flowers numerous in dense inflorescence 7
7. Inflorescence an elongated panicle; fruit a follicle; stamens twice as long as petals; leaflets doubly serrate; shrubs.....*Sorbaria sorbifolia*
7. Inflorescence a broad corymb; fruit a pome; stamens about as long as petals; leaflets merely toothed; small tree or large shrub.....[Sorbus](#)

3. Leaves simple; plants unarmed, or armed only with strong elongate spines 8
 8. Style 1, ovary 1 (superior); fruit a drupe; leaves unlobed, typically with 1 or more glands at base of blade [*Prunus*](#)
 8. Styles more than 1; ovary inferior or superior; fruit a pome, or dry; leaves lobed or not 9
 9. Ovary superior..... 10
 10. Petals 18-25 mm long; leaves usually at least 9 cm wide; fruit juicy aggregate of drupelets [*Rubus*](#)
 10. Petals 1-4.5 mm long; leaves less than 5 cm wide; fruit dry, indehiscent..... 11
 11. Stipules present; leaf blades $\pm$ lobes, toothed; fruit 5-9 mm long; bark conspicuously peeling into long vertical strips *Physocarpus opulifolius*
 11. Stipules absent; leaves toothed, not lobed; fruit 2.5-4 mm long; bark not shredding [*Spiraea*](#)
 9. Ovary inferior 12
 12. Upper midribs of leaves with red glands; leaves not lobed; plants unarmed; petals less than twice as long as wide *Aronia X prunifolia*
 12. Glands absent; leaves often not open at flowering time; leaves lobed or not; petals various 13
 13. Leaves toothed, not lobed; petals more than twice as long as wide [*Amelanchier*](#)
 13. Leaves various; petals less than twice as long as wide..... 14
 14. Leaves toothed, often coarsely so, and often lobed; long, sturdy spines on branches common; inflorescence a compound corymb 15
 15. Petals white; stamens 20 or fewer; spines usually shiny; bud scales glabrous..... [*Crataegus*](#)
 15. Petals pink; stamens about 20; spines dull; bud scales pubescent [*Malus*](#)
 14. Leaves toothed, but not lobed; plants unarmed 16

- 16. Fruit berry-like; flowers and fruit in racemes [Amelanchier](#)
- 16. Fruit a pome (pear or apple); flowers crowded on short spur branches 17
 - 17. Fruit an apple; petals pink; young branchlets densely pubescent
..... *Malus pumila*
 - 17. Fruit a pear; petals white; young branchlets $\pm$ glabrous *Pyrus communis*
- 2. Plants herbaceous, unarmed; leaves all compound 18
 - 18. Leaves all trifoliolate or palmately compound 19
 - 19. Plant with erect leafy stems; style with prominent joint near middle [Geum](#)
 - 19. Plant erect or with only basal leaves; style not jointed 20
 - 20. No bractlets between sepals 21
 - 21. Petals yellow; fruit an achene; leaves all basal *Waldsteinia fragarioides*
 - 21. Petals white; fruit an aggregate of drupelets; leaves cauline *Rubus pubescens*
 - 20. Sepal-like bractlets between sepals 22
 - 22. Bractlets with 3 teeth or lobes *Duchesnea indica*
 - 22. Bractlets entire 23
 - 23. Receptacle enlarging in fruit, becoming fleshy, red, with embedded achenes;
petals white; leaflets 3; plants stoloniferous [Fragaria](#)
 - 23. Receptacle not enlarging as above; fruit dry; petals yellow (white); leaflets 3, 5,
or 7 [Potentilla](#)
 - 18. Leaves pinnately compound or divided 24
 - 24. Carpels numerous on a conical receptacle; bractlets between sepals 25
 - 25. Styles short, not jointed, not pilose [Potentilla](#)
 - 25. Styles elongate, jointed, $\pm$ pilose [Geum](#)
 - 24. Carpels 5 or fewer on flat receptacle; no additional bractlets 26

26. Petals pink; inflorescence a broad panicle; leaflets deeply lobed..... *Filipendula rubra*

26. Petals yellow; inflorescence elongate in a spike-like raceme; leaflets not lobed
.....[Agrimonia](#)

RUBIACEAE

1. Shrubs; leaves opposite, or often in whorls of 3; flowers and fruits in dense globose heads
..... *Cephalanthus occidentalis*

1. Herbs; leaves, flowers, and fruits not as above 2

2. Leaves in whorls of 4-8.....[Galium](#)

2. Leaves opposite..... 3

3. Plants trailing; fruit a pair of red drupes.....*Mitchella repens*

3. Plants erect; fruit a capsule[Houstonia](#)

SANTALACEAE *Comandra umbellata*

SARRACENIACEAE *Sarracenia purpurea*

SAXIFRAGACEAE

1. Woody shrubs 2

2. Leaves alternate or fascicled, lobed; stamens fewer than 6[Ribes](#)

2. Leaves unlobed, opposite; stamens more than 6.....*Philadelphus coronarius*

1. Plants herbaceous, not woody..... 3

3. Leaves all cauline.....*Penthorum sedoides*

3. Leaves chiefly basal..... 4

4. Leaves $\pm$ entire 5

- 5. Scape and leaves densely pubescent; leaves at least twice as long as wide; inflorescence an elongated panicle*Saxifraga pensylvanica*
- 5. Scape glabrous; leaves up to twice as long as wide; flowers solitary..... *Parnassia glauca*
- 4. Leaves obviously crenate or dentate 6
- 6. Petioles densely hairy; flowers irregular, asymmetrical, in panicles; relatively large plants..... *Heuchera richardsonii*
- 6. Petioles and flowers not as above; plants less than 4 dm tall..... [*Mitella*](#)

SCROPHULARIACEAE

- 1. Leaves mostly in whorls of 3-7..... *Veronicastrum virginicum*
- 1. Leaves alternate, opposite, or occasionally in whorls of 3 2
- 2. Sepals (or lobes) fewer than 5 3
- 3. Most leaves deeply lobed or divided; calyx lobes fewer than 4..... 4
- 4. Leaves pinnately lobed, crenate, none with colored tips..... [*Pedicularis*](#)
- 4. Leaves entire, or 3-5 cleft into linear lobes; upper leaves usually with colored tips [*Castilleja*](#)
- 3. No leaves lobed or divided; calyx with 4 distinct lobes or sepals..... 5
- 5. Basal leaves large, cordate, long-petioled; cauline leaves much reduced, $\pm$ alternate and sessile; inflorescence a dense terminal spike..... *Besseyia bullii*
- 5. Leaves not as above; inflorescence various..... 6
- 6. Corollas $\pm$ regular, never partly yellow; capsules symmetrical; no leaves lacinate at base [*Veronica*](#)
- 6. Corollas strongly bilabiate, partly yellow; capsules pointed, asymmetrical; leaves of inflorescence often lacinate at base *Melampyrum lineare*
- 2. Sepals, or lobes, 5 7

- 7. Leaves alternate 8
 - 8. Flowers in terminal spikes or racemes 9
 - 9. Corollas distinctly spurred; stems eglandular..... *Linaria vulgaris*
 - 9. Corollas not spurred; stems often glandular or tomentose 10
 - 10. Corollas $\pm$ regular; stamens 5..... [*Verbascum*](#)
 - 10. Corollas strongly bilabiate; stamens 4 11
 - 11. Leaves entire; throat of corolla closed by a palate..... *Antirrhinum majus*
 - 11. Leaves crenate; corolla throat open *Digitalis lanata*
 - 8. Flowers axillary..... 12
 - 12. Flowers and fruits $\pm$ sessile; sepals more than 5 mm long; corolla more than 8 mm long..... *Antirrhinum majus*
 - 12. Flowers and fruits on slender pedicels; sepals less than 5 mm long; corolla spurred, less than 8 mm long *Chaenorhinum minus*
- 7. Leaves mostly opposite (a few may be in whorls of 3)..... 13
 - 13. Inflorescence a terminal raceme, panicle, or spike; flowers subtended by bracts, but not in leaf axils 14
 - 14. Inflorescence spicate, with flowers $\pm$ sessile on pedicels less than 1 mm long 15
 - 15. Spikes interrupted, bracts foliaceous; principal leaves auriculate; corolla rose *Tomanthera auriculata*
 - 15. Spikes dense, bracts much reduced, sepal-like; leaves not auriculate; corollas white *Chelone glabra*
 - 14. Inflorescence a raceme or panicle; flowers on distinct pedicels..... 15
 - 16. Leaves distinctly petiolate..... [*Scrophularia*](#)
 - 16. Leaves sessile [*Penstemon*](#)
 - 13. Inflorescence not terminal, flowers solitary in leaf axils 17

- 17. Leaves lobed, dissected, or compound..... [Aureolaria](#)
- 17. Leaves all unlobed..... 18
- 18. Sepals free to base *Lindernia dubia*
- 18. Sepals united into tube 19
- 19. Leaves harshly scabrous, or linear, or both; corolla $\pm$ regular, pink or purple
..... [Agalinis](#)
- 19. Leaves not scabrous, not linear; corolla yellow or blue-violet [Mimulus](#)

SELAGINELLACEAE..... [Selaginella](#)

SOLANACEAE

- 1. Trailing or climbing shrubs; leaves entire *Lycium barbarum*
- 1. Herbs $\pm$ erect, rarely climbing; leaves various 2
- 2. Fruit enclosed in inflated sac 3
- 3. Flowers blue or purple; calyx split to base *Nicandra physalodes*
- 3. Flowers yellowish, with purple center; calyx toothed, not split..... [Physalis](#)
- 2. Fruit not enclosed in inflated sac..... 4
- 4. Corolla rotate, flowers relatively short; fruit a berry..... [Solanum](#)
- 4. Corolla funnelform, flowers 6-20 cm long; fruit a spiny capsule..... [Datura](#)

URTICACEAE

- 1. Leaves mostly opposite..... 2
- 2. Stinging hairs present; mature plants 2+ m tall..... *Urtica dioica*
- 2. Stinging hairs wanting; plants shorter 3

- 3. Plants ± pubescent; stems opaque; stipules separate.....*Boehmeria cylindrica*
- 3. Plants ± glabrous; stems translucent; stipules united[*Pilea*](#)
- 1. Leaves alternate 4
- 4. Stinging hairs present; leaves ovate, 5-12 mm wide; flowers in loose branched cymes
..... *Laportea canadensis*
- 4. Stinging hairs wanting; leaves lanceolate, less than 2.5 cm wide; flower clusters sessile in
leaf axils.....*Parietaria pensylvanica*

VALERIANACEAE

- 1. Tall, strong-smelling perennials; some leaves pinnately divided; fruit 1-celled [*Valeriana*](#)
- 1. Low annuals; leaves entire or dentate; fruit 3-celled *Valerianella chenopodifolia*

VERBENACEAE

- 1. Corolla 5-lobed, ± regular; calyx tubular; fruit splitting into 4 nutlets [*Verbena*](#)
- 1. Corolla 4-lobed, 2-lipped; calyx short, 2-cleft; fruit splitting into 2 nutlets *Phyla lanceolata*

- VIOLACEAE [*Viola*](#)

GENERA KEYS

‘A’

Abutilon *Abutilon theophrasti*

Acalypha *Acalypha rhomboidea*

Acanthopanax *Acanthopanax sieboldianus*

Acer

1. Leaves compound *Acer negundo*

1. Leaves simple 2

2. Leaves mostly 3-lobed or unlobed, the terminal lobe prominent (twice as long and wide as the two lateral lobes)..... *Acer ginnala*

2. Leaves 3- to 5-lobed, the terminal lobe not significantly longer and wider the lateral lobes ..
..... 3

3. Leaf margins with few large teeth, or entire; leaf sinuses broadly rounded in the angles....
..... 4

4. Petioles usually with milky-white sap; wings of samaras widely diverging, often to 180 degrees; tree commonly cultivated, occasionally escaping *Acer platanoides*

4. Petioles with clear sap; wings of samaras diverging at an acute angle; tree native to upland woodlands..... 5

5. Lower leaf surfaces and petioles usually pubescent; leaf margins drooping; main leaf lobes round-shouldered, without well-developed teeth *Acer nigrum*

5. Lower leaf surfaces and petioles smooth or the blades sparsely hairy; leaf blade margins flat; main leaf lobes normally with coarse, acute, lateral lobes or teeth.....
..... *Acer saccharum*

3. Leaf margins with numerous teeth, the sinuses mostly sharp-angled..... 6

6. Terminal main lobe of leaf with sides parallel or angled inward near the base 7
7. Terminal main lobe of leaf $\frac{2}{3}$ the length of the blade, widest at middle, with a strongly narrowed base resulting in adjacent sinuses narrowed at their mouths.....
.....*Acer saccharinum*
7. Terminal main lobe of leaf $\frac{1}{2}$ the length of the blade, wider at the base, with margins that are parallel at the base with adjacent sinuses much wider at their mouths.....
..... *Acer rubrum*
6. Terminal main lobe of leaf with sides not parallel, broadest at the base, tapering uniformly to the summit of the lobe 8
8. Leaf blades whitened beneath; leaves mostly 5-lobed; a large cultivated tree, rarely escaping*Acer pseudoplatanus*
8. Leaf blades not whitened beneath; leaves mostly 3-lobed; a native small tree/ tall shrub*Acer spicatum*

Achillea

1. Leaves compound*Achillea millefolium*
1. Leaves simple *Achillea ptarmica*

Acorus*Acorus americanus*

Actaea

1. Pedicels slender, not exceeding 0.7 mm in width; fruit usually red (white) *Actaea rubra*
1. Pedicels thickened, exceeding 1 mm in width; fruit usually white (red)..... *Actaea pachypoda*

Adiantum*Adiantum pedatum*

Adlumia.....*Adlumia fungosa*

Aegopodium*Aegopodium podagraria*

Aesculus

1. Leaflets tapering gradually to tip; buds not sticky; flowers greenish-yellow; foliage with strong odor when crushed*Aesculus glabra*

1. Leaflets abruptly acuminate to a short tip; buds sticky; flowers whitish; foliage without unpleasant odor *Aesculus hippocastanum*

Aethusa*Aethusa cynapium*

Agalinis

1. Pedicels less than, or slightly longer than, length of calyx and capsule 2

2. Upper surfaces of leaves and stem very scabrous (rough hairy); capsule significantly longer than wide*Agalinis aspera*

2. Upper surfaces of leaves less scabrous, stems smooth; capsule at most barely longer than wide.....*Agalinis purpurea*

1. Pedicels longer, often exceeding length of corolla or at least longer than calyx and capsule.....
..... 3

3. Stem leaves usually 2-4 mm wide, with a flattish blade; plant dark-green or purplish, tending to blacken on drying; seeds dark-colored *Agalinis tenuifolia*

3. Stem leaves usually less than 2 mm wide, with a threadlike blade; plant green, remaining ± when dried; seeds pale or light brown 4

4. Stems terete, with only faint ridges; stem leaves 2-3 cm long; calyx teeth not whitened at tip*Agalinis gattingeri*

4. Stems with conspicuous ridges, occasionally winged; stem leaves 1-2.5 cm long; calyx teeth whitened at tip*Agalinis skinneriana*

Agastache

1. Stems glabrous or minutely glabrous between nodes; lower leaf surfaces pubescent throughout; calyx lobes less than 2 mm long; flowers greenish-yellow
.....*Agastache nepetoides*
1. Stems pubescent, including long hairs between nodes; lower leaf surfaces pubescent on veins only; calyx lobes mostly greater than 2 mm long; flowers purplish
..... *Agastache scrophulariaefolia*

Agrimonia

1. Principal leaflets 11-23 (excluding tiny leaflets), lanceolate to linear-lanceolate, 3-4 times longer than wide*Agrimonia parviflora*
1. Principal leaflets 5-11, elliptic to ovate-lanceolate, 1.5 times longer than wide 2
2. Axils of inflorescence minutely but conspicuously glandular*Agrimonia gryposepala*
2. Axils of inflorescence mostly eglandular, or with at most a few sparse glands
.....*Agrimonia pubescens*

Agrostemma *Agrostemma githago*

Agrostis

1. Palea present, one-half or more the length of the lemma; anthers (0.8) 1-1.5 mm long
..... *Agrostis alba*

[Note: *Agrostis tenuis*, has been introduced from Europe and may be a component of lawn seed mixes. It differs from *Agrostis alba* in that its upper ligules are 2 mm long or shorter, whereas the upper ligules of *Agrostis alba* are 2-7 mm long. Also, the panicles lack spikelets near the base of the branches in *Agrostis tenuis*.]

1. Palea absent; anthers 0.6 mm or shorter 2
2. Lower panicle branches 5 cm or less long, forked at about the middle of the branches, branches more or less smooth; leaf blades flat *Agrostis perennans*
2. Lower panicle branches 8 cm long or longer, forked beyond the middle closer to the ends of the branches, branches scabrous; leaf blades tend to be involute*Agrostis hyemalis*

Ailanthus *Ailanthus altissima*

Ajuga

1. Mat-forming perennial spreading by aboveground stolons; stems glabrous, or if pubescent, then sparingly so on opposite sides of stems; leaves glabrous or only sparingly pubescent on upper surfaces *Ajuga reptans*

1. Perennial, spreading by belowground rhizomes; stems and leaves densely hairy on all surfaces *Ajuga genevensis*

Alcea *Alcea ficifolia*

Aletris *Aletris farinosa*

Alisma

1. Flowers 3-4 mm wide, and petals up to 2 mm long, slightly longer than sepals; achenes up to 2 mm long *Alisma subcordatum*

1. Flowers mostly greater than 4 mm wide, and petals greater than 2 mm long, significantly longer than the sepals; achenes 2.5 mm long or longer *Alisma triviale*

Alliaria *Alliaria petiolata*

Allium

1. Leaves typically 2.5-5 cm wide, tapered into a long petiole and withering before flowers appear *Allium tricoccum*

1. Leaves much more narrow, typically less than 1.5 cm wide, petioles wanting, and persisting as flowers appear 2

2. Umbel nodding on bent tip of flowering stem; leaves flat and ribbonlike, with a keel *Allium cernuum*

2. Umbel erect on straight flowering stem; leaves terete, or if flattened, then thick and fleshy, somewhat convex at base of leaf blade 3
3. Inflorescence with bulblets and only a few flowers, if any, on pedicels much exceeding flower itself; leaves and stems solid; fibrous (mesh-like) skin on bulb *Allium canadense*
3. Inflorescence lacking bulblets, but with many densely packed flowers on pedicels shorter than the flowers; leaves and stems hollow; skin on bulb membranous, not fibrous *Allium schoenoprasum*

Alnus

1. Leaf blades blunt and/or notched at apex; leaves and twigs glutinous; a medium-sized, non-native upright tree. *Alnus glutinosa*
1. Leaf blades acute or acuminate at apex; leaves and twigs not glutinous; a tall, multi-stemmed native shrub *Alnus rugosa*

Alopecurus

1. Lemmas 4-6 mm long; anthers 2.4-3.5 mm long; *Alopecurus pratensis*
1. Lemmas 3.5 mm long or less; anthers 2 mm or less long; 2
2. Lemmas with 5 veins on back; lemmas 1.8-2 mm long; anthers 0.3-0.5 mm long *Alopecurus carolinianus*
2. Lemmas with 4 veins on back; lemmas 2-3.5 mm long; anthers greater than 0.5 mm long 3
3. Lemmas 2-2.5 mm long; anthers 0.5-1.3 mm long; lemma awn arising from the middle back of lemma, hidden within or barely exerted from the spikelet *Alopecurus aequalis*
3. Lemmas 2.5-3.5 mm long; anthers 1.5-2 mm long; lemma awn arising from near the base of the lemma, obviously exerted from the spikelet *Alopecurus geniculatus*

Althaea

1. Upper stem surfaces concealed by stellate hairs; plants branched *Althaea officinalis*

1. Parts of upper stem surfaces exposed; hairs simple or stellate; plants unbranched.....
.....*Althaea rosea*

Alyssum.....*Alyssum alyssoides*

Amaranthus

1. Plants with pair of spines at most stem nodes*Amaranthus spinosus*

1. Plants unarmed 2

2. Plants dioecious, with pistillate and staminate flowers on separate plants
.....*Amaranthus tuberculatus*

2. Plants monoecious, with pistillate and staminate flowers on same plant..... 3

3. Plants prostrate or decumbent and ascending-branching somewhat horizontal from base
stem, and then reaching upward; flowers in small, dense axillary clusters..... 4

4. Plants decumbent and ascending; outer leaves of branches noticeably smaller; stems
whitish; bracts much longer than flowers*Amaranthus albus*

4. Plants prostrate and decumbent; all leaves of similar shape and size; stems green to
purplish-tinged; bracts shorter than, or scarcely longer than, flowers.....
.....*Amaranthus graecizans*

3. Plants erect; flowers in terminal or axillary spikes 5

5. Tepals of pistillate flowers mostly no longer than 2.2 mm*Amaranthus hybridus*

5. Tepals of pistillate flowers mostly 3-3.5 mm long..... 6

6. Plants densely pubescent on upper stems, petioles, and on the base of the midrib of
the blades below; tepals abruptly truncate to rounded at tip*Amaranthus retroflexus*

6. Plants glabrous to sparsely pubescent on upper stems and leaves; tepals acute to
tapering to tip 7

7. Seeds circular in outline, 1.2-1.3 mm wide.....*Amaranthus hypochondriacus*

7. Seeds obovate in outline, about 1 mm wide*Amaranthus powellii*

Ambrosia

1. Leaves palmately compound, with 3-5 lobes, or simple (unlobed), mostly opposite throughout..... *Ambrosia trifida*
1. Leaves pinnately compound (once-, twice-, or thrice-pinnatifid), opposite on lower stem and alternate on upper stem..... 2
2. Plants annuals, from a taproot *Ambrosia artemisiifolia*
2. Plants perennial, from a horizontal rootstalk 3
3. Lower leaf surfaces silvery-gray with densely, fine, rough hairs; upper leaf surfaces with minute appressed hairs, giving plants a grayish-green appearance; most leaves alternate
..... *Ambrosia tomentosa*
3. Upper and lower leaf surfaces with straight or appressed hairs, thus giving the plant a green appearance; leaves mostly opposite *Ambrosia psilostachya*

Amelanchier

1. Summit of ovary glabrous or with only a few scattered hairs..... 2
2. Underside of leaves densely tomentose when young and retaining pubescence along midrib and petiole when mature; new leaves just emerging when plant in flower, sometimes still folded, dull green above..... *Amelanchier arborea*
2. Underside of leaves glabrous or nearly so when young and becoming completely glabrous at maturity; new leaves at least half-grown when plant in flower, bronze-reddish when young..... *Amelanchier laevis*
1. Summit of ovary densely tomentose in flower, maintaining pubescence in fruit as well 3
3. Leaves glabrous or nearly so, finely toothed, with 22-50 total teeth per side.....
..... *Amelanchier interior*
3. Leaves densely tomentose below, less finely toothed, averaging fewer than 20 teeth per side 4
4. Leaves with 5-8 teeth per cm at maturity; petals 4-10 mm long; a low, colonial plant spreading by runners and suckering, typically less than 1 m tall *Amelanchier spicata*

4. Leaves with 2-5 teeth per cm at maturity; petals 11-22 mm long; plants typically solitary and erect, and if colonial then not suckering*Amelanchier sanguinea*

Amerorchis *Amerorchis rotundifolia*

Ammannia *Ammannia robusta*

Ammophila *Ammophila breviligulata*

Amorpha

1. Compound leaves with petioles 2-5 cm long; undersides of leaflets glabrous or only sparsely pubescent, distinctly gland-dotted; a medium to tall, largely glabrous shrub of riverine habitats *Amorpha fruticosa*

1. Compound leaves sessile or nearly so; undersides of leaflets densely silvery-white hairy, glandular dots obscured if present; a small, distinctly hairy shrub of upland prairie habitats.....
..... *Amorpha canescens*

Amphicarpa *Amphicarpa bracteata*

Amsinckia *Amsinckia lycopsioides*

Anagallis *Anagallis arvensis*

Anaphalis *Anaphalis margaritacea*

Anchusa

1. Corolla tube bent; annuals..... *Anchusa arvensis*

1. Corolla tube straight; perennial with taproot..... *Anchusa officinalis*

Andromeda *Andromeda glaucophylla*

Androsace *Androsace occidentalis*

Anemone

1. Plants with relatively large flowers, the petal-like sepals more than 25 mm long; styles long, exceeding 2 cm at maturity *Anemone patens*

1. Petal-like sepals less than 25 mm long; styles short..... 2

2. Plants low, delicate, under 20 cm tall, often no more than 10 cm tall; blooming completed by late May *Anemone quinquefolia*

2. Plants tall, coarse, over 20 cm tall; blooming into June or later 3

3. Leaves (bracts) on flower stalks sessile or subsessile *Anemone canadensis*

3. Leaves (bracts) wanting on flower stalk, or, if present, then with distinct petioles 4

4. Fruiting head cylindrical, 2-4 times longer than thick; flower stalks lacking leaves (bracts), leaves instead found at base of flower stalk *Anemone cylindrica*

4. Fruiting head ovoid or thimble-shaped, less than 2.5 times longer than thick; flower stalks with pair of bracts *Anemone virginiana*

Anemonella *Anemonella thalictroides*

Anethum *Anethum graveolens*

Angelica *Angelica atropurpurea*

Antennaria

1. Basal leaves less than 1.5 cm wide, with one prominent vein, or, if lateral veins are present they are obscure, not reaching beyond midpoint of leaf blade *Antennaria neglecta*

1. Basal leaves more than 1.5 cm side, with 3-5 prominent veins, the lateral veins reaching beyond the midpoint of the leaf blade 2

2. Basal leaves persistently woolly on upper surfaces into maturity; flower heads small, the tubular ray flowers less than 3.2 mm long *Antennaria plantaginifolia*
2. Basal leaves becoming glabrous on upper surfaces once leaf unfolds; flower heads larger, the tubular ray flowers more than 3.2 mm long *Antennaria parlinii*

Anthoxanthum *Anthoxanthum odoratum*

Anthriscus *Anthriscus sylvestris*

Antirrhinum *Antirrhinum majus*

Apios *Apios americanum*

Aplectrum *Aplectrum hyemale*

Apocynum

1. Leaves on main stem often without petioles, or at most with short, obscure petioles less than 3 mm long; leaf bases often cordate-clasping *Apocynum sibiricum*
1. Leaves on main stem with distinct petioles, exceeding 3 mm long; leaf bases varying, but typically not cordate-clasping 2
2. Mature corollas 6-10 mm long, with spreading or recurved lobes, and pale pink with rosy-red markings; leaves drooping or spreading *Apocynum androsaemifolium*
2. Mature corollas 3-6 mm long, with erect or slightly divergent lobes, and white to greenish-white; leaves strongly ascending *Apocynum cannabinum*

Aquilegia

1. Flowers red and yellow with straight spurs about 1.3 cm long; native *Aquilegia canadensis*
1. Flowers blue, purple, white, and/or pink with strongly incurved spurs 0.6-0.8 cm long; rare garden escape *Aquilegia vulgaris*

Arabis

1. Upper leaves narrowing at base, not clasping stem..... 2
 2. Pods 5-9 cm long on reflexed pedicels causing the pods to droop downwards; stem leaves greater than 2.5 cm long; basal leaves often withered at maturity; plants single-stemmed *Arabis canadensis*
 2. Pods 1.9-4.5 cm long on ascending pedicels causing the pods to point upwards; stem leaves less than 2.5 cm long; basal leaves present at maturity; plants multi-stemmed *Arabis lyrata*
1. Upper leaves with distinct lobes at base, clasping the stem..... 3
 3. Stems glabrous, typically glaucous, especially on upper portion of plant, and may have simple (unforked) hairs at base 4
 4. Fruits hug stem, pointing straight up or nearly so on erect pedicels *Arabis glabra*
 4. Fruits widely spreading, at approximately right angles to stem or even downwards on reflexed pedicels *Arabis laevigata*
 3. Stems hairy, not glaucous, especially distinctly pubescent on lower portion (bottom 1/3) of plant 5
 5. Pedicels 1-4 mm long; plants much branched from base with decumbent, spreading stems, stellate-pubescent throughout *Arabis shortii*
 5. Pedicels 5 mm or more long; plants with stem(s) erect or ascending, not stellate-pubescent throughout 6
 6. Fruits widely spreading at maturity, perpendicular or nearly so to stem; petals pale pink to purple or white *Arabis divaricarpa*
 6. Fruits erect or ascending at maturity, tending to hug stem at an acute angle; petals greenish-white to white..... *Arabis hirsuta*

Aralia

1. Inflorescence and leaves on separate stalks, originating from base of plant ... *Aralia nudicaulis*

1. Inflorescence terminal or axial, sharing the stems with leaves..... 2
2. Stems (especially at base) sharply hispid with prickly hairs; inflorescence with fewer than 12 umbels..... *Aralia hispida*
2. Stems usually glabrous, not at all hispid; inflorescence tall and spike-like, with more than 12 umbels..... *Aralia racemosa*

Arceuthobium *Arceuthobium pusillum*

Arctium

1. Mature flower heads averaging less than 2.5 cm wide; lower leaf stalks typically hollow and not deeply furrowed *Arctium minus*
1. Mature flower heads averaging more than 2.5 cm wide; lower leaf stalks solid and deeply furrowed *Arctium lappa*

Arctostaphylos..... *Arctostaphylos uva-ursi*

Arenaria

1. Leaves linear, rigid, subulate, evergreen; valves of capsules entire *Arenaria stricta*
[Note: *Arenaria stricta* ssp. *dawsonensis*, rare in the Region, is often cespitose, with leaves 5-15 mm long and crowded near the base, and petals at most equaling the sepals in length.]
1. Leaves oval or entire; valves of capsules 2-toothed or 2-cleft 2
2. Leaves oval. Obtuse, 1-3 cm long; sepals obtuse, shorter than petals; seeds smooth.....
..... *Arenaria lateriflora*
2. Leaves ovate, acute, 2-8 mm long; sepals acuminate, longer than petals; seeds rough.....
..... *Arenaria serpyllifolia*

Arethusa *Arethusa bulbosa*

Arisaema

1. Leaflets usually 3; spadix terete, club-shaped, obtuse, overarched by the green- or purple-striped spathe*Arisaema triphyllum*
1. Leaflets 7-11; spadix slender, projecting beyond the green spathe.....*Arisaema dracontium*

Aristida

1. Fertile lemma 15 mm long or greater; lemma awn 4 cm long or greater; first glume with 3-5 veins*Aristida oligantha*
1. Fertile lemma 10 mm long or less; lemma awn up to 2.5 cm long; first glume with only 1 vein 2
2. Middle awn coiled in 1-2 loops at the base; glumes unequal in length, the lower glume about three-quarters the size of the upper glume.....*Aristida basiramea*
2. Middle awn bent once or straight, not coiled at base; glumes equal in length or lower glumes slightly longer than the upper glumes 3
3. Plant a perennial, last year's dead sheaths visible at base; lower sheaths pilose; lower glumes slightly longer than the upper glumes *Aristida purpurascens*
3. Plant an annual, dead sheaths not visible at base; lower sheaths glabrous except at summit; lower glume equal to the upper glume..... *Aristida intermedia*

Armoracia

1. Plants aquatic, with finely dissected submersed leaves; emerged leaves pinnatifid or shallowly toothed to $\pm$ entire; style with beak about half as long as body of fruit.....
..... *Armoracia lacustris*
1. Plants coarse, terrestrial, with leaves mostly simple, toothed; style with very short beak (0.5 mm long or less).....*Armoracia rusticiana*

Aronia *Aronia X prunifolia*

Arrhenatherum*Arrhenatherum elatius*

Artemisia

1. Plants glabrous, or at most merely sparsely pubescent 2
 2. Ultimate leaf divisions entire; disk flowers sterile.....*Artemisia caudata*
 2. Ultimate leaf divisions toothed; disk flowers fertile..... 3
 3. Heads $\pm$ sessile, erect; plants not especially fragrant; inflorescence leaves at most only gradually reduced in size*Artemisia biennis*
 3. Heads nodding on peduncles; inflorescence leaves much reduced; plants fragrant.....
.....*Artemisia annua*
1. Leaves hairy, at least beneath 4
 4. Cauline leaves entire or toothed 5
 5. Cauline leaves evenly and finely toothed; middle and lower stem glabrous.....
..... *Artemisia serrata*
 5. Cauline leaves entire to irregularly coarsely toothed, or lobed; middle and lower stem tomentose.....*Artemisia ludoviciana*
 4. Cauline leaves pinnately divided..... 6
 6. Leaves strongly bicolored: green above and densely white-tomentose below
..... *Artemisia vulgaris*
 6. Leaves not bicolored, evenly pubescent on both surfaces..... 7
 7. Ultimate leaf divisions usually more than 1.5 mm wide*Artemisia absinthum*
 7. Ultimate leaf divisions less than 1.5 mm wide 8
 8. Plants woody or semi-woody at base; leaves up to 1 cm long..... *Artemisia frigida*
 8. Plants herbaceous; larger leaves exceed 1 cm long*Artemisia caudata*

Asarum.....*Asarum canadense*

Asclepias

1. Leaves linear, less than 5 mm wide, often whorled *Asclepias verticillata*
1. Leaves linear to ovate, elliptic, or oblong, more than 5 mm wide, alternate or opposite..... 2
 2. Leaves $\pm$ linear to ovate, mostly alternate..... 3
 3. Flowers deep orange (yellow); plants without milky juice *Asclepias tuberosa*
 3. Flowers pale, greenish, or purple-tinged; milky juice present 4
 4. Umbels single, terminal; leaves alternate, less than 20, lanceolate to ovate
..... *Asclepias lanuginosa*
 4. Umbels usually 2-several, in leaf axils; leaves sub-opposite, more than 20, $\pm$ linear
..... *Asclepias hirtella*
 2. Leaves oblong to ovate, mostly opposite 5
 5. Leaves $\pm$ sessile, $\pm$ clasping..... 6
 6. Pedicels glabrous..... *Asclepias sullivantii*
 6. Pedicels pubescent..... 7
 7. Umbels 2-several, in leaf axils; pedicels and peduncles densely hairy; flowers deep red or purple; leaves not wavy-edged *Asclepias purpurascens*
 7. Umbels solitary, terminal; pedicels slightly hairy; flowers pinkish; leaves very wavy-edged *Asclepias amplexicaulis*
 5. Leaves with distinct petioles, or stalkless, but not clasping 8
 8. Reflexed corolla lobes less than 5 mm long..... *Asclepias incarnata*
 8. Reflexed corolla lobes 5 or more mm long..... 9
 9. Corona hoods without horns; reflexed corolla lobes pale green 10
 10. Stems 2.5 or more dm tall; umbels 2-several, in leaf axils; flowers at least 9 mm long; leaves stalkless, downy beneath; plant often leaning..... *Asclepias viridiflora*

10. Stems to 2.5 dm tall; umbels solitary, terminal; flowers to 8 mm long; leaves hairy on both sides; plants erect *Asclepias lanuginosa*
9. Corona hoods with slender horns; reflexed corolla lobes mostly not pale green..... 11
11. Flowers white or purplish, relatively large, on long drooping pedicels; umbels nodding, 2-several in leaf axils; leaves relatively thin *Asclepias exaltata*
11. Flowers usually cream or reddish; pedicels stout; umbels usually erect, solitary to several, terminal or axillary; leaves thick 12
12. Pedicels, peduncles, and upper stems densely white-tomentose; hoods at least 1 cm..... *Asclepias speciosa*
12. Pubescence various, but never densely white-tomentose; hoods less than 1 cm long..... 13
13. Flowers deep red or purple; leaves ovate to elliptic-oblong..... *Asclepias purpurascens*
13. Flowers yellowish, greenish, or purple-tinged; leaves various..... 14
14. Plants coarse, often more than 6 dm tall; leaves often more than 7 cm wide, varying greatly in shape; umbels several; reflexed corona lobes longer than hoods..... *Asclepias syriaca*
14. Plants slender, to 6 dm tall; leaves to 7 cm long, ovate to elliptic-ovate; umbels typically solitary; reflexed corona lobes about as long as hoods *Asclepias ovalifolia*

Asparagus *Asparagus officinalis*

Asplenium *Asplenium platyneuron*

Aster

1. At least the basal or lower cauline leaves cordate or subcordate, and also evidently petioled 2
2. Leaves entire (or at most sub-entire) 3

- 3. Leaves at middle of stem smooth, glabrous, sessile, and clasping*Aster laevis*
- 3. Leaves at middle of stem petioled, scabrous, not glabrous 4
 - 4. Leaves rough above and with somewhat widened petioles; rays bright blue or violet; upper stem nearly glabrous*Aster azureus*
 - 4. Leaves usually glabrous above, with wiry petioles; rays pale blue-violet or white; upper stem rough*Aster shortii*
- 2. Most leaves toothed 5
 - 5. Inflorescence a more-or-less flat corymb, as broad as high 6
 - 6. Basal leaves usually absent; rays white; sticky glands wanting*Aster furcatus*
 - 6. Plants with large, heart-shaped thick, rough, basal leaves; flowering branches with sticky glands; rays violet (white) *Aster macrophyllus*
 - 5. Inflorescence an elongated, open panicle 7
 - 7. Peduncles without bracts; relatively few (<50) heads*Aster ciliolatus*
 - 7. Peduncles with numerous bracts; many (>50) heads 8
 - 8. Leaves strongly cordate (with deep notches at base—sinuses 5-15 mm), sharply toothed; petioles with, at most, narrow wings; involucre bracts with narrow green stripe widened at tip *Aster cordifolius*
 - 8. Leaves arrowhead-shaped (or at most only slightly cordate), without deep notches at base; petioles with definite wings; leaves with shallow, blunt teeth; involucre bracts with narrow green stripes 9
 - 9. Plants thinly hairy or glabrous; green tips of involucre bracts very narrow; rays pale blue, lavender, or white; leaves glabrous to sparsely pubescent beneath
..... *Aster sagittifolius*
 - 9. Plants relatively densely short-hairy (except for base); green tips of involucre bracts elongate-rhombic; rays usually bright blue (lavender); leaves finely short-pubescent ..
..... *Aster drummondii*
- 1. None of the leaves both cordate and evidently petioled; leaves may be either sessile or clasping 10

10. Leaves, small, firm, not clasping, sessile, entire, and densely silvery-silky	<i>Aster sericeus</i>
10. Leaves not as above, never silvery-silky (may be pubescent)	11
11. Leaves strongly clasping.....	12
12. Leaves with definite teeth	13
13. Leaves coarsely toothed almost to an enlarged base; smooth, zigzag stem	<i>Aster prenanthoides</i>
13. Leaves coarsely toothed throughout, to nearly entire; base of leaves not enlarged; stem straight and hairy	14
14. Stem uniformly rough-hairy; leaves hispid, not crowded (long internodes); rays blue-violet	<i>Aster puniceus</i>
14. Stem pubescent above inflorescence, glabrous (or hispid only on lines) below inflorescence; leaves of inflorescence crowded (short internodes) lower ones soon deciduous; rays pale blue/lavender.....	<i>Aster firmus</i>
12. Leaves more-or-less entire	15
15. Stem smooth, with a glaucous bloom; leaves very smooth; rays blue-violet	<i>Aster laevis</i>
15. Stem bristly-hairy; leaves scabrous; rays bright red-purple or rosy.....	<i>Aster novae-angliae</i>
11. Leaves at most only weakly clasping	16
16. Heads rayless or with short rays; plants annual	17
17. Heads rayless; plants not especially succulent; leaves ciliate at base.....	<i>Aster brachyactis</i>
17. Rays present, but very short, about as long as phyllaries, pale blue; plants succulent; glabrous throughout	<i>Aster subulatus</i>
16. Heads with rays; plants perennial.....	18
18. Leaves evidently toothed.....	19
19. Flower heads at least 1/2 inch wide	<i>Aster simplex</i>

[Note: the very similar, but infrequent, aster hesperius has leaves that are often entire]

- 19. Flower heads less than 1/2 inch wide..... 20
 - 20. Leaves overall soft-pubescent beneath; stems solitary*Aster ontarionis*
 - 20. Leaves pubescent only on midrib beneath; stems often clumped
..... *Aster lateriflorus*
- 18. Leaves entire (or at most obscurely toothed) 21
 - 21. Leaves less than seven times longer than wide.....*Aster umbellatus*
 - 21. Leaves more than seven times longer than wide 22
 - 22. All leaves less than 2 inches long..... 23
 - 23. Stems long, wandlike, stiff, in tussocks; rays light blue-violet ... *Aster linariifolius*
 - 23. Stems otherwise, not in tussocks; rays white..... 24
 - 24. Heads numerous, often secund on branches; involucre 3-5 mm; rays 10-20 ...
.....*Aster ericoides*
 - 24. Heads fewer, solitary or clustered at ends of branches; involucre 5-7 mm;
rays 20-30 *Aster falcatus*
 - 22. Leaves mostly longer than 2 inches 25
 - 25. Stems scabrous 26
 - 26. Heads to 1 in. diameter, in a flat-topped corymb; leaves elongated, stiff,
grasslike.....*Aster ptarmicoides*
 - 26. Heads smaller, in an elongated panicle; leaves shorter, not grasslike.....
.....*Aster pilosus*
 - 25. Stems glabrous or pubescent, but not scabrous 27
 - 27. Flower heads few (1-12) *Aster borealis*
 - 27. Flower heads numerous 28

28. Leaves thick and firm, somewhat scabrous above, yellow-green; rays bluish-purple (rarely white), up to 50.....*Aster praealtus*

28. Leaves otherwise (glabrous or pubescent); rays white (rarely purple), 16-35.*Aster pilosus*

[Note: The regionally-rare *Aster dumosus* has been found in low prairies. It has 13-30 pale purple to white rays and $\pm$ linear, sessile leaves along the stem.]

Astragalus

1. Pubescence of stem and leaves includes many 2-cleft hairs; stipules connate with tissue around stem; fruit 4.5-6.5 mm thick, 2-celled..... *Astragalus canadensis*

1. Pubescence of stem and leaves all of simple hairs; stipules not connate; fruit 10-15 mm thick, 1-celled*Astragalus neglectus*

Athyrium

1. Fronds once-pinnate, the ultimate divisions minutely crenulate-serrulate to subentire*Athyrium pycnocarpon*

1. Fronds pinnate-pinnatifid to sub-tripinnate, the ultimate segments acute, entire to irregularly toothed *Athyrium filix-femina*

Atriplex

1. Leaves and branches alternate; leaf blades $\pm$ triangular*Atriplex rosea*

1. At least the lowest leaves and branches opposite; leaves various 2

2. Fruiting bracteoles round, more than 1 cm long, thin..... *Atriplex hortensis*

2. Fruiting bracteoles $\pm$ triangular, less than 1 cm long, thick..... 3

3. Leaves lanceolate to oblong*Atriplex patula*

3. Leaves triangular, hastate, or rhombic*Atriplex prostrata*

Aureolaria

- 1. Plants annual, $\pm$ glandular; corolla 2-3 cm long *Aureolaria pedicularia*
- 1. Plants perennial, eglandular; corolla 3-5 cm long *Aureolaria grandiflora*

Avena

- 1. Lemmas glabrous on the back; lemma awn straight or none *Avena sativa*
- 1. Lemmas with stiff hairs, at least at the base; lemma awn obviously twisted *Avena fatua*

'B'

Ballota *Ballota nigra*

Baptisia

- 1. Plant densely pubescent *Baptisia leucophaea*
- 1. Plants glabrous 2
 - 2. Petals white; calyx lobes 2-3 mm long; stipules deciduous, shorter than the petioles
..... *Baptisia leucantha*
 - 2. Petals blue-violet; calyx lobes 3 mm or more long; stipules persistent, as long as or longer
than the petioles *Baptisia australis*

Barbarea *Barbarea vulgaris*

Beckmannia *Beckmannia syzigachne*

Berberis

- 1. Leaf margins entire; flowers or fruits solitary or in small clusters of less than 10
..... *Berberis thunbergii*

1. Leaf margins spiny-toothed; flowers or fruits in drooping racemes of 10 to 20.....
.....*Berberis vulgaris*

Berteroa*Berteroa incana*

Berula*Berula erecta*

Besseyia*Besseyia bullii*

Betula

1. Leaves obovate, orbicular, or reniform, with rounded apex, margin with rounded teeth; shrubs.....*Betula pumila*
1. Leaves ovate to deltoid or at least with acute or tapering apex, margin doubly serrate; trees.
 2. Bark of mature trunks and large branches gold-yellow; bark is never white; branches with the smell and odor of wintergreen when the bark is broken..... *Betula alleghaniensis*
 2. Bark of mature trunks and large branches white and papery; branches lacking the smell and odor of wintergreen when the bark is broken. 3
 3. Leaf tapering quickly to the point; native species; twigs bearing no small resinous glands or only a few widely scattered. Leaf base cuneate, truncate or rounded.
..... *Betula papyrifera*
 3. Leaf long tapering to the tip; trees planted horticulturally and rarely escaping; branches pendulous on older trees; twigs usually bear many small resinous glands; leaf base +/- deltoid.*Betula pendula*

Bidens

1. Leaves simple; achenes normally 3-4-awned 2
2. Leaves mostly sessile to connate; heads usually nodding in fruit; rays showy and larger than disk; achenes 4-awned and retrorsely barbed*Bidens cernua*

- 2. Leaves petiolate (petioles may have wings); heads not nodding; rays absent or shorter than disk; achenes various 3
- 3. Disk flowers 5-lobed, yellowish-orange, the stamens exserted; achenes 4-awned with antrorse barbs.....*Bidens connata*
- 3. Disk flowers 4-lobed, pale yellow, the stamens included; achenes mostly 3-awned
..... *Bidens comosa*
- 1. Leaves pinnately divided such that the terminal leaflet has a distinct petiolule, or definitely pinnately compound; achenes normally 2-awned 4
- 4. Heads with conspicuous, bright yellow rays, outer phyllaries small, rarely exceeding the rays..... *Bidens coronata*
- 4. Heads lacking rays (or sometimes rays under 4 mm long present); outer phyllaries mostly large and leaf-like and exceeding the disk..... 5
- 5. Outer phyllaries 10 or more; disk corollas yellow*Bidens vulgata*
- 5. Outer phyllaries mostly 6-8; disk corollas orange*Bidens frondosa*

Blephilia

- 1. Leaves with long petioles 9-18 mm long; uppermost leaves 4 cm or more long; bracts of inflorescence linear to lanceolate and becoming reflexed; stem usually branched.....
..... *Blephilia hirsuta*
- 1. Leaves sessile or with short petioles to 4 mm long; uppermost leaves less than 4 cm long; bracts of inflorescence ovate and appressed; stem usually not branched*Blephilia ciliata*

Boehmeria*Boehmeria cylindrica*

Boltonia*Boltonia latisquama*

Botrychium

- 1. Fertile branch arising at or near the base of the sterile blade; sterile and fertile portions branching well above the ground; blades of sterile leaves sessile at the base of the fertile stalk*Botrychium virginianum*

1. Fertile branch arising well below the base of the sterile blade; sterile and fertile portions branching at or very near the ground; sterile leaf blades long-stalked from the base of the plant 2
2. Ultimate segments of sterile blade finely divided, often less than 4 mm wide and often lacerate or finely and sharply toothed. *Botrychium dissectum*
2. Ultimate segments of sterile blade not finely divided, often more than 4 mm broad and usually not sharply toothed. Margins of blade divisions rounded. *Botrychium multifidum*

Bouteloua

1. Spikes many, each about 1 cm long with 5-8 spikelets; spikelets pendulous, spaced out along and hanging off one side of the rachis *Bouteloua curtipendula*
1. Spikes 1-4, each 2.5-4 cm long with 30+ spikelets; spikelets crowded along one side of rachis; rachis of spike prolonged beyond the last spikelet; glumes densely covered with brownish tubercles and hairs 1 mm or longer..... *Bouteloua hirsuta*

Brachyelytrum *Brachyelytrum erectum*

Brasenia *Brasenia schreberi*

Brassica

1. At least the upper and middle leaves clasping with auriculate bases 2
 2. Sepals to 6.5 mm long, petals to 10 mm long; beaks of siliques more than 9 mm long, often more than 12 mm long *Brassica rapa*
 2. Sepals more than 6.5 mm long, larger petals more than 10 mm long; beaks of siliques rarely more than 9 mm long, never more than 12 mm long..... *Brassica napus*
1. Leaves not clasping 3
 3. Ovaries and fruits densely white hairy; beak of fruit very flat *Brassica alba*
 3. Ovaries and fruits glabrous; beak of fruit 4-angled or round 4

4. Fruits up to 2 cm long, strongly appressed to the rachis, the beak of the fruit less than 5 mm long; young stems hispid below *Brassica nigra*
4. Fruits more than 2 cm long at maturity, not strongly appressed, the beak of the fruit more than 5 mm long; stems hispid to smooth 5
5. Plant glabrous, glaucous; petals to 10 mm long; leaves just below the inflorescence more than 4.5 times as long as wide *Brassica juncea*
5. At least the lower part of the stem thinly to thickly hispid, not glaucous; petals mostly more than 10 mm long; leaves just below the first inflorescence branch less than 4.5 times as long as wide *Brassica kaber*

Bromus

1. First glume with 1 vein; plants perennial (except *Bromus tectorum*) 2
2. Awns greater than 1 cm long; teeth of lemma long-acuminate, 2-3 mm long; lemmas 9-12 mm long *Bromus tectorum*
2. Awns absent or less than 1 cm long; teeth of lemma blunt or acute, less than 1.5 mm long; lemmas of various lengths 3
3. Plants with creeping rhizomes, the previous year's dead leaves curling at the base; leaf margins scabrous; upper glumes equal to or slightly shorter than the adjacent lemma; lemmas usually +/- flushed with purple toward the margins when fresh; awns absent or less than 4 mm long; anthers 4-5.5 mm long *Bromus inermis*
3. Plants without rhizomes, culms solitary or tufted; leaf margins variously hairy or glabrous; upper glumes shorter than the adjacent lemma; lemmas green when fresh; the larger awns 3-7 mm long; anthers various 4
4. Lemma of firm texture, the veins inconspicuous or obsolete below the middle; anthers approx. 2.5-5 mm long; glumes pubescent at least on keel (sometimes only scabrous); nodes on culm very fuzzy *Bromus pubescens*
4. Lemma of thin texture, the veins well-developed to the base; anthers 0.9-2.2 mm long; glumes glabrous or pubescent; nodes on culm various 5
5. Nodes (equal to number of leaves) usually 8-15; leaf sheaths longer than the internodes and covering the nodes, the summit of the sheath with a band of dense

- pubescence and a pair of prominent tooth-like auricles; leaf blades glabrous above; anthers 1.5-2.2 mm long; glumes usually pubescent..... *Bromus altissimus*
5. Nodes usually not more than 8; leaf sheaths shorter than at least the upper internodes, exposing one or more of them, the summit of the sheath glabrous or minutely pubescent and lacking auricles; leaf blades softly pubescent above; anthers 0.9-1.7 mm long; glumes mostly glabrous.....*Bromus ciliatus*
1. First glume with 3-5 veins; plants annual (except *Bromus kalmii*) 6
6. First glume weakly 3-veined; spikelets densely velvety; lemmas pubescent all across the back; glumes pubescent; awns straight..... *Bromus kalmii*
6. Spikelets glabrous, scabrous, or lightly pubescent; lemmas and glumes glabrous or scabrous on the back; awns tend to be divaricate or undulate (or absent) 7
7. Lemma equaling or slightly shorter than the tip of the mature palea; sheaths glabrous (or occasionally the lowermost with some short hairs); awns +/- undulate, sometimes as long as the lemma but usually much shorter or occasionally absent*Bromus secalinus*
7. Lemma at least slightly exceeding the tip of the palea; sheaths of at least middle and lower leaves +/- densely hairy; lemmas and awns various 8
8. Sides of larger lemmas 3-3.5 mm wide from the middle back to their edge; awns elongate and very strongly divaricate at maturity*Bromus squarrosus*
8. Sides of larger lemmas 2.5 mm wide or less; awns various 9
9. Longest awns in a spikelet longer than their lemmas and more than twice as long as awn on lowest lemma of the spikelet; hairs of sheath very fine and delicate, and tending to be crooked or tangled toward their tips; tip of palea 1-2.5 mm shorter than tip of lemma; anthers 0.5-1.5 mm long.....*Bromus japonicus*
9. Longest awns in a spikelet about as long as their lemmas or shorter and usually less than twice as long as awn on lowest lemma of the spikelet; hairs of sheath usually fine but stiffish and straight; tip of palea less than 1.5 mm shorter than tip of its lemma; anthers 1.2-2 mm long.....*Bromus commutatus*
- Bulbostylis*.....*Bulbostylis capillaris***

'C'

Cacalia

1. Leaves oval to pointed, entire or slightly toothed..... *Cacalia plantaginea*
1. Leaves kidney- or fan-shaped, lobed or wavy-margined..... 2
 2. Leaves green on both sides; stem conspicuously grooved; leaves coarsely toothed, $\pm$ round.
..... *Cacalia muhlenbergii*
 2. Leaves glaucous beneath; stem $\pm$ terete; leaves irregularly fan-shaped, broad, coarsely
toothed to lobed*Cacalia atriplicifolia*

Cakile

1. Top part of pod (silicle) distinctly larger and plumper than lower; non-native ..*Cakile edentula*
1. Top part of pod (silicle) only slightly larger than lower; native *Cakile lacustris*

Calamagrostis

1. Panicle branches loose and spreading; lemmas membranous, smooth, and translucent;
callus hairs the same length as lemma or slightly shorter*Calamagrostis canadensis*
1. Panicle branches compact and ascending; lemmas firm, scabrous and opaque; callus hairs
shorter than lemma *Calamagrostis stricta*

Calamovilfa..... *Calamovilfa longifolia*

Calla*Calla palustris*

Callitriche.....*Callitriche palustris*

Calopogon

1. Loose cluster of 3-15 flowers that bloom few at a time..... *Calopogon tuberosus*

1. Loose cluster of flowers that bloom simultaneously..... *Calopogon oklahomensis*

Caltha..... *Caltha palustris*

Camassia..... *Camassia scilloides*

Camelina

1. Stems glabrous, or sometimes with minute hairs; leaves auriculate at base; petals yellow, 5-6 mm long; pods 6-9 mm long, 5-6 mm wide; pedicels 12-25 mm long..... *Camelina sativa*

1. Stems densely hairy; leaves sagittate at base; petals pale yellow, 3-4 mm long; pods 4-6 mm long, 4-5 mm wide; pedicels 8-15 mm long..... *Camelina microcarpa*

Campanula

1. Flowers in spikes or racemes 2

2. Corollas rotate; style declined; leafy spike not one-sided..... *Campanula americana*

2. Corollas campanulate; style straight; spikes very one-sided..... *Campanula rapunculoides*

1. Flowers in loose panicle, or solitary..... 3

3. Corollas 5-8 mm long white or very pale blue; leaves all lanceolate
..... *Campanula aparinoides*

3. Corollas 12-20 mm long, violet-blue; basal leaves ovate or cordate
..... *Campanula rotundifolia*

Campsis..... *Campsis radicans*

Camptosorus..... *Camptosorus rhizophyllus*

Cannabis *Cannabis sativa*

Capsella.....*Capsella bursa-pastoris*

Cardamine

1. Cauline leaves simple, unlobed..... 2
 2. Upper stem and inflorescence glabrous; petals white; sepals yellowing with age.....
..... *Cardamine bulbosa*
 2. Upper stem and inflorescence sparsely to densely hairy; petals pink to purple (white);
sepals purple-tinged *Cardamine douglassii*
1. Cauline leaves deeply lobed or compound..... 3
 3. Petals 9-14 mm long; basal leaflets nearly round; stems unbranched, glabrous.....
..... *Cardamine pratensis*
 3. Petals 2-4 mm long; basal leaflets usually longer than wide; stems occasionally pubescent,
± branched 4
 4. Petioles of cauline leaves pubescent; blades and stem ± hispid *Cardamine flexuosa*
 4. Petioles glabrous; leaves and stem usually glabrous..... *Cardamine pensylvanica*

Cardaria

1. Pedicels of mature fruit much longer than 5 mm; pedicels, ovary, and fruit glabrous; fruit
slightly cordate; inflorescence a corymb..... *Cardaria draba*
1. Pedicels to 5 mm long; pedicels, ovary, and fruit pubescent; fruit not cordate; inflorescence
of simple racemes..... *Cardaria pubescens*

Carduus

1. Heads solitary, nodding; heads 2.5+ (4-9) cm in diameter; peduncles only semi-spiny-winged .
..... *Carduus nutans*
1. Heads 1-several, erect; heads to 2.5 cm (less than 4) in diameter; peduncles conspicuously
spiny throughout..... *Carduus acanthodians*

KEY TO CAREX SPECIES

- A. Spikes sessile, uniform, usually bisexual and simple; bracts often setaceous; stigmas two; achenes lenticular (flattened); perigynia bi-convex [Subgenus Vignea](#)
- A. Spikes usually stalked, usually unisexual (i.e., either all male or all female); upper spikes typically staminate, lower spikes typically pistillate; bracts leaflike (foliose); stigmas two or three; achenes triangular or lenticular; perigynia usually round or triangular in cross-section....
..... [Subgenus Carex](#)

Subspecies Vignea

1. Inflorescence consisting of solitary (i.e., a single spikelet per culm), unisexual (pistillate) spikes with plump, dark, divergent perigynia; leaf blades wiry, very narrow (less than 1 mm wide) *Carex gynocrates*
1. Inflorescence, perigynia, and leaves not with above combination of characteristics 2
2. Culms solitary, not forming tufts 3
3. Scapes arising from previous year's fallen leafy culms on horizontal stems
..... *Carex chordorrhiza*
3. Culms arising from underground rhizomes 4
4. Perigynia 5-6 mm long *Carex siccata*
4. Perigynia 2-4.5 mm long 5
5. Perigynia with distinct wings; numerous, leafy, slender pseudoculms ≥ 5 dm tall at maturity; sheaths of upper leaves with green stripes *Carex sartwellii*
5. Perigynia essentially wingless (i.e., plump to margins); culms less than 5 dm tall; sheaths of upper leaves with broad white stripe on ventral face *Carex praegracilis*
2. Culms cespitose (i.e., in tufts), not solitary 6
6. Staminate flowers borne above pistillate in each spikelet 7
7. Perigynia 1-6 (usually less than 4) per spikelet, terete; plants delicate, in tiny tufts
..... *Carex disperma*
7. Perigynia 4+ per spikelet; plants more robust 8

- 8. Culms sharply angled, but flattening under pressure; leaf sheaths loose 9
 - 9. Perigynia to 4 mm long; beak $\pm$ half as long as body.....*Carex alopecoidea*
 - 9. Perigynia usually at least 5 mm long; beak at least as long as body 10
 - 10. Perigynia 6.5-8 mm long, with prominent enlarged disc-like area below; beak at least twice as long as body; panicles 8+ cm long; sheath purple-dotted, not wrinkled*Carex crus-corvi*
 - 10. Perigynia inflated, about 5 mm (4-7 mm) long; disc-like area absent; beak slightly longer than body; panicles usually less than 8 cm long; inner band of leaf sheath cross-wrinkled *Carex stipata*
- 8. Culms firm, often wiry, not flattening under pressure; sheaths loose or tight 11
 - 11. Spikelets at least 12 per culm 12
 - 12. Leaf sheaths with cross-wrinkled inner bands; numerous setaceous bracts 13
 - 13. Culms exceeding leaves; perigynia ellipsoidal, yellow; beak abrupt, no more than a third length of perigynium; scales red-tinted.....*Carex annectens*
 - 13. Culms and leaves $\pm$ equal; perigynia ovate to lanceolate, green or brown; beak typically at least $\frac{1}{2}$ length of perigynium; scales various.....*Carex vulpinoidea*
 - 12. Inner bands of sheaths lacking wrinkles; setaceous bracts wanting 14
 - 14. Perigynia ovate, dark, shining; spikelets crowded; perigynia spreading; leaf sheaths whitish with purplish dots; plants in smaller clumps*Carex diandra*
 - 14. Perigynia lanceolate, brown or yellow-brown; lower spikelets spread out; perigynia appressed; leaf sheaths with strong copper tinge at summit; plants in large tussocks.....*Carex prairea*
 - 11. Spikelets fewer than 12 per culm 15
 - 15. Spikelets separated along culm, not clustered in ovoid head 16
 - 16. Larger leaves 5-9 mm wide*Carex sparganioides*
 - 16. Leaves 1-3 mm wide 17

- 17. Perigynia often more than 4.2 (4-6) mm long, glossy black at maturity
.....*Carex spicata*
- 17. Perigynia less than 4.2 mm long, greenish at maturity 18
 - 18. Stigmas coiled, stout, at least .07 mm thick, usually shorter than beak;
perigynia turn yellow-orange; larger leaves greater than 1.9 mm wide.....
.....*Carex rosea*
 - 18. Stigmas slender, straight or bent, less than .07 mm thick, at least as long as
beak; perigynia turn yellow; leaves up to 1.9 mm wide.....*Carex radiata*
- 15. Spikelets aggregated into compact ovoid head..... 19
 - 19. Perigynia with ventral nerves; leaves stiff, grayish-green; stems stiff, strongly
scabrous; perigynia ≥ 3.3 mm long, 2-2.5 mm wide; upper leaf surfaces finely
papillose; inflorescence crowded to interrupted *Carex muhlenbergii*
 - 19. Perigynia without nerves; leaves and inflorescence various..... 20
 - 20. Scales and perigynia $\pm$ equal; scales long-pointed..... *Carex gravida*
 - 20. Perigynia longer than scales; scales acute or awned..... 21
 - 21. Leaves 2-5 mm wide; inflorescence about 1 cm long, with numerous
setaceous bracts *Carex cephalophora*
 - 21. Leaves 3-9 mm wide; inflorescence elongate, bracts sparse
.....*Carex cephaloidea*
- 6. Staminate flowers borne below pistillate in each spikelet (or plants dioecious)..... 22
 - 22. Perigynia plump to margins, wings wanting..... 23
 - 23. Perigynia appressed to ascending 24
 - 24. Perigynia at least 4 mm long, with distinct beaks 25
 - 25. Spikelets aggregated; perigynia lanceolate; leaves 1-2 mm wide; perigynia not
noticeably whitened *Carex bromoides*
 - 25. Spikelets separated; perigynia ovate; leaves 1.5-5 mm wide; lower half of
perigynia whitish.....*Carex deweyana*

24. Perigynia ≤ 4 mm long; beaks short or wanting 26
26. Perigynia to 2.9 mm long; 2-several spikelets in stiff inflorescence..... 27
27. Spikelets globose, to 5 mm long; perigynia green to brown, with pale nerves; leaves bright green, less than 2 mm wide; plants green, not glaucous
..... *Carex brunnescens*
27. Spikelets ovoid (longer than wide), 5+ mm long; leaves pale beneath, 2+ mm wide; perigynia blue-green or straw-colored, with dark nerves; plants glaucous
..... *Carex canescens*
26. Perigynia 2.9-4 mm long, in head, or 2-3 mm long in a raceme..... 28
28. Spikelets separated, with no more than 5 flowers each; perigynia with short beaks*Carex trisperma*
28. Spikelets close, in terminal head; more than 5 flowers per spikelet; perigynia beakless.....*Carex tenuiflora*
23. Perigynia divergent, in star-like inflorescence..... 29
29. Perigynia with numerous fine nerves on each side; gradual beak *Carex echinata*
29. Perigynia essentially nerveless, or at most with few nerves; abrupt beak 30
30. Spikelets 2-5 per culm (typically 3); scales blunt; terminal spikelet pistillate above, staminate portions 2+ mm long.....*Carex interior*
30. Spikelets four per culm; scales acute; terminal spikelet either wholly staminate, or pistillate with a short staminate portion; perigynia with few nerves on inner face*Carex sterilis*
22. Perigynia thin, scale-like, with conspicuous, $\pm$ translucent wings..... 31
31. Bracts leaf-like (to 3.5 mm wide), much longer than spikelets; spikelets in dense heads; perigynia narrowly lanceolate (less than 1 mm wide)*Carex sychnocephala*
31. Bracts not leaf-like (less than 2 mm wide); perigynia various..... 32
32. Spikelets 1-3 cm long; perigynia ≥ 7 mm long; inflorescence stiff; many sterile culms*Carex muskingumensis*

32. Spikelets less than 1.5 cm long; perigynia less than 7 mm long; inflorescence more lax; sterile culms present or absent..... 33
33. Perigynia less than 2 mm wide 34
34. Perigynia cuneate at base; wing obviously narrowed below middle; shoulder often crimped 35
35. All spikelets (except for uppermost 2-5) at most barely overlapping (i.e., distinctly separated) *Carex projecta*
35. All spikelets (except lowermost) overlapping..... 36
36. Spikelets globose; perigynia spreading, beaks turned outward; scales hidden, pinkish; sheaths loose..... *Carex cristatella*
36. Spikelets longer than wide; perigynia appressed; scales apparent; sheaths tight..... 37
37. Perigynia often greater than 1.1 mm wide, nerved ventrally
..... *Carex tribuloides*
37. Perigynia ≤ 1.1 mm wide, nerveless.....*Carex crawfordii*
34. Perigynia cuneate to rounded at base; usually completely winged; never crimped 38
38. Spikelets in dense, crowded inflorescence (except, occasionally, the lowermost)..... 39
39. Spikelets $\pm$ as wide as long..... *Carex normalis*
39. Spikelets longer than wide..... 40
40. Spikelets rounded; perigynia essentially nerveless, less than 3.6 mm long.
.....*Carex bebbii*
40. Spikelets pointed; perigynia finely nerved ventrally, many up to 3.6 mm long.....*Carex scoparia*
38. Lower spikelets only slightly overlapping; upper ones not densely crowded41
41. Perigynia mostly 4.3+ mm long, asymmetrical*Carex scoparia*

41. Perigynia rarely as long as 4.3 mm, $\pm$ asymmetrical..... 42
42. Larger leaves $\geq$ 2.4 mm wide; many sterile culms; inflorescence stiff;
lower spikelets near the one above; sheaths loose, green-mottled
..... *Carex normalis*
42. Larger leaves rarely to 2.4 mm wide; sterile culms sparse; lowest spikelet
distant; inflorescence flexed; sheaths tight, without green mottling
..... *Carex tenera*
33. Larger perigynia more than 2 mm wide 43
43. Perigynia widest above middle (diamond-shaped) *Carex suberecta*
43. Perigynia widest at, or below, middle 44
44. Perigynia obviously nerved ventrally; scales obtuse to acute, barely as long
as base of beak..... 45
45. Perigynia 4.5+ mm long; wings copper-colored at maturity, translucent.....
..... *Carex bicknellii*
45. Perigynia to 4.4 mm long; wings green, opaque *Carex molesta*
44. Perigynia essentially nerveless; scales long-pointed, often longer than base
of beak 46
46. Spikelets acute; perigynia longer than wide, tips appressed
..... *Carex suberecta*
46. Spikelets obtuse; perigynia about as long as wide (circular), tips spreading..
..... *Carex brevior*

Subspecies *Carex*

1. Stigmas 2; achenes and perigynia flattened or terete..... 2
2. Plants small (5-50 cm tall); leaves narrow (less than 5 mm wide); perigynia round in cross-
section; spikelets rounded, erect, less than 3 cm long..... 3
3. Perigynia rather fleshy, golden-orange when mature; terminal spikelet nearly staminate
throughout..... *Carex aurea*

3. Perigynia dry, granular, densely crowded, powdery white; terminal spikelet staminate at base, densely pistillate at summit *Carex garberi*
2. Plants taller (4+ dm); leaves wider (usually 5+ mm); perigynia flattened; spikelets greater than 3 cm long, arching or drooping; basal leaf sheaths often with pinnate fibrils..... 4
4. Pistillate scales setaceous-awned, much longer than perigynia; yellow roots; spikelets noticeably drooping; perigynia often indented on one side; perigynia flattened at first, but becoming nearly terete at maturity *Carex crinita*
4. Scales blunt or acute, but not awned, and either shorter than, or up to twice as long, as perigynia; roots not yellow; spikelets long, arching or ascending; perigynia not indented
..... 5
5. Beaks of perigynia elongate, to 0.4 mm long, and prominently bidentate.....
..... *Carex nebrascensis*
5. Beaks of perigynia absent or essentially so, not bidentate 6
6. Lowest bract exceeding inflorescence; perigynia (broadest above middle); basal leaf sheaths without fibrils; perigynia 2.7-3.2 mm long; plants do not form tussocks
..... *Carex aquatilis*
6. Lowest bract scarcely equaling inflorescence; perigynia broadest at or below middle; basal leaf sheaths often with pinnate fibrils; perigynia 1.5-2.7 mm long; plants forming large or small tussocks 7
7. Ligule very short, truncate; perigynia usually with 3-several distinct nerves; fibrils absent; perigynia 1.5-1.7 mm long *Carex emoryi*
7. Ligule longer than width of blade, forming a sharp 'v'; perigynia nerveless to 2-ribbed; fibrils present at base; perigynia 2-2.7 mm long 8
8. Perigynia to 2.3 mm long, plump (like a canteen), nerveless; scales much exceeding perigynia; lowest sheaths cinnamon-brown, weakly pinnate-fibrillose; perigynia divergent; spikelets relatively short, crowded; tussocks small, irregular .
..... *Carex haydenii*
8. Perigynia 2-2.7 mm long (usually greater than 2.3 mm), tapering to tip, notably nerved; scales barely exceed perigynia; lowest sheaths deep red/purple, forming distinct, abundant pinnately arranged fibrils; spikelets long; perigynia appressed; tussocks large, dense, conspicuous *Carex stricta*
1. Stigmas 3; achenes triangular in cross-section 9

9. Parts of plant (e.g., leaf, sheaths, and/or perigynia) pubescent	10
10. Perigynia pubescent.....	11
11. Leaves pubescent.....	12
12. Except near base, terminal spikelet entirely pistillate; spikelets densely flowered; perigynia less than 3 mm long; plants somewhat reddened at base.....	<i>Carex swanii</i>
12. Plants without the above combination of characteristics	13
13. Perigynia nerveless, less than 5 mm long.....	<i>Carex hirtifolia</i>
13. Perigynia strongly nerved, 5-8 mm long.....	<i>Carex hirta</i>
11. Leaves glabrous or, at most, scabrous.....	14
14. Pistillate spikelets at least 1.5 cm long	15
15. Perigynia more than 5 mm long.....	16
16. Spikelets elongate, about 9 cm long and 1 cm wide; inner leaf sheath band forming a dark inverted triangle.....	<i>Carex trichocarpa</i>
16. Spikelets arranged in globose head, about 5 mm wide; leaf sheaths not as above	<i>Carex grayi</i>
15. Most perigynia less than 5 mm long.....	17
17. Leaves without midrib, often inrolled towards tip, 1-3 mm wide.....	<i>Carex lasiocarpa</i>
17. Distinct midrib present; leaves ± flattened or m-shaped, 2.5-7 mm wide.....	<i>Carex pellita</i>
14. Pistillate spikelets less than 1.5 cm long.....	18
18. Perigynia distinctly 3-angled, or staminate spikelet pedunculate, or both.....	19
19. Terminal spikelet partly pistillate; scales with abrupt awns.....	<i>Carex pedunculata</i>
19. Terminal spikelet entirely staminate; scales obtuse to acute, but awnless.....	<i>Carex richardsonii</i>
18. Perigynia nearly round in cross-section; staminate spikelet ± sessile.....	20

- 20. Numerous pistillate spikelets hidden at base of plant on short culms (often difficult to discern without parting leaves)..... *Carex umbellata*
- 20. Pistillate spikelets on long culms, elevated well above base of plant 21
 - 21. Perigynia longer than wide; spikelets crowded *Carex peckii*
 - 21. Perigynia globose; spikelets spread out 22
 - 22. Larger leaves 3-6 mm wide, strongly reddened at bases but not fibrillose; culms 12-54 cm tall; perigynia elliptic; staminate spikelets pale, often hidden among the pistillate ones *Carex communis*
 - 22. Leaves 1-3 mm wide; leaf bases with red-brown fibrils; culms 10-30 cm tall; perigynia globose; staminate spikelets purple-brown, conspicuous *Carex pennsylvanica*
- 10. Perigynia glabrous..... 23
 - 23. Perigynia less than 3.5 mm long 24
 - 24. Perigynia beakless, faintly nerved; lower leaf sheaths brown *Carex pallescens*
 - 24. Perigynia thick-ribbed, and with short, abrupt, distinct beaks; lower leaf sheaths red *Carex torreyi*
 - 23. Perigynia 3.5 mm or more long 25
 - 25. Perigynia up to 1 cm long, with slender, distinct teeth 1 mm or more long; basal leaf sheaths breaking into pinnate fibrils *Carex atherodes*
 - 25. Perigynia shorter, barely 6 mm long; teeth wanting or less than 1 mm long; basal pinnate fibrils wanting 26
 - 26. Spikelets erect, the terminal ones entirely staminate; beak distinctly curved; plants brownish at base *Carex hitchcockiana*
 - 26. Spikelets pendulous, the terminal ones pistillate above; beak straight; plants purplish-tinged at base *Carex formosa*
- 9. Plants glabrous throughout 27

27. Styles tough, persistent; perigynia 2.5-20 mm long, often much inflated; teeth 0.2-2 mm long..... 28
28. Perigynia abruptly contracted into slender beak, very densely packed into thimble-shaped spikelet *Carex typhina*
28. Perigynia and spikelets not as above (i.e., more loosely aggregated and with gradual beaks) 29
29. Spikelets globose to elliptic, barely longer than broad; perigynia often radiate 30
30. Leaves flat or involute, narrow (1.5-3 mm wide); perigynia shiny; beak short, 4-6.5 mm long *Carex oligosperma*
30. Leaves broader, never inrolled; perigynia shiny or dull; beak 10-16 mm long 31
31. Pistillate spikelets globose; perigynia dull green, fitted like two cones base to base; 12 or more perigynia per spikelet; achene angles rounded *Carex grayi*
31. Spikelets more elongated; perigynia shining, rounded at base; perigynia 2-7 per spikelet; achenes sharply angled *Carex intumescens*
29. Spikelets long, cylindric to elliptic; perigynia not radiate..... 32
32. Bodies of perigynia at least 1 cm long; staminate spikelets usually one 33
33. Achenes about as long as wide, with tips of angles distinctly enlarged; angle at tip about 90 degrees *Carex lupuliformis*
33. Achenes longer than wide, with tips of angles not noticeably thickened angle at tip distinctly greater than 90 degrees..... *Carex lupulina*
32. Perigynia bodies less than 1 cm long; staminate spikelets 1 or more..... 34
34. Scales obtuse to gradually awned..... 35
35. Perigynia 5-6 mm wide; achene deeply indented on one side *Carex tuckermanii*
35. Perigynia usually 2-3.5 mm (4 mm) wide; achenes not indented 36
36. Larger perigynia at least 8 mm long (5-10), the lowermost reflexed
..... *Carex retrorsa*
36. Perigynia no more than 8 mm long, the lowermost wide-spreading..... 37

37. Culms smooth below inflorescence, angles blunt; leaf blades often more than 6 mm wide; perigynia light green.....*Carex utriculata*
37. Culms scabrous below inflorescence, angles sharp; leaves to 6 mm wide; perigynia straw-yellow..... *Carex vesicaria*
34. Scales with abrupt awns 38
38. Scales with awns at most as long as blades; pinnate fibrils present at leaf bases or not..... 39
39. Teeth to 0.8 mm long, and often a third shorter tooth present; leaves blue-green, glabrous; pinnate fibrils present at leaf bases *Carex lacustris*
39. Teeth up to 3 mm long; leaves green; parts of sheaths or blades may be pubescent; pinnate fibrils wanting *Carex atherodes*
38. Scales with awns longer than blades; pinnate fibrils wanting..... 40
40. Teeth to 0.7 mm long; culms slender; leaf blades 3-10 mm wide, not particularly septate*Carex hystericina*
40. Teeth 0.7-2 mm long; culms stout; leaf blades 7-18 mm wide and noticeably septate 41
41. Teeth straight, to 1 mm long; beaks shorter than body of perigynia.....
..... *Carex pseudocyperus*
41. Teeth strongly divergent, more than 1 mm long; beaks as long as body of perigynia*Carex comosa*
27. Styles deciduous, jointed at base; perigynia 2-6 mm long, not inflated; teeth absent or very short, to 0.1 mm long..... 42
42. Terminal spikelet pistillate at apex (often both pistillate and staminate), or leaves less than 1.6 mm wide, or both 43
43. Larger perigynia more than 4 mm long *Carex pedunculata*
43. Perigynia to 4 mm long 44
44. Leaves less than 1.6 mm wide 45

45. Perigynia to 2 mm long, black with age; beaks whitened at tips	<i>Carex eburnea</i>
45. Perigynia 2 mm or more long, not blackened, and beaks not whitened	<i>Carex leptalea</i>
44. Leaves at least 1.6 mm wide	46
46. Lowest pistillate spikelet pendulous on peduncles	<i>Carex gracillima</i>
46. Lowest pistillate spikelets erect or sessile	47
47. Perigynia with abrupt beak at least half as long as body; scales not dark; perigynia yellow-green	<i>Carex viridula</i>
47. Perigynia beakless, or nearly so; scales dark purple-brown; perigynia blue- green	<i>Carex buxbaumii</i>
42. Terminal spikelet entirely staminate; leaves often wider than 1.6 mm.....	48
48. Leaves often wider than 1.2 cm.....	49
49. Sheaths and staminate scales reddish or purplish	<i>Carex plantaginea</i>
49. Sheaths and staminate scales without purplish tint.....	50
50. Pistillate scales less than half as long as perigynia, $\pm$ obtuse	<i>Carex albursina</i>
50. Pistillate scales more than half longer than perigynia, pointed	<i>Carex laxiflora</i>
48. Leaves less than 1.2 cm wide	51
51. Pistillate spikelets on long drooping peduncles.....	52
52. Abrupt slender beak about as long as perigynia body	53
53. More than five perigynia, each barely exceeded by scales; beaks often bent.....	<i>Carex sprengelii</i>
53. 2-4 perigynia, much shorter than scales; beaks straight	<i>Carex jamesii</i>
52. Beaks absent or very short.....	54
54. Basal sheaths red or purple	<i>Carex pedunculata</i>

54. Basal leaf sheaths green or brown..... 55
55. Leaves no more than 5 mm wide; lateral spikelets pistillate*Carex digitalis*
55. Leaves often more than 5 mm wide; lowest part of spikelets partially
staminate*Carex laxiculmis*
51. Pistillate spikelets erect on short peduncles 56
56. Perigynia horizontal to reflexed; spikelets short-cylindric, up to twice as long as
wide, crowded, staminate spikelets often concealed 57
57. Perigynia to 3 mm long; culms bluntly angled; beaks short..... *Carex viridula*
57. Perigynia 3 mm or more long; culms sharply angled; beaks almost as long as
body*Carex cryptolepis*
56. Perigynia erect to ascending, or spikelets more than twice as long as broad 58
58. Bract of lowest pistillate spikelet without sheath 59
59. Staminate spikelet extends from pistillate spikelet; scales leaf-like; root hairs
not yellow *Carex jamesii*
59. Staminate spikelet on peduncle; scales not leaf-like; roots covered with
yellow hairs 60
60. Scales ovate, as wide as the perigynia and nearly as long; staminate
spikelet 15-30 mm long; leaf blades inrolled, about 2.5 mm wide
.....*Carex limosa*
60. Scales lanceolate, more narrow than perigynia and much longer; staminate
spikelet 5-12 mm long; leaf blades flat, to 4 mm wide*Carex magellanica*
58. Bract of lowest pistillate spikelet with well-developed sheath 61
61. Perigynia definitely 3-angled 62
62. Perigynia rhombic, about as long as wide and $\pm$ beakless; scales pointed,
but awns wanting.....*Carex digitalis*
62. Perigynia ovoid, longer than wide and with short, but distinct beaks; scales
awned..... *Carex oligocarpa*

- 61. Perigynia almost round in cross-section, or obscurely 3-angled 63
- 63. Lowermost sheaths purple-tinged 64
 - 64. Perigynia asymmetrical, nerves curving in one direction; lower sheaths with well-developed blades; larger leaves at least 4 mm wide; plants caespitose *Carex gracilescens*
 - 64. Perigynia symmetrical; lower sheaths nearly bladeless; leaves to 4 mm wide; plants from elongate rhizomes *Carex woodii*
- 63. Lowermost sheaths brown or green, but not purple 65
 - 65. Some pistillate scales distinctly purple- or brown-tinged along edges ... 66
 - 66. Pistillate scales with long awns *Carex buxbaumii*
 - 66. Scales awnless, or at most with short awns 67
 - 67. Beak wanting *Carex livida*
 - 67. Perigynia with slight beak 68
 - 68. Pistillate spikelets up to about 5 mm wide; perigynia up to about 3.5 mm long; staminate spikelets to 3.5 mm wide *Carex tetanica*
 - 68. Pistillate spikelets 5 mm or more wide; perigynia 3.5 mm or more long; staminate spikelets 3.5 mm or more wide; staminate often several times larger than pistillate *Carex meadii*
 - 65. Scale margins green or scarious, but not purple 69
 - 69. Perigynia spindle-shaped, gradually tapering to a $\pm$ asymmetrical beak 70
 - 70. Sides of perigynia usually with one main nerve *Carex leptoneura*
 - 70. Sides of perigynia with at least 7 main nerves 71
 - 71. Sheaths of bracts with smooth angles; basal leaf sheaths brownish *Carex laxiflora*
 - 71. Sheaths of lowest bracts minutely toothed; basal leaf sheaths not brownish *Carex blanda*

69. Perigynia beakless, or beak short, abrupt 72
72. Larger perigynia greater than 3.5 mm long *Carex grisea*
72. Perigynia at most 3.5 mm long 73
73. Lowest spikelet originating from lower sheaths; leaves to 3.5 mm wide *Carex crawei*
73. Lowest spikelet originating from middle and upper sheaths; leaves often at least 3.5 mm wide 74
74. Staminate spikelet sessile or nearly so; nerves of perigynia raised; leaves often more than 5 mm wide *Carex granularis*
74. Staminate spikelet on long peduncle; nerves of perigynia sunken leaves never as wide as 5 mm *Carex conoidea*

Carpinus *Carpinus caroliniana*

Carum *Carum carvi*

Carya

1. Winter buds large, gray or brown; bark very shaggy; leaflets usually 5-7, broadest near tips....
..... *Carya ovata*

1. Winter buds smaller, mustard-yellow; bark close; leaflets 5-11, broadest near centers
..... *Carya cordiformis*

Cassia *Cassia fasciculata*

Castanea *Castanea dentata*

Castilleja

1. Floral leaves (bracts) red- or yellow-tipped; plants 30-60 cm tall *Castilleja coccinea*

1. Floral leaves (bracts) green; plants 10-30 cm tall *Castilleja sessiliflora*

Catalpa *Catalpa speciosa*

Caulophyllum *Caulophyllum thalictroides*

Ceanothus *Ceanothus americanus*

Celastrus

1. Leaves ovate, serrulate, pointed, twice as long as wide *Celastrus scandens*

1. Leaves suborbicular, crenate, obtuse, barely longer than wide *Celastrus orbiculatus*

Celtis *Celtis occidentalis*

Cenchrus *Cenchrus longispinus*

Centaurea

1. Flower heads very large (2-8 cm wide); very enlarged marginal flowers; involucre bracts with long side spines; leaves lanceolate, spineless *Centaurea americana*

1. Heads much smaller; plants otherwise without above combination of characteristics 2

2. Cauline leaves deeply pinnatifid or bi-pinnatifid *Centaurea maculosa*

2. Cauline leaves mostly entire, or with few teeth or lobes 3

3. Phyllaries tipped with a long, firm spine; flowers yellow *Centaurea solstitialis*

3. Phyllaries at most tipped with short spine; flowers not yellow 4

4. Phyllaries entire, pilose *Centaurea repens*

4. Phyllaries toothed or fringed 5

- 5. Phyllaries rounded or tapered to a toothed apex*Centaurea cyanus*
- 5. Middle phyllaries with abrupt expanded appendage at apex 6
 - 6. Body of appendage on middle phyllaries $\pm$ triangular, about 1.5 times longer than wide; border of a distinct ciliate fringe..... *Centaurea vochinensis*
 - 6. Body of appendage on middle phyllaries $\pm$ orbicular; border various 7
 - 7. Middle and outer phyllaries light brown, margins irregular; marginal flowers much larger than others in head *Centaurea jacea*
 - 7. Middle and outer phyllaries blackened, deeply ciliate; marginal flowers not enlarged *Centaurea nigra*

Centaurium *Centaurium pulchellum*

Cephalanthus..... *Cephalanthus occidentalis*

Cerastium

- 1. Upper bracts completely herbaceous, without scarious margins *Cerastium nutans*
- 1. Upper bracts of inflorescence with conspicuous scarious margins..... 2
 - 2. A matted perennial; stamens 10; calyx pilose*Cerastium vulgatum*
 - 2. A small annual; stamens 4 or 5; calyx glandular-pubescent..... *Cerastium semidecandrum*

Ceratocephalus *Ceratocephalus testiculata*

Ceratophyllum

- 1. Leaves with broad-based, bristle-tipped teeth.....*Ceratophyllum demersum*
- 1. Leaves essentially entire*Ceratophyllum echinatum*

Cercis *Cercis canadensis*

Chaenorrhinum *Chaenorrhinum minus*

Chamaedaphne *Chamaedaphne calyculata*

Chamaesyce

1. Fruit and ovaries pubescent; stems with conspicuous spreading hairs
..... *Chamaesyce maculata*

1. Fruit and ovaries glabrous; stems with short incurved hairs..... *Chamaesyce nutans*

Chelidonium *Chelidonium majus*

Chelone *Chelone glabra*

Chenopodium

1. Plants strongly malodorous; leaves, stem, and perianth with many short, spreading, gland-tipped hairs, especially when young..... *Chenopodium botrys*

1. Plants not especially malodorous; plants without glands (may be farinose) 2

2. At least some seeds vertical; leaf blades glabrous or occasionally farinose 3

3. Leaf blades lanceolate or oblong, glaucous beneath *Chenopodium glaucum*

3. Leaf blades triangular or rhombic, rarely lanceolate, green beneath
..... *Chenopodium capitatum*

2. Seeds all horizontal; blades usually farinose 4

4. Flowers in panicles; leaves glabrous *Chenopodium simplex*

4. Flowers in loose or dense clusters; leaves usually farinose 5

5. Main leaves linear to lanceolate, or occasionally oblong-ovate, at least 2-3 times longer than wide, usually entire or with a pair of basal lobes..... 6
6. Leaves with one vein; blades linear, $\pm$ fleshy, entire*Chenopodium leptophyllum*
6. Leaves with three veins (one main and two obscure); blades ovate to rhombic, 2-3 times longer than wide*Chenopodium strictum*
5. Leaves ovate, rhombic, triangular, or lanceolate, up to twice as long as wide; basal lobes usually present as well as additional marginal teeth..... 7
7. Seeds honeycomb-pitted*Chenopodium berlandieri*
7. Seeds smooth..... 8
8. Leaves triangular*Chenopodium murale*
8. Leaves ovate, rhombic, or lanceolate, and variously lobed or toothed 9
9. Blades entire (except for basal lobes or teeth)..... *Chenopodium standleyanum*
9. Blades with lateral teeth and often basal lobes 10
10. Leaf margins taper to acute apex; leaves ovate, rhombic, or lanceolate; inflorescence profusely branching.....*Chenopodium album*
10. Leaf margins $\pm$ parallel below the obtuse apex; leaves lanceolate to narrowly elliptic; inflorescence not profusely branching*Chenopodium strictum*

Chimaphila.....*Chimaphila umbellata*

Chrysanthemum

1. Heads 3-5 cm wide, few or solitary; rays 20-30.....*Chrysanthemum leucanthemum*
1. Heads 5-15 mm wide, in a corymb; rays minute, or absent.....*Chrysanthemum balsamita*

Cichorium.....*Cichorium intybus*

Cicuta

- 1. Leaflets narrowly linear; bulblets in axils of upper leaves..... *Cicuta bulbifera*
- 1. Leaflets lanceolate; leaf axils without bulblets..... *Cicuta maculata*

Cimicifuga *Cimicifuga racemosa*

Cinna

- 1. Spikelets 2.5-4.5 mm long; second glume shiny with lateral veins obscure or absent
..... *Cinna latifolia*
- 1. Spikelets 4-6.5 mm long; second glume opaque and dull green with obvious lateral veins
..... *Cinna arundinacea*

Circaea

- 1. Stem 30-60 mm tall; leaves shallowly dentate, usually rounded at base; fruit 2-loculed, 4 mm long..... *Circaea lutetiana*
- 1. Stem 10-30 mm tall; leaves sharply dentate, mostly cordate; fruit 1-loculed, 2 mm long
..... *Circaea alpina*

Cirsium

- 1. Internodes with $\pm$ continuous spiny wings *Cirsium vulgare*
- 1. Internodes with at most leaf bases slightly decurrent 2
- 2. Leaves green beneath, sometimes loosely tomentose 3
- 3. Heads large (to 7 cm wide), 1-3 per stem; spines of outer phyllaries to 3.5 mm long
..... *Cirsium hillii*
- 3. Heads smaller (1-3 cm wide), often five or more per stem; spines on outer phyllaries to 1.5 mm long, or absent 4

- 4. Spines of outer phyllaries less than 0.5 mm long, or absent; involucre cobwebby-pubescent; longest spines on leaves usually less than 2.5 mm long; leaves barely whitened beneath..... *Cirsium muticum*
- 4. Spines of outer phyllaries 0.5-1 mm long; involucre barely cobwebby; largest leaf spines 3.5-7 mm long; leaves green beneath*Cirsium arvense*
- 2. Leaves densely tomentose beneath 5
- 5. Upper internodes densely white-tomentose..... 6
- 6. Lateral leaf blades up to 7 mm wide at base; involucre 2-2.7 cm long*Cirsium flodmanii*
- 6. Lateral leaf blades 7 or more mm wide; involucre 3-3.5 cm long*Cirsium undulatum*
- 5. Upper internodes at most slightly tomentose..... 7
- 7. Middle and upper cauline leaves deeply lobed *Cirsium discolor*
- 7. Middle and upper cauline leaves unlobed to only shallowly lobed*Cirsium altissimum*
- Cladium*** *Cladium mariscoides*
- Claytonia****Claytonia virginica*
- Clematis*** *Clematis virginiana*
- Cleome*** *Cleome hassleriana*
- Clintonia*** *Clintonia borealis*
- Collinsia*** *Collinsia canadensis*
- Collomia****Collomia linearis*

Comandra *Comandra umbellata*

Commelina *Commelina communis*

Conioselinum *Conioselinum chinense*

Conium *Conium maculatum*

Conopholis *Conopholis americana*

Conringia *Conringia orientalis*

Consolida *Consolida ajacis*

Convallaria *Convallaria majalis*

Convolvulus

1. Corolla about 2 cm long; bracts small, some distance below flower; leaves arrow-shaped at base *Convolvulus arvensis*

1. Corolla 3-5 cm long; calyx subtended by 2 large bracts immediately beneath flower; leaves rounded, cordate, or square-shaped at base 2

2. Plants erect, ascending, or decumbent; finely pubescent; petioles $\frac{1}{4}$ length of blades; leaves rounded or heart-shaped at base *Convolvulus spithameus*

2. Plants twining or trailing; petioles longer; leaves with square lobes *Convolvulus sepium*

Conyza *Conyza canadensis*

Coptis *Coptis trifolia*

Corallorhiza

- 1. Lip with small lobe or elongate tooth on each side near base 2
 - 2. Sepals and petals 3-nerved; lip 4.5-7 mm long..... *Corallorhiza maculata*
 - 2. Sepals and petals 1-nerved; lip 2.5-4.5 mm long..... *Corallorhiza trifida*
- 1. Lip entire, or with small teeth..... 3
 - 3. Perianth 3-4.5 mm long, purplish; lip white, spotted *Corallorhiza odontorhiza*
 - 3. Perianth 4-5.5 mm, yellowish; lip unspotted..... *Corallorhiza trifida*

Coreopsis

- 1. Most leaves 1- to 2-pinately divided; rays with brown bases *Coreopsis tinctoria*
- 1. Leaves simple, entire or palmately divided; achenes with wings; rays yellow 2
 - 2. Leaves entire (occasionally with 1 or 2 lateral lobes)..... *Coreopsis lanceolata*
 - 2. Leaves palmately divided (uppermost often entire) *Coreopsis palmata*

Corispermum *Corispermum americanum*

Cornus

- 1. Leaves alternate, clustered near twig ends..... *Cornus alternifolia*
- 1. Leaves opposite, not so clustered 2
 - 2. Plants dwarf-shrubs, ± herbaceous, 10-20 cm tall *Cornus canadensis*
 - 2. Plants upright shrubs 3
 - 3. Twigs yellow-green, with purple spots; leaves nearly orbicular *Cornus rugosa*
 - 3. Twigs not yellow, or if so, then not spotted; leaves longer than wide 4
 - 4. Fruit blue; current year's twigs densely puberulent; pith tan..... *Cornus amomum*

4. Fruit white or lead; twigs at most sparsely hairy; pith white or tan 5
5. Twigs reddish; leaves with 5 or more pairs of lateral veins; pith white
..... *Cornus stolonifera*
5. Twigs gray; leaves with fewer than 5 pairs of lateral veins; pith white in young growth,
light brown in older.....*Cornus racemosa*

Coronilla..... *Coronilla varia*

Corydalis

1. Flowers rose (yellow-tipped), 12-15 mm long..... *Corydalis sempervirens*
1. Flowers yellow, 5-9 mm long *Corydalis micrantha*

Corylus

1. Young twigs hispid-pubescent; involucre of two broad, fringed bracts.....*Corylus americana*
1. Young twigs with long, scattered hairs; bracts united into a long, tubular, bristly beak.....
..... *Corylus cornuta*

Cosmos..... *Cosmos bipinnatus*

Crataegus

1. Leaves with some primary lateral veins running to the sinuses as well as to the points of the
lobes; blades small and deeply lobed; thorns less than 5 cm long; stamens about 20
..... *Crataegus monogyna*
1. Leaves with primary lateral veins only running to points of lobes (if any); blades, thorns, and
stamens various 2
2. Nutlets with deep to shallow pits or depressions on ventral surfaces; plants flowering late
May through June 3

3. Mature leaves thin, veins scarcely impressed above, strigose above and usually pubescent beneath; corymbs, new branchlets, and petioles all usually villous/tomentose; thorns about 2.5-5 cm long, sparse or absent; stamens about 20... *Crataegus calpodendron*
3. Mature leaf blades $\pm$ coriaceous, thickened at margins, veins rather deeply impressed above, glabrous to pubescent on both surfaces; corymbs, young branchlets, and petioles glabrous to sparingly villous; thorns about 2.5-9.5 cm long, numerous; stamens about 10 or 20 4
4. Stamens about 20; anthers 0.4-0.8 mm long *Crataegus succulenta*
4. Stamens about 10; anthers 1-1.2 mm long *Crataegus macracantha*
2. Nutlets not pitted; plants flowering April, May, or June 5
5. Blades of at least the floreal leaves $\pm$ acute to broadly, or, more commonly, narrowly tapered or cuneate at bases 6
6. Bracts of corymbs numerous, stipitate-glandular on margins; petioles glandular; stamens about 10; corymbs and leaves $\pm$ glabrous; corymbs few-flowered (about 8) *Crataegus intricata*
6. Bracts of corymbs few, and/or glands sparse or absent; petioles eglandular or corymbs villous; stamens and leaves various; corymbs many-flowered 7
7. Blades obovate to oblong-elliptic, broadest above or sometimes at middle, unlobed or very obscurely lobed near tip, mostly 1.5-3+ times longer than wide, thickish or coriaceous 8
8. Leaves glossy above, veins not usually impressed; petioles less than 1 cm long; young branchlets reddish or brownish; styles and nutlets 1-3; corymb glabrous; stamens about 10; anthers pink or yellow *Crataegus crus-galli*
8. Leaves dull above, veins conspicuously impressed; petioles 1-2 cm long; branchlets various; styles and nutlets 3-5; corymb $\pm$ villous; stamens about 20..... *Crataegus punctata*
7. Blades mostly elliptic to ovate, broadest at or below middle, often $\pm$ obviously lobed, usually 1-1.5 times longer than wide, often thin..... 9
9. Stamens about 10 or fewer..... 10
10. Floreal leaf blades with lobes sharp and spreading, usually developed below middle; corymbs glabrous to densely villous; styles and nutlets 3-5; calyx lobes $\pm$

- conspicuously glandular-serrate; vegetative leaves with bases at least as acute as tip; leaves glabrous to sparsely villous beneath, teeth conspicuously gland-tipped ...
..... *Crataegus chrysocarpa*
10. Floreal leaves with blade lobes shallow or obsolete, mostly developed only beyond middle; corymbs $\pm$ glabrous; styles and nutlets 2-3; calyx lobes $\pm$ entire; vegetative leaves with tips often more acute than base; leaves $\pm$ glabrous beneath, teeth at most only obscurely gland-tipped 11
11. Corymbs and leaves glabrous *Crataegus dodgei*
11. Corymbs and leaves loosely villous *Crataegus lumaria*
9. Stamens about 15-20 *Crataegus margaretta*
5. Blades of both floreal and vegetative leaves mostly broadly rounded, truncate, or subcordate at bases 12
12. Corymb, calyx, and leaves beneath $\pm$ densely villous-tomentose; fruit short-villous at least at ends; anthers white or yellow (pink) 13
13. Stamens about 20; fruit subglobose *Crataegus mollis*
13. Stamens about 10; fruit obovoid or pear-shaped *Crataegus submollis*
12. Corymb, calyx, and leaves glabrous or pubescent; fruit glabrous; anthers (mostly) pink to purple 14
14. Stamens about 15-20; anthers pink, purple, white, or yellowish; young leaves glabrous to pubescent above 15
15. Leaves $\pm$ glabrous on both sides when young; corymbs glabrous; calyx lobes entire or weakly serrate; ripe fruit with thin dry flesh *Crataegus pruinosa*
15. Leaves strigose above, at least when young; corymbs glabrous to villous; calyx lobes usually glandular-serrate; ripe fruit succulent 16
16. Flowers 2-2.5 cm wide *Crataegus coccinoides*
16. Flowers less than 2 cm wide *Crataegus lucorum*
14. Stamens no more than 10; anthers pink to purple; young leaves strigose above 17

17. Corymbs villous or glabrous; leaves often with a few hairs, at least along veins or in axils beneath; calyx lobes prominently glandular-serrate; ripe fruit succulent 18
18. Stamens 15-20; corymb and leaves (at least when young) villous.....*Crataegus corusca*
18. Stamens no more than 10; corymb and leaves glabrous or pubescent 19
19. Calyx tube and corymb villous; fruit dark red.....*Crataegus pringlei*
19. Calyx tube and corymb glabrous or slightly villous; fruit bright red..... 20
20. Fruit distinctly obovoid or oblong, obviously longer than wide; floreal leaves oblong-ovate to elliptic, often slightly narrowed at base *Crataegus holmesiana*
20. Fruit at most slightly longer than wide; floreal leaves ovate, broadest at base *Crataegus pedicellata*
17. Corymbs mostly glabrous; leaves completely glabrous beneath; calyx lobes entire or weakly serrate; ripe fruit various 21
21. Fruit bright or dull red or greenish with thin, dry, firm or mealy flesh when ripe; leaves firm, thick, tips usually not spreading.....*Crataegus beata*
21. Fruit bright red, soft, succulent when ripe; leaves thin at maturity, tips of lobes spreading or reflexed 22
22. Corymbs $\pm$ villous 23
23. Stamens 5-7 (10) *Crataegus apiomorpha*
23. Stamens 15-20*Crataegus lucorum*
22. Corymbs completely glabrous 24
24. Stamens 15-20 *Crataegus schuettei*
24. Stamens no more than 10..... 25
25. Calyx lobes serrate*Crataegus flabellata*
25. Calyx lobes entire*Crataegus macrosperma*

[Note: At least four other species of hawthorn—*C. dissona*, *C. distincta*, *C. fluvialis*, and *C. fulleriana*—have been described and collected from the SE Wisconsin region]

Crepis

1. Achenes 2.5 mm or more long, dark purple-brown at maturity *Crepis tectorum*

1. Achenes no more than 2.5 mm long, tawny or pale brown *Crepis capillaris*

[Note: a rare non-native species—*Crepis foetida*—has been recorded from Milwaukee County]

Croton *Croton texensis*

Cryptogramma *Cryptogramma stelleri*

Cryptotaenia *Cryptotaenia canadensis*

Cuscuta

1. Plants forming a thick, tight, spiraling, rope-like cluster twining around the stem of the host plant; sepals nearly or quite separate; chiefly a parasite on species of solidago, aster, helianthus, and silphium..... *Cuscuta glomerata*

1. Plants not distinctly rope-like; sepals united above their bases 2

2. Perianth 5-merous; capsule ovoid, longer than wide; corolla lobes broadly rounded; parasitic on *Impatiens*, *Salix*, *Cephalanthus*, *Decodon*, *Eupatorium*, etc.. *Cuscuta gronovii*

2. Perianth 4-merous; petals erect or ascending; capsules subglobose, wider than long 3

3. Perianth fleshy-papillose, lustrous; many pedicels at least 1 mm long; corolla lobes acute; parasitic on corylus and other shrubs and herbs *Cuscuta coryli*

3. Perianth dull, not papillose; flowers ± sessile; corolla lobes acute or obtuse..... 4

4. Corolla lobes much shorter than tube, obtuse, erect, persisting on top of capsule *Cuscuta cephalanthi*

4. Corolla lobes deltoid, acute, remaining with tube; parasitic on species of polygonum, etc... *Cuscuta polygonorum*

Cycloloma *Cycloloma atriplicifolium*

Cynanchum *Cynanchum nigrum*

Cynoglossum

1. Leaves numerous, extending into the inflorescence, tapering to a $\pm$ sessile base; flowers reddish-purple *Cynoglossum officinale*

1. Leaves few, not extending into inflorescence; upper leaves clasping; flowers blue
..... *Cynoglossum boreale*

Cynosurus..... *Cynosurus cristatus*

Cyperus

1. Styles 2-cleft; achenes lenticular or biconvex; anthers 0.3-0.5 mm long..... 2

2. Scales reddish near tips; style $\pm$ persistent, conspicuous*Cyperus diandrus*

2. Scales reddish near base and edges; styles deciduous, not especially conspicuous.....
..... *Cyperus bipartitus*

1. Styles 3-cleft; achenes 3-sided; anthers various..... 3

3. Scale tips obviously outward-spreading *Cyperus squarrosus*

3. Scale tips not spreading 4

4. Spikelets at maturity 1.5-5 mm wide, in a $\pm$ globose head; rachilla with at most a very narrow wing; anthers 0.5-1.1 mm long 5

5. Culms 1-2.5 mm thick below inflorescence, scabrous on sides and sharp angles; widest leaves 3-5 mm broad; achenes 2.2-2.5 mm long; scales to 4 mm long, including a 0.5-1 mm long awn *Cyperus schweinitzii*

5. Culms 0.4-1.2 mm thick below inflorescence, smooth, obtusely angled; leaves 1-3 mm wide; achenes 1.6-2 mm long; scales 2-3 mm long, with tiny tips (or absent)
..... *Cyperus lupulinus*
4. Spikelets linear, to 1.5 (2.3) mm wide, pinnately arranged at $\pm 90^\circ$ angle to central axis, and often at least 1 cm long; rachilla with distinct wing; anthers 0.2-0.5 mm long 6
6. Scales not overlapping (i.e., tip of one scale not reaching base of the one above)
..... *Cyperus odoratus*
6. Scales overlapping 7
7. Scales 3-5 mm long, with yellowish sides and green midrib *Cyperus strigosus*
7. Scales 1.1-2.7 mm long, often with reddish or dark brown markings 8
8. Wings of rachilla chaffy, readily deciduous; achenes 0.7-0.8 mm long; scales 1.1-1.5 mm long *Cyperus erythrorhizos*
8. Rachilla wings not separating; achenes 1.1-1.4 mm long; scales 1.5-2.7 mm long
..... *Cyperus esculentus*

Cypripedium

1. Leaves two, both basal; flowering stem leafless; lip pink or purplish *Cypripedium acaule*
1. Flowering stem leafy; lip various 2
2. Lip yellow, 2-5 cm long 3
3. Sepals and petals reddish-brown; lateral petals strongly twisted, of solid color, to 5 cm long; lip up to 4 cm long *Cypripedium parviflorum*
3. Sepals and petals yellow to greenish-brown; lateral petals $\pm$ spiraled, streaked with green and maroon, 4-8 cm long; lip usually greater than 4 cm long *Cypripedium pubescens*
2. Lip white or pink/rose (not yellow) 4
4. Lip projected below into a conical spur; lateral sepals separate; lip pink
..... *Cypripedium arietinum*
4. Lip forming a distinct pouch; lateral sepals united almost their entire length, thus appearing as one; lip white or pink 5

5. Lip white; plants 1.5-4 dm tall; leaves 3-5, glabrous, often strongly overlapping; petals lanceolate, often twisted *Cypripedium candidum*

5. Lip pink; plants 4-10 dm tall; stems leafy; leaves hairy, clasping; petals ovate, not twisted *Cypripedium reginae*

Cystopteris

1. Fronds usually with fewer than 16 pairs of pinnae, the lowermost scarcely as long as next one; many veins end in a tooth; plants without glands *Cystopteris fragilis*

1. Fronds with usually at least 16 pairs of pinnae, the lowermost a little longer than the next one; veins usually ending in sinuses; indusia and veins often with scattered bulblets *Cystopteris bulbifera*

'D'

Dactylis *Dactylis glomerata*

Danthonia *Danthonia spicata*

Datura

1. Plant mostly glabrous; flowers less than 10 cm long; leaves coarsely toothed *Datura stramonium*

1. Plant soft-hairy, flowers greater than 10 cm long; leaves entire or with an occasional tooth *Datura inoxia*

Daucus *Daucus carota*

Decodon *Decodon verticillatus*

Dentaria

1. Each leaf consisting of 3 ovate leaflets that are coarsely toothed *Dentaria diphylla*

1. Each leaf is deeply 3-parted and lobed to look 5-parted; each part is linear to lanceolate in shape..... *Dentaria laciniata*

Deparia*Deparia acrostichoides*

Deschampsia.....*Deschampsia caespitosa*

Descurainia

1. Plant grayish with stellate pubescence; fruits 1.3 cm or more long, up to 1 mm broad
..... *Descurainia sophia*

1. Plant green with numerous gland-tipped hairs and sparse stellate hairs; fruits 0.7 to 1 cm long and more than 1 mm broad..... *Descurainia pinnata*

Desmanthus.....*Desmanthus illinoensis*

Desmodium

1. Calyx lobes deltoid or rounded, much shorter than the tube; leaflets with deciduous or no stipels; stipe of fruit much longer than the remnant calyx 2

2. Inflorescence on a long, naked stalk from the base of the plant; blades of terminal leaflets usually longer than broad *Desmodium nudiflorum*

2. Inflorescence on top of a leafy stem; blades of terminal leaflets usually as broad as long or broader..... *Desmodium glutinosum*

1. Calyx lobes triangular to lanceolate, equal to or longer than the tube; stipe of fruit at most 1.5 times as long as the calyx, often obscured within it; leaflets longer than broad..... 3

3. Lower surface of leaflets with tiny hooked hairs (feels sticky); stipules persistent and ovate. *Desmodium illinoense*

3. Lower surface of leaflets without tiny hooked hairs; stipules somewhat persistent and lanceolate to linear 4

4. Pubescence on lower surface of leaflets denser on the midveins than on the branch veins; segments of fruit rounded, not triangular *Desmodium canadense*
4. Pubescence, if present, on lower surface of leaflets uniform in density on all veins and surface; segments of fruit distinctly triangular..... 5
5. Stipules lanceolate, broadest just above the base, 11-18 mm long; terminal leaflet broadly acuminate, 10-15 cm long; segments of fruit 7-11 mm long; flowers 10-13 mm long..... *Desmodium cuspidatum*
5. Stipules narrowly triangular, broadest at the very base, 3-8 mm long; terminal leaflet ovate-lanceolate, or less than 10 cm long, or both; segments of fruit 6-7.5 mm long; flowers 6-7.5 mm long *Desmodium glabellum*

Dianthus..... *Dianthus armeria*

Dicentra

1. Spurs of corolla triangular; plant with fleshy pink bulblets at ground level.....
..... *Dicentra cucullaria*
1. Spurs of corolla rounded, appearing heart-shaped; plant with yellow bulblets on rhizomes
..... *Dicentra canadensis*

Dichanthelium

1. Widest leaves over 15 mm wide; base of leaves cordate..... *Dichanthelium latifolium*
1. Widest leaves less than 15 mm wide; base of leaves not cordate 2
2. Longest leaves at least 20 times as long as wide AND internodes glabrous or covered in minute hairs; leaves appearing to be crowded at the base of the plant; plants not forming basal rosettes of short, stubby leaves 3
3. Tip of spikelets tapered to a beak-like point; spikelets 3.2-4.0 mm long.....
..... *Dichanthelium depauperatum*
3. Tip of spikelets rounded; spikelets 2.0-3.5 mm long 4
4. Spikelets 2.8-3.5 mm long; pedicels (except the terminal one) mostly not over 7 mm long; panicles narrow..... *Dichanthelium perlongum*

4. Spikelets 2.0-2.7 mm long; pedicels mostly 8-18 mm long; panicles mostly open
.....*Dichanthelium linearifolium*
2. Longest leaves less than 20 times as long as wide OR internodes pilose (long, straight hairs)
(*D. wilcoxianum* may have long leaves but it has pilose internodes); leaves appear to be
more evenly distributed along the stem; plants forming basal rosettes of short, stubby
leaves 5
5. Largest spikelets 3.1-3.8 mm long 6
6. Spikelets rounded in shape, sparsely covered in short hairs, hairs less than 0.5 mm
long; leaves glabrous or pubescent on only one side; ligule 1-1.5 mm long
.....*Dichanthelium oligosanthos*
6. Spikelets more oval in shape, covered in long, spreading hairs, the longest about 1 mm
long; leaves hispid on both sides; ligule less than 0.5 mm long *Dichanthelium leibergii*
5. Largest spikelets less than 3.1 mm long 7
7. Spikelets 2.3-3.1 mm long; leaves of vernal culms 15-20 times as long as wide and
pilose*Dichanthelium wilcoxianum*
7. Spikelets 2.2 mm or less long; leaves of vernal culms less than 15 times as long as wide;
leaf hairs various 8
8. Middle and upper internodes and sheaths glabrous (except along their edges);
panicle axes more or less glabrous and lacking long hairs 9
9. Spikelets 1.3-1.8 mm long; longest hairs of ligules 1.5-3mm long; spikelets
pubescent..... *Dichanthelium acuminatum ssp. lindheimeri*
9. Spikelets 1.8-2.2 mm long; longest hairs of ligules 1 mm long; spikelets finely
pubescent.....*Dichanthelium boreale*
8. Middle and upper internodes and sheaths puberulent and/or pilose; panicle axes
with some long hairs..... 10
10. Sheaths of main culm with long hairs on the lower sheaths and short hairs on the
upper sheaths, with mixing of the two hair types on the middle sheaths; spikelets
1.7-1.9 mm long; leaves glabrous to sparsely pilose on upper surface
..... *Dichanthelium acuminatum ssp. columbianum*

10. Sheaths of main culm all with long hairs only; spikelets 1.5-2 mm long; leaves pilose on upper surface 11
11. Sheaths of main culm with widely spreading hairs, 3-4 mm long; first glume narrow and acute at tip; spikelets 1.8-2 mm long.....
..... *Dichanthelium ovale ssp. praecocius*
11. Sheaths of main culm with spreading to ascending hairs less than 3 mm long; first glume broad and obtuse at the tip; spikelets 1.5-1.8 mm long
..... *Dichanthelium acuminatum ssp. implicatum (Panicum implicatum)*

Diervilla *Diervilla lonicera*

Digitalis *Digitalis lanata*

Digitaria

1. Foliage more or less pilose; spikelets glabrous; first glume 0.4 mm long, triangular; second glume about half as long as the lemma; fertile lemma light gray *Digitaria sanguinalis*
1. Foliage glabrous except for maybe lower sheaths; spikelets densely pubescent with minute spreading hairs; first glume a minute collar about 0.1 mm long; second glume about the same length as the lemma; fertile lemma dark brown *Digitaria ischaemum*

Dioscorea *Dioscorea villosa*

Diplachne *Diplachne acuminata*

Diplotaxis *Diplotaxis muralis*

Dipsacus

1. Leaves deeply pinnately lobed or laciniate; flowers white..... *Dipsacus laciniatus*
1. Leaves undivided; flowers purple *Dipsacus sylvestris*

Dirca *Dirca palustris*

Dodecathon *Dodecathon meadia*

Draba

1. Leaves all basal; petals cleft nearly half their lengths *Draba verna*

1. The lower half of the stem only with cauline leaves; petals mostly entire *Draba reptans*

Dracocephalum *Dracocephalum parviflorum*

Drosera

1. Leaves in basal rosette on long stalks, very round in shape, at least as broad as long; pollen white *Drosera rotundifolia*

1. Leaves in basal rosettes on long stalks, linear to obovate, greater than 2 times as long as broad, pollen orange..... 2

2. Leaves linear, greater than 7 times as long as broad, petals pink-tinged *Drosera linearis*

2. Leaves obovate, 2 to 6.5 times as long as broad, petals white *Drosera intermedia*

Dryopteris

1. Blade bipinnate-pinnatifid or tripinnate..... 2

2. Lower, basal pinnule of lowest pinna shorter than adjacent pinnule; surface of blade with glands..... *Dryopteris intermedia*

2. Lower basal pinnule of lowest pinna less than twice as long as upper basal pinnule of lowest pinna; surface of blade without glands..... *Dryopteris carthusiana*

1. Blades bipinnate, or less divided. 3

3. Blade more than 15 cm wide, abruptly narrowed to the tip..... 4

3. Blade less than 12 cm wide, gradually narrowed to the tip. *Dryopteris cristata*

4. Mature blades 15-18 cm broad; basal (lowest) pinnae roughly triangular, broadest at the base, (i.e deltate).*Dryopteris clintoniana*

4. Mature blades 20-30 cm broad; basal pinnae ovate, narrowing to the base.
.....*Dryopteris goldiana*

Duchesnea *Duchesnea indica*

Dulichium *Dulichium arundinaceum*

Dyssodia *Dyssodia papposa*

'E'

Echinacea

1. Leaves 8-15 times as long as wide; leaves taper into the petiole; margins entire.....
..... *Echinacea pallida*

1. Leaves 2-4 times as long as wide; leaves on distinct petioles; margins with some teeth.....
..... *Echinacea purpurea*

Echinochloa

1. Lower leaf sheaths with stiff, spreading hairs (rarely glabrous); 1 awn on upper glume and 1 awn on sterile lemma*Echinochloa walteri*

1. Lower leaf sheaths smooth (may have a few hairs); 0 awns on glumes and 1 or 0 awns on sterile lemma 2

2. Tip of fertile lemma with a ring of minute bristles; stiff bristles on second glume and sterile lemma without swollen bases (for the most part)*Echinochloa crusgalli*

2. Tip of fertile lemma lacking ring of bristles; stiff bristles on second glume and sterile lemma with swollen bases.....*Echinochloa muricata*

Echinocystis.....*Echinocystis lobata*

Echinops *Echinops sphaerocephalus*

Echium *Echium vulgare*

Elaeagnus

1. Small tree; leaves lanceolate; new twigs with silvery scales; fruit a yellowish drupe shaped like an olive and covered in silvery scales *Elaeagnus angustifolia*

1. Tall shrub; leaves ovate; new twigs with brown and silvery scales; fruit a small round, red drupe covered in brown and silvery dots *Elaeagnus umbellata*

Eleocharis

1. Stem as thick as spikelet and sharply 4-angled; stem stout, 1.5-5 mm thick *Eleocharis quadrangulata*

1. Stem thinner than spikelet and round or flattened; stem usually narrow, up to 2 mm thick (but may be up to 4 mm thick in some species) 2

2. Tubercle not separated from achene by a distinct constriction (may have a slightly different texture or color, though); top of leaf sheath without a tooth; stigmas 3-cleft 3

3. Sterile stems arching and rooting at the tip; fertile stems erect and flattened; spikelets 9-17 mm long *Eleocharis rostellata*

3. Stems not arching or rooting at the tip; spikelets 4-7 mm long *Eleocharis pauciflora*

2. Tubercle separated from the achene by a distinct constriction or by a change in texture or color; top of leaf sheath usually with a sharp tooth; stigmas 2 or 3-cleft 4

4. Body of achene three-angled or rounded in cross-section; achene usually ridged or roughened 5

5. Sterile shoots mat-forming; stems very fine and hair-like; achenes white with vertical bars connected by horizontal stripes; anthers 0.6-1 mm long; basal scale of spikelet fertile *Eleocharis acicularis*

5. Shoots tufted or mat-forming; achenes not white and not textured as above; anthers various; basal scale of spikelet sterile..... 6
6. Plants tufted and without rhizomes, some of the stems within the bunch very short; achenes light green-yellow to olive and slightly roughened; anthers less than 0.5 mm long..... *Eleocharis intermedia*
6. Plants with rhizomes; achenes yellow to orange or golden brown; anthers various 7
 7. Stems strongly flattened; scales at middle of spike red-brown with bifid white tips, 0.6-1 mm long.....*Eleocharis compressa*
 7. Stems not compressed; scales at middle of spike dark red-brown to black and lacking the white bifid tips or bifid tips less than 0.6 mm long *Eleocharis elliptica*
4. Body of achene flattened or two-sided in cross-section; achene usually smooth or shiny 8
 8. Sheaths white and loose at the top and split; achenes olive green to brown, 1-1.5 mm long including tubercle; anthers 0.6-1 mm long.....*Eleocharis olivacea*
 8. Sheaths closed at the top, not split, and usually darker; achenes yellow to brown, 1.1-2.8 mm long including tubercle; anther length various 9
 9. Annual plant, densely tufted; achenes 1.1-1.5 mm long including tubercle; anthers 0.4-0.7 mm long.....*Eleocharis obtusa*
 9. Perennial plant, rhizomatous; achenes 1.5-2.8 mm long including tubercle; anthers 1.2-2.7 mm long 10
 10. Fertile scales ovate; one sterile scale that almost completely encircles the stem at the base of the spikelet; stems narrow, less than 0.7 mm wide; achenes 1.6-1.8 mm long including tubercle *Eleocharis erythropoda*
 10. Fertile scales pointed; 2-3 sterile scales at base of spikelet; stems 0.5-4 mm wide; achenes 1.5-2.8 mm long including tubercle..... *Eleocharis palustris*
- Eleusine***.....*Eleusine indica*
- Ellisia****Ellisia nyctelea*

Elodea

1. Leaves 1.2-4.5 mm wide and 2-5 times as long as wide; male spathe 4-8.5 mm long and elongate *Elodea canadensis*
1. Leaves 0.7-1.8 mm wide and 5-10 times as long as wide; male spathe 2-3 mm long and globose *Elodea nutallii*

Elymus

1. One spikelet on most nodes of the rachis 2 (*Agropyron/Elytrigia*)
 2. Lemmas with a dense, tangle of hairs; spikelets with 3-7 florets; leaves narrow and often involute; whole plant usually strongly glaucous; a rare plant of Lake Michigan beach and dunes *Elymus lanceolatus* (*Elytrigia dasystachya*)
 2. Lemmas glabrous to slightly hairy; spikelets with 3-16 florets; leaves and plants various 3
 3. Plants lacking creeping rhizomes between tufts; anthers 1-2.5 mm long; empty glumes often remaining on rachis *Elymus trachycaulus* (*Agropyron trachycaulum*)
 3. Plants with creeping rhizomes between tufts; anthers 3-6 mm long; spikelets falling entire 4
 4. Leaves stiff with deep grooves between prominent raised veins and often strongly scabrous; glume margins with small hairs at the base; spikelets with 6-16 florets and 15-30 mm long; lemmas awnless; upper culm nodes less than half as long as wide (i.e., rectangular) *Elymus smithii* (*Agropyron smithii*)
 4. Leaves lax and not deeply grooved; glume margins lacking hairs at base; spikelets with 3-6 florets and 10-18 mm long; lemmas may or may not have an awn; upper culm nodes as tall as wide (i.e., square-shaped) *Elymus repens* (*Agropyron repens*)
1. Two or three spikelets on most nodes of the rachis 5 (*Elymus/Leymus*)
 5. Glumes 3.3-4.2 mm wide; lemmas awnless; an uncommon plant of Lake Michigan shores
..... *Leymus arenarius* (*Elymus arenarius*)
 5. Glumes 2 mm wide or narrower; lemmas with awns; habitat not restricted to Lake Michigan shores 6

6. Palea of lowest floret 9 mm long or longer; lemma awns strongly recurved when dry; spike curved to strongly nodding..... *Elymus canadensis*
6. Palea of lowest floret 8 mm long or shorter; lemma awns straight when dry; spike erect...
..... 7
7. Spikelets falling entire; glumes 0.9-2.0 mm wide, widest at or above the middle, appearing to be bowed out *Elymus virginicus*
7. Florets falling, leaving glumes behind on the rachis; glumes 0.4-0.8 mm wide, widest near the base and not bowed out 8
8. Spikelets with 2-4 florets; glumes wider at the base; lowest palea 7-8 mm long; leaves glabrous..... *Elymus riparius*
8. Spikelets with 1, sometimes 2, florets; glumes reduced to narrow awns; lowest palea 5.2-6.7 mm long; upper surface of leaves finely hairy *Elymus villosus*

Epifagus *Epifagus virginiana*

Epilobium

1. Large, showy purple flowers, 2-4 cm wide on an elongated terminal raceme; leaves all alternate..... *Epilobium angustifolium*
1. Flowers smaller, less than 1.5 cm wide, mostly in the axils of leaves, if flowers wider, then not in an elongated terminal raceme; leaves mostly opposite 2
2. Stems pubescent with widely spreading hairs..... 3
3. Leaves 8 mm wide or less; entire and often curled under at the edges; stigma in one piece *Epilobium strictum*
3. Leaves more than 8 mm wide; with at least small teeth; stigma divided into 4 lobes
..... *Epilobium hirsutum*
2. Stems glabrous or with minute, incurved hairs 4
4. Leaves linear or lanceolate, usually less than 4 mm wide, entire and often curled under at the edges; stems rounded except for sometimes angled just beneath the leaves; small hairs are appressed and not glandular *Epilobium leptophyllum*

4. Leaves lanceolate and usually over 1 cm wide, toothed; internodes angled; small hairs are glandular 5
5. Petioles of leaves from the middle of the plant short, 2-3 mm long, with broad wings; hairs of seeds white *Epilobium ciliatum*
5. Petioles of leaves from the middle of the plant longer, 2-6 mm long, with narrow wings or not winged; hairs of seeds brownish.....*Epilobium coloratum*

Epipactis..... *Epipactis helleborine*

Equisetum

1. Green stems usually with regularly whorled branches (briefly in spring, *E. arvense* produces separate brownish fertile stems without whorled branches, but the sterile stems bear whorled branches). 2
2. Central cavity at least 80% of the diameter of stem (the stems therefore very easy to compress when alive and often very flat when pressed); stems with or without branches, often growing in standing water.....*Equisetum fluviatile*
2. Central cavity less than 50% of the diameter of stem (the stems therefore not easily compressed when alive and not as severely flattened when pressed); stems usually with regularly whorled branches, usually not in standing water (although the soil may be wet)... 3
3. Sheath teeth brown, loosely combined into 3 or 4 groups, and 5-10 mm long.....
..... *Equisetum sylvaticum*
3. Sheath teeth black (sometimes margins whitish), separate and mostly <5 mm long 4
4. Lowest internode of lowest branches shorter than the adjacent stem sheath; branches 4-6 ridged; fertile plants with strobilus on tip of green, branched stems; plants of swamps or marshes *Equisetum palustre*
4. Lowest internode of lowest branches longer than the adjacent stem sheath; branches 3-4 ridged; fertile plants various..... 5
5. Fertile stems brownish with no branches and often less than 25 cm tall; sterile stems green, taller than 30 cm when mature, sheaths approximately as wide as tall with mostly blackish teeth; teeth of branch sheaths narrowly triangular; branches strongly ascending (best seen in younger plants); common plants of disturbed wet to dry sites ..
.....*Equisetum arvense*

5. Fertile stems green, similar to sterile, (with addition of terminal strobilus) and taller than 30 cm when mature, stem sheaths clearly longer than wide, teeth with blackish center and conspicuous hyaline margins; teeth of branch sheaths broadly triangular; branches widely spreading; plants most often in upland forest. *Equisetum pratense*
1. Green stems without regularly whorled branches (mostly unbranched, but occasionally a few irregularly scattered branches on some species). 6
6. Stems essentially solid inside, lacking conspicuous central cavity; stems small (less than 1.5 mm thick and often less than 15 cm long), conspicuously curved and often numerous and tangled. *Equisetum scirpoides*
6. Stems with conspicuous central cavity of at least 1/4 the diameter of the stem; stems about 2 mm or more thick, usually longer than 10 cm, and essentially straight. 7
7. Stems with 10 or fewer ridges and usually less than 30 cm tall *Equisetum variegatum*
7. Stems with more than 10 ridges and usually more than 30 cm tall 8
8. Teeth of stem sheaths obvious, sharp-pointed and persistent; plants usually in standing water or very wet conditions; sheaths lacking black bands *Equisetum fluviatile*
8. Teeth of stem sheaths deciduous, leaving only truncated bases; plants usually in moist to dry soil; most common species with conspicuous black bands at base of sheaths 9
9. Sheaths about as long as wide and with black bands at base and tip of each sheath; stems rough, perennial and often persisting for several years *Equisetum hyemale*
9. Sheaths longer than wide and at most with a black band at base of some sheaths; stems smooth, annual and not persisting over winter *Equisetum laevigatum*

Eragrostis

1. Plants mat-forming, rooting at the nodes; nodes with a beard of hairs *Eragrostis hypnoides*
1. Plants erect and tufted, not rooting at the nodes; nodes glabrous 2
2. Plants perennial, with hard, knotted base; spikelets pink to purple; panicle branches with swollen pulvini at base of branch with long hairs *Eragrostis spectabilis*
2. Plants annual, with soft base; spikelets green; pulvini hardly developed and more or less glabrous 3

3. Leaf margins, midribs of lemmas, and pedicels with warty glands (look closely under strong magnification) 4
4. Spikelets 1-2 mm wide; sheaths with sparse hairs *Eragrostis poaeoides*
4. Spikelets 2.5-3.5 mm wide; sheaths glabrous except at the top *Eragrostis cilianensis*
3. Leaf margins, midribs of lemmas, and pedicels without warty glands 5
5. Spikelets spreading from the branches; the largest spikelets usually with 2-5 florets; sheaths glabrous except at the top; axils of panicle branches glabrous; tip of second glume opposite the tip of the lowest lemma *Eragrostis frankii*
5. Spikelets appressed to the branches; the largest spikelets usually with more than 6 florets (except sometimes *E. pilosa*); sheaths various; axils of panicle branches various; tip of second glume shorter than tip of lowest lemma 6
6. Lateral veins of lemmas obscure; sheaths glabrous except for a few short hairs at the top or none; panicle branches flowering to the base and whorled at lower nodes
..... *Eragrostis pilosa*
6. Lateral veins of lemmas distinct; sheaths with long hairs about 2 mm long at the top; panicle branches lacking flowers along the lower third of the branch 7
7. Sheaths with glandular depressions toward the base; size of largest lemmas 2-2.2 mm long; pedicels less than 5 mm long; spikelets tinged with purple
..... *Eragrostis mexicana*
7. Sheaths lacking glandular depressions; size of largest lemmas 1.5-2 mm long; pedicels more than 5 mm long; spikelets not purplish *Eragrostis pectinacea*

- Erechtites*** *Erechtites hieracifolia*

- Erigenia*** *Erigenia bulbosa*

- Erigeron***
1. Heads usually 2-3 cm across and usually few (1-10); lower leaves soft-hairy, more or less clasping 2

- 2. Stem simple; heads few; 50-100 rays per head, each 1 mm wide*Erigeron pulchellus*
- 2. Stems usually branches; heads several; 150-200 rays per head, each greater than 1 mm wide.....*Erigeron philadelphicus*
- 1. Heads less than 2 cm across and many (greater than 10); leaves not soft-hairy and not clasping 3
- 3. Plants with appressed hairs; stem leaves few, entire or subentire..... *Erigeron strigosus*
- 3. Plants with still, sparse, spreading hairs; stem leaves more numerous, most irregularly sharply toothed..... *Erigeron annuus*

Eriochloa *Eriochloa villosa*

Eriophorum

- 1. A single, terminal spikelet; lacking involucre leaves.....*Eriophorum spissum*
- 1. Multiple spikelets; with 1 or more involucre leaves 2
- 2. Only one involucre leaf present, shorter than the inflorescence; cauline leaves 3-angled their whole length.....*Eriophorum gracile*
- 2. Two involucre leaves present, usually longer than the inflorescence; cauline leaves flat for at least their lower half..... 3
- 3. Spikelets congested and erect; maturing in late July or August; scales of spikelet red-brown and lacking a distinct midnerve.....*Eriophorum virginicum*
- 3. Spikelets elongated on longer pedicels, with some spikelets nodding; maturing in June or early July; scales of spikelet grey-black and having a midnerve..... 4
- 4. Anthers long, 2.2-4.5 mm; mature achenes 2-2.3 mm long; top of upper leaf sheath with a dark border *Eriophorum angustifolium*
- 4. Anthers short, 0.8-1.5 mm; mature achenes 3 mm long; top of upper leaf sheath without a dark border*Eriophorum viridicarinatum*

Erodium.....*Erodium cicutarium*

Erucastrum..... *Erucastrum gallicum*

Eryngium..... *Eryngium yuccifolium*

Erysimum

1. Petals 3.5-5 mm long; fruits 1.5-2.5 cm tall; pedicels thin, and widely spreading.....
..... *Erysimum cheiranthoides*

1. Petals 7-9 mm long; fruits 2.5-5 cm tall; pedicels thick, ascending..... 2

2. Cauline leaves with minute teeth; leaves with 3 and 4-pronged hairs above; leaves usually greater than 5 mm wide *Erysimum hieracifolium*

2. Cauline leaves entire; leaves with 2 or 3-pronged hairs above; leaves usually less than or equal to 5 mm wide *Erysimum inconspicuum*

Erythronium

1. Flowers yellow *Erythronium americanum*

1. Flowers white..... *Erythronium albidum*

Escholzia *Escholzia californica*

Euonymus

1. Stems climbing or trailing via adventitious roots; leaves evergreen..... *Euonymus fortunei*

1. Stems trailing or an erect shrub; lacking adventitious roots at the nodes; leaves deciduous.....
..... 2

2. Twigs with obvious corky wings..... *Euonymus alata*

2. Twigs lacking obvious corky wings..... 3

3. Creeping or trailing shrub; leaves obovate, on short petioles, 1-5 mm long; fruit with three lobes, red and warty on the outside *Euonymus obovata*

3. Erect shrub or small tree; leaf shape various, on longer petioles, 10-30 mm long; fruit with four lobes and pink or purple and smooth on the outside 4
4. Outside of fruit is pink, and inside seed covering is red; flower is purple; lower surface of leaves with fine pubescence..... *Euonymus atropurpurea*
4. Outside of fruit pink, and inside seed covering is orange; flower is yellow-green; lower surface of leaves glabrous *Euonymus europaeus*

Eupatorium

1. Flowers purple-pink; leaves whorled 2
2. Inflorescence flat-topped; each flower head with 9-24 florets; plant of wet habitats *Eupatorium maculatum*
2. Inflorescence convex on top; each flower head with 3-8 florets; plant of dry woods..... *Eupatorium purpureum*
1. Flowers white; leaves opposite, except for a few alternate leaves near the top of the stem.. 3
3. Leaves perfoliate, completely surrounding the stem *Eupatorium perfoliatum*
3. Leaves petioled or sessile, but not surrounding or clasping the stem 4
4. Leaves sessile and narrowly lanceolate; 5-8 florets per flower head..... 5
5. Leaves with one midvein and broadly rounded at the base..... *Eupatorium sessilifolium*
5. Leaves with three prominent veins and tapering to the base..... *Eupatorium altissimum*
4. Leaves with long petioles and widely lanceolate to ovate; 8-25 florets per flower head... 6
6. Leaves lanceolate; the undersides of leaves pubescent; phyllaries of uneven lengths *Eupatorium serotinum*
6. Leaves ovate; the undersides of leaves glabrous or with some hairs along the main veins; phyllaries the same length *Eupatorium rugosum*

Euphorbia

1. Cyathia (specialized flowers) with one gland and no petal-like appendages; leaves opposite and strongly toothed *Euphorbia dentata*
1. Cyathia with 4 or 5 glands, with or with-out petal-like appendages; leaves opposite or alternate but not strongly toothed (may be minutely toothed) 2
2. Stems prostrate or ascending; leaves opposite and with asymmetrical leaf bases; stipules at base of leaves present; cyathia in upper axils of plant 3
3. Stems pubescent, with at least a fine line of hairs present; young leaves with at least some hairs below that may be shed when older.....*Euphorbia vermiculata*
3. Stems and leaves completely glabrous..... 4
4. Leaves completely entire; seeds (2.4-2.7 mm long) and capsules large (3-3.5 mm long); plant of dunes and beaches along Lake Michigan*Euphorbia polygonifolia*
4. Leaves minutely toothed at least at the tip or on one side; seeds (0.9-1.2 mm long) and capsules smaller (1.3-1.9 mm long); plants not restricted to dunes and beaches..... 5
5. Seeds with irregular pitting; leaves usually wider above the middle with teeth on the apical half of leaf..... *Euphorbia serpyllifolia*
5. Seeds with obvious, transverse ridges; leaves usually wider below the middle; teeth at tip not as pronounced*Euphorbia glyptosperma*
2. Stems erect; at least the lower leaves alternate; stipules absent; cyathia in terminal cymes 6
6. Cyathia with 4 or 5 white, obvious, petal-like appendages..... 7
7. Upper leaves and bracts variegated (green with white edges); capsules pubescent
..... *Euphorbia marginata*
7. Upper leaves and bracts green; mature capsules glabrous (may have some hairs when young)*Euphorbia corollata*
6. Cyathia lacking white, petal-like appendages; bracts of inflorescences petal-like 8
8. Leaves broadly rounded to obovate or spatulate..... 9

- 9. Leaves with minute teeth; glands on cyathia rounded to kidney-shaped; primary branches of inflorescences 5, originating from one point.....*Euphorbia helioscopia*
- 9. Leaves strictly entire; glands on cyathia with little horns on each end; primary branches of inflorescences 3, originating from one point..... *Euphorbia peplus*
- 8. Leaves more or less linear..... 10
 - 10. Main cauline leaves 1-3 cm long, crowded together along stem; flowers of inflorescence crowded together at top of stem; plant up to 0.4 m tall
.....*Euphorbia cyparissias*
 - 10. Main cauline leaves 3-7 cm long, spread out along the stem; flowers of inflorescence on longer branches or may be spread out along the stem; plant 0.4-0.9 m tall*Euphorbia esula*

‘F’

Fagopyrum.....*Fagopyrum esculentum*

Fagus..... *Fagus grandifolia*

Festuca

- 1. Blades of leaves flat, 3 mm or more wide 2
 - 2. Largest lemma 5 mm or more long; spikelets 8 mm or more long; branches of panicle bearing spikelets nearly to the base*Festuca elatior*
 - 2. Largest lemma 4.7 mm or less long; spikelets less than 8 mm long; branches of panicle bearing spikelets only above the lower third of the primary panicle branches..... 3
 - 3. Lowest branches of panicle mostly with 1-7 spikelets scattered along one side.....
..... *Festuca obtusa*
 - 3. Lowest branches with 6-15 spikelets in a dense cluster.....*Festuca paradoxa*
- 1. Blades of leaves strongly involute, less than 3 mm wide 4
 - 4. Basal sheaths reddish, thin, disintegrating, with strong veins that persist as fibers; basal shoots tending to arise laterally, making culms bent at the base..... *Festuca rubra*

4. Basal sheaths grayish, firm, persistent; basal shoots erect 5
5. Panicle narrow and spikelike; inflorescence with strictly appressed branches; fertile spikelets 9-15 mm long; culms slender, 20-40 cm long..... *Festuca saximontana*
5. Panicle more open; inflorescence with at least lower branches spreading; fertile spikelets 5-10 mm long; culms 5-75 cm long..... *Festuca trachyphylla*

Filipendula *Filipendula rubra*

Fimbristylis

1. Leaves and culms pubescent, often scabrous; stigmas 2; a stiff perennial
..... *Fimbristylis puberula*
1. Leaves and culms glabrous; stigmas typically 3; a tufted annual *Fimbristylis autumnalis*

Floerkea *Floerkea proserpinacoides*

Fragaria

1. Terminal tooth of leaflets longer than or equal to the neighboring teeth; hairs on peduncles and petioles usually appressed; fruit a conical berry with achenes projecting from the surface of the fruit; calyx lobes widely spreading to reflexed from the developing fruit.....
..... *Fragaria vesca*
1. Terminal tooth of leaflets shorter than the neighboring teeth; hairs on petioles strongly spreading; fruit an ovoid to round berry with achenes sunken in depressions on the surface of the fruit; calyx lobes appressed to the developing fruit.....*Fragaria virginiana*

Fraxinus

1. Twigs 4-angled, with flattish sides *Fraxinus quadrangulata*
1. Twigs terete..... 2
2. Lateral leaflets sessile, 6-10; buds bluish-black; uppermost pair of buds separated (0.3 to 1 cm) from terminal bud; flaky bark that rubs off easily *Fraxinus nigra*

2. Lateral leaflets short-stalked, 4-8; buds brown to red-brown; uppermost pair of buds adjacent to terminal bud; bark ridged and not flaking off easily 3
3. Leaves and young twigs may be pubescent; leaflets often serrate; leaflets green on both sides; leaflets on petiolules to 5 mm long; terminal buds acute (<90 degree angle); leaf scars usually straight on upper edge; seeds very narrow, with wings of samara 6.5 mm wide, often extending to below the middle of the seed *Fraxinus pennsylvanica*
3. Leaves and young twigs glabrous but sometimes hairs on lower side of veins; leaflets often entire; leaflets white or pale beneath (minutely papillose); terminal buds obtuse (>90 degree angle); leaf scars deeply notched (U- or V-shaped at top); seeds moderately tapered, with wings of samara about 5 mm wide, extending to about half of seed
..... *Fraxinus americana*

Froelichia *Froelichia gracilis*

Fumaria *Fumaria officinalis*

'G'

Galeopsis *Galeopsis tetrahit*

Galinsoga

1. Pappus of ray flowers absent or vestigial; pappus scales of disk flowers obtuse or acute and awnless; leaves with small, barely visible, rounded teeth *Galinsoga parviflora*
1. Pappus of ray flowers well-developed; pappus scales of disk flowers with a terminal awn; leaves with definite teeth visible *Galinsoga ciliata*

Galium

1. Fruit hispid or bristly, or leaves with 3 prominent longitudinal veins, or plants with both these conditions 2
2. Principal leaves in whorls of 6-8, with only a midrib prominent at base of leaf; plant more or less reclining 3

3. Flowers white, finishes blooming by mid-June; stem and leaf-margin rough-scabrous with retrorse barbs; leaves broadest beyond the middle, tapering more quickly to the apex than to the base*Galium aparine*
3. Flowers greenish, blooms starting in early-mid June; stem smooth; leaf margin antrorse-scabrous; leaves narrowly elliptic, tapering equally to apex and base*Galium triflorum*
2. Principal leaves in whorls of 4 or less, often with a pair of weaker veins on either side of the midrib at base of leaf; plant erect 4
 4. Branches of inflorescences with all flowers and fruits with distinct pedicels (at least 1 mm long), many flowers in one panicle; corolla white; leaves linear-lanceolate with 1-2 pairs of veins besides the midrib prominent half or more the length of the leaf.....*Galium boreale*
 4. Flowers and fruits sessile or nearly so; branches of inflorescences with lateral flowers in small clusters; corolla yellow-green to maroon 5
 5. Principal leaves broadly ovate-elliptic, tips rounded, mostly less than 2.5 times as long as broad; internodes and outside of corolla usually pubescent; corolla yellow-green
..... *Galium circaezans*
 5. Principal leaves broadly lanceolate, tips acute, mostly more than 2.5 times as long as broad; internodes and outside of corolla glabrous; corolla maroon ...*Galium lanceolatum*
1. Fruit smooth or at most roughened, and leaves with only one prominent vein (i.e., midrib).....
..... 6
 6. Leaves sharply acute or awned at apex, 6-12 leaves per whorl 7
 7. Leaves linear, strongly revolute, commonly pubescent beneath; corollas yellow, in elongate terminal panicles*Galium verum*
 7. Leaves narrowly lanceolate or ovate, glabrous or scabrous beneath; corollas white, panicles various..... 8
 8. Leaves and stems very harsh, strongly retorsely scabrous*Galium asprellum*
 8. Leaves and stems smooth or antrorsely scaberulous..... 9
 9. Leaves at main nodes 8-12 per whorl; leaves densely antrorse-scabrous on the margins, leaves oblanceolate to obovate.....*Galium mollugo*
 9. Leaves at main nodes 6 per whorl; leaves smooth or weakly antrorse-scabrous on the margins, leaves linear to narrowly oblong *Galium concinnum*
 6. Leaves obtuse or rounded at apex, not over 4-6 leaves per whorl 10

10. Corolla 2-3 mm broad; corolla lobes 4, mostly longer than wide; stem nodes bearded with short hairs 11
11. Leaves linear, less than 1.5 cm long and less than 2 mm wide, leaves strongly reflexed; mature fruit 1-1.8 mm in diameter..... *Galium labradoricum*
11. Leaves linear to oblong, the principal leaves more than 1.5 cm long and more than 2 mm wide; leaves not reflexed; mature fruit more than 2 mm in diameter 12
12. Leaves elliptic-oblong, up to 3 cm long; flowers few in scattered inflorescences
.....*Galium obtusum*
12. Leaves linear-lanceolate, frequently longer than 3 cm; flowers many in terminal panicles*Galium boreale*
10. Corolla 2mm or less broad; corolla lobes mostly 3, mostly wider than long or as wide as long; stem nodes glabrous..... 13
13. Pedicels densely retrorse-scabrous, the longer ones 7-17 mm long, curved toward the tip at maturity, usually 2 or 3 separate pedicels attached directly to a whorl of leaves rather than on a common peduncle*Galium trifidum*
13. Pedicels smooth, not longer than 8 mm long and straight at maturity, often 2 or 3 attached to a common peduncle rather than directly to a whorl of leaves 14
14. Pedicels 0.5-3.5 mm long and often curved at maturity, solitary or in pairs but not on a common peduncle; corolla not over 1 mm wide; fruit 0.8-1.2 mm in diameter; leaves mostly 2.5-7 mm long *Galium brevipes*
14. Pedicels 3-8 mm long and straight, often on a common peduncle; corolla 1-1.8 mm wide; fruit 1-1.8 mm in diameter; leaves mostly 5.5-14 mm long*Galium tinctorium*

Gaultheria

1. Leaves less than 1 cm long, with dark bristles on their undersides; bell-shaped flowers with 4 lobes, about 2-3 mm long; stem with bristles; fruit white*Gaultheria hispidula*
1. Leaves 2-4.5 cm long, with bristles on leaf margins only; bell-shaped flowers with 5 lobes, about 6-9.5 mm long; stems with incurved white hairs or glabrous; fruit red
..... *Gaultheria procumbens*

Gaura

1. Leaves linear-lanceolate, rarely more than 5 mm wide and 3 cm long; plant less than 50 cm tall; ovary and fruit densely hairy with appressed or incurved hairs; fruit contracted just below the middle to a thick, stipe-like base *Gaura coccinea*
1. Leaves lanceolate, usually more than 5 mm wide and 3 cm long; plant greater than 50 cm tall; ovary and fruit densely hairy with mostly wide-spreading hairs; fruit equally tapered to both ends 2
2. Main stem with numerous straight hairs over a layer of shorter or appressed hairs *Gaura biennis*
2. Main stem with all hairs long or short curled or appressed *Gaura longiflora*

Gaylussacia *Gaylussacia baccata*

Gentiana

1. Corollas white or cream-colored, marked with greenish; leaf margins smooth *Gentiana alba*
1. Corollas blue; leaves with scabrous or ciliate (view under 10X magnification) margins 2
2. Areas between the corolla lobes distinctly longer than the lobes and with small teeth; calyx lobes minutely ciliate; corolla closed at antithesis *Gentiana andrewsii*
2. Areas between the corolla lobes distinctly shorter than the corolla lobes, with or without teeth; stem with small hairs especially on the angles; calyx lobes linear; corolla open at antithesis *Gentiana puberula*

Gentianella *Gentianella quinquefolia*

Gentianopsis

1. Largest mid-cauline leaves linear to linear-lanceolate, 6-21 times as long as broad and less than 1 cm wide; summit of corolla lobes erose-dentate *Gentianopsis procera*

1. Largest mid-cauline leaves ovate to ovate-lanceolate, less than 4 times as long as broad and/or over 1 cm wide; summit of corolla lobes distinctly fringed *Gentianopsis crinita*

Geranium

1. Petals 12-18 mm long, much exceeding the sepals; fruiting sepals about 1 cm long; leaves large, palmately lobed with 5-7 lobes; mostly basal except for a pair just below the flowering stalk *Geranium maculatum*
1. Petals less than 10 mm long (not including claw), scarcely if at all exceeding the sepals; fruiting sepals rarely as much as 1 cm long; cauline leaves usually numerous..... 2
2. Leaf blades deeply pinnatifid to pinnately lobed, the divisions complete; petals 9-13 mm long (including claw), narrowed basally to a distinct, long claw *Geranium robertianum*
2. Leaf blades deeply divided, but not to their base; petals less than 8 mm long, with minute claw or claw absent..... 3
3. Pedicels spreading-hairy, eglandular; mature beak about 1 mm long... *Geranium sibiricum*
3. Pedicels either strigose or glandular-villous; beak about 3.5 mm long..... 4
4. Pedicels with dense spreading hairs of varying lengths, the longer hairs mostly glandular; the fruiting body with long hairs *Geranium bicknellii*
4. Pedicels with tiny retrorse non-glandular hairs; the fruiting body mostly glabrous.....
..... *Geranium columbinum*

Geum

1. Calyx bell-shaped, red or purple; flowers nodding (becoming erect in fruit); petals yellow with purple veins or purple cast 2
2. Plant of fens and bogs; style barely twice as long as the perianth at maturity; terminal leaflet rotund or broadly cuneate, much larger than the lateral leaflets *Geum rivale*
2. Plant of dry prairies; style becoming long and plumose, becoming 2-6 times as long as the perianth at maturity, terminal leaflet scarcely larger than the lateral leaflets.....
..... *Geum triflorum*
1. Calyx not bell-shaped, green, with lobes becoming reflexed; flowers mostly erect; petals white or yellow 3

3. Calyx with small bractlets between the sepals, calyx at least 4 mm long; plant only beginning to bloom in June or later; petals greater than 2 mm long; larger fruiting heads 1-2.2 cm broad including beaks; essentially sessile on perianth 4
3. Calyx lacking bractlets between the sepals, calyx 3-4 mm long (including lobes before reflexing); plant with mature fruit by first week of June; petals 1.2-2 mm long; larger fruiting heads less than 1.2 cm broad, elevated on a stipe well above the perianth
.....*Geum vernum*
4. Key to Flowering Material..... 5
5. Petals white to pale yellow or cream..... 6
6. Petals 4-7 mm long, greater than or equal to the sepals; stem glabrous or with a few scattered hairs; pedicels at most with scattered long hairs.....*Geum canadense*
6. Petals 2.5-4 mm long, much shorter than the sepals; stem densely pubescent with spreading hairs (many hairs 2 mm or longer); pedicels various..... 7
7. Pedicels hirsute with spreading to reflexed hairs; largest stipules less than 10 mm wide.....*Geum laciniatum*
7. Pedicels with at most scattered long hairs; largest stipules over 10 mm wide
.....*Geum virginianum*
5. Petals bright yellow..... 8
8. Petals 3-4 mm long, less than or equal to the sepals; terminal segment of style mostly glabrous..... *Geum urbanum*
8. Petals 5-8 mm long, usually greater than the sepals; terminal segment of style conspicuously hairy..... *Geum aleppicum*
4. Key to Fruiting Material 9
9. Receptacle glabrous (remove a few achenes to see clearly); stems and pedicels pubescent with long, spreading hairs.....*Geum laciniatum*
9. Receptacle hairy; stem and pedicels various..... 10
10. Cauline leaves pinnately compound, usually with 5-7 leaflets; pedicels stout; achenes more than 150 per head..... *Geum aleppicum*

10. Cauline leaves mostly 3-lobed or trifoliate; pedicels slender; achenes rarely more than 100 per head..... 11
11. Deciduous terminal segment of style glabrous or only minutely pubescent; stipules of cauline leaves mostly 12-35 mm wide *Geum urbanum*
11. Deciduous terminal segment of style pilose at base; stipules of cauline leaves rarely more than 12 mm wide 12
12. Leaflets acute; stipules up to 2 cm long and 1 cm wide; stems glabrous or slightly pubescent with appressed hairs *Geum canadense*
12. Leaflets obtuse; larger stipules 2 cm or more long; stems usually densely pubescent..... *Geum virginianum*

Glechoma *Glechoma hederacea*

Gleditsia *Gleditsia triacanthos*

Glyceria

1. Spikelets linear, 8-30 mm long, on strongly ascending pedicels; sheaths compressed; plants develop floating leaves in aquatic habitats 2
2. Back of lemma more or less glabrous; leaves less than 5 mm wide *Glyceria borealis*
2. Back of lemma scabrous-puberulent between the veins; wider leaf blades 4-10 mm broad ..
..... *Glyceria septentrionalis*
1. Spikelets ovate, 3-12 mm long; mostly on spreading or lax pedicels; sheaths not compressed .
..... 3
3. Plants large in size, mature culms 90-250 cm tall; leaf blades 6-20 mm wide 4
4. Cauline leaves mostly 7 or more; spikelets of 4-10 fertile florets, 5-12 mm long; lower glume 2-3 mm long; upper glume 3-4 mm long *Glyceria maxima*
4. Cauline leaves mostly 3-6; spikelets of 5-6 fertile florets, 4-5 mm long; lower glume 1.6-1.7 mm long; upper glume 2.4-2.5 mm long *Glyceria grandis*
3. Plants smaller statured, mature culms 40-90 cm tall; leaf blades 2-8 mm wide 5

5. Lemmas with prominent raised veins, giving a corrugated appearance; lemmas 1.5-2 mm long; spikelets 3-4 mm long, becoming 1.5-2.6 mm wide at maturity.....*Glyceria striata*
5. Lemmas smooth, veins visible but not strongly raised; lemmas 3-3.5 mm long; spikelets 4-7 mm long, becoming 3.5-4 mm wide at maturity.....*Glyceria canadensis*

Glycyrrhiza *Glycyrrhiza lepidota*

Gnaphalium

1. Involucre greenish to brown, up to 3 mm long; heads in numerous axillary clusters, with bract-like leaves overtopping the clusters..... *Gnaphalium uliginosum*
1. Involucre white, averaging more than 3 mm long; heads in terminal panicles, above the leaves 2
2. Leaves decurrent at the base (stem with 2 short wings extending beneath the nodes); stems with spreading glandular hairs over 0.3 mm long..... *Gnaphalium macounii*
2. Leaves not decurrent at the base; stems with few or no glandular hairs *Gnaphalium obtusifolium*

Goodyera *Goodyera pubescens*

Grindelia *Grindelia squarrosa*

Gymnocarpium *Gymnocarpium dryopteris*

Gymnocladus *Gymnocladus dioica*

Gypsophila

1. Calyx 1-2.1 mm long; pedicels and branches of inflorescence smooth... *Gypsophila paniculata*
1. Calyx 2.5-4 mm long; pedicels and branches of inflorescence with glandular hairs *Gypsophila scorzonifolia*

'H'

Habenaria *Habenaria viridis*

Hackelia *Hackelia virginiana*

Hamamelis *Hamamelis virginiana*

Hasteola *Hasteola suaveolens*

Hedeoma

1. Leaves linear, sessile, and entire *Hedeoma hispida*

1. Leaves more or less elliptic, with short petioles, often weakly toothed
..... *Hedeoma pulegioides*

Helenium

1. Leaves numerous and crowded, less than 2 mm wide; stems without wings
..... *Helenium amarum*

1. Leaves not crowded, wider than 2 mm; stem with green wings the length of the internode.....
..... *Helenium autumnale*

Heleochoa *Heliochoa schoenoides*

Helianthemum

1. Petaliferous flowers solitary and overtopped by leafy branches; capsules of cleistogamous
flowers about 2.5 mm or greater in diameter with at least 5 seeds; upper surface of young
cauline leaves with longer simple hairs over the top of the stellate hairs.....
..... *Helianthemum canadense*

1. Petaliferous flowers 2 or more, not overtopped by leafy branches; capsules of cleistogamous flowers 2 mm or less in diameter with 1-2 seeds; upper surface of young cauline leaves with only stellate hairs *Helianthemum bicknellii*

Helianthus

1. Plants annual; disk brown to purple; upper leaves alternate; leaves broadly ovate on definite petioles 2
2. Receptacular chaff at center of disk tipped with a fringe of white, multicellular hairs; phyllary margins and back scabrous or with stiff bristles less than 0.33 mm long *Helianthus petiolaris*
2. Receptacular chaff without said hairs, at most uniformly ciliate; phyllary margins and backs with longer stiff hairs *Helianthus annuus*
1. Plants perennial; disk yellow (except in *H. laetiflorus*); leaves various but mostly opposite ... 3
3. Phyllaries all rounded or obtuse at the apex; disk red-purple or yellow *Helianthus laetiflorus*
3. Phyllaries (except sometimes a few outer ones) acute to acuminate at the apex; disk yellow 4
4. Basal leaves conspicuous, with most leaves crowded at the base of the plant; phyllaries shingle-like (of different lengths) and pressed flat to the involucre *Helianthus occidentalis*
4. Basal leaves inconspicuous or absent, with well-developed cauline leaves; phyllaries mostly the same length and often with spreading tips 5
5. Principal mid-cauline leaves sessile or subsessile with petioles less than 4 mm long 6
6. Widest part of leaf blade at or just below the middle, the base more or less tapered ... 7
7. Leaves equally scabrous above and beneath; linear to narrowly elliptic-lanceolate; usually folded lengthwise and entire; stem with appressed hairs, with dense white antrorse pubescence on the upper part or on the peduncles; phyllary margins smooth or rarely with cilia less than 1 mm long, some phyllaries with soft, bristle-like tips; plant of dry habitats *Helianthus maximilianii*

7. Leaves more scabrous above than beneath; narrowly elliptic to ovate-lanceolate; usually flat with distinct, shallow teeth; stem with spreading hairs and the dense white pubescence usually lacking; phyllary margins with cilia 1 mm or more long; phyllaries lacking bristle tips; plant of wet habitats *Helianthus giganteus*
6. Widest part of leaf blade at the base, the base broadly obtuse or rounded or subcordate 8
8. Stem at least sparsely hairy or scabrous; lowest lateral veins of leaf joining midrib above the base of the blade *Helianthus hirsutus*
8. Stem glabrous and/or glaucous at least below the inflorescence; lowest lateral veins of leaf joining midrib at the base of blade (i.e., no green leaf tissue below it) *Helianthus divaricatus*
5. Principal mid-cauline leaves with petioles over 5 mm long 9
9. Stem with spreading, sometimes scattered, hairs, or at least scabrous 10
10. Cilia on margins of phyllaries mostly less than 0.8 mm long; leaf blades ovate-elliptic, the larger leaves at least 3.5 cm broad, on conspicuously winged petioles 1.5 cm or longer *Helianthus tuberosus*
10. Cilia on margins of phyllaries 1 mm or more long; leaf blades lance-elliptic, less than 3 cm broad, on shorter petioles *Helianthus giganteus*
9. Stem glabrous or even glaucous (although not always near the top of the plant) 11
11. Leaves slightly scabrous above; usually not more than 3 cm wide, the blades 4-8 times as long as wide; leaves alternate on upper part of stem *Helianthus grosseserratus*
11. Leaves very scabrous above; usually more than 3 cm wide, the blades 2.5-3.8 times as long as broad; leaves opposite on entire stem 12
12. Leaves coarsely toothed, glabrate or sparsely pubescent beneath; phyllaries with prolonged and loose tips distinctly longer than the disk, though often reflexed *Helianthus decapetalus*
12. Leaf blades shallowly tooth or entire, densely pubescent beneath; phyllaries slightly if at all exceeding the disk *Helianthus strumosus*
- Heliopsis*** *Heliopsis helianthoides*

Hemerocallis *Hemerocallis fulva*

Hepatica

1. Lobes of leaves triangular, longer than broad *Hepatica acutiloba*

1. Lobes of leaves rounded *Hepatica americana*

Heracleum *Heracleum lanatum*

Hesperis *Hesperis matronalis*

Heuchera *Heuchera richardsonii*

Hibiscus

1. Leaves serrate, densely velvety beneath *Hibiscus moscheutos*

1. Leaves palmately 3-lobed, glabrate or with scattered hairs beneath *Hibiscus trionum*

Hieracium

1. Plants scapose—all leaves basal (or at most, 1-3 reduced cauline leaves); corollas yellow or red-orange; glabrous, or with hairs < 1 cm long; all introduced weeds 2

2. Corollas red-orange; leaves with rusty pubescence *Hieracium aurantiacum*

2. Corollas yellow 3

3. Stolons absent; leaves glabrous, except for long bristly hairs; stellate hairs on pedicels absent or few *Hieracium piloselloides*

3. Short stolons present; leaves with tawny-shite pubescence on both surfaces; pedicels densely stellate-pubescent *Hieracium caespitosum*

1. Cauline leaves present, or, if absent, plants with abundant hairs 7-20 mm long; mostly natives 4
4. Cauline leaves more than 24.....*Hieracium canadense*
4. Cauline leaves fewer than 24..... 5
5. Leaves mostly basal; cauline leaves reduced; plants with densely long-pilose hairs (1-2 cm long).....*Hieracium longipilum*
5. Leaves often cauline; plants glabrous, or with short hairs about 3 mm long 6
6. Coarsely toothed leaves tapering to long, villous petioles; involucre hairs stellate; stems glabrous.....*Hieracium lachenalii*
6. Leaves toothed to subentire, tapering to short petioles or sessile; involucres glandular or glabrous; stems glabrous to hairy 7
7. Leaves spatulate, the upper ones sessile and entire, the lower ones petioled and subentire; involucres and peduncles black-glandular *Hieracium scabrum*
7. Leaves lanceolate to oblanceolate, sessile, toothed; involucres and peduncles usually eglandular *Hieracium umbellatum*

Hierochloa..... *Hierochloa odorata*

Hippuris..... *Hippuris vulgaris*

Holosteum..... *Holosteum umbellatum*

Hordeum

1. Awns slender, 0.2 mm wide at base; awns spreading at maturity; glumes all bristle-like (reduced to awns); leaves 1-4 mm wide.....*Hordeum jubatum*
1. Awns stout, 1.0 mm wide at base; awns strictly erect at maturity; glumes not bristle-like; leaves 5-15 mm wide *Hordeum vulgare*

Houstonia

1. Peduncles with a single flower; corolla with a long, narrow tube, stamens occurring within the tube; leaves oblong-elliptic to spatulate, with the lower leaves on definite petioles.....
..... *Houstonia caerulea*
1. Peduncles with 2-several flowers in a cyme; corolla with a funnel-shaped tube, stamens exerted; leaves linear or lanceolate, all leaves sessile *Houstonia longifolia*

Humulus *Humulus lupulus*

Hydrastis *Hydrastis canadensis*

Hydrophyllum

1. Cauline leaves deeply pinnately divided into 4-6 lateral lobes; calyx with no appendages in the sinuses *Hydrophyllum virginianum*
1. Cauline leaves all or mostly palmately lobed; sinus of calyx with a reflexed appendage 0.5-1.5 mm long *Hydrophyllum appendiculatum*

Hypericum

1. Stamens more than 20 2
2. Petals with black spots or streaks 3
3. Petals with glands primarily on the margins; midrib of leaves decurrent on stem; leaves mostly less than 1 cm wide; stems with many branches; seeds more than 1 mm long
..... *Hypericum perforatum*
3. Petals with glands throughout, glands also present on sepals, stems and leaves; midrib of leaves not decurrent; leaves mostly more than 1 cm wide; stems simple or with few branches; seeds less than 1 mm long *Hypericum punctatum*
2. Petals without black spots or streaks 4
4. Plant a woody shrub *Hypericum kalmianum*

4. Plant herbaceous 5
5. Flowers greater than 3 cm in diameter; capsules greater than 1 cm long; plant greater than 0.7 m high *Hypericum pyramidatum*
5. Flowers less than 3 cm in diameter; capsules less than 1 cm long; plant less than 0.7 m high..... *Hypericum sphaerocarpum*
1. Stamens 20 or fewer 6
6. Bracts of inflorescence, those just below the pedicels, leaf-like, 0.5-2 mm wide; leaves elliptic-oblong *Hypericum boreale*
6. Bracts of inflorescence not leaf-like, more linear, less than 0.5 mm wide; leaves lanceolate or linear-oblongate..... *Hypericum majus*
- Hypoxis** *Hypoxis hirsuta*
- Hystrix**..... *Hystrix patula*
- 'I'**
- Iberis** *Iberis umbellata*
- Ilex**..... *Ilex verticillata*
- Impatiens**
1. Leaves sharply toothed; flowers red to purple..... *Impatiens glandulifera*
1. Leaves with fewer (12 or fewer teeth per side), rounded teeth; flowers orange or yellow 2
2. Yellow flowers; spur of flower less than or equal to 5 mm long; larger leaves of flowering branches usually greater than 8 cm long..... *Impatiens pallida*
2. Orange flowers; spur of flower 9-10 mm long; larger leaves of flowering branches usually less than 8 cm long *Impatiens capensis*

Inula *Inula helenium*

Iodanthus *Iodanthus pinnatifidus*

Ipomoea

1. Sepals 1.1 to 1.5 cm long and acute; flowers on peduncles longer than the sepals; leaves entire and heart-shaped *Ipomoea purpurea*

1. Sepals 1.7-2.5 cm long, turning into long, linear lobes; flowers nearly sessile; leaves deeply 3-lobed *Ipomoea hederacea*

Iris

1. Plants dwarf, usually less than 15 cm tall 2

2. Upper surfaces of sepals with a hairy “beard” *Iris pumila*

2. Upper surfaces of sepals glabrous *Iris lacustris*

1. Plants not dwarf, much taller 3

3. Upper surfaces of sepals with a hairy “beard” *Iris germanica*

3. Upper surfaces of sepals glabrous 4

4. Flowers yellow *Iris pseudacorus*

4. Flowers blue *Iris virginica*

Isopyrum *Isopyrum biternatum*

Iva *Iva xanthifolia*

‘J’

Jeffersonia *Jeffersonia diphylla*

Juglans

1. Pith of twigs dark brown; terminal bud 1-2 cm long; 11-17 leaflets with terminal leaflet often present; fruit lemon-shaped and sticky-downy.....*Juglans cinera*
1. Pith of twigs cream-colored; terminal bud 6-8 mm long; 13-23 leaflets with terminal leaflet often absent; fruit tennis-ball shaped and not sticky-downy *Juglans nigra*

Juncus

1. Inflorescence appearing to be lateral, with an involucre bract serving as a continuation of the stem above the inflorescence; no apparent leaves on the plant..... 2
2. Stems are chunky and clumped together; stamens 3 and found opposite the sepals *Juncus effusus*
2. Stems are slender and arise singly from a creeping, underground rhizome, forming rows; stamens 6 and found opposite both the petals and the sepals *Juncus balticus*
1. Inflorescence is terminal; at least some leaves apparent on the plant..... 3
3. Leaf blades flat, rolled inwards, or rounded, with no hard cross-partitions 4
4. Leaf blades rounded at least towards the tip (may have a channel on the underside of the leaf) *Juncus greenei*
4. Leaf blades flat or involute (rolled inwards) 5
5. Leaf blades flat almost their entire length, at least 1.5 mm wide 6
6. Flowers in groups of 2 or more; sepals reddish-brown *Juncus marginatus*
6. Flowers borne singly along the branches of the inflorescence; sepals dark-striped, not reddish-brown..... *Juncus compressus*
5. Leaf blades often involute (but clearly channeled to the end) their entire length, usually less than 1.5 mm wide 7
7. Some leaf blades emerging from the middle of the plant..... 8

- 8. Inflorescence comprising one half or more the height of the plant; plant rarely over 10 cm tall; plant an annual with fibrous roots.....*Juncus bufonius*
- 8. Inflorescence comprising less than a third of the height of the plant; plant a perennial from a rhizome *Juncus gerardii*
- 7. All leaf blades basal or nearly so..... 9
 - 9. Auricles at summit of leaf sheaths conspicuous, 1-3 mm long; membraneous and fragile, whitish.....*Juncus tenuis*
 - 9. Auricles at summit of leaf sheaths less than 1 mm long 10
- 3. Leaf blades rounded, with hard, regularly spaced cross partitions inside, which can be felt when running a leaf through a thumb and forefinger..... 10
 - 10. Auricle thick and leathery, not membraneous, yellow or brownish *Juncus dudleyi*
 - 10. Auricle of intermediate texture, submembranaceous, brownish with scarious margins....
..... *Juncus interior*
 - 11. Seeds with pale colored "tails" at both ends..... 12
 - 12. Inflorescences with heads containing 5 to many flowers each, forming a hemisphere or wider; plants stout and over 30 cm tall.....*Juncus canadensis*
 - 12. Inflorescences with heads containing 2-5 flowers each, forming a narrower than hemispherical head; plants slender and 20 cm or more 13
 - 13. Inflorescence branches spreading; perianth 2-2.5 mm long; tepals rounded at the tip, with hyaline margins often half the width of the central portion
.....*Juncus brachycephalus*
 - 13. Inflorescence branches erect or ascending; perianth 2.5-3.5 mm long; tepals sharp and pointed at the tip, with hyaline margins less than half the width of the central portion *Juncus brevicaudatus*
 - 11. Seeds without tails, either blunt or with small dark points..... 14
 - 14. Flowering heads spherical; involucre bract taller than the inflorescence..... 15
 - 15. Sepals 4-5.5 mm long; slightly longer than the petals; larger flower heads over 1 cm in diameter; heads spiny in appearance; auricles at top of leaf sheaths longer than 1.5 mm..... *Juncus torreyi*

15. Sepals 2.5-3.5 mm long; slightly shorter than the petals; flower heads under 1 cm in diameter; auricles at top of leaf sheaths shorter than 1.5 mm.....*Juncus nodosus*
14. Flowering heads hemispherical or narrower; involucre bract shorter than the inflorescence 16
16. Petals usually shorter and blunter than the sepals; capsules obtuse and abruptly sharp-pointed; branches of inflorescence ascending.....*Juncus alpinoarticulatus*
16. Petals usually the same length or longer than the sepals and pointed; capsules more gradually pointed; some branches of inflorescence spreading
.....*Juncus articulatus*
- [Note: The regionally-rare *Juncus acuminatus* may occasionally be found in moist, sandy ground. It has 3 stamens, seeds without pale ends, and sepals about equaling the petals.]

Juniperus

1. Leaves jointed at the base and in whorls of 3, all leaves needle-shaped and more than 5 mm long.....*Juniperus communis*
1. Leaves not jointed at the base, at least some of the leaves scale-like 2
2. Leaves scale-like in pairs, with some needle-shaped leaves present, plant a small tree 10-15 m tall *Juniperus virginiana*
2. Leaves scale-like and imbricate, with some needle-shaped leaves present, plant a creeping shrub *Juniperus horizontalis*

'K'

Kalmia *Kalmia polifolia*

Kochia *Kochia scoparia*

Koeleria *Koeleria macrantha*

Krigia.....*Krigia biflora*

Kuhnia.....*Kuhnia eupatorioides*

‘L’

Lactuca

1. Flowers yellow or lilac; pappus white; achenes slender-beaked 2
2. Flowers yellow; stems 3-6 dm tall; leaves prickly; achenes light brown, 5- to 7-ribbed; beaks filiform, longer than body.....*Lactuca serriola*
2. Flowers yellow or lilac; stems 1-3 m tall; leaves prickly or not; achenes dark brown, single-nerved and rugulose; beak about as long as body or shorter 3
3. Flowers yellow; leaves entire to pinnatifid, not spinulose-toothed and not prickly, usually not clasping; involucre 10-15 mm high; latex tawny-orange *Lactuca canadensis*
3. Flowers pale lilac; leaves spinulose-toothed, clasping; involucre 15-22 mm high; latex white*Lactuca ludoviciana*
1. Flowers not yellow; pappus white or brown; achenes beakless or short-beaked 4
4. Flowers cream or bluish; pappus brown; leaves deeply lobed with small teeth
.....*Lactuca biennis*
4. Flowers blue or lavender (white); pappus white; leaves various 5
5. Heads 6-10 mm diameter, involucre 10-13 mm high; leaves dentate to lyrate-pinnatifid, with the triangular terminal lobe larger *Lactuca floridana*
5. Heads 1-2 cm diameter, involucre 16-20 mm high; leaves linear-lanceolate, entire or dentate to lobed or pinnatifid (those of stem partly clasping)*Lactuca pulchella*

Lamiastrum.....*Lamiastrum galeobdolon*

Lamium

1. Corolla 2-2.5 cm long; leaves usually white-marked, ovate, petioled; calyx slightly pubescent to nearly glabrous; nutlets 3 mm long..... *Lamium maculatum*
1. Corolla less than 2 cm long; leaves not white-marked, ovate, orbicular, or reniform, petioled or sessile-clasping; calyx thinly to densely pubescent; nutlets 2 mm long 2
 2. All leaves petioled, ovate; calyx slightly pubescent..... *Lamium purpureum*
 2. Upper leaves sessile or clasping, orbicular or reniform; calyx densely pubescent
..... *Lamium amplexicaule*

Laportea..... *Laportea canadensis*

Lappula *Lappula squarrosa*

Lapsana..... *Lapsana communis*

Larix *Larix laricina*

Lathyrus

1. Leaflets 2 2
 2. Stems wingless; flowers 11-19 mm long..... *Lathyrus tuberosus*
 2. Stems broadly winged; flowers of various sizes 3
 3. Flowers 12-18 mm long; main lobe of stipules up to half as wide as the winged stem.....
..... *Lathyrus sylvestris*
 3. Flowers 16-26 mm long; main lobe of stipules more than half as wide as winged stem *Lathyrus latifolius*
1. Leaflets mostly 4-12 4
 4. Larger stipules 10-20 mm wide; larger leaflets 1.5-3.5 cm wide; stems angled, not winged ...
..... 5

- 5. Flowers purple to blue (pink); stipules with two basal $\pm$ hastate lobes; leaves thick, fleshy.
..... *Lathyrus japonicus*
- 5. Flowers cream; stipules with one basal lobe; leaves not especially thick or fleshy.....
..... *Lathyrus ochroleucus*
- 4. Stipules less than 7 mm wide; larger leaflets 0.4-2.4 cm wide; stems winged or not 6
- 6. Calyx $\pm$ densely pubescent; principal leaves with 8-12 (14) leaflets; racemes 6-26
flowered; stems not winged*Lathyrus venosus*
- 6. Calyx glabrous or at most sparsely pubescent; principal leaves with 4-6 (10) leaflets;
racemes 2-8 flowered; stems often with narrow wings.....*Lathyrus palustris*

Lechea

- 1. The narrow outer sepals equal to, or longer than, the broad inner sepals.....*Lechea tenuifolia*
- 1. The narrow outer sepals shorter than the broad inner sepals.....*Lechea stricta*

Ledum *Ledum groenlandicum*

Leersia

- 1. Spikelets overlapping half of the spikelet above; spikelets 4.5-5 mm long; 2-3 panicle
branches at the first node of the inflorescence*Leersia oryzoides*
- 1. Spikelets barely overlapping other spikelets if at all; spikelets 3-4 mm long; only one panicle
branch per node in the inflorescence..... *Leersia virginica*

Lemna

- 1. Fronds spatulate or oblong, much (2-3.5 times) longer than wide, 4-16 mm across, bases
abruptly narrowed into a green stalk; 1 root; colony submersed into a suspended, tangled
mass, floating just below the surface*Lemna trisulca*
- 1. Fronds ovate to elliptical, 1.5-5 mm across, often red-tinged, usually floating; 1 or more
roots 2

2. Plants forming small, olive to brown turions (overwintering structures) that sink to bottom; fronds with distinct wart-like papules along median line *Lemna turionifera*
2. Plants without turions; papules present or not..... 3
 3. Fronds often reddish on lower surface, 1-4 mm across, and with distinct wart-like papules along median line *Lemna turionifera*
 3. Fronds not very reddish on lower surface, 1-8 mm wide, without distinct wart-like structures *Lemna minor*

Leonurus *Leonurus cardiaca*

Lepidium

1. Upper leaves clasping to perfoliate 2
 2. Upper leaves broadly rounded, clasping/perfoliate, entire, barely longer than wide; plants glabrous; petals yellow; pods 4 mm long *Lepidium perfoliatum*
 2. Upper leaves linear to lanceolate, toothed, clasping; plants densely grayish pubescent; petals white; pods 5-6 mm long *Lepidium campestre*
1. Upper leaves narrowed at base, sessile, not clasping or perfoliate 3
 3. Petals present, at least as long as sepals (usually twice as long) *Lepidium virginicum*
 3. Petals absent or minute, shorter than sepals..... 4
 4. Leaves and teeth/lobes acute at tip; lower leaves entire to once-pinnatifid; plants without distinctive odor..... *Lepidium densiflorum*
 4. Leaves and teeth/lobes rounded at tip, lower leaves once- or twice-pinnatifid; plants very malodorous *Lepidium ruderae*

Leptoloma *Leptoloma cognatum*

Lespedeza

1. Many flower clusters on peduncles longer than the leaflets of the subtending leaves

- *Lespedeza leptostachya*
1. All flower clusters sessile or on peduncles shorter than leaflets of subtending leaves 2
 2. Flowers in heads; calyx lobes at least 5 mm long; flowers pale yellow-white, with one purple spot; plants strictly herbaceous *Lespedeza capitata*
 2. 1-4 flowers in leaf axils; calyx lobes less than 5 mm long; flowers whitish, with several purple spots; plants semi-shrubby *Lespedeza cuneata*

Liatris

1. Pappus bristles plumose, the lateral branches more than 8 times as long as the diameter of the main bristle; flower heads few or solitary, cylindrical; 20-60 florets per head; heads stiffly stalked or sessile; bracts in tight cylinders, shining, sharp-pointed, flat; plants ± glabrous
..... *Liatris cylindracea*
1. Pappus bristles strongly barbed, the lateral branches less than 5 times as long as the diameter of the main bristle; flower heads various; up to about 40 florets per head; bracts not as above; plants glabrous or not..... 2
2. Involucre ± cylindrical or conical, heads with 5-10 florets; inflorescence a long cylindrical spike of dense, sessile heads 3
3. Axis of the inflorescence ± densely hairy; tips of bracts (phyllaries) tapered to an acute, often reflexed, apex.....*Liatris pycnostachya*
3. Axis of inflorescence glabrous, or nearly so; phyllary tips rounded to obtuse, appressed, purple-tinged *Liatris spicata*
2. Involucre broadly rounded at base, ± hemispheric, often with many more than 10 florets per head; inflorescence various..... 4
4. Heads of uniform in size, each with 16-35 florets; corollas hairy at base within; heads sessile on short peduncles; inflorescence an elongate spike of 10 or more heads
..... *Liatris aspera*
4. Heads not uniform, the terminal one much larger than the others; 30-100 florets per head; corollas glabrous within; heads on distinct peduncles; inflorescence a raceme of 3-10 heads.....*Liatris ligulistylis*

Ligustrum *Ligustrum vulgare*

Lilium

1. Flowers erect; perianth segments with oval or lanceolate blades and a slender claw; leaves mostly alternate, linear, 2-7 mm wide *Lilium philadelphicum*
1. Flowers nodding; perianth segments oblanceolate, recurved, not clawed; leaves whorled, $\pm$ elliptic, 1-3 cm wide *Lilium michiganense*

Linaria

1. Flowers yellow, 1.5 + cm long *Linaria vulgaris*
1. Flowers blue (white), less than 1.5 cm long *Linaria canadensis*

Lindernia *Lindernia dubia*

Linnaea *Linnaea borealis*

Linum

1. Petals blue (white), 1-1.5 cm long; pedicels one or more cm long; capsules 8-12 mm diameter 2
2. Flowers 2-3 cm diameter; sepals $\pm$ obtuse, ciliate *Linum perenne*
2. Flowers 10-15 mm diameter; sepals acute, inner ones often ciliate *Linum usitatissimum*
1. Petals yellow, 4-8 mm long; pedicels to 1 cm long; capsules 3-6 mm diameter 3
3. Styles distinct; leaves without dark glands *Linum medium*
3. Styles united below; leaves with dark stipular glands *Linum sulcatum*

Liparis

1. Lip purplish, 6 + mm long, $\pm$ equaling the petals; flowers numerous *Liparis lilifolia*

1. Lip yellow-green, less than 6 mm long, shorter than petals; flowers few.....*Liparis loeselii*

Lipocarpha*Lipocarpha micrantha*

Liriodendron*Liriodendron tulipifera*

Listera*Listera cordata*

Lithospermum

1. Terminal inflorescence of showy, yellow petals much longer than sepals; limb 9-25 mm wide.
..... 2

2. Petals pale yellow; corolla tube 22-35 mm long, the lobes distally fringed; leaves relatively narrow (less than 4 mm wide); stem pubescence appressed*Lithospermum incisum*

2. Petals yellow-orange; corolla tube 6-14 mm long, lobes entire; leaves wider; stem pubescence spreading 3

3. Calyx lobes 6-13 mm long; pubescence stiff*Lithospermum carolinense*

3. Calyx lobes 2.2-5 mm long; pubescence soft.....*Lithospermum canescens*

1. Flowers mostly axillary, corolla white, yellowish, or greenish, barely exceeding the calyx..... 4

4. Leaves to 4 cm wide; cauline leaves typically 15-20; pubescence closely appressed; petals pale yellow*Lithospermum latifolium*

4. Leaves to 2 cm wide; cauline leaves 25+; pubescence on undersides of leaves raised, not appressed; petals white *Lithospermum officinale*

Lobelia

1. Principal cauline leaves linear/lanceolate, entire to remotely toothed; widest leaves less than 0.4 cm wide..... *Lobelia kalmii*

1. Principal cauline leaves elliptic to obovate, ± toothed; leaves 1-4.5 cm wide..... 2

2. Corolla more than 15 mm long; sepals more than 5 mm long..... 3

- 3. Corolla bright red, 3+ cm long *Lobelia cardinalis*
- 3. Corolla bright blue, less than 2.6 cm long *Lobelia siphilitica*
- 2. Corolla less than 15 mm long; sepals up to 5 mm long 4
 - 4. Stem $\pm$ hairy, with many hairs up to 1 mm long *Lobelia inflata*
 - 4. Stems mostly glabrous, except for dense hairs near base, none over 0.5 mm long
 *Lobelia spicata*

Lobularia *Lobularia maritima*

Lolium *Lolium perenne*

Lonicera

- 1. 1-2 pairs of leaves below the inflorescence connate; flowers in clusters at ends of branchlets; vines 2
- 2. The pair of connate leaves beneath the inflorescence $\pm$ orbicular, glaucous above
 *Lonicera prolifera*
- 2. The pair of connate leaves beneath the inflorescence longer than wide, barely glaucous
 *Lonicera dioica*
- 1. Leaves all distinct; flowers in pairs on axillary peduncles; mostly erect shrubs 3
 - 3. Climbing or trailing vine, forming a dense mat; young stems hairy; corolla 3-5 cm long; fruit dark purple, $\pm$ sessile or on short peduncles *Lonicera japonica*
 - 3. Erect bushy shrubs; stems hairy or not; corolla less than 2.5 cm long; fruit and peduncles various 4
 - 4. Pith of twigs white, continuous; fruit red, blue, or dark purple 5
 - 5. Peduncles less than 1 cm long; ovaries united (with 2 corollas), forming a single glaucous-blue fruit per peduncle; corolla $\pm$ regular, lobes $\pm$ equal; pubescence mostly of straight brownish hairs *Lonicera villosa*

5. Peduncles 1.1-4.5 cm long; ovaries separate or $\pm$ united, forming separate red or dark purple fruit (or a 2-lobed one); corolla regular or 2-lipped; pubescence (if present) less extensive 6
6. Leaves downy-hairy beneath; leaf margins and petioles without cilia; corolla 2-lipped; the 2 ovaries in a pair partly to fully united, both ascending (not diverging)
.....*Lonicera oblongifolia*
6. Leaf blades mostly glabrous beneath; leaf margins and petioles ciliate; corolla $\pm$ regular; the 2 ovaries in a pair barely united at the base and strongly diverging in fruit..
.....*Lonicera canadensis*
4. Pith of twigs brown and hollow between nodes; fruit orange to red 7
7. Peduncles distinctly shorter than petioles (flowers and fruit $\pm$ sessile); leaves acuminate
.....*Lonicera maackii*
7. Peduncles much longer than petioles; leaves acute or obtuse 8
8. Leaves and young stems completely glabrous (or at most with very few hairs)
.....*Lonicera tatarica*
8. Leaves and at least young stems pubescent..... 9
9. Leaf blades mostly widest beyond middle; ovary and bracteoles glandular
.....*Lonicera xylosteum*
9. Leaf blades broadest at or below middle; ovary and bracteoles glandless..... 10
10. Bracteoles more than half as long as ovary at flowering time; twigs finely pubescent; lower leaf surfaces hairy; peduncles 7-10 mm long; flowers white, becoming yellow
.....*Lonicera morrowii*
10. Bracteoles no more than half as long as ovary; twigs somewhat pubescent; lower leaf surfaces at most sparsely pubescent; peduncles about 12 mm long; flowers pink or white, becoming yellow.....
.....*Lonicera x bella*
- Lotus***.....*Lotus corniculatus*

Ludwigia

1. Leaves opposite, oval; stems trailing or floating*Ludwigia palustris*

1. Leaves alternate, elliptical; stems erect *Ludwigia polycarpa*

Lunaria *Lunaria annua*

Lupinus *Lupinus perennis*

Luzula

1. Flowers whitish; inflorescence 30+ cm tall *Luzula luzuloides*

1. Flowers brownish or greenish; inflorescence less than 30 cm tall 2

2. Flowers solitary (2); perianth 3-4.5 mm long *Luzula acuminata*

2. Flowers in tight, sessile clusters; perianth about 3 mm long *Luzula multiflora*

Lychnis

1. Plants densely white-tomentose; corollas reddish-purple *Lychnis coronaria*

1. Plants green, villous; corollas red or white 2

2. Corollas scarlet; calyx not inflated *Lychnis chalcidonica*

2. Corollas white; calyx inflated *Lychnis alba*

Lycium *Lycium barbarum*

Lycopodium

1. Leaves deflexed downward, shiny; sporangia in leaf axils *Lycopodium lucidulum*

1. Leaves not deflexed downward; sporangia in terminal strobiles 2

2. Leaves of aerial stems caudate, ending in bristly tips 2+ mm long *Lycopodium clavatum*

2. Leaves of aerial stems acute to acuminate, but without long bristly tips 3

3. Most leaves 5+ mm long, spreading to ascending; branching only occasionally, not fanlike *Lycopodium inundatum*
3. Leaves up to 5 mm long, spreading to appressed; much fanlike branching 4
 4. Leaves 6-8-ranked, 3-5 mm long, 0.5+ mm wide; branches subterete *Lycopodium obscurum*
 4. Leaves 4-ranked, less than 3 mm long, less than 0.5 mm wide; branches flattened 5
 5. Horizontal stems below ground; leaves $\pm$ equal *Lycopodium tristachyum*
 5. Horizontal stems on surface; leaves of different sizes *Lycopodium complanatum*

Lycopus

1. Calyx lobes lanceolate, $\pm$ deltoid, less than 1 mm long, at most as long as mature nutlets; leaves shallowly toothed 2
 2. Stamens greatly extending from corolla tube; nutlets smooth, to 1.5 mm long, with teeth near outer edge of tip *Lycopus uniflorus*
 2. Stamens included in corolla tube; nutlets toothed across tip, 1.7-2 mm long *Lycopus virginicus*
1. Calyx lobes awl-shaped, sharp-pointed, much longer than nutlets; leaves distinctly toothed 3
 3. Leaves with $\pm$ obtuse, sessile bases; bracts lanceolate; nutlets tuberculate *Lycopus asper*
 3. Leaves tapered to petioled; nutlets smooth 4
 4. Principal cauline leaves 2.5-3 times longer than wide, coarsely toothed; calyx lobes 1.8-2.8 mm long *Lycopus europaeus*
 4. Cauline leaves 2-8 times longer than wide, lower ones deeply pinnatifid into linear lobes; calyx lobes 1.3-2 times longer than wide *Lycopus americanus*

Lysimachia

1. Plants prostrate, creeping; leaves opposite, nearly orbicular *Lysimachia nummularia*

1. Plants erect; leaves alternate, opposite, or whorled, obviously longer than wide 2
2. Flowers in ± dense terminal or axillary racemes or panicles 3
 3. Leaves alternate, pubescent; flowers white *Lysimachia clethroides*
 3. Leaves opposite or whorled, glabrous or pubescent; flowers yellow 4
 4. Inflorescence a panicle; sepals dark-bordered; leaves opposite or whorled, pubescent ...
..... *Lysimachia vulgaris*
 4. Inflorescence a raceme; sepals not with dark borders; leaves all opposite, ± glabrous.. 5
 5. Racemes terminal; corolla lobes 5.5-8.5 mm long *Lysimachia terrestris*
 5. Racemes on axillary peduncles; corolla lobes 2.5-5.5 mm long ... *Lysimachia thyrsiflora*
2. Flowers solitary on axillary peduncles 6
 6. Leaf blades rounded at base, on long (1-3 cm), strongly ciliate petioles; flowers 1.7-3.3
cm wide *Lysimachia ciliata*
 6. Leaves tapered, sessile or on short, glabrous to ciliate, petioles; flowers 1-2 cm wide 7
 7. Leaves linear, less than 5 mm wide, ± revolute *Lysimachia quadriflora*
 7. Leaves lanceolate to broadly elliptic, up to 34 mm wide, not revolute 8
 8. Calyx, corolla, and leaves ± streaked or dotted with red or black; corolla lobes ±
entire *Lysimachia quadrifolia*
 8. Calyx, corolla, and leaves without streaks or dots; corolla lobes coarsely toothed 9
 9. Sepals with 3-5 distinct nerves; leaves ovate to lanceolate, green beneath; stems
about 4-7 mm diameter at base *Lysimachia hybrida*
 9. Sepals ± nerveless; leaves lanceolate to ± elliptic, occasionally pale beneath; stem
1-2.5 mm diameter at base *Lysimachia lanceolata*

Lythrum

1. Flowers in axillary clusters of 2 to several; bracts and floral tube pubescent; petals 7-11 mm long; leaves opposite or whorled *Lythrum salicaria*
1. Flowers solitary in leaf axils; bracts and floral tube glabrous; petals 2-7 mm long; leaves mostly alternate 2
2. Petals 2-3 mm long; flowers borne almost all way to base of plant in axils of small linear leaves *Lythrum hyssopifolia*
2. Petals 4-7 mm long; flowers borne in axils of linear bracts on upper half of stem *Lythrum alatum*

'M'

Maclura *Maclura pomifera*

Maianthemum *Maianthemum canadense*

Malaxis

1. Pedicels 1-2 mm long; lip drooping, slender, entire *Malaxis brachypoda*
1. Lower pedicels longer than 3.5 mm long; lip ascending, 2-lobed with a short tooth in the middle *Malaxis unifolia*

Malus

1. Leaves simple, serrate or crenate-serrate, unlobed 2
2. Fruit over 4 cm in diameter, indented at both ends; pedicels 2.5 cm long or less and densely tomentose *Malus pumila*
2. Fruit 4-7 mm in diameter, indented only at one end (near the pedicel); pedicels often more than 2.5 cm long and glabrous to tomentose *Malus sieboldii*
1. Leaves irregularly doubly-serrate and lobed 3

3. Outside of calyx lobes, pedicels, and petioles densely tomentose; leaf blades thick and leathery, with sunken veins *Malus ioensis*
3. Outside of calyx lobes, pedicels, and petioles glabrous to densely tomentose, with tomentum rubbing off after flowering time; leaf blades thin, with no sunken veins.....
..... *Malus coronaria*

Malva

1. Upper and middle cauline leaves divided more than halfway to their base into 3-7 coarsely toothed to pinnatifid lobes *Malva moschata*
1. Leaf blades shallowly divided or lobed if at all 2
2. Petals pink-purple, 1.5-2.4 cm long; bractlets just beneath the calyx ovate-oblong; stems erect and becoming glabrous *Malva sylvestris*
2. Petals white, less than 1.5 cm long; bractlets linear to linear-lanceolate; stems various 3
3. Stems erect; flowers sessile or subsessile; leaf blades ruffled at the edges *Malva crispa*
3. Stems more or less prostrate; flowers on pedicels longer than the calyx; leaf blades flat....
..... 4
4. Stems becoming glabrous; petals the same length as the sepals or only slightly longer; outer surface of fruits reticulate with sparse pubescence *Malva rotundifolia*
4. Stems pubescent; petals almost twice as long as the sepals; outer surface of fruits short pubescent and not reticulate..... *Malva neglecta*

Matricaria

1. Ray flowers absent; disk corollas often with 4 lobes; pineapple scent
..... *Matricaria matricarioides*
1. Ray flowers present, white; disk corollas with 5 lobes; aromatic scent.....
..... *Matricaria chamomilla*

Matteuccia..... *Matteuccia struthiopteris*

Medeola *Medeola virginiana*

Medicago

1. Yellow flowers, 1.8-2.2 mm long; fruit kidney-shaped and black when mature
..... *Medicago lupulina*

1. Purple flowers, 8-10 mm long; fruit coiled and green when mature *Medicago sativa*

Megalodonta *Megalodonta beckii*

Melampyrum *Melampyrum lineare*

Melilotus

1. Flowers white *Melilotus alba*

1. Flowers yellow 2

2. Immature fruit and ovary glabrous *Melilotus officinalis*

2. Immature fruit and ovary with short hairs *Melilotus altissima*

Menispermum *Menispermum canadense*

Mentha

1. Flowers from leaf axils *Mentha arvensis*

1. Flowers mostly in terminal inflorescences 2

2. Bracts and calyx glabrous to slightly pubescent; plant mostly glabrous *Mentha spicata*

2. Bracts and calyx whitish due to thick, matted hairs; plant mostly pubescent
..... *Mentha longifolia*

Menyanthes *Menyanthes trifoliata*

Mertensia..... *Mertensia virginica*

Milium..... *Milium effusum*

Mimulus

1. Flower yellow, less than 1.5 cm long; stems terete *Mimulus glabratus*

1. Flower blue, more than 1.5 cm long; stems 4-sided *Mimulus ringens*

Mirabilis

1. Leaves ovate, on petioles about 1 cm long; lower and middle internodes glabrous.....
..... *Mirabilis nyctaginea*

1. Leaves lanceolate, nearly sessile; lower and middle internodes pubescent in 2 strips with
small, incurved hairs *Mirabilis albida*

Miscanthus *Miscanthus sacchariflorus*

Mitchella..... *Mitchella repens*

Mitella

1. One opposite pair of leaves midway down the flowering stalk *Mitella diphylla*

1. Leaves all basal; flowering stalk naked *Mitella nuda*

Mollugo..... *Mollugo verticillata*

Monarda

1. Flowers from multiple leaf axils, including the terminal one; corolla cream with purple dots ...
..... *Monarda punctata*

1. Flowers in a terminal inflorescence; corolla lavender *Monarda fistulosa*

Moneses *Moneses uniflora*

Monotropa

1. Flower solitary; plant white; plant glabrous except for the petals *Monotropa uniflora*

1. Flowers 2-several in a raceme; plant more pinkish; plant more or less pubescent
..... *Monotropa hypopithys*

Morus

1. Leaves downy beneath, usually undivided but sometimes with lobes *Morus rubra*

1. Leaves glabrous beneath except along major veins, leaves usually divided into 3-5 lobes
..... *Morus alba*

Muhlenbergia

1. Lemma surface glabrous or scabrous, but not pubescent or pilose at the base 2

2. Primary panicle branches appressed; ligule a membrane 1.5-2 mm long; fertile lemma 2.5-3 mm long; more than one spikelet on each panicle branch *Muhlenbergia richardsonis*

2. Primary panicle branches ascending; ligule a membrane 0.2-0.8 mm long; fertile lemma 1.5-2 mm long; usually only one spikelet at the end of each panicle branch
..... *Muhlenbergia asperifolia*

1. Callus and/or the base of the lemma pubescent or pilose 3

3. Lower glume absent or minute, upper glume 0.1-0.2 mm long and persistent on pedicel; plant with fibrous roots and lacking rhizomes; panicle linear and appressed; leaf blades short, the longest leaf blades up to 10 cm long *Muhlenbergia schreberi*

3. Glumes at least half as long as the lemma; plants from long, scaly rhizomes; panicles various; leaf blades usually longer, the longest leaf blades up to 15 cm long 4

4. Glumes, including awns, (2.9) 3.5-6.5 mm long, mostly longer than the body of the lemma; panicle spike-like (up to 18 mm wide) with florets at the base of the panicle branches..... 5
5. Fertile spikelets on pedicels; lemma hairy at base with no hairs on the margins; ligule membrane 0.6-1.5 mm long; anthers 0.4-0.7 mm long; culms branch above the base
..... *Muhlenbergia racemosa*
5. Fertile spikelets more or less sessile; lemma hairy at base with pubescent margins; ligule membrane 0.2-0.6 mm long; anthers 0.8-1.5 mm long; culms rarely branch above the base (i.e., inflorescence appears more clumped together)
..... *Muhlenbergia glomerata*
4. Glumes, including awns, less than 3.6 mm long, equal to or shorter than the body of the lemma; panicle branches loosely flowered and lacking florets at the base, or very slender (2-6 mm wide)..... 6
6. Principal lemma awn 2-11 mm long 7
7. Panicle branches and axis scabrous; culms branched only at base; lemma surface pubescent; anthers 1-1.3 mm long..... *Muhlenbergia tenuiflora*
7. Panicle branches smooth; culms branched above the base; lemma surface not pubescent; anthers 0.5-0.7 mm long..... *Muhlenbergia sylvatica*
6. Principal lemma awn none or at most 2 mm long..... 8
8. Entire culm glabrous and shiny except for 1-2 mm of pubescence just below the node; base of inflorescence usually enclosed in a leaf sheath; upper and lower glumes lacking awns or with awns less than 1 mm long; at least one of the glumes shorter than the lemma..... *Muhlenbergia frondosa*
8. Culms pubescent beneath the nodes for about 10 mm below the node; base of inflorescence not enclosed in a leaf sheath; upper and lower glumes with awns 0.5-1.5 mm long; glumes equal to or longer than the lemma..... *Muhlenbergia mexicana*

Muscari *Muscari botryoides*

Myosotis

1. Hairs on calyx straight and appressed 2

- 2. Style shorter than the nutlets; corolla limb up to 5 mm long; plant not stoloniferous *Myosotis laxa*
- 2. Style longer than the nutlets; corolla limb 5-9.5 mm long; plant stoloniferous *Myosotis scorpioides*
- 1. Hairs on calyx hooked and spreading 3
- 3. Pedicels shorter than the calyx; calyx lobes erect when in fruit; plant with slender, straight stems; corolla limb 1-2 mm long *Myosotis stricta*
- 3. Pedicels as long as the calyx or longer; calyx lobes spreading when in fruit; plant with bent and creeping stems; corolla limb 2.5-9 mm long 4
- 4. Corolla more or less cupped, with limb of corolla 2.5-3.5 mm long *Myosotis arvensis*
- 4. Corolla flat, with limb of corolla 5-10 mm long *Myosotis sylvatica*

Myosoton *Myosoton aquaticum*

Myosurus *Myosurus minimus*

Myriophyllum

- 1. Leaves short, 4-12 mm long; upper flowers in axils of alternate floral bracts in a spike held above water *Myriophyllum alterniflorum*
- 1. Leaves longer, 10-40 mm long; upper flowers in axils of whorled leaves in a spike held above water, or in the axils of submersed leaves 2
- 2. Leaves whorled, but often with some additional, scattered alternate leaves on the stem... 3
- 3. Flowers in axils of submersed leaves; plant forms turions late in the summer *Myriophyllum farwellii*
- 3. Flowers held in axils of whorled leaf bracts in a spike held above water; plant does not form turions *Myriophyllum heterophyllum*
- 4. Flowers held in axils of whorled leaf bracts in a spike held above water, the leaf bracts mostly longer than the flowers and deeply lobed; stems brown or green *Myriophyllum verticillatum*

2. Leaves whorled, without any additional, scattered alternate leaves..... 4
4. Flowers held in axils of whorled leaf bracts in a spike held above water, the leaf bracts the same as or shorter than the flowers, entire or minutely toothed; stems whitish..... 5
5. 13-20 pairs of leaflets per leaf; plant does not produce turions.....
..... *Myriophyllum spicatum*
5. 5-12 pairs of leaflets per leaf; plant produces turions in late summer
..... *Myriophyllum sibiricum*

‘N’

Najas

1. Leaves with coarse teeth; fruits 4-5 mm long*Najas marina*
1. Leaves with fine teeth not visible without a lens; fruits 2-3.5 mm long 2
2. Style 1 mm or more long; fruit 2.5-3.5 mm long, shiny, with 30-40 rows of pits along the length of the seed; leaves very narrow and tapering to the tip, 0.3-1 mm wide at the middle.
..... *Najas flexilis*
2. Style 0.5 mm or less long; fruit about 2 mm long, dull, with 10-20 rows of pits along the length of the seed; leaves wider at the middle, 0.6-2.2 mm wide, and shorter
..... *Najas guadalupensis*

Nasturtium..... *Nasturtium officinale*

Nelumbo*Nelumbo lutea*

Nemopanthus*Nemopanthus mucronata*

Nepeta *Nepeta cataria*

Nicandra*Nicandra physalodes*

Nuphar

1. Petioles oval in cross-section; notch of leaf broad with angle of lobes 45-80 degrees, more arrow-shaped; sepals with green patch*Nuphar advena*
1. Petioles flattened on top, often with slight wings; notch of leaf narrow, often closed by overlapping rounded lobes; sepals with a basal, maroon-patch*Nuphar variegata*

Nymphaea*Nymphaea odorata*

Nymphoides*Nymphoides peltata*

Nyssa*Nyssa sylvatica*

'O'

Oenothera

1. Flowers white or pinkish*Oenothera nuttallii*
1. Flowers yellow 2
 2. Fruits and ovaries sharply 4-angled and tapered at the base 3
 3. Petals small, 4.5-7 mm long; ovary and fruit with sparse hairs; fruit 8-11 mm long
..... *Oenothera perennis*
 3. Petals large, 13-27 mm long; ovary and fruit very hairy; fruit 12-13 mm long
..... *Oenothera pilosella*
 2. Fruits weakly 4-angled or rounded and ovaries rounded; not tapered and sessile at the base 4
 4. Leaves linear, less than 7 mm wide, with sharp, wide-spaced teeth; stigma with 4 broad shallow lobes.....*Oenothera serrulata*
 4. Leaves otherwise; stigma with 4 linear lobes 5

5. Petals more or less pointed at the top, 5-15 mm long; capsules linear and slender, 2-3.2 mm wide and 5-12 times as long; leaves linear to linear-lanceolate and entire *Oenothera clelandii*
5. Petals rounded at the top; capsules wider, 5-7 mm wide and 3.5-5 times as long; leaves elliptic-lanceolate..... 6
6. Plant more or less glabrous *Oenothera biennis*
6. Plant with hairs 7
7. Plant with dense, appressed hairs, making it appear grayish *Oenothera villosa*
7. Plant with gland-tipped hairs and some spreading long hairs ... *Oenothera parviflora*

Onoclea *Onoclea sensibilis*

Onosmodium *Onosmodium hispidissimum*

Ophioglossum *Ophioglossum pusillum*

Opuntia *Opuntia humifusa*

Orchis *Orchis spectabilis*

Origanum *Origanum vulgare*

Ornithogalum *Ornithogalum umbellatum*

Orobanche

1. Flowers 2 or more; scale-like leaves pubescent; calyx lobes pointed and longer than the calyx tube *Orobanche fasciculata*
1. Flowers solitary; scale-like leaves glabrous; calyx lobes deltoid and shorter than the calyx tube *Orobanche uniflora*

Oryzopsis

- 1. Leaves mostly basal; panicle linear; mature lemma yellowish..... *Oryzopsis asperifolia*
- 1. Leaves mostly cauline; panicle open; mature lemma dark brown or black
..... *Oryzopsis racemosa*

Osmorhiza

- 1. Styles 2-4 mm long in fruit; 9-18 flowers per umbellet; 5-6 involucre bracts
..... *Osmorhiza longistylis*
- 1. Styles less than 1.5 mm long in fruit; 4-8 flowers per umbellet; 3-4 involucre bracts
..... *Osmorhiza claytonii*

Osmunda

- 1. Blades completely bipinnately compound with oval-shaped leaflets *Osmunda regalis*
- 1. Blades only pinnate-pinnatifid 2
 - 2. Sporangia borne on separate stalks; tufts of rust-colored hairs on the underside of each pinna at the base *Osmunda cinnamomea*
 - 2. Sporangia borne on reduced pinnae in the middle of the leaf blades; no rusty hairs on the underside of each pinna *Osmunda claytoniana*

Ostrya *Ostrya virginiana*

Oxalis

- 1. Flowers in an umbel on top of a naked scape; petals purple *Oxalis violacea*
- 1. Flowers from stalks that arise from the axils of leaves; petals yellow 2
 - 2. Stems usually erect; stems and fruits with regular appressed hairs; leaves whorled or in bundles..... *Oxalis stricta*

2. Stems prostrate and rooting at the nodes; stems glabrous or with scattered, spreading hairs; leaves alternate.....*Oxalis corniculata*

Oxypolis *Oxypolis rigidior*

‘p’

Panax

1. Ripe fruit red; ovary with 2 styles; leaflets on distinct petiolules that are 1-2.5 cm long; larger leaflets 3.5-6 cm wide; plant larger than 20 cm tall..... *Panax quinquefolia*

1. Ripe fruit yellow-green; ovary with 3 styles; leaflets sessile or subsessile; larger leaflets 0.5-2.5 cm wide; plant smaller than 20 cm tall..... *Panax trifolius*

Panicum

1. Perennial; plant over 0.5 m tall; lateral branches lacking; lower glume more than half as long as upper glume; basal floret has stamens; plant glabrous.....*Panicum virgatum*

1. Annual; plant smaller and/or has lateral branches; lower glume half the length of upper glume or shorter; basal floret sterile; plant glabrous or hairy 2

2. Sheaths glabrous except at the top; stem of plant bent at nodes into a zigzag shape with distinct, alternate leaves.....*Panicum dichotomiflorum*

2. Sheaths, and sometimes leaves, pilose; stems not bent into a zigzag shape 3

3. Spikelets 4.5-5 mm long, with a purple, acuminate tip; dense, sometimes nodding, panicle; leaf sheaths extremely pilose.....*Panicum miliaceum*

3. Spikelets 1.8-3.6 mm long, panicle not nodding; sheaths various 4

4. Pulvini in axils of lower panicle branches pilose; terminal panicle wider than long when mature, about 15-30 cm wide, branches spreading; leaves 5-14 mm wide
.....*Panicum capillare*

4. Pulvini in axils of lower panicle branches glabrous; terminal panicle usually longer than wide when mature, about 5-10 cm wide, branches ascending; leaves 2-7 mm wide
..... *Panicum flexile*

Papaver

- 1. Plant with non-flowering stems present; petals at least 5 cm long *Papaver orientale*
- 1. Plant with only flowering stems present; petals less than 5 cm long 2
 - 2. Plant very glaucous and usually glabrous; upper leaves clasping *Papaver somniferum*
 - 2. Plant hairy or bristly and not glaucous; upper leaves sessile but not clasping
..... *Papaver rhoeas*

Parietaria *Parietaria pensylvanica*

Parnassia *Parnassia glauca*

Paronychia *Paronychia canadensis*

Parthenium *Parthenium integrifolium*

Parthenocissus

- 1. Tendrils not ending in discs; leaves shiny above; inflorescence with branches splitting equally
..... *Parthenocissus inserta*
- 1. Tendrils ending in discs; leaves dull above; inflorescence with a central axis
..... *Parthenocissus quinquefolia*

Pastinaca *Pastinaca sativa*

Pedicularis

- 1. Stem leaves alternate; capsule 2 or 3 times the length of the calyx; leaves pinnately lobed
more than halfway to the middle of the leaf; stem of plant hairy on upper part of plant
..... *Pedicularis canadensis*

1. Stem leaves opposite; capsule only slightly exceeding the calyx; leaves pinnately lobed less than halfway to the middle of the leaf; stem more or less glabrous on upper part of plant
..... *Pedicularis lanceolata*

Pellaea *Pellaea glabella*

Peltandra *Peltandra virginica*

Penstemon

1. Corolla large, 3.3-4.5 cm long; at least the upper leaves broad and rounded at the tip; plant very glaucous *Penstemon grandiflorus*
1. Corolla smaller, less than 3 cm long; the leaves acute and narrower; plant usually not glaucous 2
 2. Corolla tube inflated above the base; the stem glabrous below the inflorescence; anthers bearded where they connect to the filament *Penstemon digitalis*
 2. Corolla tube not abruptly inflated above the base; the stem hairy below the inflorescence; anthers not bearded 3
 3. Stem with long hairs 0.5-1 mm long; corolla 22-28 mm long, almost closed by lower lip of corolla; corolla lacking purple nectar guides *Penstemon hirsutus*
 3. Stem with hairs less than 0.5 mm; corolla 16-20 mm long, open; corolla with purple nectar guides 4
 4. Corolla white; stem leaves lightly hairy on upper and lower surfaces, at least on the main veins *Penstemon pallidus*
 4. Corolla pale purple; stem leaves glabrous *Penstemon gracilis*

Penthorum *Penthorum sedoides*

Petalostemum

1. Flowers white; calyx and bracts of inflorescence glabrous; leaflets more than 2 mm wide
..... *Petalostemum candidum*

1. Flowers purple; calyx and bracts of inflorescence hairy; leaflets less than 2 mm wide
..... *Petalostemum purpureum*

Phalaris

1. Inflorescence with many, dense branches; plants perennial and rhizomatous; lower sterile lemmas very hairy..... *Phalaris arundinacea*
1. Inflorescence a single, ovate spike; plants annual and tufted; lower sterile lemmas more or less glabrous..... *Phalaris canariensis*

Phegopteris

1. Rachis winged with leaf tissue except for just above the lowest pair of pinnae; rachis and stipe with scales; lowest pinnae smaller than the pair of pinnae just above and bent backwards *Phegopteris connectilis*
1. Rachis winged with leaf tissue between all pairs of pinnae; rachis and stipe with fine hairs; lowest pinnae larger than the pinnae just above them *Phegopteris hexagonoptera*

Philadelphus *Philadelphus coronarius*

Phleum *Phleum pratense*

Phlox

1. Calyx and stem more or less glabrous 2
 2. Leaves lanceolate to ovate, less than 5 times as long as wide *Phlox paniculata*
 2. Leaves linear to linear-lanceolate and tapering to a sharp point; leaves more than 5 times as long as wide *Phlox glaberrima*
1. Calyx and stem minutely hairy 3
 3. Tube of corolla glabrous; calyx tips 0.5 mm long; leaves lanceolate to ovate
..... *Phlox divaricata*

3. Tube of corolla pubescent; calyx tips 0.5-1.5 mm long; leaves linear to linear-lanceolate *Phlox pilosa*
- Phragmites***..... *Phragmites australis*
- Phryma***..... *Phryma leptostachya*
- Phyla*** *Phyla lanceolata*
- Physalis***
1. Flower white, with 5 distinct lobes; fruit enclosed in a bright orange husk over 3.5 cm long..... *Physalis alkekengi*
1. Flower yellow and trumpet-shaped; fruit enclosed in a green husk less than 3.5 cm long..... 2
2. Stems glabrous or with a few antrorse hairs near the top 3
3. Plant annual, with small roots; pedicels of fruit less than 1 cm long . *Physalis philadelphica*
3. Plant perennial, with large roots and rhizomes; pedicels of fruit 1-3 cm long *Physalis longifolia*
2. Stems with spreading or retrorse hairs 4
4. Hairs on stems retrorse and not glandular-sticky; anthers 1.6-2.5 mm long..... *Physalis virginiana*
4. Hairs on stem spreading, glandular-sticky; anthers 2.8-4 mm long *Physalis heterophylla*
- Physocarpus***..... *Physocarpus opulifolius*
- Physostegia***..... *Physostegia virginiana*
- Phytolacca*** *Phytolacca americana*

Picea

1. Twigs and branches spreading horizontally or ascending; cones less than 8 cm long; needles 0.5-1.5 cm long; small native tree, 8-10 m tall *Picea mariana*
1. Twigs and branches pendulous; cones 10-20 cm long; needles 1-2 cm long; tall ornamental tree, to 45 m tall *Picea abies*

Pilea

1. Achenes 1.1-1.4 mm wide; fruits purple to black and warty on the sides *Pilea fontana*
1. Achenes 0.7-1.0 mm wide; fruits yellow-green to buff and not very warty *Pilea pumila*

Pinus

1. 5 needle-leaves to a cluster; cones narrow, 10-25 cm long *Pinus strobus*
1. 2 needle-leaves to a cluster; cones wider and less than 10 cm long 2
 2. Leaves 10-15 cm long; cones open at maturity *Pinus resinosa*
 2. Leaves 2.5-10 cm long; cones persisting on branches, often closed at maturity *Pinus banksiana*

Plantago

1. Leaves cauline and opposite; inflorescences rounded in shape *Plantago indica*
1. Leaves basal only, lacking a stem; inflorescences elongate and borne on scapes 2
 2. Each flower subtended by a long bract up to 3 cm long, protruding outward from the inflorescence *Plantago aristata*
 2. Each flower not having such a bract; inflorescence with compact bracts 3
 3. Bracts of inflorescence with spreading hairs across the back at their base 4
 4. Inflorescence extremely woolly; leaves linear *Plantago patagonica*

4. Inflorescence not woolly yet still coarsely pubescent, the hairs jointed; leaves lanceolate to elliptic..... *Plantago virginica*
3. Bracts of inflorescence glabrous or merely ciliate along the edges 5
5. Leaves linear to lanceolate to slightly spatulate, with 3 or more parallel veins per leaf and more than 5 times as long as wide *Plantago lanceolata*
5. Leaves broadly rounded, less than 3 times as long as wide; veins parallel or not 6
6. Leaves appearing to be pinnately veined; older leaves cordate; a semi-aquatic species *Plantago cordata*
6. Leaves parallel veined; older leaves not cordate; plants of drier habitats 7
7. Base of petioles reddish; flowering spike tapering at the top; sepals narrow and acute *Plantago rugelii*
7. Base of petioles green; flowering spike not tapering at the top; sepals rounded and obtuse *Plantago major*

Platanthera

1. Lip of orchid flower obviously fringed and broken into three lobes 2
2. Flowers purple; the fringe cutting less than half way into the petals *Platanthera psycodes*
2. Flowers green to cream or white; the fringe cutting more than half way into the petals..... 3
3. Flowers white; upper two petals fan-shaped, with small teeth at the top of the fan *Platanthera leucophaea*
3. Flowers green to cream; upper two petals linear, with few or no teeth at the top *Platanthera lacera*
1. Lip of orchid flower entire, lobed, or toothed only 4
4. Leaves basal or appearing basal; stem leaves bract-like if present..... 5
5. Upper petals touching upper sepal to form a loose hood; lip with upturned hook, making the flower look like a claw hand in profile..... *Platanthera hookeri*

5. Upper petals diverging, like horns on a steer; lip not with upturned hook; flower not claw-shaped in profile.....*Platanthera orbiculata*
4. Leaves cauline; some upper leaves may be bracts 6
6. Lip long and narrow, prolonged into an acuminate tip 7
7. Lip dilated at base, almost forming lobes on the sides; flowers white and fragrant
.....*Platanthera dilatata*
7. Lip not dilated at base; flowers greenish and only faintly fragrant.....
.....*Platanthera hyperborea*
6. Lip not long and narrow, truncate 8
8. Lip with a lobe on either side near the base; lower cauline leaf large, with the remaining cauline leaves gradually becoming smaller going up the stem.....
..... *Platanthera flava*
8. Lip with 2-3 teeth at apical end; lowermost cauline leaf large, with the remaining cauline leaves bract-like.....*Platanthera clavellata*

Platanus *Platanus occidentalis*

Poa

1. Culms strongly flattened, blue-green in color; panicle small and contracted.....*Poa compressa*
1. Culms rounded, green in color; panicle open or drooping..... 2
2. Callus at base of lemma glabrous to pubescent, but lacking a crinkly tuft of hairs; however, mid-vein of lemma usually densely ciliate; plant an annual with a soft base; spikelets with 3-10 florets *Poa annua*
2. Callus at base of lemma with a crinkly tuft of hairs; midvein of lemma various; plants perennial with a hard base; spikelets with no more than 5 florets..... 3
3. Outer edges of lemmas glabrous (need to look under strong magnification) 4
4. Mid-vein and entire lemma glabrous; panicle branches drooping; with 1-3 branches per node of the inflorescence 5

- 5. Ligules 2.1-4.4 mm long; upper glume slightly longer than the adjacent fertile lemma; lemmas obtuse; anthers 0.6-0.8 mm long..... *Poa languida*
- 5. Ligules 0.6-1.5 mm long; upper glume shorter than the adjacent fertile lemma; lemmas acute; anthers 0.9-1.5 mm long.....*Poa saltuensis*
- 4. Mid-vein of lemma with minute or dense hairs at base; panicle branches erect; with 4-8 branches per node of the inflorescence 6
- 6. Ligules 4-11 mm long; lemma 2.5-3.5 mm long; anthers 0.8-1.8 mm long...*Poa trivialis*
- 6. Ligules 0.7-2.2 mm long; lemma 4 mm long; anthers 0.4-0.7 mm long *Poa alsodes*
- 3. Outer edges of lemmas hairy, at least at the base 7
- 7. Upper ligules greater than or equal to 2 mm long 8
- 8. Intermediate veins of lemma obscure, lemmas with yellowish tips; upper ligules 2.6-5 mm long; anthers 0.8-1.2 mm long*Poa palustris*
- 8. Intermediate veins of lemma prominent, lemmas green or hyaline; upper ligules <3 mm long; anthers 1-2 mm long 9
- 9. Plants with scaly rhizomes; lemmas 3-4 mm long; lemmas glabrous between the veins; mid-vein of lemma only hairy on the lower 2/3rds; mature panicle branches ascending or spreading, but not drooping*Poa pratensis*
- 9. Plants lacking rhizomes; lemmas 2.5-3 mm long; lemmas glabrous to pubescent between the veins; mid-vein of lemma hairy almost to the tip; mature panicle branches drooping*Poa sylvestris*
- 7. Upper ligules less than 2 mm long..... 10
- 10. Lower panicle branches in clusters of 2; upper ligules 0.3-1.5 mm long; larger glumes 2-2.8 mm long; anthers 0.5-0.7 mm long; plant of wet habitats.....
..... *Poa paludigena*
- 10. Lower panicle branches in clusters of (3) 4 or more; upper ligules, glumes, anthers and habitats various..... 11
- 11. Upper ligules 0.1-0.5 mm long; larger glumes 3-4.4 mm long; anthers 1.3-2 mm long; plant of dry or rocky habitats *Poa nemoralis*

11. Upper ligules >1 mm long; larger glumes 2.5-4mm long; anthers 1.5-2 mm long;
plant occurring in wet and dry habitats.....*Poa pratensis*

Podophyllum.....*Podophyllum peltatum*

Pogonia.....*Pogonia ophioglossoides*

Polanisia *Polanisia graveolens*

Polemonium.....*Polemonium reptans*

Polygala

1. Leaves few, evergreen, and occurring only at the top of the plant; flowers few (1-4), large (15-20 mm long).....*Polygala paucifolia*
1. Flowers and usually leaves many; flowers smaller (3-7.5 mm long) 2
 2. Leaves whorled 3
 3. Flowering raceme round to elliptical, about 10-15 mm wide; leaves more than 3 mm wide.....*Polygala cruciata*
 3. Flowering raceme long and narrow, about 3-5 mm wide; leaves less than 3 mm wide
.....*Polygala verticillata*
 2. Leaves alternate, at least near the top of the plant 4
 4. Flowers well-spaced in a loose raceme, usually magenta; plant producing white cleistogamous flowers underground*Polygala polygama*
 4. Flowers crowded together in a dense raceme, colors white to magenta; plants not producing cleistogamous flowers underground..... 5
 5. Petals of flowers fused into a long tube, 5-7 mm long; leaves minute and deciduous.....
..... *Polygala incarnata*
 5. Petals of flowers not fused into long tube, 3-5.5 mm long; leaves larger and persistent 6

6. Racemes long and narrow, 4-8 mm wide and 3-5 times as long; flowers usually white .
..... *Polygala senega*
6. Racemes shorter and wider, more cylindrical, 8-12 mm wide and only up to 2 times
as long; flowers usually rose colored..... *Polygala sanguinea*

Polygonatum

1. Leaves glabrous above and below *Polygonatum biflorum*
1. Leaves pubescent below on the veins of the leaf..... *Polygonatum pubescens*

Polygonella *Polygonella articulata*

Polygonum

1. Plant shrub-like in size and growth form; leaves truncate to shallowly cordate, up to 15 cm
long, and with acuminate tips; clusters of flowers from upper leaf axils
..... *Polygonum cuspidatum*
1. Plant not shrub-like; leaves various, usually shorter; flowers various 2
2. Stems with retrorse, broad-based, prickles..... 3
3. Achenes 2-sided; leaves arrow-shaped, with lobes that are pointing outward.....
..... *Polygonum arifolium*
and giving the appearance of clasping the stem *Polygonum sagittatum*
2. Stems lacking broad-based prickles, but may have retrorse hairs 4
4. Plant an herbaceous vine 5
5. Fruiting perianth less than 5 mm long; achenes roughened; pedicels of flowers with
nodes closer to the base of pedicel *Polygonum convolvulus*
5. Fruiting perianth 7-10 mm long; achenes smooth; pedicels of flowers with nodes
midway between the base of the pedicel and the flower..... *Polygonum scandens*
4. Plant not an herbaceous vine 6

6. Flowers 1-4 from leaf axils; leaves jointed at the base; plants tending to be short or mat-forming annuals 7
7. Leaves mostly linear, w-shaped in cross-section, and sharply acute; stems strongly angled..... *Polygonum tenue*
7. Leaves linear to ovate, not w-shaped, and tending to be blunt-tipped; stems ridged or rounded..... 8
8. Leaves on plants of two sizes; the leaves on the flowering branches are much smaller than those on the main stem..... 9
9. Outer tepals not keeled and hood-shaped, about equal in length to the inner tepals..... *Polygonum aviculare*
9. Outer tepals strongly keeled and hood-shaped, distinctly longer than the inner tepals..... 10
10. Leaves wider, less than 4 times as long as wide *Polygonum erectum*
10. Leaves narrower, more than 4 times as long as wide *Polygonum ramosissimum*
8. Leaves on plants all one size; the leaves on the flowering branches are the same size as those on the main stem..... 11
11. Tepals divided to below the middle..... *Polygonum buxiforme*
11. Tepals divided to the middle or above 12
12. Outer tepals hood-shaped and keeled and longer than the inner tepals; fruiting perianth has a prominent beak on top *Polygonum achoreum*
12. Outer tepals not hood-shaped and keeled and about equal in length to the other tepals; fruiting perianth does not have a prominent beak..... *Polygonum arenastrum*
6. Flowers in terminal or axillary racemes with more than 4 flowers; leaves not jointed at the base; plants tending to be taller perennials..... 13
13. Flowers with 4 tepals; the style becoming a long, hooked beak on the achene..... *Polygonum virginianum*
13. Flowers with 5 tepals; the style not becoming a long, hooked beak 14

14. Plant semi-aquatic; in deep water leaves are floating and during draw-downs, plants are erect and often have hairy stems; flowers deep pink; stipules often with a leafy portion surrounding the stem..... *Polygonum amphibium*
14. Plants of wetlands but not with floating leaves; flowers light pink or white; stipules lacking a leafy portion surrounding the stem 15
15. Ocreae not bristly or hairy at the summit 16
16. Peduncles with stalked glands; raceme thick and erect; achenes 2.3-3.3 mm broad *Polygonum pensylvanicum*
16. Peduncles with sessile glands or no glands; raceme slender and nodding; achenes 1.5-2.2 mm broad *Polygonum lapathifolium*
15. Nerves of ocreae becoming bristles or hairs at the summit..... 17
17. Stems, peduncles, or ocreae with spreading hairs; larger leaves ovate and over 4.5 cm wide *Polygonum orientale*
17. Stems, peduncles, and ocreae glabrous or with appressed hairs; larger leaves usually less than 4.5 cm wide 18
18. Tepals covered with shining yellow dots; leaves of plant peppery-tasting... 19
19. Tepals greenish with white tips; ocreae not swollen; achenes smooth and glossy..... *Polygonum punctatum*
19. Tepals white, often with pink tips; ocreae swollen due to presence of hidden cleistogamous flowers; achenes slightly granular *Polygonum hydropiper*
18. Tepals not covered in shining yellow dots; plants with no taste..... 20
20. Cilia of ocreae that subtend flowers much more than 2 mm long; achenes 3-sided..... *Polygonum cespitosum*
20. Cilia of ocreae that subtend flowers less than 2 mm long; achenes 2 or 3-sided 21
21. Inflorescence 1-3 cm long; achenes usually 2-sided; some of the leaves with a purple blotch in the center of the leaf..... *Polygonum persicaria*

21. Inflorescence over 3 cm long; achenes 3-sided; leaves not blotched
 *Polygonum hydropiperoides*

Polymnia *Polymnia canadensis*

Polypodium *Polypodium virginianum*

Polystichum *Polystichum acrostichoides*

Polytaenia *Polytaenia nutallii*

Pontederia *Pontederia cordata*

Populus

1. Undersides of leaves strongly white-tomentose; leaves often lobed *Populus alba*
1. Undersides of leaves not white-tomentose; leaves not lobed 2
2. Petioles of leaves round; buds aromatic, like balsam fir; undersides of leaves with rusty brown resin *Populus balsamifera*
2. Petioles of leaves flattened; buds not strongly aromatic; undersides of leaves without resin 3
3. Leaves deltoid in shape; leaves bright or yellowish-green 4
4. Branches spreading, crown broad and spreading; leaves with incurved teeth
 *Populus deltoides*
4. Branches appressed to trunk; crown long and narrow; leaves with teeth not incurved
 *Populus nigra*
3. Leaves ovate to rounded in shape; leaves dull or grayish-green 5
5. Leaf margins coarsely toothed; leaves 7-13 cm long *Populus grandidentata*
5. Leaf margins finely serrate; leaves 7 cm long or less *Populus tremuloides*

Portulaca.....*Portulaca oleracea*

Potamogeton

1. Submersed leaves greater than or equal to 8 mm wide and ruffled..... 2
2. Floating leaves large; submersed leaves with petioles 3
3. Submersed leaves 35-72 mm wide and strongly arched; each with 24-40 parallel veins; fruits 4-5.5 mm long including beak*Potamogeton amplifolius*
3. Submersed leaves 30 mm or less wide and not strongly arched; each leaf with less than 19 veins; fruits 2-4 mm long 4
4. Submersed leaves with petioles over 2 cm long; apex of submersed leaves pointed but not mucronate; fruits with a warty keel; petioles of floating leaves often many times the length of the leaves.....*Potamogeton nodosus*
4. Submersed leaves with petioles 2 cm or less long or sessile; apex of submersed leaves mucronate; fruits with a keel, but not warty; petioles of the floating leaves shorter than the length of the leaves*Potamogeton illinoensis*
2. Floating leaves absent; submersed leaves clasping..... 5
5. Leaves shorter, less than 10 cm long, and more ruffled; fruit 2.5-3 mm long and with keel weak or absent; stipules distintegrating..... *Potamogeton richardsonii*
5. Leaves longer, more than 10 cm long, and less ruffled; fruit 3.5-5 mm long with a sharp keel; stipules white and persistent..... *Potamogeton praelongus*
1. Submersed leaves less than 8 mm wide and not ruffled..... 6
6. Submersed leaves 3 to 8 mm wide 7
7. Medium-sized floating leaves present..... 8
8. Submersed leaves look longer, linear and ribbon-like; midrib of leaf with a cellular-reticulate band on either side of the midrib that appears lighter in color than the rest of the leaf and about 1/4th the total width of the leaf; stems strongly compressed
.....*Potamogeton epihydrus*

8. Submersed leaves tend to be shorter, but variable; midrib of leaf lacking such a band;
stems round in cross-section *Potamogeton gramineus*
7. Floating leaves absent..... 9
9. Stems strongly flattened, may appear winged; leaves entire
..... *Potamogeton zosteriformis*
9. Stems round in cross-section, not winged; leaves with tiny serrations 10
10. Leaves strongly 2-ranked, with auricles at their base and coming to a point at the
tip; leaf margins straight.....*Potamogeton robbinsii*
10. Leaves not 2-ranked and lacking auricles, leaves broadly rounded at the tip; leaf
margins very wavy *Potamogeton crispus*
6. Submersed leaves 3 mm or less wide 11
11. Submersed leaves long (compared to the length of the branches of the stem), thread-
like, 0.2-2 mm thick..... 12
12. Medium-sized floating leaves present; submersed leaves flattened with no channels ...
..... 13
13. Floating leaves more or less cordate at the base, 3.7-9 cm long and 2-4.7 cm wide;
fruits 3.7-4.5 mm long (including beak)..... *Potamogeton natans*
13. Floating leaves round or acute at the base, 2-4.7 cm long and 1.2-2.2 cm wide; fruits
3-3.4 mm long (including beak) *Potamogeton oakesianus*
12. Floating leaves absent; submersed leaves rounded with channels 14
14. Tips of leaves with a sharp point; fruits 3-4.5 mm long, not including a tiny beak.....
.....*Potamogeton pectinatus*
14. Tips of leaves blunt, often with a minute notch; fruits 2-3 mm long and lacking a
beak (but may have a tiny bump) *Potamogeton filiformis*
11. Submersed leaves short (compared to the length of the branches of the stem) and thin,
0.5-3 mm thick 15
15. Pairs of glands absent; fruit less than 3 mm long, usually with a narrow keel;
submersed leaves with 3-5 veins and a narrow thin band of tissue in the middle.....
..... *Potamogeton foliosus*

15. Pairs of glands present at the base of the leaves (on the stem); fruits and leaves various..... 16
16. Stipules fragile, breaking off at the base when mature; fruits less than 3 mm long and with rounded or obscure keel..... *Potamogeton pusillus*
16. Stipules fibrous, the fibers persistent..... 17
17. Tips of leaves rounded; 5-7 veins per leaf; midrib of leaf surrounded by a narrow band of thin tissue; leaves flat.....*Potamogeton friesii*
17. Tips of leaves sharp; 3-5 veins per leaf; midrib of leaf not surrounded by a band of thin tissue; leaves often rolled.....*Potamogeton strictifolius*

Potentilla

1. Plant a woody shrub; leaves pinnately compound and leaflets not toothed.....
.....*Potentilla fruticosa*
1. Plant a forb; leaves pinnately or palmately compound; the leaflets with teeth..... 2
2. Most of the leaves pinnately compound 3
3. Plant semi-aquatic; flowers maroon or purple colored; generally 5 leaflets per leaf.....
..... *Potentilla palustris*
3. Plants of upland habitats; flowers pale yellow to bright yellow; leaflets 5 or more..... 4
4. Leaves basal; creeping tufts of plants connected by stolons; 13-21 leaflets per leaf, the undersides whitened with dense, silky hairs.....*Potentilla anserina*
4. Leaves mostly cauline; plant erect and without stolons; 5-11 leaflets per leaf, the undersides may have hairs but not densely whitened..... *Potentilla arguta*
2. Most of the leaves palmately compound 5
5. Lower leaves with only 3 leaflets.....*Potentilla norvegica*
5. Lower leaves with 5 or more leaflets..... 6
6. Leaves white-tomentose beneath, the margins slightly revolute *Potentilla argentea*

6. Leaves not white-tomentose beneath, although may be hairy on the underside but not strongly whitened 7
7. Flowers solitary from a long peduncle; plant tending to be stoloniferous and creeping 8
8. Stems becoming smooth with age; larger leaflets less than 3 cm long.....*Potentilla reptans*
8. Stems pubescent; larger leaflets more than 3 cm long*Potentilla simplex*
7. Multiple flowers in a terminal cyme; plants erect..... 9
9. Petals pale yellow, 8-11 mm long; anthers 1-1.4 mm long; leaflets with straight hairs beneath only*Potentilla recta*
9. Petals bright yellow, 3.5-5.5 mm long; anthers 0.5-0.8 mm long; leaflets with straight hairs and gray tomentum beneath.....*Potentilla inclinata*

Prenanthes

1. Involucres and pedicels glabrous.....*Prenanthes alba*
1. Involucres and pedicels coarsely hairy 2
2. Leaves and stems glabrous below the inflorescence *Prenanthes racemosa*
2. Leaves and stems hairy or scabrous below the inflorescence.....*Prenanthes aspera*

Proserpinaca*Proserpinaca palustris*

Prunella*Prunella vulgaris*

Prunus

1. Inflorescence a linear raceme of 12-20 flowers 2
2. Leaves ovate to lanceolate; glossy green above, with a row of rusty brown hairs along the base of the midrib on the underside of the leaf; fruits black..... *Prunus serotina*

2. Leaves obovate; dull above, lacking the rusty brown hairs beneath; fruits red to dark purple
..... *Prunus virginiana*
1. Inflorescence a compact corymb of 12 or fewer flowers 3
3. Winter twigs lacking terminal buds; plant a small tree or shrub; thornlike twigs present; fruits ovoid, 2-3 cm in diameter 4
4. Leaves ovate with short acuminate tips; teeth on leaf margins crenate-serrate with glands; two glands at base of leaf occurring on petiole *Prunus nigra*
4. Leaves lanceolate with prolonged-acuminate tips; teeth on leaf margins sharp and lacking glands; two glands occurring at base of leaf occurring on leaf tissue.....
..... *Prunus americana*
3. Winter twigs with terminal buds present; plant a small to large tree; thornlike twigs absent; fruits round, usually less than 1 cm in diameter (if bigger then not ovoid in shape)
..... 5
5. Flowers and fruit small; petals 4-7.5 mm long; fruit 1 cm or less in diameter
..... *Prunus pensylvanica*
5. Flowers and fruit larger; petals 9-15 mm long; fruit 1.5-2.5 cm in diameter
..... *Prunus cerasus*
- Ptelea*** *Ptelea trifoliata*
- Pteridium*** *Pteridium aquilinum*
- Pterospora*** *Pterospora andromeda*
- Puccinellia*** *Puccinellia distans*
- Pycnanthemum***..... *Pycnanthemum virginianum*

Pyrola

1. Raceme one-sided.....*Pyrola secunda*
1. Flowers on all sides of the raceme..... 2
2. Leaves thin and deciduous and dull..... 3
3. Leaves shorter than their petioles; anthers contracted to short tubes beneath the pores...
.....*Pyrola chlorantha*
3. Leaves longer than their petioles; anthers not constricted beneath the pores.....
.....*Pyrola elliptica*
2. Leaves thick and evergreen and shiny 4
4. Flowers white to light pink; calyx lobes longer than wide; plant occurring in dry-mesic
woods..... *Pyrola rotundifolia*
4. Flowers pink to reddish; calyx lobes as long as wide; plant occurring in moist woods or in
bogs..... *Pyrola asarifolia*

Pyrus *Pyrus communis*

‘Q’

Quercus

1. Leaves with rounded lobes or teeth 2
2. Leaves with 9 or greater pairs of lateral veins, all ending in coarse, rounded teeth
..... *Quercus muhlenbergii*
2. Leaves with 8 or fewer pairs of lateral veins, and lobed rather than toothed..... 3
3. Leaves completely glabrous on both sides *Quercus alba*
3. Leaves with stellate pubescence on lower surface 4
4. Leaves more deeply cut on the lower half of the blade, the terminal segment more or
less obovate as a result; terminal buds and young twigs densely pubescent; acorn cup
with fringes *Quercus macrocarpa*

4. Leaves irregularly cut and not as deep; terminal buds and young twigs more or less glabrous; acorn cup lacking fringes *Quercus bicolor*
1. Leaves with pointed lobes 5
5. Leaves more or less pubescent underneath; bud scales all densely hairy, appearing grayish; acorn cup scales likewise hairy *Quercus velutina*
5. Leaves more or less glabrous underneath; bud scales mostly glabrous except at the tip; acorn cup scales mostly glabrous 6
6. Trunk tending to have remnant dead branch stubs; acorn cup shaped like a ski cap, covering about ½ the nut; nut round to ellipsoidal in shape; leaf sinuses tend to be more deeply cut.....*Quercus ellipsoidalis*
6. Trunk not having remnant dead branch stubs; acorn cup shaped like a beret, only covering the top of the nut; nut barrel-shaped; leaf sinuses tend to be more shallowly cut .
..... *Quercus rubra*

'R'

Ranunculus

1. True aquatic plant; leaves finely dissected 2
2. Flowers white; leaves narrow, under 0.3 mm wide, rounded in cross-section; achenes wrinkled*Ranunculus aquatilis (longirostris)*
2. Flowers yellow; leaves wider than 0.3 mm and flattened; achenes not wrinkled
.....*Ranunculus flabellaris (wet phase)*
1. Leaves simple, lobed, or compound, but not finely dissected; usually occurring in drier conditions..... 3
3. Leaves unlobed except for cordate base, entire to toothed 4
4. Petals 2.5-4 mm long; sepals 5; achenes glabrous*Ranunculus cymbalaria*
4. Petals 8-10 mm long; sepals 3-4; achenes pubescent*Ranunculus ficaria*
3. At least the cauline leaves lobed more than halfway to the base..... 5

5. Plant creeping or trailing; leaves palmately lobed*Ranunculus flabellaris* (dry phase)
5. Plant erect; leaves various 6
6. Petals less than 5 mm long and shorter than sepals; heads cylindrical 7
 7. Stem with spreading hairs; basal leaves deeply lobed more than halfway into the leaf and sharply toothed..... 8
 8. Basal leaves living when plant flowers; middle lobe of leaves not stalked; achenes with a prominent, recurved beak*Ranunculus recurvatus*
 8. Basal leaves die back as plant flowers; middle lobe of leaves stalked; achenes with a straight beak*Ranunculus pensylvanicus*
 7. Stem more or less glabrous; basal leaves cordate or lobed less than halfway into the leaf and teeth rounded 9
 9. Basal leaves with cordate base and unlobed (cauline leaves usually deeply three-lobed); achenes 1.5-2 mm long with short beak; plant of upland woods or disturbed areas.....*Ranunculus abortivus*
 9. Basal leaves strongly lobed; achenes 1 mm long with short beak; plant found in wetlands.....*Ranunculus sceleratus*
6. Petals greater than 5 mm long and longer than the sepals; heads globose 10
 10. Basal leaves not lobed; achenes convex; basal leaves on long stalks and cauline leaves not stalked*Ranunculus rhomboideus*
 10. Basal leaves lobed; achenes flattened; leaves stalked variously..... 11
 11. Leaves deeply cut but the terminal lobe not on a stalk (not a true compound leaf); receptacle smooth *Ranunculus acris*
 11. Terminal lobe of leaf on a definite stalk (compound); receptacle hairy 12
 12. Style triangular in shape, up to 1 mm long; plant strongly stoloniferous
..... *Ranunculus repens*
 12. Style linear in shape, 1.5-3 mm long; plants erect or stoloniferous..... 13

- 13. Compound leaves longer than wide and appearing to be more pinnately compound; teeth of leaflets rounded; petals more linear in shape; plant erect; occurring in upland habitats *Ranunculus fascicularis*
- 13. Compound leaves wider than long and appearing to be more palmately compound; teeth of leaflets sharp; petals more round in shape; plant stoloniferous; occurring in wetland habitats..... *Ranunculus hispidus*(14)
- 14. Petals 10 to 20 mm long; plant very pubescent
.....*Rancunculus hispidus var. caricetorum*
- 14. Petals less than 10 mm long; plant not as pubescent
..... *Ranunculus hispidus var. nitidus (R. septentrionalis)*

Raphanus *Raphanus raphanistrum*

Rapistrum*Rapistrum rugosum*

Ratibida

- 1. Disk a hemisphere, up to 1.5 times as long as wide; pappus lacking *Ratibida pinnata*
- 1. Disk a cylinder, over 2 times as long as wide; pappus of 1-2 small teeth
.....*Ratibida columnifera*

Rhamnus

- 1. Winter buds naked and pubescent; leaves alternate, entire*Rhamnus frangula*
- 1. Winter buds scaly and glabrous; leaves alternate or opposite, with rounded teeth..... 2
 - 2. A large shrub or tall tree to 6 m tall; leaves opposite, sub-opposite, or alternate; twigs ending in a terminal spine*Rhamnus cathartica*
 - 2. A small shrub up to 1 m tall; leaves alternate; twigs lacking a terminal spine.....
..... *Rhamnus alnifolia*

Rheum *Rheum rhaponticum*

Rhodotypos *Rhodotypos scandens*

Rhus

1. Inflorescence of spreading to drooping, glabrous white fruit arising from the leaf axils; leaflets entire or with irregular teeth 2
2. Plant a vine or small shrub; leaves with 3 leaflets with irregular teeth *Rhus radicans*
2. Plant a large shrub up to 7 m tall; pinnately compound leaves with 7-13 leaflets
..... *Rhus vernix*
1. Inflorescence a terminal raceme of red pubescent fruit; leaflets with regular teeth for at least half their margin 3
3. Petioles and young twigs densely pubescent; the undersides of the leaflets with pubescence *Rhus typhina*
3. Petioles and young twigs glabrous; the undersides of the leaflets glabrous *Rhus glabra*

Rhynchospora

1. Perianth bristles 9-12, hairy at base; scales whitish to pale brown *Rhynchospora alba*
1. Perianth bristles 6 (sometimes 9), not hairy at base; scales brown *Rhynchospora capillacea*

Ribes

1. One to four flowers or fruit from any one point on the stem (gooseberries); stems with spines or bristles at least at the nodes 2
2. Ovary and fruit bristly (occasionally smooth) and peduncles of fruit 7-18 mm long
..... *Ribes cynosbati*
2. Ovary and fruit glabrous and peduncles of fruit 2-3 mm long 3
3. Stamens equaling the petals; fruit smooth to bristly; leaves with sessile or stalked glands at least on the undersides *Ribes oxycanthoides*
3. Stamens long-exserted past the petals; fruit glabrous; leaves lacking glands 4

- 4. Flowers white, petals strongly reflexed; stout spines at the nodes; floral bracts with marginal, gland-tipped hairs *Ribes missouriense*
- 4. Flowers green to purple, petals not reflexed; weak spines at the nodes or spines absent; floral bracts with only marginal cilia *Ribes hirtellum*
- 1. Five or more flowers or fruit in a raceme (currants); stems usually without spines or bristles ..
..... 5
- 5. Ovary and fruit with bristles or at least gland-tipped hairs; stems with dense prickles
..... *Ribes lacustre*
- 5. Ovary and fruit smooth; stems lacking prickles of any kind 6
- 6. Leaves with yellow, resinous dots on the undersides *Ribes americanum*
- 6. Leaves lacking yellow, resinous dots 7
- 7. Flowers trumpet-shaped with tube 9-15 mm long; leaves deeply 3-lobed to about the middle *Ribes odoratum*
- 7. Flowers saucer-shaped with tube less than 4.5 mm long; leaves shallowly 3-5 lobed 8
- 8. Flowers greenish-yellow; pedicels glabrous *Ribes rubrum*
- 8. Flowers pinkish; pedicels glandular and somewhat pubescent *Ribes triste*

Robinia

- 1. A tree; twigs with a pair of spines at nodes only; legume smooth *Robinia pseudoacacia*
- 1. A shrub; young twigs covered in spines; legume covered in spiny hairs *Robinia hispida*

Rorippa

- 1. Petals over 2.5 mm long, distinctly longer than the sepals; fruits linear (over 5 times as long as wide) *Rorippa sylvestris*
- 1. Petals less than 2.5 mm long, about equal to the sepals; fruits round to oblong 2
- 2. Pedicels 3 or more times as long as the length of the fruit *Rorippa austriaca*

2. Pedicels equaling or shorter than the length of the fruit *Rorippa palustris*

Rosa

1. Stipules deeply pinnatifid; inflorescences of many flowers; styles glabrous *Rosa multiflora*
1. Stipules entire or shallowly lobed; inflorescences of 1-4 flowers; styles pilose 2
2. Young twigs and thorns densely pubescent; leaflets densely pubescent beneath; fruits large, greater than 2 cm in diameter *Rosa rugosa*
2. Young twigs and thorns not densely pubescent; leaflets various; fruits smaller 3
3. Stems with stout, down-curved thorns that are widened at the base and usually no other types of thorns; pedicels, hypanthia, and fruit covered with gland-tipped hairs
..... *Rosa palustris*
3. Stems thornless or with straight slender prickles; pedicels, hypanthia, and fruit various.....
..... 4
4. Pedicels and hypanthia with glandular hairs; sepals spreading and deciduous on fruit.....
..... *Rosa carolina*
4. Pedicels and hypanthia glabrous; sepals upright and persistent on fruit 5
5. Leaflets 9-11 *Rosa arkansana*
5. Leaflets 5-7 *Rosa blanda*

Rubus

1. Leaves simple, palmately lobed; petals pink-purple..... *Rubus odoratus*
1. Leaves compound; petals white 2
2. Stems without thorns or prickles; leaves trifoliate..... *Rubus pubescens*
2. Stems with thorns or prickles; leaves variously compound 3
3. Leaves densely white-hairy beneath; fruit separating easily from the receptacle 4

4. Mature fruits black; pedicels with strong, recurved thorns; stems arching and often rooting where it touches the ground; stems glaucous and with thorns
.....*Rubus occidentalis*
4. Mature fruits red; pedicels with weak, straight bristles; stems more erect and not rooting as above; stems more or less smooth and not glaucous
.....*Rubus idaeus* var. *strigosus*
3. Leaves green on both upper and lower surfaces (may have some hairs but not obviously white); fruit does not separate readily from the receptacle 5
5. Flower-bearing stems prostrate or trailing and rooting at the tip (non-flower-bearing stems may be ascending) 6
6. Flower-bearing stems with slender bristles that are not wider at the base; leaves firm and shiny, almost ever-green, and the leaflets are usually rounded at the tip; petals of flowers 3.5-6 mm long*Rubus hispidus*
6. Flower-bearing stems with strong thorns that are wider at the base; leaves thin and dull, not ever-green, the leaflets strongly pointed at the tip; petals of flowers 8-15 mm long *Rubus flagellaris* complex
5. Flower-bearing stems erect or ascending and not rooting at the tip (non-flower-bearing stems also erect) 7
7. Plants shorter, up to 1 m tall; stems with slender, straight bristles only
..... *Rubus setosus* complex
7. Plants taller, mature plants stout and over 1 m tall; stems with thorns that are wider at the base and straight or curved 8
8. Young growth, pedicels, and axis of inflorescence with many, stalked, glandular hairs; inflorescence an elongate raceme *Rubus allegheniensis* complex
8. Young growth, pedicels, and axis of inflorescence either lacking stalked, glandular hairs, or with only a few; inflorescence usually not an elongated raceme
.....*Rubus pensilvanicus* complex

Species from each complex known to occur in the SE WI Region:

***Rubus flagellaris* complex:**

Rubus curtipes

Rubus flagellaris

Rubus ithacanus
Rubus plicatifolius
Rubus roribaccus
Rubus satis

Rubus setosus complex:

Rubus stipulatus
Rubus wisconsinensis

Rubus allegheniensis complex:

Rubus allegheniensis
Rubus alumnus
Rubus rosa

Rubus pensilvanicus complex:

Rubus ablatus
Rubus frondosus
Rubus recurvans

Rudbeckia

1. Chaff of receptacle sharp-pointed and glabrous; rays orange and yellow; leaves rough beneath but not downy; leaves often with 3 lobes but may be ovate and toothed
..... *Rudbeckia triloba*
1. Chaff of receptacle obtuse and either glabrous or pubescent; rays all yellow; leaves various 2
2. Lower leaves deeply pinnately lobed or compound..... 3
3. Disk flowers yellow; stem glaucous; leaves often 5-7 lobed *Rudbeckia laciniata*
3. Disk flowers brown; stems pubescent; leaves no more than 3-lobed and downy-pubescent beneath *Rudbeckia subtomentosa*
2. Leaves all unlobed..... 4
4. Leaves on distinct petioles; stem and leaves with scattered, soft hairs; pappus a short crown *Rudbeckia fulgida*
4. Leaves sessile or with a winged petiole; stem and leaves with coarse, dense hairs; pappus none *Rudbeckia hirta*

Ruellia *Ruellia humilis*

Rumex

1. Plants dioecious; leaves arrow-shaped with acute basal lobes..... *Rumex acetosella*

1. Flowers usually perfect; leaves not arrow-shaped, at most cordate at the base 2

2. Inner tepals with spines 3

3. Leaves narrower than 5 cm and tapered at the base; spines on tepals long, giving the fruits a bristly appearance *Rumex maritimus*

3. Leaves wider than 5 cm and deeply cordate at the base; spines on tepals shorter, fruits not appearing very bristly *Rumex obtusifolius*

2. Inner tepals entire or at most, wavy along the edge..... 4

4. Plant large, may be over 2 m tall; inner tepals more than 6 mm long; larger leaves over 7 cm wide..... 5

5. Pedicel of flower with a swollen joint; tubercles at the base of one or none of the inner tepals..... *Rumex patientia*

5. Pedicel of flower without an obvious swollen joint; tubercles at the base of 2 or 3 of the inner tepals *Rumex orbiculatus*

4. Plant smaller, usually 1 m tall or less; inner tepals less than or equal to 6 mm long; all leaves less than 7 cm wide..... 6

6. Leaves crispy-curly at the edges; tubercles usually at the base of all 3 of the inner tepals; profile of inner tepals rounded in fruit *Rumex crispus*

6. Leaves more or less entire; tubercles at the base of 1-3 of the inner tepals; profile of inner tepals deltoid in fruit 7

7. Pedicels 2.5-3 times as long as the perianth, straight and deflexed; inflorescence in distinct whorls..... *Rumex verticillatus*

7. Pedicels less than 2 times as long as the perianth, curved; inflorescence not in distinct whorls..... 8

8. Tubercle at the base of only one of the three inner tepals; larger leaves more than 3.5 cm wide *Rumex altissimus*

8. Tubercles at the bases of all three of the inner tepals; all leaves less than 3.5 cm wide *Rumex mexicanus*

Ruppia *Ruppia cirrhosa*

'S'

Sabatia *Sabatia angularis*

Sagina *Sagina procumbens*

Sagittaria

1. Leaves linear, lanceolate, or oval, but not sagittate (except sometimes for small basal lobes); filaments pubescent 2

2. Pedicels very short, thus flowers appear $\pm$ sessile; achenes 3 mm long, with beak 1.5 mm long; axis of inflorescence strongly bent above lowest flowers *Sagittaria rigida*

2. Flowers on pedicels; achenes 2 mm long, with beaks less than 1 mm long; axis of inflorescence straight *Sagittaria cristata*

1. Leaves sagittate; filaments glabrous 3

3. Bracts of inflorescence ovate, $\pm$ obtuse, 4-9 (11) mm long; beak of achene horizontal, 0.5-2 mm long *Sagittaria latifolia*

3. Bracts of inflorescence lanceolate, acuminate; beak of achene erect, about 0.7 mm long *Sagittaria cuneata*

Salix

1. Leaves entire, crenate, or with fewer than 3 blunt teeth per cm at middle of blade 2

2. Leaves revolute 3

3. Leaves entire, glabrous, strongly veined above and glaucous beneath*Salix pedicellaris*
3. Leaves pubescent below and sometimes above, rugose 4
 4. Less than 4 times longer than wide; plants often more than 2 m tall; year-old branches densely pubescent *Salix cinerea*
 4. Most leaves more than 4 times longer than wide; plants relatively short at maturity (less than 2 m tall); branches pubescent or not 5
 5. Leaves densely white- or gray-tomentose, typically more than 6.5 times longer than wide..... *Salix candida*
 5. Leaves villous, including some reddish hairs; blades less than 6.5 times longer than wide; young branches somewhat pubescent*Salix humilis*
2. Leaves not revolute (i.e., margins flat) 6
 6. Leaf blades less than 3 times longer than wide; stipules less than 2 mm long, deciduous ...
.....*Salix bebbiana*
 6. Leaf blades often more than 3 times longer than wide; stipules 2 mm or more long, deciduous or persistent 7
 7. Leaf blades usually not as much as 4 times longer than wide, $\pm$ glabrous.....*Salix discolor*
 7. Most leaves more than 4 times longer than wide, glabrate or hairy beneath..... 8
 8. Leaves green, smooth above, acuminate; hairs on undersides straight, appressed
.....*Salix petiolaris*
 8. Leaves gray-green, rugose above, acute; hairs beneath often tangled*Salix humilis*
1. Leaves distinctly toothed, with more than 3 sharp teeth per cm at middle of blade 9
 9. Leaves irregularly toothed; teeth with distinct glands; leaves very long, linear (at least 10 times longer than wide) *Salix interior*
 9. Leaves regularly toothed, glandular or not; some leaves 10 times longer than wide 10
 10. Leaves green beneath, glabrous or glabrate 11
 11. Leaves glabrous or glabrate, without glands on petioles *Salix eriocephala*

- 11. Petioles usually with glands at summit; leaves glabrous or with a few reddish hairs 12
- 12. Leaves linear-lanceolate, mostly greater than 7 times longer than wide; buds sharp pointed.....*Salix nigra*
- 12. Leaves narrowly lanceolate to ovate, less than 7 times longer than wide; buds blunt 13
- 13. Stipules well-developed, glandular; leaves with blades long-attenuate, at least 3.6 times longer than wide, glabrous or with deciduous reddish hairs*Salix lucida*
- 13. Stipules absent or minute; leaves acute to acuminate, mostly less than 3.6 times longer than wide, glabrous 14
- 14. Leaves rarely much more than 3 times longer than wide, not especially leathery, and not pale beneath.....*Salix pentrandra*
- 14. Leaves often more than 3 times longer than wide, very leathery, usually somewhat pale beneath *Salix serissima*
- 10. Leaves distinctly pale, glaucous, or white-pubescent beneath 15
- 15. Leaves appressed-pubescent beneath 16
- 16. Long silky white hairs on leaves beneath; tree-size at maturity; many petioles glandular at summit..... *Salix alba*
- 16. Lower leaf surfaces thinly pubescent with white hairs often mixed with copper-reddish-tinged ones; shrubs to 3 m tall; petioles without glands..... *Salix petiolaris*
- 15. Leaves glabrous or glabrate below 17
- 17. Buds sharp-pointed; leaves ovate-lanceolate, long-attenuate; stipules minute, early deciduous.....*Salix amygdaloides*
- 17. Buds tongue-shaped; leaves linear, lanceolate, or ovate, and acute to long-attenuate; stipules conspicuous or absent..... 18
- 18. Mature leaves rounded, cuneate, or subcordate at base; petioles without glands; stipules often prominent; young leaves reddish 19
- 19. Leaves at least 4 times longer than wide, less than 2.2 cm wide, glabrous or ± pubescent along midvein, and thinly glaucous beneath *Salix eriocephala*

19. Leaves less than 4 times longer than wide, at least 2.2 cm wide, glabrous and thickly glaucous beneath*Salix myracoides*
18. Leaves tapered at base; petioles glandular or eglandular; stipules often absent; young leaves green 20
20. Leaves thick, leathery, lance-ovate, acuminate, up to 5 times longer than wide....
.....*Salix serissima*
20. Leaves not especially leathery, linear to lanceolate, acute to acuminate, at least 5 times longer than wide 21
21. Leaves glabrous; petioles at least 7 mm long 22
22. Branches pendulous; leaf blades linear, more than 7 times longer than wide, finely toothed; petioles pubescent.....*Salix babylonica*
22. Branches usually not pendulous; leaf blades lanceolate, less than 7 times longer than wide, coarsely toothed; petioles glabrous *Salix fragilis*
21. At least some leaves thinly pubescent along veins beneath; petioles often less than 7 mm long 23
23. Leaf blades sharply toothed, hairs copper- or reddish-colored; petioles without glands *Salix petiolaris*
23. Leaf blades bluntly toothed, hairs all white; petioles often glandular
.....*S. alba X fragilis*

[Note: *S. purpurea* is occasionally found escaped from cultivation. It is a 1 m to 2.5 m tall shrub with linear or spatula-shaped blue-green leaves, toothed near the top. Also, the Regionally-rare *S. sericea* may be found in boggy soils. *S. sericea* has toothed leaves that are pale and silky beneath and dark green above, and catkins that appear mostly before the leaves.]

Salsola*Salsola kali*

Salvia

1. Leaves chiefly basal (and up to 3 pair of cauline ones); corolla 1.5-2.5 cm long
..... *Salvia pratensis*

1. Stems leafy, usually with more than 3 pair of leaves; corolla less than 1.5 cm long 2
2. Corolla tube exerted from calyx; leaves lanceolate to ovate.....*Salvia nemorosa*
2. Corolla tube included in calyx; leaves linear to oblong-lanceolate, less than 2 cm wide
.....*Salvia reflexa*

Sambucus

1. Fruit black; inflorescence flat-topped, 10-40 cm wide; pith white *Sambucus canadensis*
1. Fruit red; inflorescence ovoid, 4-5 cm wide; pith brown*Sambucus pubens*

Samolus.....*Samolus valerandi*

Sanguinaria..... *Sanguinaria canadensis*

Sanicula

1. Styles recurved and conspicuously longer than the bristles on the fruit 2
2. Petals greenish-white; fruit sessile, 5-7 mm long; leaves usually 5-parted, but appearing 7-parted; plant with overall grayish appearance.....*Sanicula marilandica*
2. Petals yellow-green; fruit 3-4 mm long, on pedicels; leaves usually 3-parted, and appearing 5-parted; plants yellowish-green overall, not especially grayish *Sanicula gregaria*
1. Styles erect, inconspicuous, shorter than bristles on fruit 3
3. Staminate flowers on pedicels up to 3 times the length of the calyx; fruit globose, 4-5 mm long; leaves 3-parted, appearing 5-parted; terminal leaflet 2-3 times longer than wide.....
..... *Sanicula canadensis*
3. Staminate flowers on slender pedicels, at least 3 times the length of the calyx; fruit ellipsoid (tapering at both ends), 6-7 mm long; terminal leaflet 1.5-2 times longer than wide.
.....*Sanicula trifoliata*

Saponaria

1. Leaves narrowed to base, widest near middle; flowers in dense axillary and terminal clusters; calyx terete*Saponaria officinalis*
1. Leaves widest at the ± clasping base; flowers in loose, compound cymes; calyx 5-angled
.....*Saponaria vaccaria*

Sarracenia *Sarracenia purpurea*

Sassafras *Sassafras albidum*

Satureja

1. Cauline leaves broadly elliptic-ovate, less than 3 times longer than wide and about 1 cm or more wide; flowers subtended by long-ciliate linear bracts; plants aromatic... *Satureja vulgaris*
1. Cauline leaves linear to narrowly elliptic, or narrowly ovate, at least 4 times longer than wide and less than 1 cm wide; flowers without bracts; plants extremely aromatic
..... *Satureja arkansana*

Saxifraga*Saxifraga pensylvanica*

Scheuchzeria*Scheuchzeria palustris*

Schizachne*Schizachne purpurascens*

Schrankia *Schrankia nuttallii*

Scilla*Scilla siberica*

Scirpus

1. Spikelet single, erect, terminal, not exceeded by involucral bract..... 2

2. Culms $\pm$ terete, smooth; anthers 1.1-2.5 mm long; body of achenes 1.5-1.7 mm long
.....*Scirpus cespitosus*
2. Culms triangular, scabrous; anthers 0.6-1.1 mm long; achenes various..... 3
 3. Perianth bristles ciliate, about as long as the blunt achene; scales of spikelet up to 7;
achenes 1.6-1.8 mm long..... *Scirpus clintonii*
 3. Perianth bristles smooth, much longer than achenes; scales of spikelet at least 7;
achenes less than 1.5 mm long.....*Scirpus hudsonianus*
1. Spikelets 2-many, appearing lateral or terminal, and often exceeded by 1 or more involucre bracts..... 4
 4. Inflorescence appearing lateral, an erect bract appearing to be a continuation of the culm;
thus, the inflorescence seems to be bursting from the side of the culm..... 5
 5. Spikelets on distinct pedicels; culms terete, stout, 5-20 mm thick at base, often more
than 1 m tall 6
 6. Stigmas 3; achenes triangular, about 2.5 mm long; perianth bristles 2-4; scales pale
brown, glabrous*Scirpus heterochaetus*
 6. Stigmas 2; achenes flat on 1 side, rounded on other; bristles (4) 6; scales darker (red-
brown), pubescent at times..... 7
 7. Culms soft, easily compressed, pale blue-green; spikelets ovoid in open, lax
inflorescence; scales shiny, orange-brown, with greenish midrib; achenes 1.6-2.4 mm
long, barely covered by scales*Scirpus validus*
 7. Culms firm, dark olive green; spikelets ovoid to cylindrical in stiffer inflorescences;
scales dull, pale or whitish brown, midrib not standing out; achenes 2.2-2.7 mm long,
completely hidden by scales..... *Scirpus acutus*
5. Spikelets 1-few, crowded, $\pm$ sessile; culms triangular or terete 8
 8. Spikelets one, strongly ascending, the bract surpassing its tip by about 15 mm; leaves
many, capillary, submersed; culm to 1 mm thick *Scirpus subterminalis*
 8. Spikelets one or more, the bract surpassing tips by more than 15 mm; leaves stiff,
culms thicker 9
 9. Culms soft, terete or barely 3-angled, tufted; anthers 0.3-0.7 mm long 10

10. Longer culms rarely more than 4 times the length of the inflorescence bract; bracts appear as straight continuation of culm; achene $\pm$ flat; perianth bristles absent, or decidedly shorter than achene..... *Scirpus smithii*
10. Longer culms at least 4 times the length of the inflorescence bract; bracts often bent or divaricate, so that culm and bract give a kinked appearance; achene $\pm$ rounded on both sides; perianth bristles, if any, surpass the achene *Scirpus purshianus*
9. Culms sharply triangular; anthers 1-3.1 mm long *Scirpus pungens*
4. Inflorescence terminal, not appearing lateral..... 11
11. Spikelets 15-36 mm long, 5-9 mm wide; achenes 3-5 mm long; anthers 4-5 mm long; scales $\pm$ puberulent, tipped with a prominent curved awn; culms stout, sharply triangular*Scirpus fluviatilis*
11. Spikelets, achenes (0.9-1.2 mm long), and anthers (0.5-1.3 mm long) smaller; scales glabrous; culms terete or somewhat triangular 12
12. Perianth bristles $\pm$ straight, about as long as achenes, minutely retrorsely barbed; spikelets grouped into $\pm$ globose heads; base of involucre not blackened; plants solitary or few 13
13. Leaf sheaths all green; stigmas 3; summit of culm nearly smooth, slightly scabrous....*Scirpus atrovirens*
13. Leaf sheaths strongly red-tinged; stigmas 2; summit of culm smooth *Scirpus microcarpus*
12. Bristles much curled, exceeding achene, smooth; spikelets solitary or in groups of 2-5; plants usually in dense clumps; base of involucre blackened or not 14
14. Bristles inconspicuous, about twice as long as achene; spikelets cylindric, mostly solitary; scales orange-brown with conspicuous green midrib; involucre not blackened at base*Scirpus pendulus*
14. Bristles conspicuously exceeding scales and achenes; spikelets short-ovoid to nearly round, solitary or in groups of 2-5; scales various, but without conspicuous midrib; involucre blackened (reddened) at base*Scirpus cyperinus*

Scleria

1. Spikelets in terminal clusters; achenes supported by a whitish, foam-like basal disk; achenes 3 mm long, smooth; leaves 3-9 mm wide *Scleria triglomerata*
1. Spikelets in an interrupted spike; basal disk wanting (or, at most, inconspicuous); achenes wrinkled, 1-2 mm long; leaves up to 1 mm wide *Scleria verticillata*

Sclerochloa.....*Sclerochloa dura*

Scrophularia

1. Corolla dull; sterile stamen brownish-purple; capsules ovoid, glossy, 4-7 mm long; leaves evenly toothed, teeth $\pm$ rounded; leaf bases $\pm$ subcordate, but not decurrent; stem face flat to grooved; plants maturing in late summer *Scrophularia marilandica*
1. Corolla glossy; sterile stamen greenish-yellow; capsules subglobose, dull, 7-9 mm long; leaves coarsely toothed; teeth long acuminate; leaf bases $\pm$ rounded or cuneate, decurrent (slightly winged); stem face flat to convex; plants mature early summer
..... *Scrophularia lanceolata*

Scutellaria

1. Flowers all in axillary or terminal racemes; larger leaves with petioles 4 or more mm long.... 2
 2. Racemes chiefly axillary; flowers 5-8 mm long..... *Scutellaria lateriflora*
 2. Racemes chiefly terminal; flowers 11-20 mm long *Scutellaria ovata*
1. Flowers solitary in axils of cauline leaves; larger leaves with petioles wanting or less than 4 mm long 3
 3. Corolla 16-22 mm long; mid-cauline leaves 2-8 cm long, including a distinct petiole
..... *Scutellaria galericulata*
 3. Corolla 6-11 mm long; mid-cauline leaves 1-2 cm long, $\pm$ sessile *Scutellaria leonardii*

Secale.....*Secale cereale*

Sedum

1. All leaves minute, less than 6 mm long; petals white, pale pink, or yellow*Sedum acre*
1. Leaves larger; petals pink, white, or rose 2
 2. Leaves sessile, coarsely toothed; flowers deep rose-purple; leaves alternate on the flowering stems.....*Sedum purpureum*
 2. Sessile or on short petioles, shallowly to bluntly toothed; flowers white or pinkish; at least the uppermost leaves opposite *Sedum alboroseum*

[Note: Other garden escapes, such as *S. spectabile* and *S. ternatum*, may be found on occasion.]

Selaginella

1. Leaves numerous, uniform, many-ranked, subulate, short-awned*Selaginella rupestris*
1. Leaves relatively fewer, of two kinds, 4-ranked, in two planes, ovate, acute, or cuspidate
..... *Selaginella eclipses*

Senecio

1. Rays absent; stems with well-developed leaves $\pm$ throughout; annuals.....*Senecio vulgaris*
1. Rays present; stems leafy below, the median and upper leaves much reduced; principal leaves chiefly basal; perennials 2
 2. Blades of basal leaves of flowering stems mostly 3 or more times longer than wide; terminal lobe of lowest leaf $\pm$ linear, rarely more than 1 cm wide*Senecio pauperculus*
 2. Blades of basal leaves less than 3 times longer than wide; terminal lobe of lowest leaf lanceolate to ovate, often more than 1 cm wide 3
 3. Blades of basal leaves cuneate to rounded at base, about 1.5 times longer than wide; base of involucre very floccose tomentose; terminal lobe of lower cauline leaves usually distinctly elongate, different from the laterals*Senecio plattensis*
 3. Blades of basal leaves rounded to cordate at base, less than 1.5 times longer than wide; base of involucre nearly glabrous; terminal lobe of lower cauline leaves often not much longer than wide, similar in shape to laterals..... 4

4. Basal leaves long-stalked, cordate, less than 1.5 times longer than wide; stem leaves never clasping; vegetative reproduction by horizontal rhizomes *Senecio aureus*
4. Basal leaves narrowly oval, not tapering to stalk, at least 1.5 times longer than wide, subcordate to abruptly contracted to the petiole; stem leaves smaller towards tip, sometimes clasping; vegetative reproduction by adventitious shoots on roots
.....*Senecio pseud aureus*

Setaria

1. Bristles of involucre, top of culm, and panicle axis with downward-facing barbs; panicle branches appearing whorled and sometimes the lower branches separated from the rest of the spike *Setaria verticillata*
1. Bristles of involucre, top of culm, and panicle axis with upward-facing barbs; panicle very compact 2
2. Fertile lemmas with strong, horizontal wrinkles; bristles of spikelet turning yellow-orange; sheaths glabrous on the margins *Setaria glauca*
2. Fertile lemmas smooth to merely rugose; bristles of spikelet turning green or purple; sheaths ciliate on the margins 3
3. Fertile lemma dark yellow or brown when mature; spikelets persistent on plant; panicle sometimes lobed *Setaria italica*
3. Fertile lemma pale green or tan when mature; spikelets falling when mature; panicle cylindrical 4
4. Leaves glabrous above; panicle erect (but may be nodding slightly at the tip); rachis with short and longer, villous hairs; spikelets 1.8-2.5 mm long *Setaria viridis*
4. Leaves usually hairy above; panicle strongly nodding; rachis with dense, villous hairs; spikelets 2.5-3.0 mm long *Setaria faberi*

Shepherdia *Shepherdia canadensis*

Sicyos *Sicyos angulatus*

Silene

1. Calyx glabrous 2
2. Upper internodes often sticky; petals pink, rose, or white, or absent; calyx with 10 prominent veins. 3
3. Calyx 5-9 mm long; capsule on very short (1 mm) stipe; petals short or wanting; leaves sessile, but not clasping *Silene antirrhina*
3. Calyx 12-16 mm long; capsule on stipe 7-8 mm long; petals showy (1 cm or more wide); leaves $\pm$ clasping *Silene armeria*
2. Sticky internodes lacking; petals white; calyx with 20 nerves, sometimes obscure 4
4. Calyx only slightly inflated; upper bracts minutely ciliate; stipe of capsule about 1.5 mm tall, minutely puberulent; leaves blue-green *Silene cserei*
4. Calyx much inflated; upper bracts $\pm$ glabrous; stipe of capsule 1.5-3.5 mm long, glabrous; leaves greenish *Silene cucubalus*
1. Calyx pubescent 5
5. Leaves whorled; petals deeply fringed *Silene stellata*
5. Leaves opposite; petals at most once divided 6
6. Flowers in 1-sided spikes or racemes; flowers (or branches) one per node; calyx 10-14 mm long *Silene dichotoma*
6. Flowers in panicle or cyme, not especially 1-sided; flowers (or branches) 2-3 per node; calyx 14-27 mm long *Silene noctiflora*

Silphium

1. Leaves alternate, deeply pinnately divided; stems leafy *Silphium laciniatum*
1. Leaves alternate, opposite, or basal, entire or toothed, but not deeply divided 2
2. Leaves large, toothed, basal, very roughened *Silphium terebinthinaceum*
2. Leaves smaller, cauline, opposite or alternate, toothed or not, roughened or not 3

- 3. Leaves connate-perfoliate, toothed; stems square *Silphium perfoliatum*
- 3. Leaves sessile, toothed or not; stems $\pm$ terete *Silphium integrifolium*

Sisymbrium

- 1. Pods 1-1.5 cm long, on very short pedicels, closely appressed to stem; leaves pinnately divided into 5-13 lobes; petals 3 mm long *Sisymbrium officinale*
- 1. Pods 3-10 cm long, on slender pedicels, spreading or ascending; leaves various; petals 5-8 mm long 2
- 2. Lower stem spreading-hirsute; upper leaves with linear divisions; petals pale yellow, 6-8 mm long; pods 7-10 cm long, on ascending pedicels *Sisymbrium altissimum*
- 2. Lower stem retrorsely hirsute; upper leaves with lanceolate divisions; petals bright yellow, 5-6 mm long; pods 3 cm long on spreading pedicels *Sisymbrium loeselii*

Sisyrinchium

- 1. Plants appearing to have cauline leaves; spathes on peduncles arising from a leaflike bract, thus stem appearing branched; fruit 3.5-6mm long 2
- 2. Stem widely winged, 3-4 mm wide; fruit dark brown to black..... *Sisyrinchium angustifolium*
- 2. Stem very narrow, less than 2 mm wide; fruit tan to $\pm$ white *Sisyrinchium strictum*
- 1. Plants scapose; spathes sessile on a simple, unbranched stem; fruit less than 4mm long 3
- 3. Fruit tan to light brown; inflorescence of 2 clusters at top of stem; inner bracts 2 (3). *Sisyrinchium albidum*
- 3. Fruit light to dark brown; inflorescence in one cluster near top of stem; inner bract one *Sisyrinchium campestre*

Sium *Sium suave*

Smilacina

- 1. Leaves 1-4, sheathing *Smilacina trifolia*

1. Leaves more than 4, clasping or not, but not sheathing 2
2. Perianth segments 1-2 (3) mm long; inflorescence a panicle; flowers and fruit on short pedicels; fruit often dotted; flowers numerous; leaves oblong-elliptic, deeply veined, sessile. *Smilacina racemosa*
2. Perianth segments 3-5 mm long; inflorescence a raceme; flowers and fruit on long pedicels; fruit striped; flowers few; leaves narrow, lanceolate, clasping, not as deeply veined *Smilacina stellata*

Smilax

1. Stems woody, armed *Smilax hispida*
1. Stems herbaceous, unarmed 2
2. Climbing vines, with tendrils, much exceeding 1 m tall (to about 3 m) at maturity; branching freely; peduncles borne in leaf axils *Smilax lasioneura*
2. Erect herbs, occasionally with tendrils on upper part of stem; typically less than 1 m tall, never branching; peduncles borne in axils of bladeless bracts or of lowest leaves 3
3. 25+ flowers per umbel; plants over 0.5 m tall; tendrils among upper nodes; petioles often longer than blades (and often surpassed by flowering peduncles) *Smilax illinoensis*
3. Fewer than 25 flowers per umbel; plants less than 0.5 m tall; tendrils scarce; petioles usually shorter than blades (and often exceeding the flowering peduncles) *Smilax ecirrhata*

Solanum

1. Plants spiny or prickly; pubescence stellate 2
2. Calyx very spiny, fully enclosing berry at maturity; corolla yellow; leaves deeply lobed to compound *Solanum rostratum*
2. Calyx without spines, not enclosing berry; corolla white to purple; leaves simple or shallowly lobed *Solanum carolinense*
1. Plants without spines or prickles; pubescence of simple hairs 3

3. Sub-shrub vine, with stems elongate and sprawling or climbing; corolla purple; fruit red
..... *Solanum dulcamara*
3. Erect herbs; corolla white; fruit green or black 4
4. Plants covered with $\pm$ dense, spreading, glandular hairs; fruit dark green to dark brown
..... *Solanum sarachoides*
4. Plants at most sparsely pubescent with short, appressed, eglandular hairs; fruit black
..... *Solanum americanum*

Solidago

1. Leaves canescent on both surfaces; achenes hairy; upper leaves sessile; rare escape from cultivation *Solidago mollis*
1. Hairs may be present on leaves, but not especially canescent; leaves and achenes various... 2
2. Heads in terminal, $\pm$ flat-topped corymbs 3
3. Lower leaves well developed, persistent, 1 or more cm wide, with a tapered petiole; upper and middle leaves reduced, $\pm$ sessile and $\pm$ clasping; glandular dots wanting 4
4. Stems and leaves densely pubescent *Solidago rigida*
4. Stems and leaves glabrous..... 5
5. Pedicels and inflorescence branches densely rough-hirsute; many leaves folded lengthwise; larger leaves often 3-nerved; upper leaves outwardly arching
..... *Solidago riddellii*
5. Pedicels and inflorescence glabrous; leaf blades flat, with one horizontal vein; upper leaves point upward *Solidago ohioensis*
3. Leaves all similar, bases sessile, never clasping; lower leaves soon deciduous, less than 1 cm wide; leaves with obvious glandular dots..... 6
6. Larger leaves 4 or more cm wide, at least 3 main veins easily visible; stems glabrate or glabrous..... *Solidago graminifolia*
6. Leaves up to 4 mm wide, 1 (3) main vein evident; stems glabrous..... 7
7. Main cauline leaves up to 2 mm wide, usually subtending axillary fascicles

- *Solidago tenuifolia*
7. Larger cauline leaves 2 or more cm wide; axillary fascicles wanting, or only poorly developed *Solidago gymnospermoides*
2. Leads in axillary clusters or terminal inflorescence (racemes, thyrse, panicle), but not in flat-topped corymbs 8
8. Heads in short axillary clusters, usually much exceeded by subtending leaves; stems and leaves $\pm$ glabrous; achenes $\pm$ densely pubescent; leaves decreasing in size from mid-stem to base; upper leaves sharply toothed 9
9. Stems glaucous with waxy bloom, straight or arching; leaves sessile, narrowly elliptic to lanceolate (less than 3 cm wide) *Solidago caesia*
9. Stems green, not glaucous, $\pm$ zigzag; leaves on winged petiole, broadly ovate (at least 3 cm wide)..... *Solidago flexicaulis*
8. Heads in terminal, paniculate, thyrseoid, or racemose clusters; subtending leaves not exceeding inflorescence; stems and leaves glabrous, pubescent, or scabrous; achenes and leaves various..... 10
10. Cauline leaves not much reduced in size from base to summit 11
11. Stem greatly pubescent, at least above middle *Solidago altissima*
[Note: For SEWRPC purposes, this includes *S. canadensis*; involucre of *S. canadensis* are 2-3 mm long, while those of *S. altissima* are 3.1-5 mm.]
11. Stems $\pm$ glabrous below inflorescence 12
12. Leaves pinnately veined, reticulate; primary lateral veins not parallel to midvein
..... *Solidago ulmifolia*
12. Leaves 3-veined, not especially reticulate; lateral veins 2, parallel to midvein
..... *Solidago gigantea*
10. Cauline leaves gradually reduced in size from base to summit..... 13
13. Stems pubescent $\pm$ throughout, or leaves harshly scabrous above, or both 14
14. Heads spirally arranged in terminal and axillary racemes, not second 15
15. Rays white or cream when fresh *Solidago bicolor*

15. Rays deep yellow.....*Solidago hispida*
14. Heads secund along upper sides of panicle branches 16
16. Cauline leaves not rugose, minutely scabrous above; blades of lower leaves 4.5 times or more longer than wide, long-tapered into a petiole and sub-entire
.....*Solidago nemoralis*
16. Cauline leaves rugose, harshly scabrous above, blades ovate, less than 4.5 times longer than wide, strongly toothed; lower leaves at least 3.5 times longer than wide..... *Solidago patula*
13. Stems $\pm$ glabrous below inflorescence; leaves smooth or weakly scabrous above .. 17
17. Middle cauline leaves less than 4.5 times longer than wide and sharply and regularly toothed; heads secund in panicles *Solidago ulmifolia*
17. Middle cauline leaves either more than 4.5 times longer than wide, or sub-entire to irregularly toothed, or both; heads secund in panicles or thyrses 18
18. Leaves thick, fleshy, entire, glabrous; midvein conspicuous; heads with 20+ flowers; rays 8-10..... *Solidago sempervirens*
18. Leaves various, but not thick and fleshy; heads and rays various..... 19
19. Pedicels and inflorescence branchlets minutely hairy; inflorescence a thyrse; heads not secund; heads to 15-flowered; rays up to 8 20
20. Lower leaves less than 7 times longer than wide, not sheathing; cauline leaves at least 25; rays at least 6*Solidago speciosa*
20. Lower leaves at least 7 times longer than wide, petioles $\pm$ sheathing; cauline leaves up to 25; rays up to 6..... *Solidago uliginosa*
19. Inflorescence and pedicels $\pm$ glabrous; heads strongly secund; leaves never clasping; heads 15+-flowered; rays 8 or more 21
21. Lower leaves usually less than 2.5 cm wide, absent at flowering time; achenes glabrous to sparsely hairy.....*Solidago missouriensis*
21. Lower leaves often 2.5 or more cm wide, often still present at flowering time; achenes short-hairy*Solidago juncea*

Sonchus

1. Flowering heads about 2.5-5 cm broad; largest involucre 14-18 mm long; upper leaves clasp stem partially with strongly recurved lobes; flowers bright yellow; glandular hairs often present on bracts and stalks *Sonchus arvensis*
1. Flowering heads less than 2.5 cm wide; largest involucre 8-13 mm long; stems smooth; lobes various; flowers pale yellow 2
2. Leaf bases with $\pm$ acute (arrow-shaped) lobes, not recurved; achenes densely tuberculate; lower leaves deeply lobed (with a large triangular terminal lobe); leaves slightly prickly
..... *Sonchus oleraceus*
2. Leaf bases with large, conspicuous, rounded, recurved lobes; mature achenes smooth except for 3 (5) prominent ribs on each face; leaves often unlobed; leaves very prickly.....
..... *Sonchus asper*

Sorbaria *Sorbaria sorbifolia*

Sorbus

1. Leaflets lanceolate, glabrous; flowers about 6 mm diameter; fruit 4-5 mm diameter.....
..... *Sorbus americana*
1. Leaflets oblong to oblong-lanceolate, $\pm$ pubescent beneath 2
2. Leaflets short-acuminate, sparsely pubescent beneath.....*Sorbus decora*
2. Leaflets acute, not acuminate, tomentose beneath *Sorbus aucuparia*

Sorghastrum *Sorghastrum nutans*

Sorghum

1. Pedicelled spikelet shorter than the fertile, sessile spikelet; spikelets not dropping from pedicels when mature; leaves over 2 cm wide..... *Sorghum bicolor*
1. Pedicelled spikelet longer than the fertile, sessile spikelet; spikelets dropping from pedicels when mature; leaves usually under 2 cm wide *Sorghum halepense*

Sparganium

1. Stigmas 2; achenes at least 3.5 mm thick at maturity, shaped like an inverted pyramid.....
.....*Sparganium eurycarpum*
1. Stigma 1; achenes less than 3.5 mm thick at maturity, spindle-shaped 2
2. Inflorescence with 1 central axis without lateral branches; pistillate heads 1-4; leaves 3-7 mm wide; leaves stiffly erect and much surpassing the inflorescence ...*Sparganium emersum*
2. Inflorescence with branches and a central axis; pistillate heads 3 or more; leaves less than 7 mm wide, stiffly erect and thickly triangular*Sparganium androcladum*

Spartina*Spartina pectinata*

Specularia*Specularia perfoliata*

Spergularia*Spergularia media*

Sphenopholis

1. Second glume swollen so that it is as wide as long, truncate and shallowly 2-lobed at tip.....
.....*Sphenopholis obtusata*
1. Second glume half as wide as long or less, obtuse to acute at tip *Sphenopholis intermedia*

Spiraea

1. Flowers roseate (white); leaves densely tomentose beneath.....*Spiraea tomentosa*
1. Flowers white; leaves $\pm$ glabrous *Spiraea alba*

Spiranthes

1. Lip less than 6 mm long 2
2. Floor of lip with bright yellow or green strip*Spiranthes lacera*

- 2. Floor of lip white or creamy yellow throughout..... *Spiranthes casei*
- 1. Lip 6-11 mm long 3
- 3. Lip fiddle-shaped; sepals and petals form a hood; inflorescence heavy, thick, weakly spiraled.....*Spiranthes romanzoffiana*
- 3. Lip not fiddle-shaped; sepals and petals not forming a distinct head; spikes strongly spiraled 4
- 4. Leaves absent at flowering time; lip $\pm$ deflexed; central portion of underside of lip yellow; flowers strongly fragrant*Spiranthes magnicamporum*
- 4. Leaves present at flowering time; lip white or uniformly pale cream; not strongly fragrant. 5
- 5. Flowers cream or yellowish; lower leaves usually withering at flowering time.....
..... *Spiranthes casei*
- 5. Flowers white; leaves normally in good condition at flowering time *Spiranthes cernua*

Spirodela *Spirodela polyrrhiza*

Sporobolus

- 1. Spikelets less than or equal to 3 mm long 2
- 2. Top of leaf sheath with dense tuft of long hairs on outside..... *Sporobolus cryptandrus*
- 2. Top of leaf sheath lacking such hairs on outside (may have some hairs on inside of sheath) *Sporobolus neglectus*
- 1. Spikelets greater than or equal to 3.5 mm long 3
- 3. Panicle exserted and widely spreading at maturity; the larger glume equaling or longer than the lemma.....*Sporobolus heterolepis*
- 3. Most of or at least the base of panicle enclosed in the upper leaf sheath; glumes shorter than the lemma..... 4
- 4. Lemma and palea pubescent; palea longer than the lemma*Sporobolus vaginiflorus*

4. Lemma and palea glabrous; palea shorter than the lemma.....*Sporobolus asper*

Stachys

1. Internodes pubescent both on sides and angles; calyx pubescent throughout; leaves sessile, or with short (about 4 mm) petioles.....*Stachys palustris*
1. Internodes glabrous, or pubescent only on angles; calyx glabrous, or pubescent mostly on nerves and lobes; petioles 3-25 mm long.....*Stachys tenuifolia*

- Staphylea****Staphylea trifolia*

Stellaria

1. Leaves ovate to obovate, $\pm$ triangular; flowers in small, open leafy cymes, or solitary.....
.....*Stellaria media*
1. Leaves narrow, $\pm$ linear; flowers in branched dichotomous cymes 2
2. Bracts herbaceous; sepals 6-7 mm long *Stellaria holostea*
2. Bracts scarious; sepals 3.5-5.5 mm long.....
3. Flowers few; sepals 3.5-4.5 mm long, weakly 3-nerved; inflorescence axillary; leaves linear, scarcely tapered..... *Stellaria longifolia*
3. Flowers many; sepals 4.5-5.5 mm long, strongly 3-nerved; inflorescence terminal; leaves widest at base or at least below middle.....*Stellaria graminea*

Stipa

1. Leaf sheath with ring of white hairs at the summit; glumes 0.7-1.0 cm long; lemmas 0.5-0.6 cm long..... *Stipa viridula*
1. Leaf sheath lacking ring of white hairs at summit; glumes 1.5-5.0 cm long; lemmas 8-25 cm long..... 2
2. Lemmas dark brown when mature, 1.5-2.5 cm long; glumes 3.0-5.0 cm long ... *Stipa spartea*

2. Lemmas white or pale brown when mature, 0.8-1.2 cm long; glumes 1.5-2.0 cm long.....
 *Stipa comata*

Streptopus*Streptopus roseus*

Suaeda *Suaeda calceoliformis*

Symphoricarpos

1. Corolla 3-4 mm long; flowers pinkish-purple; fruit red (whitish)*Symphoricarpos orbiculatus*

1. Corolla 6-8 mm long; fruit white or pinkish 2

2. Corolla lobes equaling tube; styles and stamens exserted; styles 3 or more mm long;
 flowers pinkish-white.....*Symphoricarpos occidentalis*

2. Corolla lobes half as long as tube; styles and stamens included; styles less than 3 mm long;
 flowers pink; fruit white..... *Symphoricarpos albus*

Symphytum

1. Upper leaves strongly decurrent; calyx 6-9 mm long at anthesis; pubescence merely
 spreading..... *Symphytum officinale*

1. Upper leaves barely decurrent; calyx 3-4 mm long at anthesis; pubescence partly of recurved
 prickles *Symphytum asperum*

Symplocarpus*Symplocarpus foetidus*

Syringa*Syringa reticulata*

'T'

Taenidia*Taenidia integerrima*

Talinum*Talinum rugospermum*

Tanacetum

- 1. Ray flowers absent; disk flowers yellow and 5-10 mm in diameter *Tanacetum vulgare*
- 1. Ray flowers present, white; disk flowers yellow; entire flower head up to 20 mm in diameter .
..... *Tanacetum parthenium*

Taraxacum

- 1. Seeds red-brown; leaves cut deeply to the midrib; phyllaries with a thickening at the apex
..... *Taraxacum laevigatum*
- 1. Seeds gray to brown; leaves less deeply cut; phyllaries lacking a thickening at the apex
..... *Taraxacum officinale*

Taxus *Taxus canadensis*

Tephrosia *Tephrosia virginiana*

Teucrium *Teucrium canadense*

Thalictrum

- 1. Upper leaves with long petioles; leaflets with 4 or more teeth each; blooming in April or May
..... *Thalictrum dioicum*
- 1. Upper leaves sessile; leaflets with 3 or fewer teeth each; blooming in June or July 2
- 2. Leaflets more or less pubescent on the undersides with multicellular hairs
..... *Thalictrum dasycarpum*
- 2. Undersides of leaflets and fruits with sessile or short-stalked glands and foetid scent when
crushed..... *Thalictrum revolutum*

Thaspium *Thaspium trifoliatum*

Thelypteris *Thelypteris palustris*

Thlaspi..... *Thlaspi arvense*

Thuja *Thuja occidentalis*

Thymus..... *Thymus praecox*

Tilia *Tilia americana*

Tofieldia *Tofieldia glutinosa*

Tomanthera *Tomanthera auriculata*

Torilis *Torilis japonica*

Tradescantia *Tradescantia ohiensis*

Tragopogon

1. Ray flowers purple; pappus brownish in color *Tragopogon porrifolius*

1. Ray flowers yellow; pappus white in color 2

2. Ray flowers pale yellow, shorter than the phyllaries; pedicels dilated beneath the heads;
leaves straight *Tragopogon dubius*

2. Ray flowers bright yellow, equaling or longer than the phyllaries; pedicels not dilated
beneath the heads; leaves curled at the tips *Tragopogon pratensis*

Triadenum..... *Triadenum fraseri*

Trichostema *Trichostema brachiatum*

Trientalis *Trientalis borealis*

Trifolium

1. Petals yellow 2

2. All three leaflets sessile, with petiolules less than 1 mm long; the length of the stipules about the same length as the petiole of the whole leaf; flowering head 12-15 mm in diameter..... *Trifolium aureum*

2. Two lateral leaflets sessile, terminal leaflet on a petiolule more than 1 mm long; the length of the stipules about half as long as the petiole of the whole leaf; flowering head 9-12 mm in diameter..... *Trifolium campestre*

1. Petals white, red, or pink 3

3. Flowers on pedicels 0.5 mm or more long, becoming reflexed at maturity 4

4. Plant creeping; petals usually all white; stipules truncate with a bristle-like tip up to 2 mm long; calyx lobes with broad, scarious margins..... *Trifolium repens*

4. Plant mostly erect; petals usually white and pink; stipules gradually tapering to a tip; calyx lobes with narrow, scarious margin or none..... *Trifolium hybridum*

3. Flowers sessile, not reflexing at maturity 5

5. Inflorescence sessile or on a short peduncle with a pair of opposite leaves just beneath; calyx teeth with a few hairs or glabrous..... *Trifolium pratense*

5. Inflorescence on a long peduncle coming from the axil of an alternate leaf; calyx teeth densely hairy 6

6. Corollas red, the same length or longer than the calyx teeth; leaflets broad.....
..... *Trifolium incarnatum*

6. Corollas white or pink, much shorter and hidden by the calyx teeth; leaflets narrow.....
..... *Trifolium arvense*

Triglochin

1. Six stigmas per flower; plant not stoloniferous; fruits oblong and rounded at the base
..... *Triglochin maritima*
1. Three stigmas per flower; plant stoloniferous; fruits club-shaped, narrower at the base
..... *Triglochin palustris*

Trillium

1. Flower sessile and upright; petals maroon; leaves with white speckles *Trillium recurvatum*
1. Flower on a stalk; petals white or pinkish with age; leaves not speckled 2
2. Plant less than 10 cm tall; leaves more than two times as long as broad with rounded tips
and on distinct petioles *Trillium nivale*
2. Plant greater than 10 cm tall; leaves broader and with pointed tips, at most subsessile but
usually sessile 3
3. Flower stalks erect, holding the flowers above the leaves; petals at least 3.5 cm long and
longer than the sepals *Trillium grandiflorum*
3. Flowers stalks usually bent, holding flowers at or below the leaves; petals less than 3.5
cm long and about the same length as the sepals 4
4. Anthers large, 6-15 mm long, and yellowish; on short filaments, less than 2 mm long
and less than a quarter of the length of the anthers *Trillium flexipes*
4. Anthers small, less than 7 mm long, and pink; on longer filaments that are as long as or
at least half as long as the anthers *Trillium cernuum*

Triosteum

1. Main leaves perfoliate; stem covered in short (<0.5mm long), glandular hairs; styles
protruding out of the corolla tubes *Triosteum perfoliatum*
1. Main leaves tapered at the base, 1 or 2 pairs may be narrowly connate; stem with long (1-
2mm) eglandular hairs and with some shorter, glandular hairs; styles contained within the
corolla tubes *Triosteum aurantiacum*

Triplasis *Triplasis purpurea*

Trisetum *Trisetum melicoides*

Tsuga *Tsuga canadensis*

Typha

1. Leaves wide, 6-15 mm; male and female portions of the flowering spike adjoined; summit of leaf sheath lacking auricles *Typha latifolia*

1. Leaves narrow, 3-8 mm; male and female portions of the flowering spike separated; summit of leaf sheath with prominent auricles *Typha angustifolia*

‘U’

Ulmus

1. Leaf blades 3-7 cm long; bark on trunk with orange color layer in fissures, bark solid dark brown in cross-section *Ulmus pumila*

1. Leaf blades 7-18 cm long; bark on trunk lacking orange layer in fissures, bark solid brown or with white and brown stripes in cross-section 2

2. Leaves more or less smooth on both sides; branches with corky ridges; lower branches strongly drooping *Ulmus thomasii*

2. Leaves rough on one or both sides; branches without corky ridges; lower branches not drooping 3

3. Leaves usually scabrous above and smooth beneath; bark with white and brown stripes in cross-section; buds not covered in rusty brown pubescence, either glabrous or slightly hairy *Ulmus americana*

3. Leaves usually scabrous and/or hairy on both sides; bark solid brown in cross-section; buds covered in rusty-brown pubescence *Ulmus rubra*

Urtica *Urtica dioica*

Utricularia

1. Stems erect and definitely anchored in a substrate (sand, mud, etc.) with one scape; corolla yellow, much longer than the calyx *Utricularia cornuta*
1. Stems usually drifting free in water with several scapes; corolla yellow or purple 2
2. Corolla purple; leaves whorled with bladders at their tips; no scape scales *Utricularia purpurea*
[Note: The very rare *Utricularia resupinata* also has a purple corolla, but is rooted in the substrate and is $\pm$ leafless.]
2. Corolla yellow; leaves alternate with bladders at the sides of or at the base of the leaf segments, or on separate branches; has scape scales 3
3. Leaf segments flattened, with midribs; bracts with basal lobes 4
4. Bladders on separate stems from the leaves; leaf margins with small teeth throughout.. *Utricularia intermedia*
4. Bladders on the same stems as the leaves; leaves with teeth only at apex..... *Utricularia minor*
3. Leaf segments thread-like; bracts with or without basal lobes..... 5
5. Bracts without basal lobes; 1-2 flowers per scape; leaves forked 1-2 times; plant slender-looking *Utricularia gibba*
5. Bracts with basal lobes; 2-20 flowers per scape; leaves forked many times; plant bushy-looking..... *Utricularia vulgaris*

Uvularia *Uvularia grandiflora*

'V'

Vaccinium

1. Trailing or creeping stems with evergreen leaves 2

- 2. Pedicel of fruit with red bracts borne at the middle of the pedicel or closer to the fruit;
leaves 3-8 mm long *Vaccinium oxycoccos*
- 2. Pedicel of fruit with green bracts borne above the middle of the pedicel closer to the stem;
leaves 6-18 mm long *Vaccinium macrocarpon*
- 1. Low shrubs with deciduous leaves 3
- 3. Leaves pubescent across the entire undersurface; young twigs pubescent; leaves entire
..... *Vaccinium myrtilloides*
- 3. Leaves glabrous beneath or with some pubescence along the veins on the undersurface;
young twigs glabrous or with only a few hairs; leaves with fine serrations.....
..... *Vaccinium angustifolium*

Valeriana

- 1. Basal leaves with 5 or more pairs of leaflets; cauline leaves pinnately divided.....
..... *Valeriana officinalis*
- 1. Basal leaves entire or with 2 lower lobes; cauline leaves pinnately divided..... 2
- 2. Leaf margins strongly ciliate; plant with large taproot; inflorescence longer than wide.....
..... *Valeriana edulis*
- 2. Leaf margins glabrous or sparsely ciliate; plant rhizomatous; inflorescence usually wider
than long *Valeriana uliginosa*

Valerianella *Valerianella chenopodifolia*

Vallisneria *Vallisneria americana*

Verbascum

- 1. One flower per each axil of a bract; inflorescence of widely-spaced flowers; stem glabrous or
with sparse glandular hairs near the top of the plant..... *Verbascum blattaria*
- 1. Two or more flowers per each axil of a bract; inflorescence of compact flowers; stem and
leaves densely pubescent with stellate hairs 2

2. Cauline leaves not decurrent or only slightly, clasping the stem; leaves ovate with crenulate margins *Verbascum phlomoides*
2. Cauline leaves with decurrent bases; leaves entire or crenate, lanceolate 3
 3. Corolla 3-5 cm wide; upper leaves with a narrow, prolonged tip ... *Verbascum densiflorum*
 3. Corolla 1.2-2.5 cm wide; upper leaves merely acute to rounded *Verbascum thapsus*

Verbena

1. Inflorescence spikes 1.2 cm wide or more; plant spreading; leaves pinnately lobed 2
 2. Bracts much exceeding the calyx; corolla inconspicuous, less than 1 cm long; style shorter than the calyx..... *Verbena bracteata*
 2. Bracts shorter than the calyx; corolla showy, over 1 cm long; style longer than the calyx, conspicuous once the corolla withers *Verbena canadensis*
1. Inflorescence spikes less than 0.8 cm wide; plant erect; leaves with at most 1-2 lobes at the base of the leaf 3
 3. Leaves linear-lanceolate; up to 1.5 cm wide; stem with scattered, appressed hairs or glabrous..... *Verbena simplex*
 3. Leaves broader; 2-6.5 cm wide; stem with more and spreading hairs 4
 4. Plant downy-pubescent; leaves sessile; calyx over 3.5 mm long; corolla light blue to lavender *Verbena stricta*
 4. Plant with less pubescence; leaves on petioles over 5 mm long; calyx less than 3.5 mm long; corolla white or dark blue..... 5
 5. Corolla white; flowers well-separated along the axis of the inflorescence; leaves all simple..... *Verbena urticifolia*
 5. Corolla dark blue; flowers overlapping along the axis of the inflorescence; some leaves with one or two lobes at the base *Verbena hastata*

Verbesina *Verbesina alternifolia*

Vernonia *Vernonia fasciculata*

Veronica

1. Flowers in racemes arising from the axils of leaves 2
2. Stems glabrous or with minute glands; plant a native species..... 3
3. Opposite leaves with short petioles *Veronica americana*
3. Opposite leaves sessile 4
4. Flowering racemes mostly alternately arranged on the stem, coming from the axil of only one of a pair of leaves; leaves with clasping bases; leaves lanceolate.....
..... *Veronica anagallis-aquatica*
4. Flowering racemes mostly opposite, one coming from each axil of a pair of leaves; leaves with merely sessile bases; leaves linear *Veronica scutellata*
2. At least the upper part of the stem with pubescence; plant an introduced species 5
5. Flowers on long pedicels 2.5-7.5 mm long in fruit *Veronica chamaedrys*
5. Flowers sessile or on pedicels up to 2.5 mm long in fruit 6
6. Leaves long, greater than 5 cm, with sharp teeth; corolla tube about equal to the length of the lobes *Veronica longifolia*
6. Leaves shorter, entire or crenulate or with shallow teeth; corolla tube obviously shorter than the lobes *Veronica officinalis*
1. Flowers solitary in the axils of leafy bracts, forming “pseudo” spike..... 7
7. Leaf blades and bracts pubescent; entire to toothed *Veronica arvensis*
7. Leaf blades and bracts more or less glabrous; entire to obscurely crenulate..... 8
8. Plant matted; lower flowers on long pedicels, 2-4.5 mm long; stem with fine, incurved hairs..... *Veronica serpyllifolia*
8. Plant erect; lower flowers sessile; stems glabrous or with glandular hairs
..... *Veronica peregrina*

Veronicastrum *Veronicastrum virginicum*

Viburnum

1. Leaves lobed with palmate venation 2
 2. Glands absent from petioles; undersides of leaves dotted with red-orange glands and covered in stellate pubescence; black fruits..... *Viburnum acerifolium*
 2. Glands present on petioles; undersides of leaves not dotted; red fruits..... 3
 3. Glands on petioles saucer-shaped; upper surfaces of leaves glabrous..... *Viburnum opulus*
 3. Glands on petioles club-shaped; upper surfaces of leaves with thin, appressed hairs.....
..... *Viburnum trilobum*
1. Leaves unlobed with pinnate venation..... 4
 4. Margins of leaves with coarse teeth, the leaf veins prominent and forking only 1-2 times and ending in coarse teeth 5
 5. Stipules absent at base of leaves; petioles more or less glabrous; leaf margins lacking hairs.....*Viburnum dentatum*
 5. Stipules present at base of leaves; petioles pubescent; leaf margins with hairs
..... *Viburnum rafinesquianum*
 4. Margins of leaves entire, serrulate, or crenulate, the leaf veins disappearing before they reach the leaf margin and not ending in coarse teeth 6
 6. Winter buds naked; thick leaves with dense stellate-pubescence above and beneath
..... *Viburnum lantana*
 6. Winter buds with 2 valvate scales; leaves lacking stellate-pubescence..... 7
 7. Inflorescence on definite stalks; leaves with small, blunt teeth
..... *Viburnum nudum* var. *cassinoides*
 7. Inflorescence $\pm$ sessile; leaves sharply toothed..... 8
 8. Petioles with wavy margins; the leaf tips acuminate (elongated into a point); a tendency towards wetter habitats *Viburnum lentago*

8. Petioles narrow; the leaf tips merely acute; a tendency towards drier habitats
 *Viburnum prunifolium*

Vicia

1. Inflorescences with 1-2 flowers; sessile or subsessile in the leaf axils *Vicia angustifolia*
1. Inflorescences with 2 or more flowers on distinct peduncles 2
2. Stipules with 2 or more sharp teeth; leaflets with at least 10 pairs of lateral veins;
 inflorescence with 3-8 flowers *Vicia americana*
2. Stipules entire or with one basal lobe; leaflets with 6 or fewer pairs of lateral veins;
 inflorescence with 12-40 flowers 3
3. Calyx up to 3 mm long, with equal calyx teeth; corolla white tinged with purple
 *Vicia caroliniana*
3. Calyx 3.5-8 mm long, with obviously unequal calyx teeth; corolla purple 4
4. Calyx and pedicel covered in long, often tangled, hairs; upper lip of flower about half as
 long as the lower lip *Vicia villosa*
4. Calyx and pedicel covered with short, appressed hairs; upper lip of flower about equal
 to the lower lip *Vicia cracca*

Vinca *Vinca minor*

Viola

1. Leaves strongly divided 2
2. Leaves palmately divided into 3-5 parts and toothed; leaves basal 3
2. Leaves pinnately divided; leaves cauline; each flower a mixture of purple, yellow, and/or
 white *Viola tricolor*
3. Stamens exserted; all petals lacking a beard; purple flower with yellow center
 *Viola pedata*
3. Stamens included; lateral petals bearded; purple flower with white center

.....	<i>Viola pedatifida</i>	
1. Leaves simple		4
4. Leaves arrow-shaped, 1.5 times as long as wide; base of leaves truncate or with auricles; flowers purple	<i>Viola sagittata</i>	
4. Leaves not arrow-shaped, broader; flower colors various.....		5
5. Leaves kidney-shaped; wider than long and rounded at the tip; flowers white with purple nectar guides on lowest petal.....		6
6. Leaves glabrous; sometimes longer than wide; lateral petals glabrous or with a scanty beard; flower petals rounded; green capsules with orange dots	<i>Viola pallens</i>	
6. Leaves usually pubescent on one or both sides; usually shorter than wide; lateral petals with sparse or heavy beard; petals narrow, tear-drop shaped; capsules mottled with purple		7
7. Plant stoloniferous (buried in litter); largest leaf blades 0.75 times as long as wide or longer; flowers 2.5 cm wide or shorter	<i>Viola blanda</i>	
7. Plant not stoloniferous; largest leaf blades 0.75 times as long as wide or shorter; flowers 1 cm wide or shorter	<i>Viola renifolia</i>	
5. Leaves acute or blunt at the tip and generally heart-shaped; flowers various		8
8. Plant with a leafy stem.....		9
9. Flower petals all yellow.....	<i>Viola pubescens</i>	
9. Flowers not yellow, white or purple		10
10. Outer portion of flowers white, never purple; with purple nectar guides on the lowest petal; stipules of cauline leaves entire or toothed slightly	<i>Viola canadensis</i>	
10. Flowers generally purple, but sometimes white or lavender; stipules of cauline leaves strongly fringed.....		11
11. Flower with a prominent spur, 8-13 mm long, pointing upwards; lateral petals glabrous.....	<i>Viola rostrata</i>	
11. Flower with a shorter spur, less than 5 mm long; lateral petals bearded.....		12

- 12. Leaves pubescent on one or both sides; plant fuzzy *Viola adunca*
- 12. Leaves glabrous; plant glabrous..... *Viola labradorica*
- 8. Plant with leaves all basal 13
- 13. Ovary and fruiting capsule pubescent; style hooked at tip; plant sweet-smelling
..... *Viola odorata*
- 13. Ovary and fruiting capsule glabrous; style not hooked; plant lacking odor 14
- 14. Sepals acute or tapered at the tip 15
- 15. Lateral petals with beard of short, club-shaped hairs; spurred petal beardless;
sepals with strong lobes at the base (1-2.5 mm long)..... *Viola cucullata*
- 15. Spurred petal with a sparse beard, hairs not club-shaped; sepals lacking strong
lobes..... *Viola affinis*
- 14. Sepals oblong or ovate and rounded at the tip 16
- 16. Spurred petal with a sparse beard; leaves glabrous; sepals glabrous.....
..... *Viola nephrophylla*
- 16. Spurred petal usually glabrous; leaves usually pubescent; sepals often with hairs
around the margins..... *Viola sororia*

Vitis

- 1. Undersides of leaves with thick, rust-colored, woolly pubescence covering the entire surface
between the veins; stems with tendrils at 3 or more nodes in a row..... *Vitis labrusca*
- 1. Undersides of leaves glabrous or with thin or tufted pubescence between the veins; stems
with tendrils at no more than 2 nodes in a row 2
- 2. Undersides of leaves glaucous (i.e., covered by a white, waxy bloom); pubescence
concentrated along the veins or absent; sinuses between leaf lobes rounded, obtuse, or
absent..... *Vitis aestivalis*
- 2. Undersides of leaves green, not glaucous; sinuses between leaf lobes acute..... *Vitis riparia*

Vulpia *Vulpia octoflora*

‘W’

Waldsteinia.....*Waldsteinia fragarioides*

Wolffia

1. Plants round, from the top and from the side; without brown dots.....*Wolffia columbiana*

1. Plants oval-shaped, from the top; with minute brown dots 2

2. Plants with a prominent point in the middle, visible from the side *Wolffia brasiliensis*

2. Plants with a prominent point at the tip, visible from the side..... *Wolffia borealis*

‘X’

Xanthium*Xanthium strumarium*

‘Y’

Yucca*Yucca flaccida*

‘Z’

Zannichellia..... *Zannichellia palustris*

Zanthoxylum.....*Zanthoxylum americanum*

Zea..... *Zea mays*

Zizania

1. Plant over 2.1 m tall; female lemmas with strong veins, hairy between the veins; aborted female spikelets very thin, less than 1 mm wide.....*Zizania aquatica*

1. Plants under 2.1 m tall; female lemmas with strong veins, smooth between the veins;
aborted female spikelets broad and flat, over 1 mm wide *Zizania palustris*

Zizia

1. Basal leaves simple with cordate leaf bases; cauline leaves trifoliate *Zizia aptera*

1. Basal and cauline leaves compound, with 3-11 leaflets *Zizia aurea*

Zosterella *Zosterella dubia*

Zigadenus *Zigadenus elegans*

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