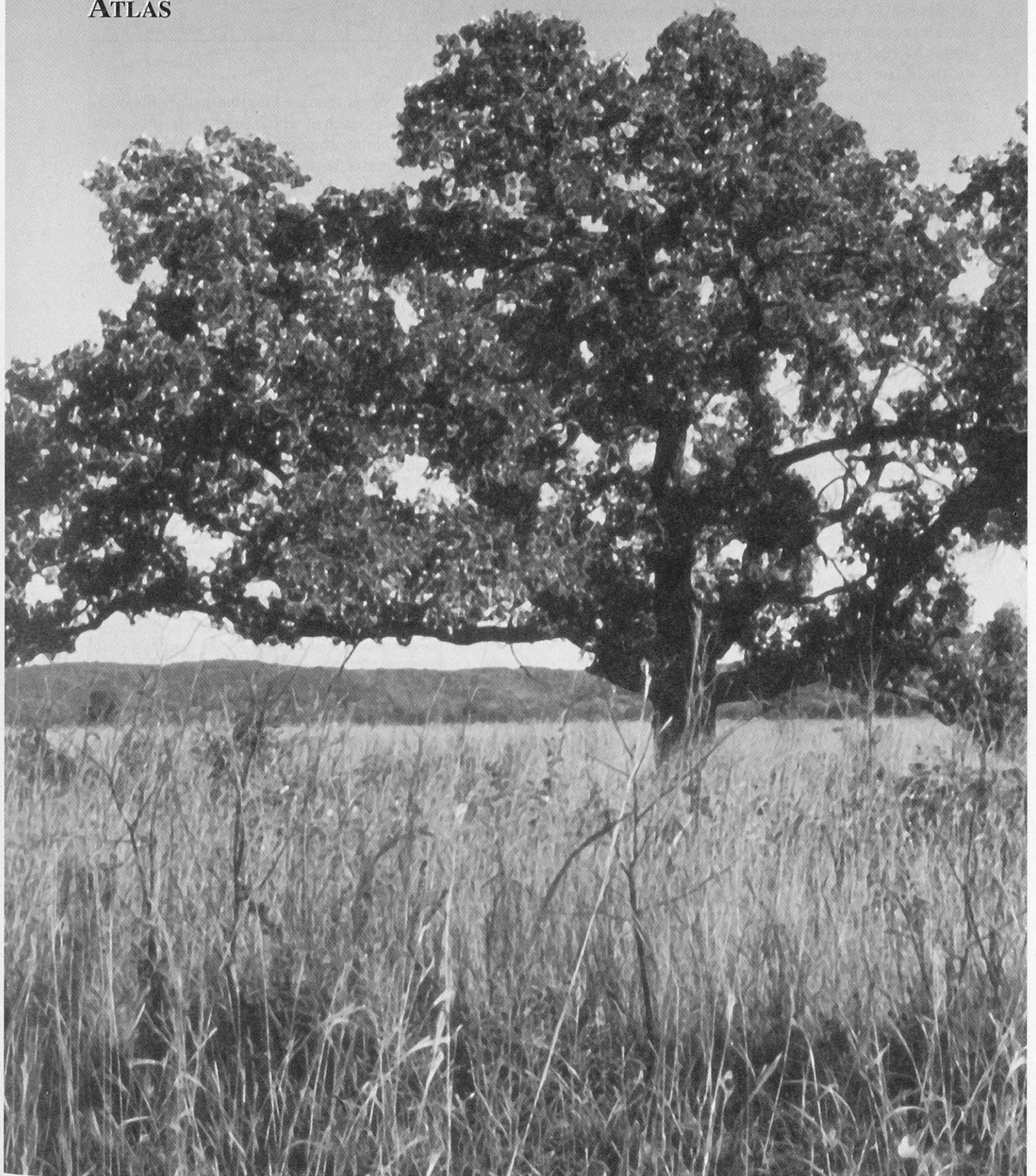
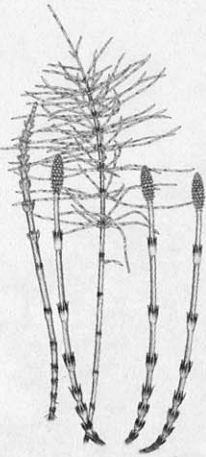

PART II
ATLAS



PTERIDOPHYTES

The Ferns and Fern Allies



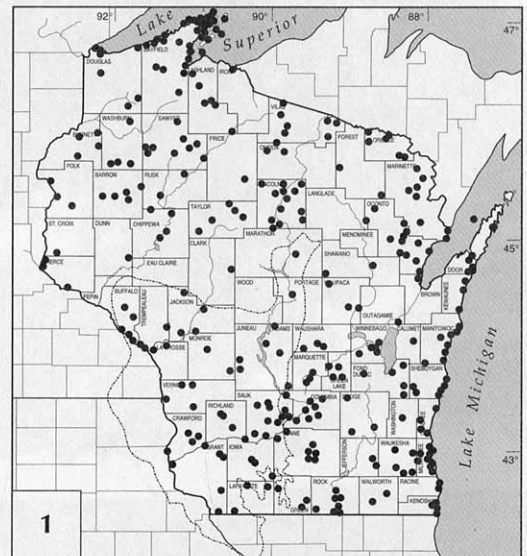
EQUISETACEAE—the Horsetail Family

Rhizomatous perennials, forming colonies, with tubular stems that are longitudinally ribbed and grooved and readily pull apart at the conspicuous solid nodes, each of which bears a whorl of small leaves and/or a whorl of branches; spore cases (sporangia) borne on specialized leaves (sporophylls) aggregated in a terminal cone (strobilus). (Hauke 1965, Peck & Taylor 1980, Tryon et al. 1953)

The only family of the order, whose single living genus, *Equisetum*, is represented in Wisconsin by 9 species plus 4 taxa of hybrid origin. Those with evergreen, unbranched stems (or at least not with regularly whorled branches) are the scouring rushes (e.g., *E. laevigatum*), and those with non-green fertile stems and regularly branched sterile stems are the horsetails (e.g., *E. arvense*). An external silicon deposit that is often minutely rough to the touch covers this most peculiar type of plant, the last remaining genus of three otherwise extinct orders of equisetopsids that were once co-dominant constituents of the swamp forests of the great coal age, the Carboniferous Period, some 300 million years ago.

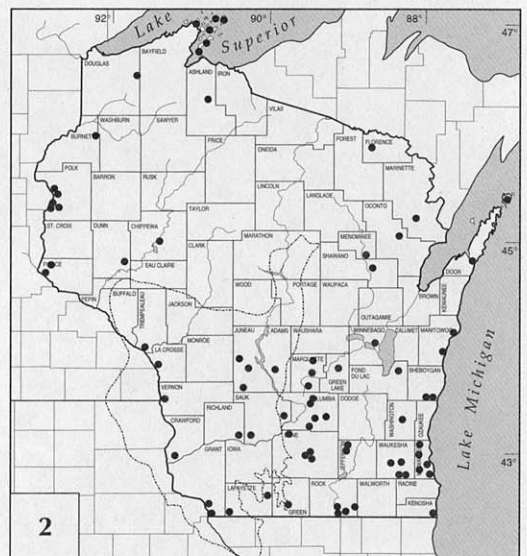
1. *Equisetum arvense* L. FIELD HORSETAIL, COMMON HORSETAIL. Circumpolar, in North America south to Georgia, Texas and California; throughout Wisconsin very common in various moist to dry habitats, especially **wet prairies** and edges of woods, often also in disturbed habitats such as fields, roadsides, railroads, sand dunes, riverbanks and lakeshores. (17)

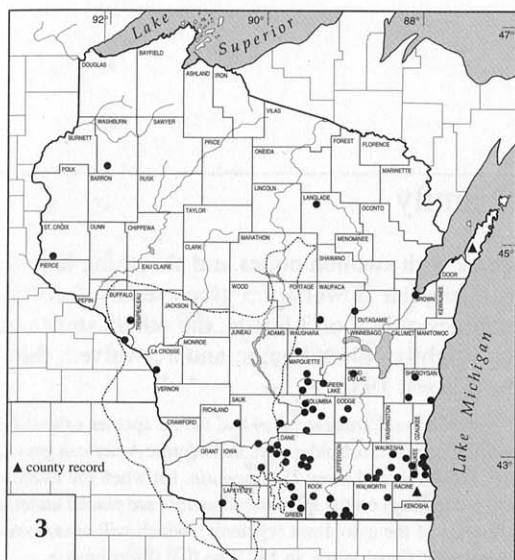
This is our most common and most variable *Equisetum*, with the light rusty-brown fertile stems emerging right after snow melt, only soon to die back just when the young vegetative shoots are beginning to develop. Both types of shoots are illustrated above.



2. *Equisetum* × *ferrissii* Clute [*E. hyemale* × *E. laevigatum*; *E. laevigatum* of Tryon et al. 1953, Curtis 1959, in part]. FERRISS'S HORSETAIL. Scattered across North America, not uncommon on the Great Plains; in Wisconsin in dry to moist, sandy, gravelly or cindery (and usually disturbed) ground: roadsides and railroads, lakeshores (including the Great Lakes) and riverbanks, sandy slopes, **wet-mesic prairies** and waste places, occasionally in oak openings and pine plantations; in southeastern Wisconsin about as frequent as the two parental species, occasional to rare in northern Wisconsin where *E. hyemale*, scouring rush, is very common, but the other parent is absent. (6)

A not uncommon sterile hybrid distributed by vegetative reproduction.





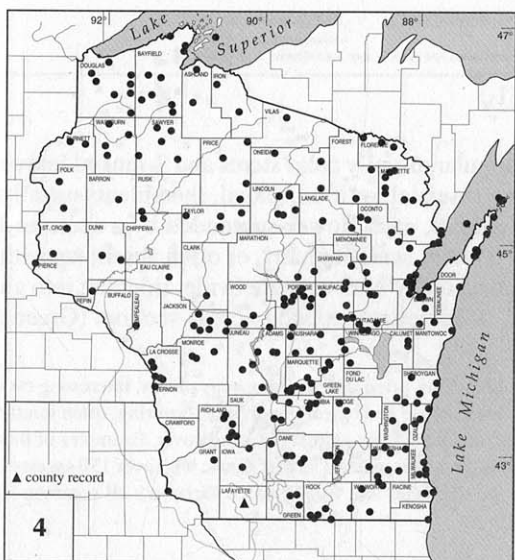
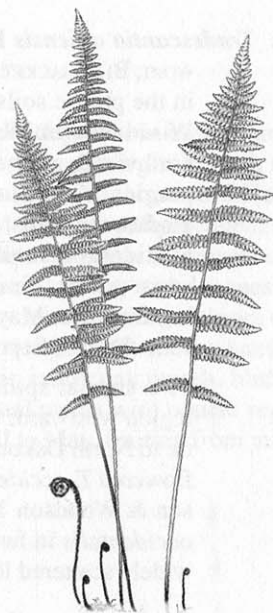
3. *Equisetum laevigatum* A. Braun [*E. kansanum* J. H. Schaffn. of Fernald 1950, Tryon et al. 1953]. SMOOTH SCOURING-RUSH. Nearly transcontinental, from western New York to southern British Columbia, south to Virginia, Texas and Baja California; in southeastern Wisconsin frequent in open habitats, especially **wet-mesic prairies** and fields, but less often along railroads, roadsides and lakeshores. (Including *E. × ferrissii*, 6)

One of the parental species of *E. × ferrissii* (2).

THELYPTERIDACEAE—the Marsh Fern Family

Small to large ferns from creeping to erect rhizomes, with deciduous, pinnate to pinnate-pinnatifid leaves (fronds) bearing needle-like hairs at least on the rachis, and sori (clusters of spore cases) that are intramarginal, with each sorus borne on a vein that continues to the margin. (Breakey & Walker 1931, Peck & Taylor 1980, Smith 1993, Tryon et al. 1953, Tryon & Tryon 1973)

Essentially worldwide, in Wisconsin represented by two genera: *Thelypteris* (blades narrowly lance-shaped and indusium present) and *Phegopteris* (blades triangular and indusium absent). Most earlier taxonomists included the majority of thelypterids in the large genus *Dryopteris*. That these ferns evidently comprise a distinct natural group was not recognized until recently, and whether they are sufficiently distinct to deserve status as a separate family is still controversial, with the more conservative recent works retaining them in the Aspleniaceae. Other treatments accept the segregate family, some recognizing as few as one (*Thelypteris*) or two (*Thelypteris* and *Phegopteris*) to as many as 32 genera. It all depends whether the taxonomist is a “lumper” or a “splitter.”



4. *Thelypteris palustris* Schott var. *pubescens* (Lawson) Fernald. [*Dryopteris thelypteris*]. MARSH FERN, EASTERN MARSH FERN. Common in much of eastern North America, West Indies and (as var. *palustris*) through much of Eurasia, from Japan and northeastern Asia to Siberia; in Wisconsin locally frequent to abundant in marshy or boggy ground, especially marshes, sedge meadows, wet prairies, fens, bogs, swamp forests (deciduous or coniferous) and wet willow-dogwood-**alder thickets**, depressions in rich deciduous woods and occasionally in ditches and moist fields. (13)

No doubt our most common fern is the Bracken, *Pteridium aquilinum* (L.) Kuhn var. *latiusculum* (Desv.) Underw., which occurs in a wide range of communities throughout Wisconsin, especially in bracken grasslands, northern forests, pine barrens and, in the Prairie-Southern Forest Province, in oak openings, oak barrens, degraded woods, dry sunny rights-of-way and even mesic to moist prairies on somewhat sandy soil.

CLASS LILIOPSIDA

The Monocotyledons



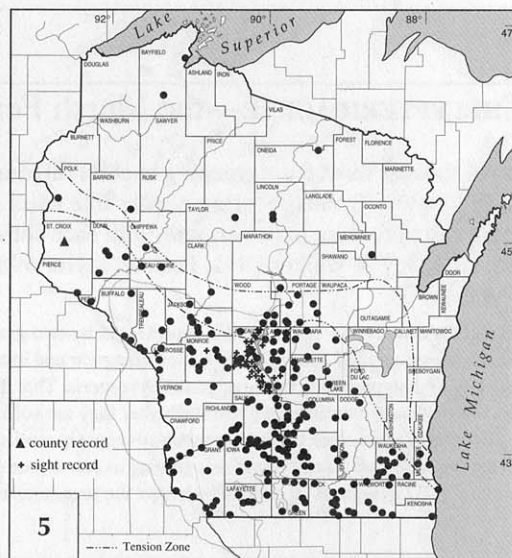
COMMELINACEAE—the Spiderwort Family

Annual or perennial herbs with mucilaginous stems with swollen nodes and sheathing leaves; helicoid inflorescences with regular to somewhat irregular flowers of 3 green sepals, 3 colorful, often blue or purple petals, 6 stamens (sometimes only 2 or 3 fertile, the others sterile or lacking), their filaments often fringed with long, brightly colored hairs; and a 3-valved, thin-walled capsule with a few, relatively large seeds. (Fassett 1932a)

Mainly tropical to warm temperate, with only two genera (*Commelina* and *Tradescantia*) and their 5 species extending northward into Wisconsin. *Commelina*, Dayflower, *Tradescantia* sensu stricto, Spiderwort, an endemic American genus, and *Zebrina*, Wandering Jew, are commonly cultivated. Every school should grow *Tradescantia*, for when the moniliform hairs (i.e., made up of a row of single cells, like beads in a necklace) on the staminal filaments are placed under a microscope, within each cell one can readily see the active flowing of the cytoplasm (cyclosis), which will amaze students now as much as it did Robert Brown (of "Brownian movement" fame) when, in 1831, he first discovered it.

5. *Tradescantia ohiensis* Raf. COMMON SPIDERWORT, SMOOTH SPIDERWORT, BLUE-JACKET. Eastern United States, especially abundant in the prairie soils of the Midwest; common in all southern Wisconsin prairie and savanna types (rare—adventive?—northward), in dry, open, often sandy places such as disturbed prairies, barrens, open oak and jack pine woodlands, **cedar glades**, old fields, roadsides and railroad ballast, as well as on hillsides, embankments, bluffs and dunes, occasionally in moist prairies, fencerows and borders of fields. (15) Flowering from late May to early August, fruiting from the end of June through September.

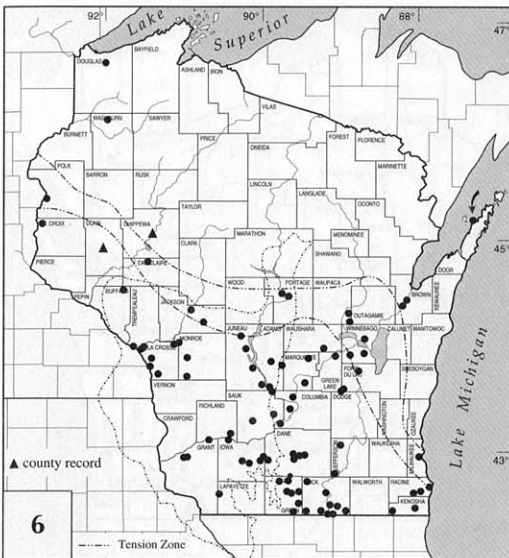
Two similar spiderworts occur from the eastern tallgrass region westward: the wide-leaved, rose-flowered *T. bracteata*, to North Dakota and Kansas, and the narrow-leaved, blue-flowered *T. occidentalis*, as far as Montana and Utah (Anderson & Woodson 1935). Both are rare in upland prairies, *T. occidentalis* in far western Wisconsin, *T. bracteata* in a few widely scattered locations and occasionally in gardens.



CYPERACEAE—the Sedge Family

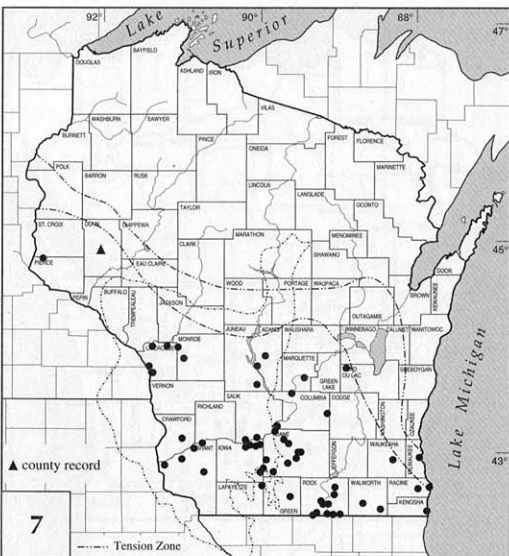
Grass-like or rush-like herbs with often triangular, usually solid stems and 3-ranked leaves with closed sheaths; minute flowers that are bisexual, or if unisexual, then plants usually monoecious (both sexes on the same individual), each flower subtended by a scale and arranged in spikelets; a perianth reduced to bristles, scales or hairs, or often absent (as with grasses, all of ours are wind pollinated); and an ovary with a single ovule, ripening into an achene that is either lens-shaped, 3-angled, or sometimes round in cross-section. (Greene 1953, Marcks 1974, Zimmerman 1976)

Cosmopolitan, but most abundant in temperate and cold regions, often in damp to marshy places. Interesting taxonomically and evolutionarily, the Cyperaceae are of inestimable ecological importance, covering, often jointly with grasses, vast areas, contributing to peat formation and furnishing animal food and cover. Examples of this huge family include the taxonomically difficult sedges (*Carex*, Wisconsin's largest genus, with over 150 species), the mostly tropical umbrella sedges (*Cyperus*), and the bulrushes and wool-grasses (*Scirpus*), all common in Wisconsin.

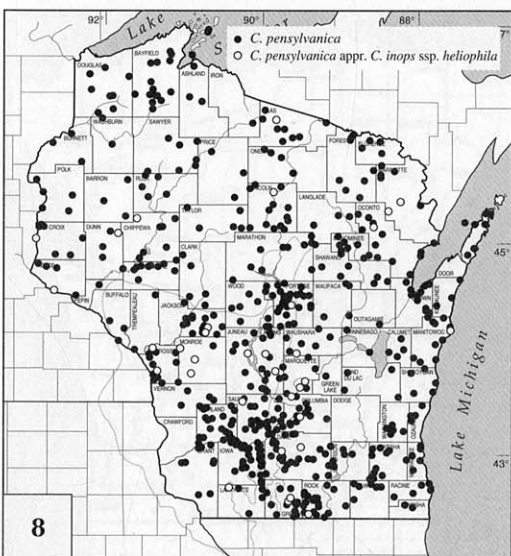


6. *Carex bicknellii* Britton. BICKNELL'S SEDGE. From the eastern Great Plains of Oklahoma and Saskatchewan across the Prairie Peninsula to southern Ontario, and near the coast from Delaware to Maine; in Wisconsin occasional or locally common within and south of the Tension Zone, very rare in the north, most abundant in lowland **wet-mesic prairies**, mesic relic railroad prairies and dry to moist sandy prairies, often on rock outcrops (rhyolite, quartzite, granite) and in prairie-like habitats such as old fields, grassy roadsides or quarries. (4) Flowering from mid May to mid June, fruiting from mid June to the end of September.

Many other carices occur in Wisconsin prairies, savannas and shrub communities such as *C. annectens*, *C. buxbaumii*, *C. conoidea*, *C. haydenii*, *C. pellita*, *C. stricta*, *C. tenera*, *C. tetanica* and *C. trichocarpa* in lowland prairies and/or sedge meadows; *C. molesta* and *C. torreyi* in mesic prairies; *C. brevior* in dry prairies; *C. eburnea* in cedar glades; *C. muhlenbergii* in sand barrens; *C. laeviconica* in lowland savannas; and *C. siccata* in oak barrens.



7. *Carex meadii* Dewey. MEAD'S SEDGE. Widespread in eastern and central North America from Texas and Virginia north to southeastern Saskatchewan, southern Michigan and New Jersey (disjunct in Arizona and Mexico); locally frequent to common in the southern two-fifths of Wisconsin (present on almost every remnant), in wet-mesic, mesic and dry-mesic prairies, but perhaps mainly in dry lime prairies on slopes of bluffs and crests of gravel hills, occasionally on dry sandy ridges, slopes and plains, rarely in sandy oak woods, bluff-top pine relics and gravelly embankments with prairie vegetation. Flowering from late April to May, fruiting from mid June to early July.



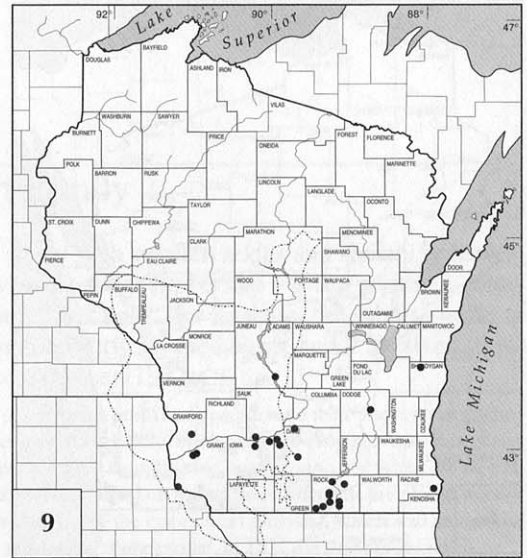
8. *Carex pensylvanica* Lam. PENNSYLVANIA SEDGE. Common from the southern Appalachians to Nova Scotia and Manitoba; in Wisconsin the most abundant and widespread sedge, ubiquitous in dry to dry-mesic habitats, particularly in woods of all types, from cool northern mixed forests to humid sugar maple forests, but mostly in **southern dry-mesic forests** and woods of oak, jack pine or aspen, in open, usually sandy or rocky ground such as sandy or limy, dry to dry-mesic prairies, barrens and dunes, there often forming extensive circular clonal colonies. (16) Flowering from mid April to late May, fruiting from mid May to early July.

Pennsylvania Sedge appears to be very tolerant of grazing, and its high relative density in some prairies may be an artifact of past grazing.

Specimens from scattered localities approach *Carex inops* L. H. Bailey ssp. *heliophila* (Mack.) Crins [*C. pensylvanica* var. *digyna*], having some but not all the characteristics of this large-prairies and plains element.

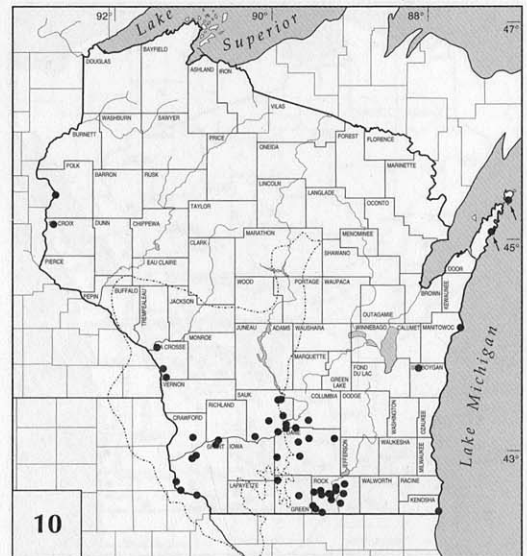
9. *Carex richardsonii* R. Br. (for Robert Brown; see note under Commelinaceae). RICHARDSON'S SEDGE (Special Concern). Interruptedly transcontinental, most common on the Canadian prairies and in montane woodlands east of the Cascades, rare eastward (Minnesota to Vermont and Maryland) on prairies, sand dunes and shorelines; present in low densities on most dry and dry-mesic prairies in the southern quarter of Wisconsin, on exposed prairie hilltops, on dolomite bedrock or morainal gravel, occasionally on open sandy plains, slopes and dunes or openings in oak woods, rarely in low fen-like prairies. Flowering from April to early May, fruiting from late May to mid June.

This species is supposedly rare but may be only under-represented in herbaria due to limited habitat, brief flowering period (when the plant resembles the ubiquitous *Carex pensylvanica*) and, finally, poor fruiting.

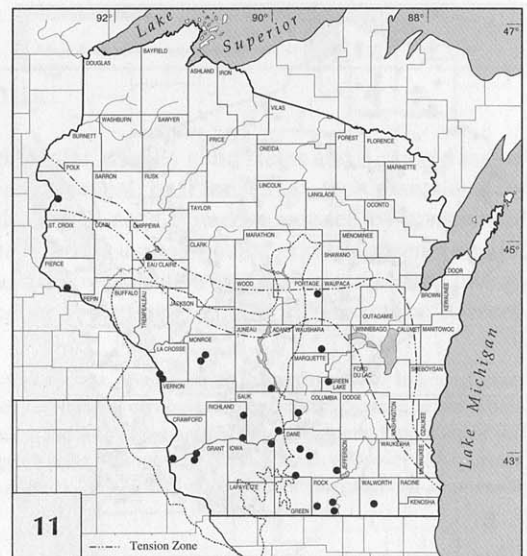


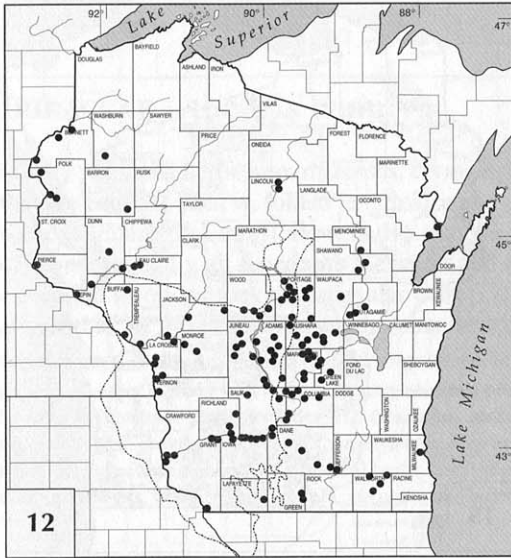
10. *Carex umbellata* Schkuhr ex Willd. [*C. abdita*]. HIDDEN SEDGE. (Greenland) Newfoundland to Saskatchewan (Vancouver Island), south to Virginia, Tennessee and Texas; in Wisconsin in dry to moist, sandy or gravelly open ground, reaching greatest abundance in steep dry limy prairies on dolomite bluffs and gravel hills, frequently on sandstone outcrops, quartzite talus, and rarely in fens and on beach ridges along Lake Michigan. Flowering from mid-April to early May, fruiting from late May through June.

This sedge resembles *Carex rugosperma*, which is a coarser, stiffer plant with larger perigynia. The two species may occur near each other (and/or with *C. pensylvanica*, which also has a coarse barrens form) along the lower Wisconsin River Valley, where *C. umbellata* characteristically grows on the steep limy bluff prairies, and *C. rugosperma* in the sandy prairies and oak barrens on the old terraces below.

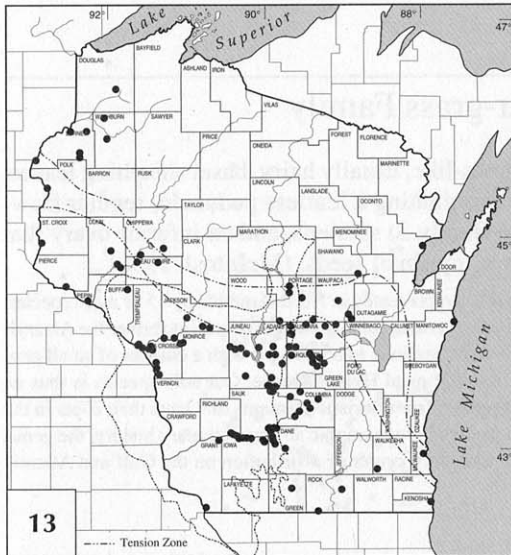


11. *Cyperus lupulinus* (Spreng.) Marcks ssp. *lupulinus* [*C. filiculmis* of Curtis 1959 and other authors, in part, misapplied]. SAND SEDGE, GREAT PLAINS FLAT SEDGE. Widespread in the eastern United States on dry exposed sands, gravels and rocky prairies and oak openings, with geographical dispersal centers in the southern Great Plains and Ozarks, as well as the Appalachians; in Wisconsin rather rare south of the Tension Zone, on sandstone and granite outcrops, gravelly areas, old fields, sand barrens and prairies, but sometimes weedy in disturbed sandy, gravelly or cindery soil such as roadcuts, eroded pastures and along railroads. (4) Flowering from mid June to late August, fruiting from July through October.



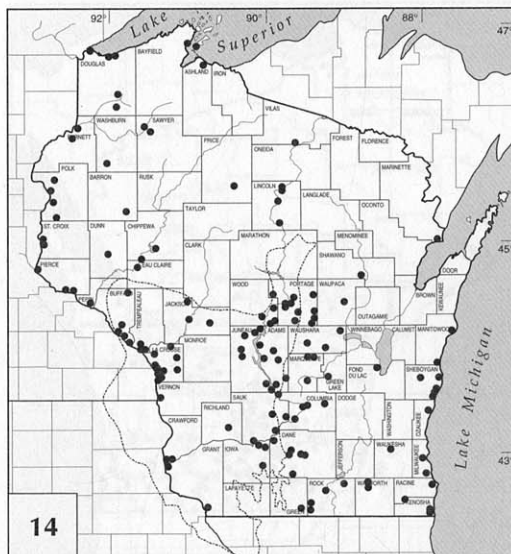


12. *Cyperus lupulinus* (Spreng.) Marcks ssp. *macilentus* (Fernald) Marcks [*C. macilentus*; *C. filiculmis* var. *macilentus*; *C. filiculmis* of Curtis 1959, in part]. SLENDER SAND SEDGE. Dry exposed sands, from the southern Appalachians to the Atlantic Coastal Plain of the Carolinas, northwestward in glaciated territory to Iowa and southeastern Minnesota; in Wisconsin in sandy soil of rock outcrops, **sand barrens**, roadcuts, abandoned fields, young pine plantations and in glacial lake beds and outwash plains. (4) Flowering from late June to early September, fruiting from July to October.



13. *Cyperus* \times *mesochorus* Geise [*C. lupulinus* \times *C. schweinitzii*]. MIDLAND SAND SEDGE. Three distinct but closely related taxa, *Cyperus lupulinus* ssp. *lupulinus*, *C. lupulinus* ssp. *macilentus* and *C. schweinitzii*, all members of the taxonomically difficult section *Laxiglumi*, are often sympatric in dry, open and sunny sands of prairie blowouts, roadcuts and railroads, abandoned fields, young pine plantations, sandstone outcrops and lake dunes in glaciated eastern North America. Wherever they occur together they hybridize extensively, producing highly variable hybrid swarms (Marcks 1967, 1972, 1974; Marcks & Iltis 1967). Flowering from June to September, fruiting from late June to October.

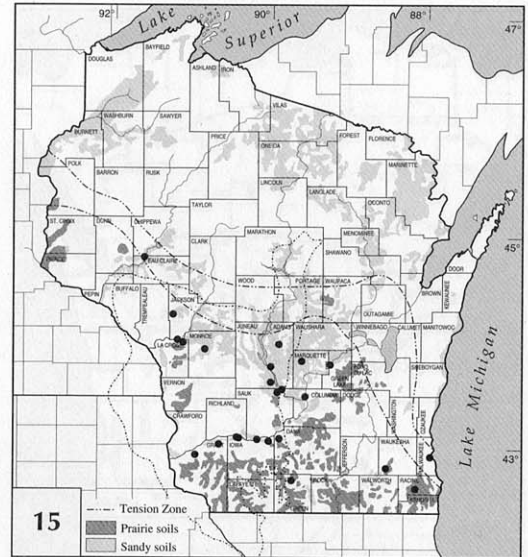
Similar, but less variable, more stabilized hybrid populations, also of sandy, grassy habitats, especially jack pine barrens, from northern Minnesota and Wisconsin to southern Ontario and New England, which appear to date back to earlier, post-Pleistocene hybridization events, have been classified as *Cyperus houghtonii* Torr.



14. *Cyperus schweinitzii* Torr. PLAINS SAND SEDGE, SCHWEINITZ'S FLAT SEDGE. A southern Great Plains element from the Staked Plain (Llano Estacado) of west Texas and the sand hills of Nebraska to the sandy soils of eastern Canada and New York; in Wisconsin rather common on dry exposed sands of glacial outwash plains, river floodplains, dunes of Lake Michigan, sandstone outcrops, **sand barrens**, and disturbed sands of roadcuts, sandblows and pine plantations. (2) Flowering from mid June to September, fruiting from July to the end of September.

15. *Scleria triglomerata* Michx. NUT-RUSH, STONE-RUSH, WHIP-GRASS, WHIP NUT-RUSH (Special Concern). A member of a large neotropical or neosubtropical genus; rare in Wisconsin, but especially characteristic of moist to **wet prairies** on sandy loam or silt loam, where it may be locally common (e.g., Avoca Prairie, Iowa County and the railroad prairies to the west of it), but also in seasonally moist sandy meadows and swales, marsh margins and oak opening borders. (3) Flowering in June, fruiting from June to late September.

The rare, diminutive *Scleria verticillata* Muhl. ex Willd., Low Nut-rush (Special Concern), its thread-like stems just 4 to 12 inches tall, hides in tall grass at Muir Lake, Marquette County, Chiwaukee Prairie, Kenosha County, and a few other calcareous prairies and fens in between. It ranges south to Texas and Florida and beyond to the savannas of the Guianas of northern South America, truly a floristic element in the Wisconsin flora, here at the very northern edge of its range.



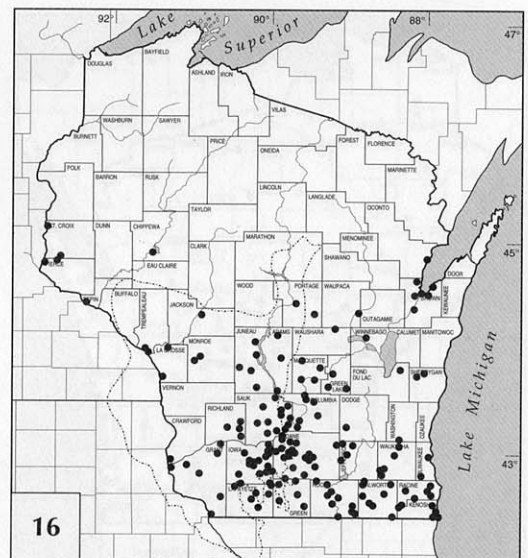
HYPOXIDACEAE—the Star-grass Family

These miniature amaryllids have grass-like, usually hairy, basal sheathing leaves, 1- or few-flowered inflorescences terminating a leafless peduncle, regular flowers with 3 pilose sepals, 3 petals, 6 (rarely 3) stamens, and an inferior ovary that ripens into a capsule or berry with many small seeds. (McIntosh 1950)

Hypoxis, by far the largest genus (100 species), is represented in North America by 15 or more species, with only *H. hirsuta* reaching Wisconsin. Most American authors place *Hypoxis* into either the Amaryllidaceae or Liliaceae, but modern taxonomists are inclined to combine it with a number of small genera into the mostly southern hemispheric, paleotropical Hypoxidaceae. Our sole species is thus an interesting reminder that floras are pieced together from floristic elements that have their roots in the four corners of the Earth, each species with its own biogeographic and evolutionary history, the genus *Hypoxis* being a Gondwanaland taxon with a modern center of distribution on the Gulf and Atlantic coastal plains.

16. *Hypoxis hirsuta* (L.) Coville. YELLOW STAR-GRASS, COMMON STAR-GRASS. Eastern North America, from Maine to Manitoba, south to Georgia and Texas; common across the southern half of Wisconsin in dry, mesic or **wet prairies**, sandy, gravelly or rocky hillsides, outcrops and bluff tops (especially edges, paths, glade-like openings) and pine relics, occasionally in pastured sedge meadows and swamp borders. (11) Flowering from mid May to late June, fruiting from late June to July.

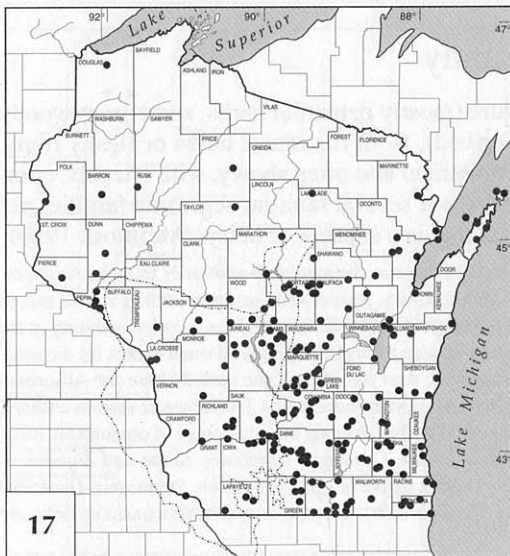
Like Blue-eyed-grass, this small herb is well identified by its common name. Hiding among grasses in sunlit prairies, old pastures and open woods, its presence is revealed in early summer by the bright yellow, star-shaped flowers.



IRIDACEAE—the Iris Family

Mostly perennial herbs from rhizomes, corms or bulbs, with basal 2-ranked leaves that are equitant [that is, folded lengthwise and astride the stem, like a rider on a horse (= *Equus*, in Latin)], flowers that may be radially or bilaterally symmetrical, with generally all 6 perianth members and often also the style petaloid, and a 3-celled inferior ovary and capsular fruit (i.e., with the perianth and stamens attached at the top of the ovary rather than beneath it). (McIntosh 1950)

In temperate and warm-temperate regions, with centers of diversity in the eastern Mediterranean region and other regions with a similar highly seasonal climate such as South Africa, this popular family of ornamental plants includes *Iris*, *Gladiolus*, *Moraea*, *Sisyrinchium*, *Crocus* and some 40 other cultivated genera. In Wisconsin, we have only *Sisyrinchium*, low, tufted, grass-like herbs with small delicate flowers, and *Iris*, perennial herbs from stout horizontal rhizomes with large, more complex flowers, which, in both genera, are pollinated by bees, flies or other nectar-seeking insects.



17. *Iris virginica* L. var. *shrevei* (Small) E. S. Anderson. SOUTHERN BLUE FLAG, SHREVE'S IRIS. Widespread in the southeastern United States; in Wisconsin often forming extensive clones in wet places or shallow water, but rarer north of the Tension Zone, in marshes, sedge meadows, low prairies, **fens**, swamps and low bottomland forests, alder-willow-dogwood thickets, stream margins, lakeshores, riverbanks, ponds and ditches. (13) Flowering from late May to late July, fruiting from (mid July) early August through October.

Very similar to the common, more northeastern *Iris versicolor* L., from which it is difficult or impossible to distinguish if herbarium specimens lack flowers or ripe fruit. *Iris versicolor* is an ancient 108-chromosome hexaploid hybrid of the arctic 36-chromosome diploid *I. setosa* Pall. with the 72-chromosome tetraploid *I. virginica* var. *shrevei*, hence their great similarity (Anderson 1928, 1936b). In addition, natural pentaploid hybrids (*I.* × *robusta*) have been reported from Ontario and Michigan.



18. *Sisyrinchium albidum* Raf. PALE BLUE-EYED-GRASS. Prairies and dry sandy woodlands from New York and southern Wisconsin to Virginia, western Florida and Louisiana; occasional in southwestern Wisconsin on dry sunny hillsides, brushy slopes and sandy fields, in sandy oak or jack pine woods, edges of sand blows, prairie relics, and spreading to roadsides and railroads. Flowering from mid May to mid June, fruiting in June and July.

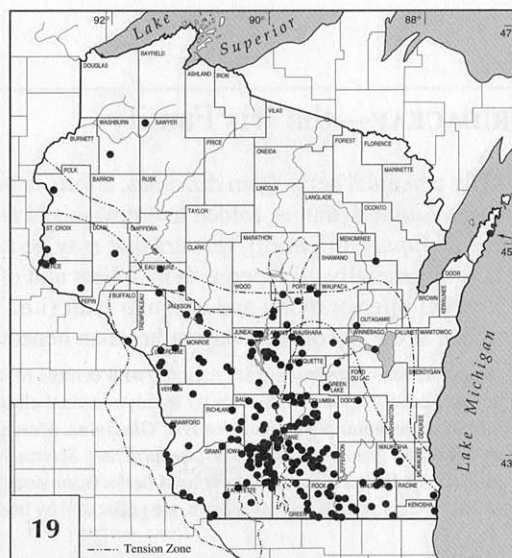
Sisyrinchium angustifolium Mill. NARROW-LEAVED BLUE-EYED-GRASS (Special Concern). Chiefly a forest and riparian species, from New England to Wisconsin and Texas, reaching its northwestern limit in southeastern Wisconsin, where it is very rare in woods, thickets and fields. Flowering from May through July.

Although a distinctive member of a taxonomically difficult genus, its epithet *angustifolium* has nevertheless been misapplied by Fernald (1950) to *S. graminoides*, by Alexander in Gleason (1952) to *S. montanum*, and by local collectors to *S. strictum* or *S. farwellii*.

19. *Sisyrinchium campestre* E. P. Bicknell. PRAIRIE BLUE-EYED-GRASS.

Widespread in prairies, from Wisconsin and southeastern Manitoba to northeastern Texas; this lovely species is common to abundant in Wisconsin on dry prairies mostly south of the Tension Zone such as sandy and gravelly hill prairies, **dry-mesic prairies**, less frequent on mesic and wet-mesic prairies, on sandstone and limestone bluffs, sand plains and open or wooded hillsides with oak, jack pine or white pine; occasionally somewhat weedy, invading sandy fields, roadsides, railroad rights-of-way and quarries. (9) Flowering from early May through June, fruiting from late May to mid July.

The many species of *Sisyrinchium*—about three dozen in North America—look so much alike that even botanists have trouble distinguishing them. Although grass-like in appearance, their two-edged stems and equitant leaves, to say nothing of the presence of a true perianth of six sepals and a capsule rather than a grain or achene, will easily distinguish them from any grass or sedge.



LILIACEAE—the Lily Family

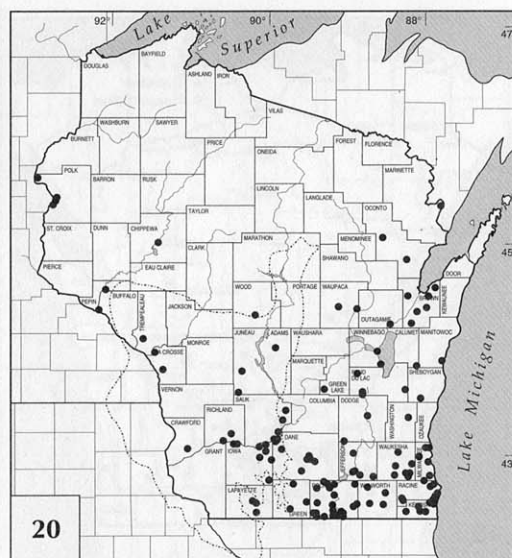
Plants of diverse habit and structure (mostly perennial herbs, sometimes woody if the family is broadly circumscribed), from rhizomes, bulbs or fleshy roots, with flowers that are radially symmetrical and often showy, with 6 tepals, commonly 6 stamens, 1 superior ovary (or if several familiar segregate families are included, also inferior), and a fruit that is a capsule or berry. (McIntosh 1950)

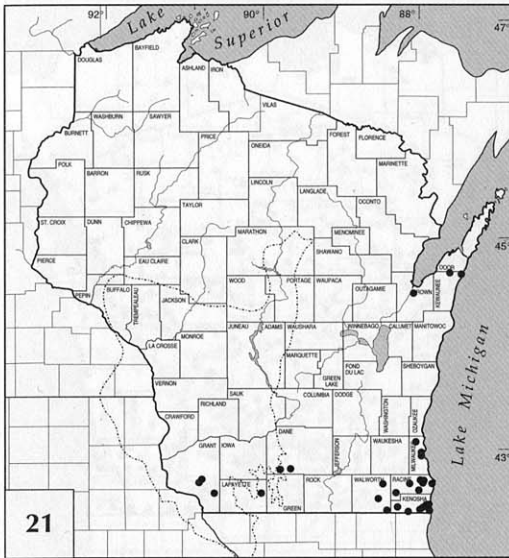
There are nearly 4,000 species in the traditional Liliaceae, distinguished arbitrarily from the Amaryllidaceae solely by a superior, rather than inferior, ovary. Recent and current work has shown that to reflect evolutionary relationships, a radical realignment of both families was in order, resulting in the recognition by taxonomic splitters of some two dozen natural groupings, all small except for the nearly 500 species of Liliaceae. Until the taxonomic dust has settled, we include here the Alliaceae, Amaryllidaceae, Calochortaceae, Convallariaceae, Dracaenaceae and Trilliaceae of various authors, but segregate *Hypoxis* and *Smilax* into their own families. Among the wide range of ornamental, medicinal and poisonous plants are *Allium*, *Calochortus*, *Camassia*, *Narcissus*, *Tulipa* and *Zigadenus*. Except for *Allium* and *Trillium*, all genera, whether native (e.g., *Erythronium*, *Streptopus*, *Uvularia*) or escaped garden plants (e.g., *Asparagus*, *Hemerocallis*), are represented in Wisconsin by only one or a few species each.

20. *Allium canadense* L. WILD GARLIC, WILD ONION, MEADOW GARLIC.

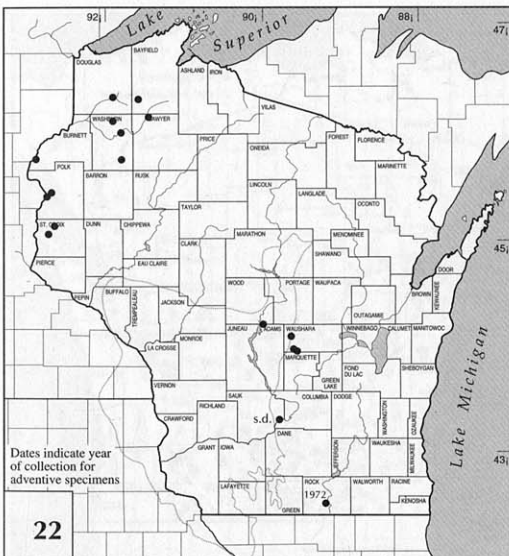
Widely distributed, most common in the eastern and central United States, from southern Canada to Florida and the eastern Great Plains, from southern Minnesota and the eastern Dakotas to Texas; in Wisconsin infrequent, largely confined to glacial drift in the southeastern half of the state, in moist to dry, wooded or open habitats, **wet-mesic prairies**, locally common or abundant in low to rich or even dry deciduous woods and various floodplain habitats, including stream banks, sandy or rocky shores of rivers, often weedy in grazed woods, railroad embankments, damp grassy roadsides, and other disturbed places such as edges of paths, overgrown quarries, man-made pond banks, even unkempt yards in cities. (9) Flowering from the beginning of June to early July.

Our plant belongs to a variable series of almost exclusively asexual populations reproducing by inflorescence bulbils, derived from hybrids involving several sexual species of the Deep South (Ownbey & Aase 1955).





- 21. *Allium cernuum* Roth. NODDING WILD ONION.** Very widespread, with three variants centered in the Cascade and Rocky mountains from British Columbia to northern Mexico, and one reappearing in the East from New York to North Carolina, west to Missouri, northeastern Illinois and South Dakota (only one Minnesota station); rare but locally abundant in southeastern Wisconsin, either in calcareous wet to **mesic prairies** and savannas about Lake Michigan, especially on sands or marly clays associated with the old, now-elevated bed of Glacial Lake Chicago, or there and in north-east Wisconsin, in habitats where dolomite is near the surface, or westward, occasionally on grassy wooded banks and in oak openings (usually on sandy loam), and in Dane and Grant counties in maple-basswood forests (sometimes on moist cliffs or talus), but also spreading along railroad embankments and roadside ditches. (1) Flowering from mid July to early September, fruiting from the end of August to mid October.



- 22. *Allium stellatum* Ker Gawl. WILD ONION, PRAIRIE ONION, AUTUMN ONION.** Prairies, barrens and rocky hills of west-central North America, from Saskatchewan and western Ontario south to Wyoming, Oklahoma and Illinois; in Wisconsin rare but locally common in the northwest, mainly in dry sand prairies (e.g., Crex Meadows) and sand barrens (Namekagon River Valley), in very rocky prairies on the high bluffs along the St. Croix River at Interstate Park (**exposed cliffs**, fide Curtis 1959), in central Wisconsin sporadic in open or disturbed, sandy or gravelly places such as ditches and lakeshores; rarely adventive farther south, as in Sauk and Rock counties. (1) Flowering from late July to early September, fruiting from late August to September.



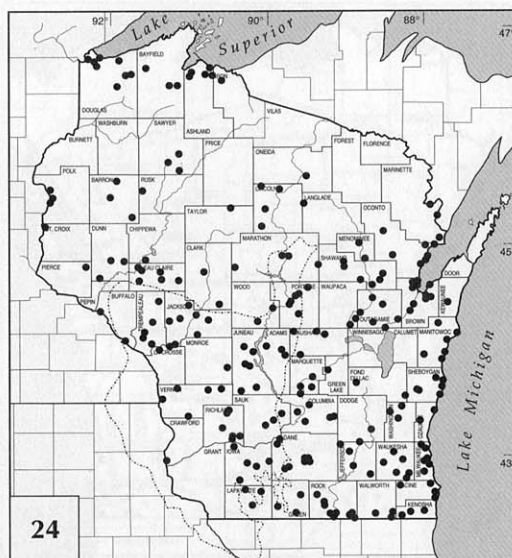
- 23. *Camassia scilloides* (Raf.) Cory. WILD-HYACINTH, EASTERN CAMASS (Endangered).** The only eastern species of a small western genus, widespread on prairies, savannas and open woods, from southern Ontario and western Pennsylvania to Georgia, west to Texas, eastern Kansas and Iowa; in Wisconsin restricted to relictual **mesic** and **wet-mesic prairies**, barely surviving along railroads and roadsides. (1) Flowering from mid May to mid June, fruiting from late June to mid July.

This lovely plant has, in the last 150 years, lost most of its mesic prairie habitat to agriculture, and its continued existence in Wisconsin will depend on the deliberate protection and management of its few surviving stations. More of a savanna than a prairie species, it may have attained its pre-settlement optimum in rich open oak woodlands and savannas.

Camassia, though hardy and easy to grow, is still uncommon in cultivation. Our Eastern Camass can be propagated by seed and could be effectively used in the wildflower border.

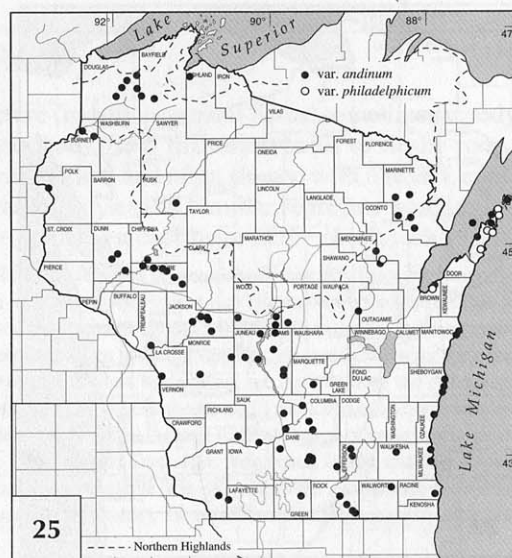
24. *Lilium michiganense* Farw. [*L. canadense* L. ssp. *michiganense* (Farw.) B. Boivin & Cody]. MICHIGAN LILY, TURK'S-CAP LILY. A mostly midwestern, barely distinct variant of the north-eastern and Appalachian *L. canadense*; occasional to locally common throughout Wisconsin in moist, mucky, peaty or sandy soils of rich, mesic to **wet prairies**, sedge meadows, fens, moist borders of mesic hardwoods, grassy openings to deep shade of swamp forests, tamarack-poison sumac bogs, thickets with willows on prairies, among alders along streams, rights-of-way with mixtures of prairie and marsh plants, and grassy, marshy places such as streambanks, ditches, fields and pastures. (19) Flowering from (mid) late June to early (late) August, fruiting from mid August through September.

Both this species and the next (25) are becoming rare (at least in the south) due to habitat loss, digging of bulbs by gardeners, and picking of the gorgeous flowers by pulling the whole stem from the bulb, thus killing it. The common name Turk's-cap Lily is best reserved for the eastern *Lilium superbum* L.



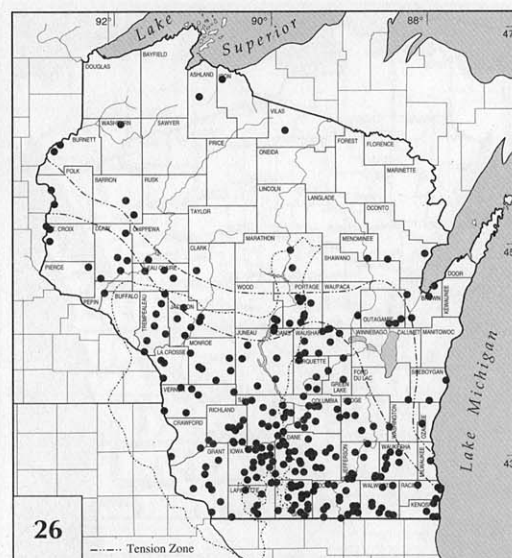
25. *Lilium philadelphicum* L. WOOD LILY, PRAIRIE LILY. Transcontinental, divisible into var. *philadelphicum*, Wood Lily (southeastern Quebec to North Carolina, Kentucky and Wisconsin) and var. *andinum* (Nutt.) Ker Gawl., Wood or Prairie Lily (southwest Quebec to the northern Great Plains, south to Ohio, Texas and Arizona); in Wisconsin both conspicuously absent from the granitic Northern Highlands, infrequent elsewhere in open, often dry, sandy or rocky woods or thickets, associated with jack pine, pin cherry, oaks and aspen, less often on edges of mesic coniferous woods, dry to moist, but mostly **mesic prairies** and swales, and on wooded bluffs and dunes along Lake Michigan; usually rare or scattered but sometimes locally common on grassy rights-of-way and clearings in cut- and burned-over areas. (9) Flowering from late June to early August, fruiting from September to October.

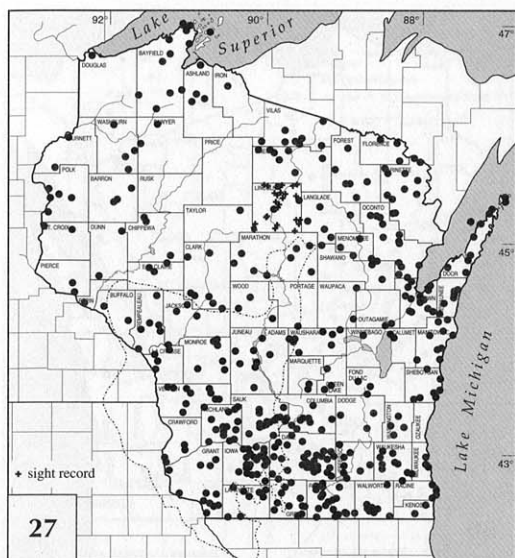
Var. *philadelphicum* (whorled leaves) is known from a few counties in northeastern Wisconsin, where it intergrades with the more western var. *andinum* (mostly alternate leaves).



26. *Polygonatum biflorum* (Walter) Elliott var. *commutatum* (Schult. f.) Morong [*P. canaliculatum*, misapplied]. SOLOMON'S-SEAL, SMOOTH SOLOMON'S-SEAL. Temperate North America, New England to southern Saskatchewan, south to Georgia and northeast Texas (northeast Mexico); very common in Wisconsin mostly south of the Tension Zone, in a variety of open deciduous woods such as dry oak, oak-hickory, oak-pine or white birch woods and rich mesic elm, cherry, basswood and maple woods, in floodplain forests, oak openings, **oak barrens**, thickets, especially along roadsides, railroads, fencerows, on borders of bogs and marshes, and occasionally surviving as a relict in fire-devastated forest later invaded by prairie (Bray 1957). (17) Flowering from late May through June, fruiting from early July to mid October.

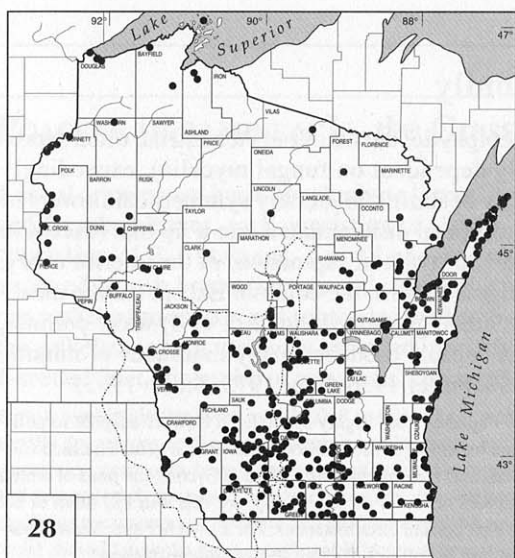
This is typically a variety of forests and oak openings throughout the prairies and plains, whereas the more southerly var. *biflorum* occurs from the Gulf Coast north to Indiana and New York in the deciduous forest.



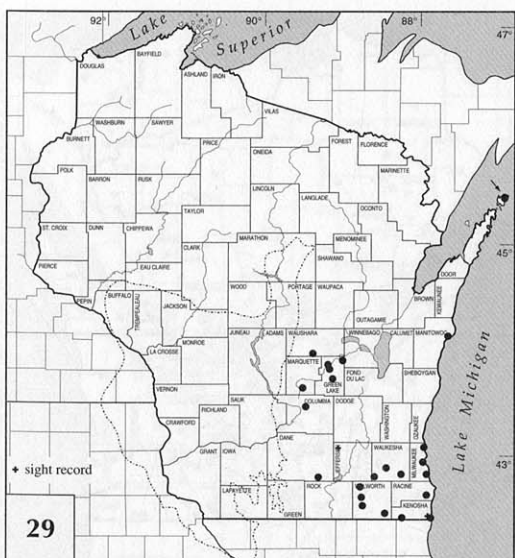


27. *Smilacina racemosa* (L.) Desf. ssp. *racemosa* [*Maianthemum* r.]. FALSE SPIKENARD, FALSE SOLOMON'S-SEAL. Widespread in eastern North America to the eastern Great Plains (Canada to Texas) and the Rocky Mountains, and with a regional variant in the West; very common throughout Wisconsin in dry, mesic or moist woods of oak, pine-oak, oak-maple and sugar maple, south of the Tension Zone in **southern dry forests**, mesic to damp maple, basswood and elm woods, and bottomland hardwoods; north of the Tension Zone in pine, pine-oak, aspen-birch and moist fir-hemlock-white cedar stands, also in semishade along grassy rights-of-way, roadsides, fencerows, slopes and banks, rarely in mesic deep-soil prairies or lowland oak savannas. (19) Flowering from mid May through June, fruiting from late July to early October.

Ssp. *amplexicaule* (Nutt.) LaFrankie is the western race of the species.



28. *Smilacina stellata* (L.) Desf. [*Maianthemum* s.]. STARRY FALSE SOLOMON'S-SEAL. A transcontinental species of sandy, gravelly or alluvial shores, woods, thickets, prairies and meadows, from Canada to Colorado, Kansas and northern Missouri, and west to California; common in the southern half of Wisconsin, especially in **southern dry forests**, infrequent in the northern half, in dry to moist woods such as rich deciduous hardwoods, floodplain forests, conifer swamps and associated thickets (e.g., oak, aspen, pine, pine-oak, oak-elm, edges of white cedar woods), oak openings, prairie patches and pine relics on sandstone hills, ridges, bluffs and outcrops, shaded sandy embankments along rivers, sand barrens and occasionally in hillside prairies; particularly characteristic of stabilized inner beach ridges and dunes along Lake Michigan. (21) Flowering from early May to mid June, fruiting from late July through September.

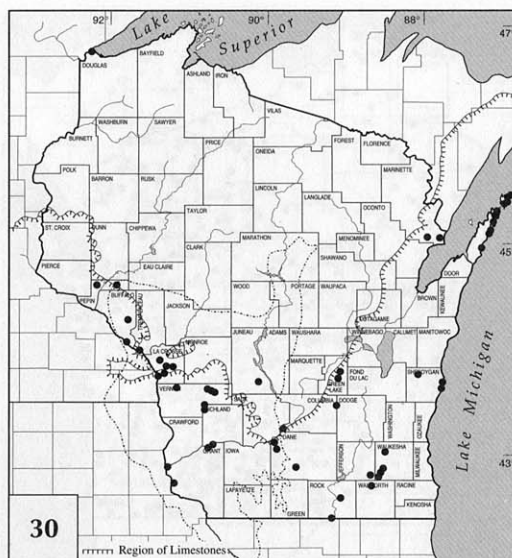


29. *Tofieldia glutinosa* (Michx.) Pers. FALSE ASPHODEL, STICKY FALSE ASPHODEL (Threatened). Eastern United States from Newfoundland and Maine to Minnesota and Alaska, south in mountain bogs to Georgia; rare but locally common in a dozen counties of eastern Wisconsin, in Door County on wet sandy or marly shores and interdunal flats and pools along Lake Michigan, in the southeast in calcareous **wet prairies**, fens, and as a pioneer in moist sandy excavations such as ditches and interdunal swales. (2) Flowering from June to July, fruits persisting through the winter.

Our specimens represent var. *glutinosa*, one of five well-defined geographical varieties, the others all occurring in western North America. Other *Tofieldia* species occur in Eurasia and the Andes of South America.

30. *Zigadenus elegans* Pursh ssp. *glaucus* (Nutt.) Hultén [*Z. e.* var. *g.*]. WHITE OF DEATH CAMAS. Widespread from Alaska to northern Mexico (ssp. *elegans*), east through Minnesota to Quebec and New York, and disjunct to the Ozarks and southern Appalachians; occasional in Wisconsin in the region of limestones (dolomites) in a variety of usually sunny habitats such as **oak openings** and dry to dry-mesic, gravelly calcareous prairies, limestone-capped sandstone bluffs, cliffs and outcrops, stabilized sand dunes along Lake Michigan and, rarely, damp, shaded calcareous sandstone ledges on the Kickapoo River; on north-facing slopes in the open prairie habitats. (5) Flowering from late May through July, fruiting from mid August to early September.

Wisconsin plants are usually treated as *Zigadenus glaucus* or *Z. elegans* var. (or ssp.) *glaucus*, an Ozarkian-Appalachian element, which is, however, scarcely or not at all separable in the Great Lakes region from the cordilleran *Z. elegans*, if the latter occurs here at all.



ORCHIDACEAE—the Orchid Family

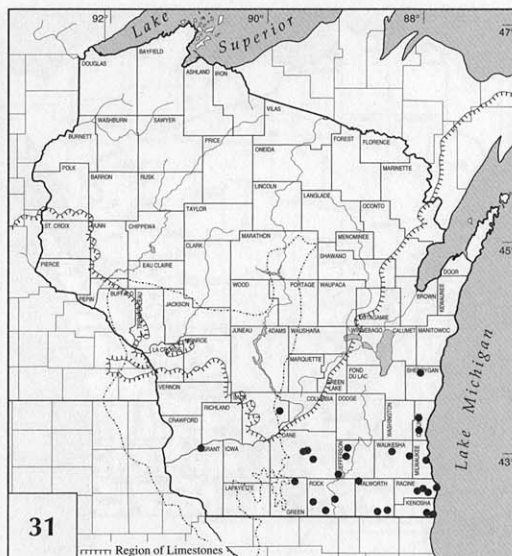
Perennial herbs, the majority tropical and epiphytic, but all of ours terrestrial, often saprophytic (without chlorophyll, nutritionally dependent on fungal mycelia), exceedingly diverse in floral morphology, their strikingly beautiful, bilaterally symmetrical flowers of 6 tepals in 2 whorls of 3 each, the uppermost petal differentiated into a lip that (except in *Calopogon*) points downward because of a 180° twist (resupination) of the inferior ovary, and 1 or 2 stamens fused with style and stigma to form the column. Except for the mealy pollen of the lady's-slippers, pollen grains are agglutinated into 2 (4 or 8) waxy pollinia, delivered by pollinators to the stigma. The capsule produces many thousands of minute, wind-borne seeds. (Case 1987, Correll 1950, Fuller 1933, Luer 1975, Smith 1993)

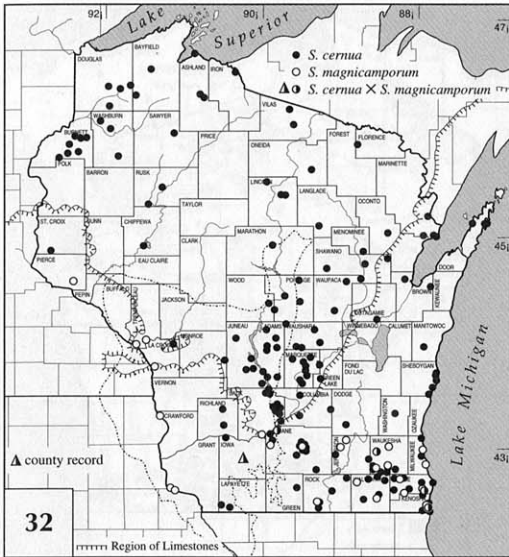
This, perhaps the largest of all plant families (15,000+ species), has highly specialized flowers adapted to pollination by bees, moths, butterflies, flies, mosquitoes and hummingbirds. The 200 horticultural genera include *Cattleya*, *Dendrobium*, *Epidendrum*, *Paphiopedilum*, *Vanda* and *Vanilla planifolia*, *Vanilla* Orchid, the pods of which yield the extract of natural vanilla. Native orchids should never be picked or dug, for this will kill them or set them back, nor should they be transplanted except in exceptional circumstances. For a voucher specimen, a portion of the inflorescence and a sketch of the habit and leaf are often sufficient for later identification.

31. *Platanthera leucophaea* (Nutt.) Lindl. [*Habenaria l.*]. EASTERN PRAIRIE FRINGED ORCHID, PRAIRIE WHITE FRINGED ORCHID (U.S. Threatened, WI Endangered). A midwestern species of the Prairie Peninsula, extending eastward to New York and Nova Scotia; rare in Wisconsin, characteristically in rich mesic or **wet-mesic prairies**, as in Jefferson County (Leopold 1940), but sometimes on edges of tamarack fens. (3) Flowering from late June through July, fruiting in September.

This tall orchid presents a striking display because of its large, white inflorescence, pollinated in the early evening by Sphinx moths (Bowles 1983, Sheviak & Bowles 1986).

The lady's-slippers, *Cypripedium candidum* (Threatened), *C. parviflorum* (Special Concern), *C. pubescens* and their even rarer hybrids (Curtis 1932, 1946, 1959) may be found in moist prairies. *Cypripedium candidum*, once shipped by the wagonload from southeastern Wisconsin to Chicago flower markets, is now all but extinct here.





- 32. *Spiranthes cernua* (L.) Rich. NODDING LADY'S-TRESSES.** A widespread North American "compilospecies" from the Atlantic to the Great Plains; in Wisconsin occasional throughout in moist, open, acidic to calcareous habitats such as sandy lakeshores, swales and ditches, also in peaty, mucky or marly substrates, including **fens**, low prairies, borders of marshes, sedge meadows, bogs and damp thickets, rarely on sandstone ledges in the North; usually among grasses and sedges or in sparse, ecologically open vegetation. (Including the next, 4) Flowering from August through September.

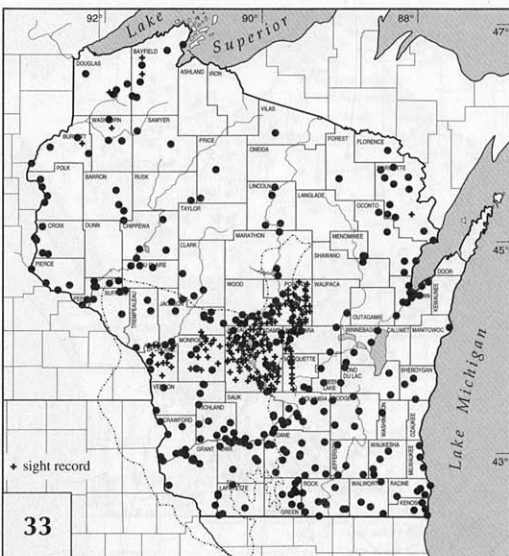
***Spiranthes magnicamporum* Sheviak. GREAT PLAINS LADY'S-TRESSES.** Mostly an eastern Great Plains species; in Wisconsin local on dry to moist calcareous prairies, typically on open gravelly ridges and bluffs of exposed dolomite along the Mississippi River and in rich mesic to moist prairies, wet clay bluffs and swales among sand dunes along Lake Michigan in the southeast. Flowering from late August to mid October.

This stable diploid species, closely related to the above, was recognized as distinct only recently (Sheviak 1973).

POACEAE [GRAMINEAE]—the Grass Family

Annual or perennial herbs (or shrubs to "trees," in bamboos) with cylindrical, jointed stems and 2-ranked leaves, each consisting of sheath, ligule and blade; inconspicuous flowers, consisting of 2–6 stamens, 1 pistil and 1–3 minute scale-like tepals (lodicules), each enclosed by two bracts (lemma and palea), the whole forming a floret; one to several florets, attached to an axis and subtended by 2 empty bracts (glumes), forming a spikelet; and the spikelets in turn variously arranged into inflorescences. Each fertile floret produces a 1-seeded fruit, the grain, or caryopsis. (Fassett 1951, Hitchcock 1951, Pohl 1966)

A vast, worldwide family of over 10,000 species, the Poaceae constitute not only the climax vegetation of seasonally dry regions such as prairies, plains and steppes, but also humanity's most important food crops such as wheat, rice, corn, oats, barley, sorghum and rye, not to mention animal forage and fodder, ornamentals and turf, and raw materials for paper, construction, glue, oils and perfume (the uses of bamboo are legion). The grasses challenge the taxonomist, amateur and professional alike; nonetheless, every wildlife manager, forester or agronomist should know the most significant Wisconsin genera and species on sight.



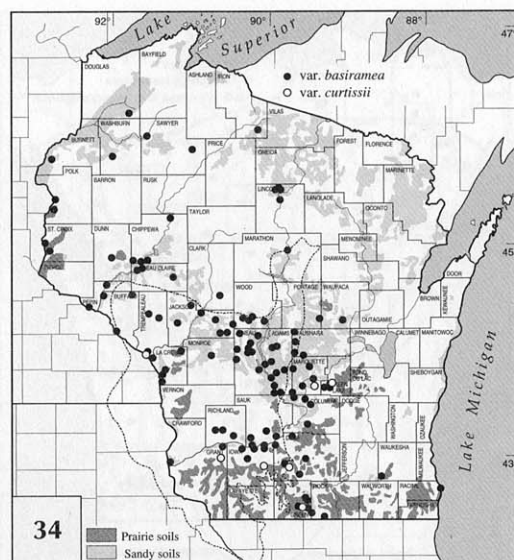
- 33. *Andropogon gerardii* Vitman. BIG BLUESTEM, TURKEYFOOT.** A southern element, widespread from Florida to Mexico, north to Quebec and Saskatchewan; in Wisconsin formerly abundant and still locally common in moist to dry, but especially **mesic prairies**, in dry open woods (often associated with jack pine or scrub oak), and co-dominant with little bluestem on calcareous hill prairies, sandy plains and old fields, but absent from the Precambrian Shield except on roadsides and railroads. (19) Flowering and fruiting in late summer.

The dominant constituent of tallgrass prairies, Big Bluestem, with its 3' to 6' or even up to 9' tall stems, still presides over scenes of unequalled splendor on some of our few remaining unplowed deep-soil prairies.

34. *Aristida basiramea* Engelm. ex Vasey. FORK-TIP THREE-AWN. Interior United States, from Texas to Minnesota and Kentucky, adventive to Maine and Florida; frequent in central and southwestern Wisconsin in dry, sandy, cindery or gravelly soil, most common on **sand barrens**, sandy prairies and abandoned sandy fields, becoming less common in scrubby open black oak woods and on bluffs, slopes below cliffs, and outcrops (sandstone and granite), and weedy on roadsides, railroad tracks, sand and gravel pits, limestone quarries and waste ground. (3)

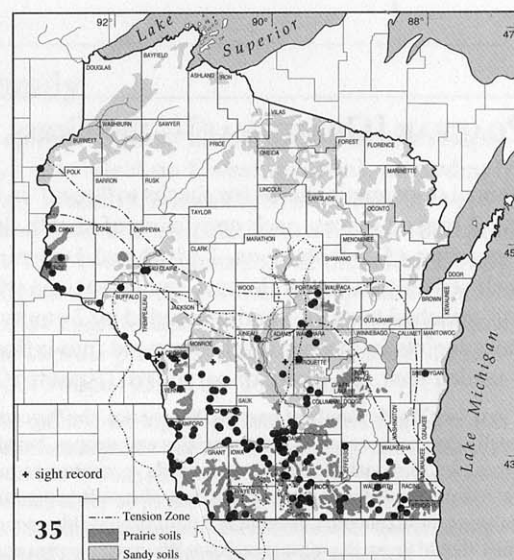
Aristida b. var. *curtissii* (A. Gray ex S. Watson & J. M. Coulter.) Shinnars [*A. dichotoma* var. *c.*], CURTISS'S THREE-AWN, of similar habitats but mostly on dry rocks, is more local and sometimes grows with the typical variety.

The lovely *Aristida tuberculosa* Nutt., Beach Three-awn, of the dry sands of the Atlantic coastal states from Massachusetts to Mississippi and again from Lake Michigan to Minnesota, occurs in Wisconsin in sand prairies and barrens, especially in the Wisconsin and Mississippi river valleys.



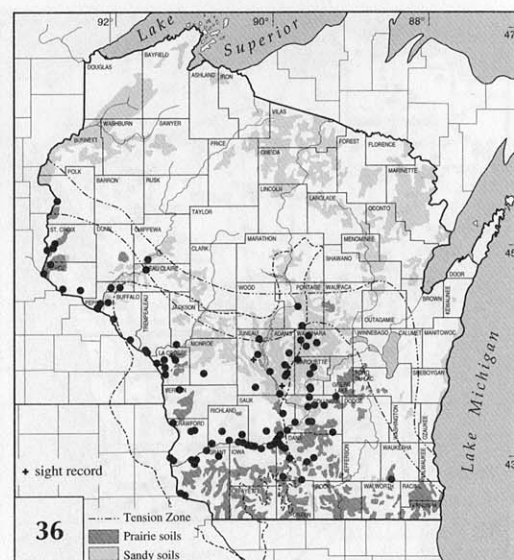
35. *Bouteloua curtipendula* (Michx.) Torr. SIDE-OATS GRAMA. A Madro-Tertiary element, and the most widespread member of a genus found throughout grasslands of the Americas, from Mexico to Canada and also in South America from Colombia to Argentina; in Wisconsin rather common south of the Tension Zone, where it is characteristic of dry-mesic to **dry prairies**, oak openings and cedar glades, usually on sandy plains, gravelly or rocky hills, bluff prairies such as along the Mississippi River, often on calcareous soils, but rarely on roadsides or mine tailings. (5) Flowering and fruiting in late summer.

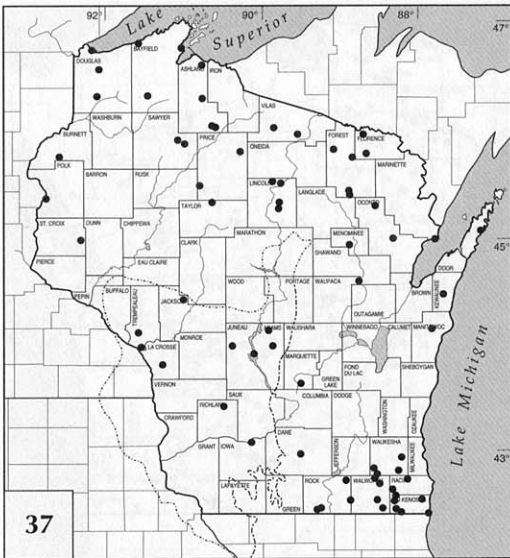
Side-oats Grama is one of several *Bouteloua* species that are prominent members of the shortgrass flora of the Great Plains region. Like Big Bluestem, Little Bluestem, Indian Grass, Switchgrass and Prairie Dropseed, Side-oats is being more widely planted all the time in landscaping because of its attractive appearance and excellent growth in dry soils. The common name refers to the graceful raceme of small, drooping, oatlike spikes suspended on one side of the common axis (rachis).



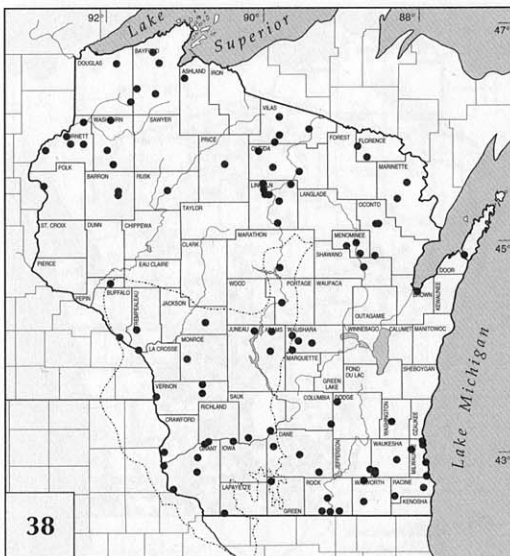
36. *Bouteloua hirsuta* Lag. HAIRY GRAMA. Dry prairies, plains and hills, from Wisconsin and North Dakota to Florida, Louisiana, Texas, California and Mexico; not infrequent in the central sands and outwash-filled valleys of the Wisconsin and Mississippi rivers, in dry sandy prairies, **cedar glades**, oak openings and often on dry sandstone or limestone bluff prairies, where it usually grows with *B. curtipendula*. (6) Flowering throughout August and September.

Hairy Grama is easily confused with the almost glabrous Blue Grama, *Bouteloua gracilis* (Willd. ex Kunth) Lag. ex Griffiths, a widespread and dominant shortgrass prairie and steppe species of the Great Plains, which barely reaches Wisconsin on the St. Croix and Mississippi river bluffs in St. Croix and Pierce counties, and is rarely adventive along railroads elsewhere in the southern part of the state.

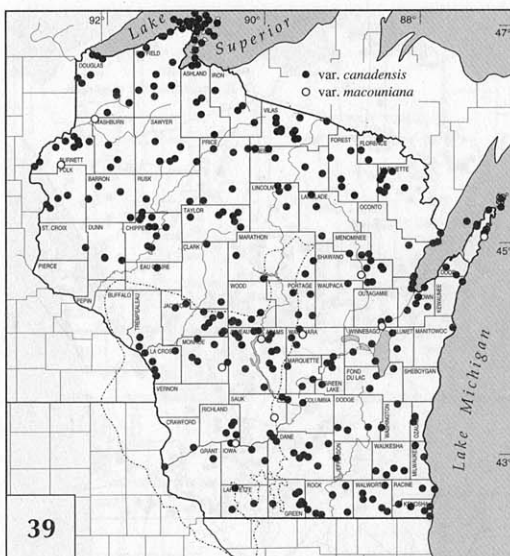




37. *Bromus ciliatus* L. [including var. *intonsus* Fernald]. FRINGED BROME. Transcontinental in temperate North America, south to Maryland, Tennessee, Colorado and California (Mexico); scattered throughout Wisconsin except in the southwest, in open low damp woods, swamps, sedge meadows, prairies, fens, bogs, **alder thickets**, stream banks and shores, northward often in drier, sandy upland oak or aspen woodlands, bracken grasslands, pine plantations and roadside ditches. (11) Flowering from July to early August, fruiting from early July to early October.



38. *Bromus kalmii* A. Gray. KALM'S or PRAIRIE BROME. Northeastern North America, from New England and southern Ontario south to Maryland and west to Iowa, Minnesota and the Black Hills; throughout Wisconsin our most common native brome, in dry to moist open ground or thickets, chiefly associated with **bracken grasslands** and pine or oak woodlands, especially along borders and clearings, frequently in dry (especially on north-facing slopes) to wet-mesic, calcareous prairies, occasionally along roadsides and in fields. (10) Flowering in July, fruiting from early July to early October.

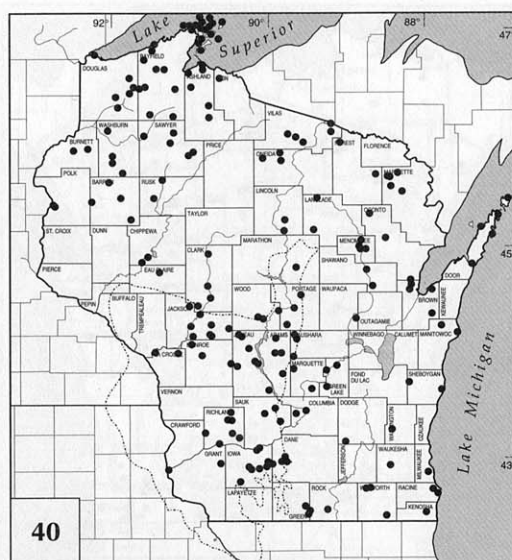


39. *Calamagrostis canadensis* (Michx.) P. Beauv. BLUE-JOINT, REED-GRASS. An aggregate circumboreal species, in North America transcontinental from Greenland to Alaska, south to Arizona and in the mountains to North Carolina; one of Wisconsin's most common wetland grasses, occurring often as a dominant in nearly pure stands, in sedge meadows, marshes, wet prairies, **fens**, swales, bogs, openings in wet thickets, depressions in woodlands, along sloughs, streams, shores and rock pavements along the Great Lakes, only rarely in drier ground. (20) Flowering throughout June.

This highly variable species is represented here mostly by var. *canadensis* [including var. *robusta*], BIG REEDGRASS, and rarely by the small-flowered var. *macouniana* (Vasey) Stebbins, MACOUN'S BLUE-JOINT, MACOUN'S REEDGRASS.

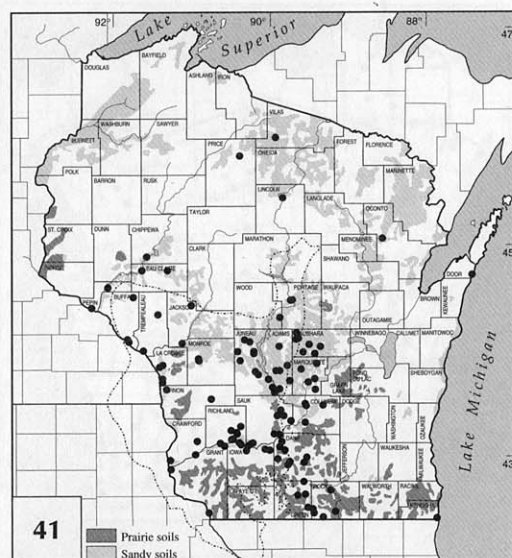
40. *Danthonia spicata* (L.) P. Beauv. ex Roem. & Schult. POVERTY GRASS, POVERTY OAT GRASS. A transcontinental, low-arctic to temperate zone species, from Canada to Florida and New Mexico; in Wisconsin in mesic or more generally dry places, usually in sandy or rocky, poor and thin, occasionally peaty, acidic soil, in **bracken grasslands**, openings in aspen, oak and/or pine woods, barrens or glades, particularly on plains, dunes, ridge tops, bluffs and outcrops, and often weedy in abandoned fields, roadsides, gravel pits and earthen dams. (5) Flowering from late June into early July, fruiting throughout July and August.

A variable species, and, like many others in this genus, often apomictic with abortive anthers.



41. *Digitaria cognata* (Schult.) Pilg. [*Leptoloma cognatum* (Schult.) Chase]. FALL WITCH GRASS. Southeastern North America, west to Minnesota, the southern Great Plains and into northern Mexico; in Wisconsin mostly in the Driftless Area and the central lowlands, where locally abundant, most often on dry to mesic sandy prairies, **sand barrens**, lakeshores and riverbanks, dunes and blowouts, and weedy on roadsides, railroads and sandy abandoned fields. (5) Fruiting from early July into November.

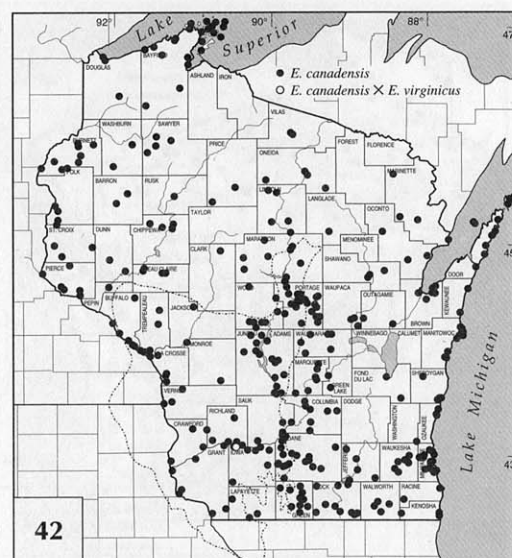
In its delicately branched architecture, Fall Witch Grass superficially resembles *Panicum capillare* L., Common Witch Grass, and *Eragrostis spectabilis*, Tumble Grass (46), two other very common weedy natives that, occupying many of the same disturbed ecological niches, line our highways in the fall with a pale pink haze.

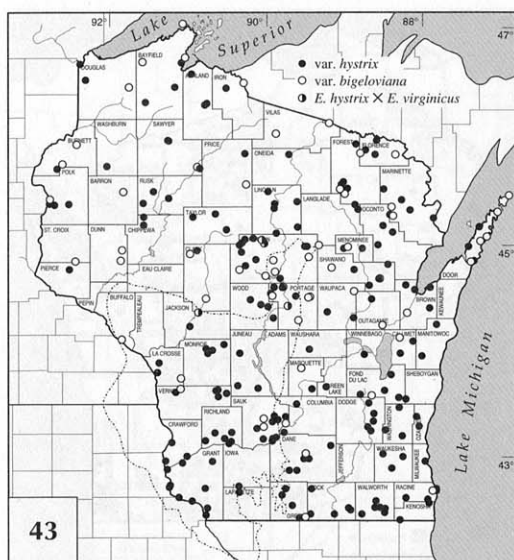


42. *Elymus canadensis* L. CANADA WILD-RYE. Throughout most of the United States and southern Canada to Alaska in one or the other of its varied forms; in Wisconsin common, usually in sandy or gravelly sunny ground, including dry to **wet-mesic prairies**, sandy woods, oak openings and thickets, particularly common on lakeshores, sand dunes and riverbanks, and sometimes weedy along roadsides, railroads and in abandoned fields. (10) Flowering from mid July to mid August, fruiting from early August through October.

Our plants are mostly var. *canadensis* (northern range of the species, south as far as Oklahoma) and var. *robustus* (Scribn. & J. G. Sm.) Mack. & Bush (east-central range of the species). The less well-defined f. *glaucofolius* (Muhl. ex Willd.) Fernald and var. *villosus* Bates are, for the present, included by us in var. *canadensis*. Hybridization with *E. virginicus*, *E. hystrix* and other species may help explain its great variability (Church 1954, 1958, 1967).

Coarse but attractive, this cool-season perennial is easily established in prairie landscape plantings.

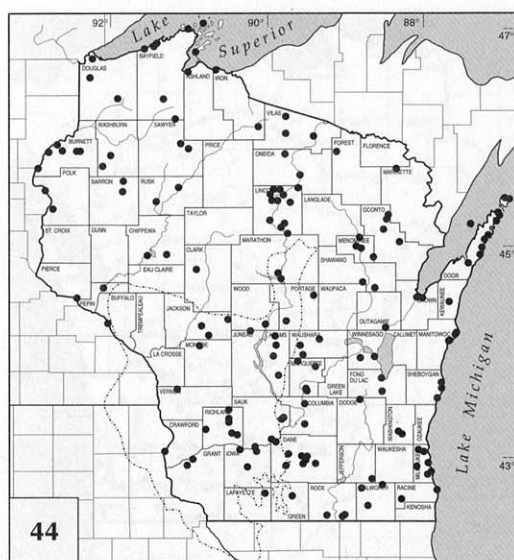




43. *Elymus hystrix* L. [*Hystrix patula* Moench]. BOTTLEBRUSH GRASS.

Widespread in the deciduous forests and northern hardwoods of eastern North America and the eastern Great Plains; in Wisconsin fairly common, especially southward, in rich deciduous or mixed woods such as **southern dry-mesic forests**, less often in dry oak or oak-hickory woods, swamps and thickets, and often on riverbanks and open floodplain forests. (9) Flowering from mid June to mid July.

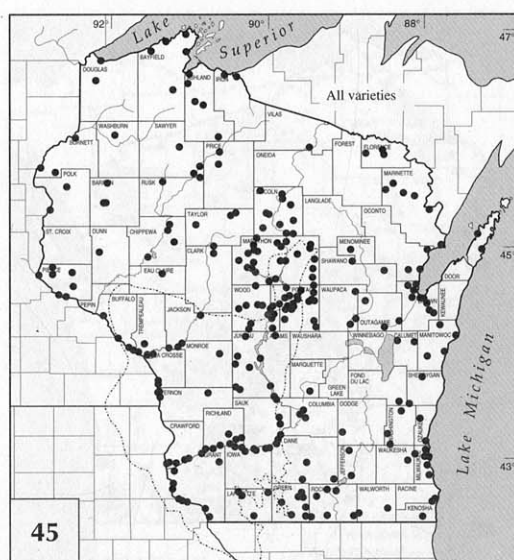
Although very different in appearance owing to its open spikes and obsolete glumes, this charming grass is known to form fertile hybrids with other *Elymus* species such as *E. virginicus*, hence its assignment in recent years to that genus. A variable species, with the typical variety having glabrous to scabrous lemmas, and the var. *bigeloviana* (Fernald) Bowden, BIGELOW'S BOTTLEBRUSH GRASS, pubescent lemmas.



44. *Elymus trachycaulus* (Link) Gould ex Shinn. SLENDER WHEAT GRASS.

A transcontinental species with a Canadian, northern Great Plains and far western center of distribution, reaching eastward only into glaciated areas; in Wisconsin common in dry prairies, open woods, **bracken grasslands**, sand barrens, on cliffs, lakeshores and dunes, and sometimes as a weed on roadsides, railroads and other waste places. (9) Flowering from late June to mid July, fruiting from mid July to late September.

Despite much study, there remains a lack of understanding of the variability and proper infraspecific classification of this polymorphic species. Of the five variants that have been recognized for Wisconsin, ssp. *trachycaulus*, the characteristic Slender Wheat Grass of the prairie states, is the most common.

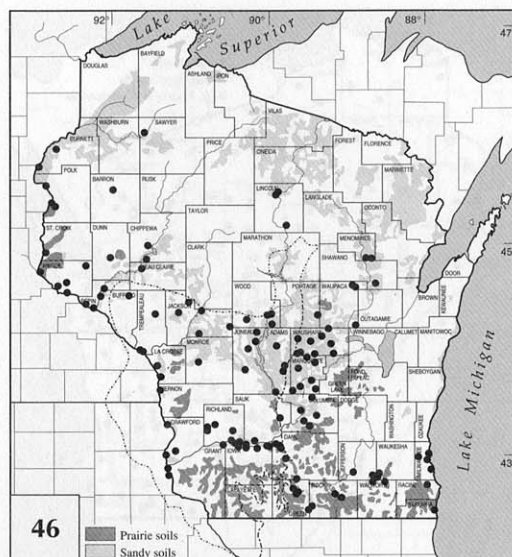


45. *Elymus virginicus* L. VIRGINIA WILD-RYE. A widespread, highly variable temperate zone forest species of eastern North America, from Newfoundland to Florida, extending west across the Great Plains as far as Alberta, Washington and Arizona; frequent throughout Wisconsin in **southern wet forests** and other low deciduous woods and thickets, especially along stream banks and flood plains, marshy, often sandy or swampy shores, damp meadows and prairies. (5) Flowering from the end of June through July.

Our specimens fall into four intergrading varieties (or forms or species), namely, var. *intermedius* (Vasey) Bush, var. *jejunus* (Ramaley) Bush, var. *submuticus* Hook. and var. *virginicus*. Hybrids with *Elymus hystrix* and *E. canadensis* rarely occur. On-going work by Julian J. N. Campbell should soon help clear up this difficult taxonomy.

46. *Eragrostis spectabilis* (Pursh) Steud. [including var. *sparsihirsuta* Farw.]. TUMBLE GRASS, PURPLE LOVE GRASS. A perennial, very widely distributed, from Maine to Minnesota, south to Florida, Texas, Mexico and Belize; locally common in western, central and southern Wisconsin in dry, open, sandy or gravelly ground, in **sand barrens**, dry sandy prairies, oak openings and dry sandy shores, conspicuous (even in northern Wisconsin) as a weed on roadsides, railroads and old sandy fields, spreading into waste places, there resembling *Digitaria* [*Leptoloma*] *cognata* and *Panicum capillare*, two other pink tumbleweeds of similar ecology. (2) Flowering from mid June into early October.

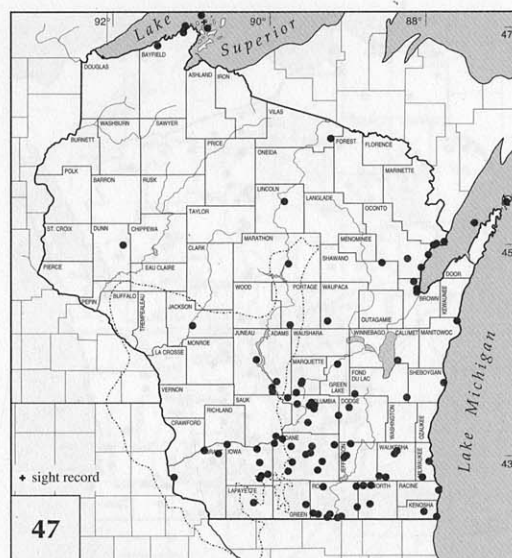
Eragrostis pectinacea (Michx.) Nees ex Steud., Low Love Grass, frequents sand prairies, sandy shores, and cultivated and waste ground.



47. *Hierochloa hirta* (Schrank) Borbas ssp. *arctica* (J. Presl) G. Weim. [long called *H. odorata* (L.) P. Beauv.]. SWEET GRASS, VANILLA GRASS. Circumboreal, from North America to Eurasia in low-arctic to cool-temperate zones, south to New Jersey, Ohio and Arizona; scattered in the southeastern half of Wisconsin, rare in the north, usually in **wet prairies**, swales, shores and edges of woods and bogs, and occasionally in wet sandy fields and roadsides. (4) Reflecting its arctic and boreal biogeography, it is the earliest of our grasses, blooming from March to mid June.

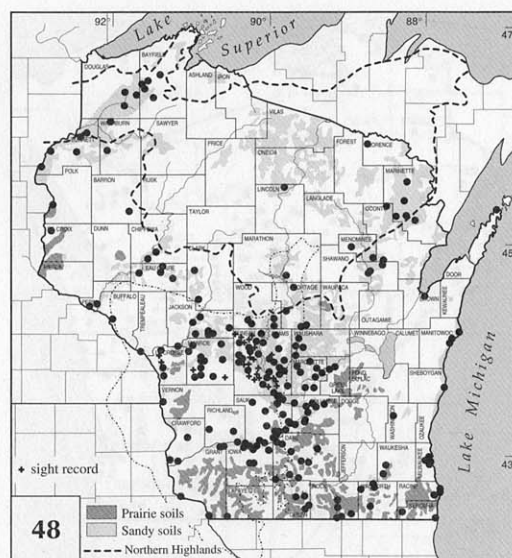
Like many northern species, Vanilla Grass has reduced sexual reproduction due to polyploidy leading to apomixis (asexual seed formation). The sweet vanilla-like fragrance is due to coumarin, the same substance that in wet alfalfa is often lethal to cows. Investigation of this problem at the University of Wisconsin in the 1930s led to the discovery of the rat poison Warfarin and the anticoagulant Coumadin.

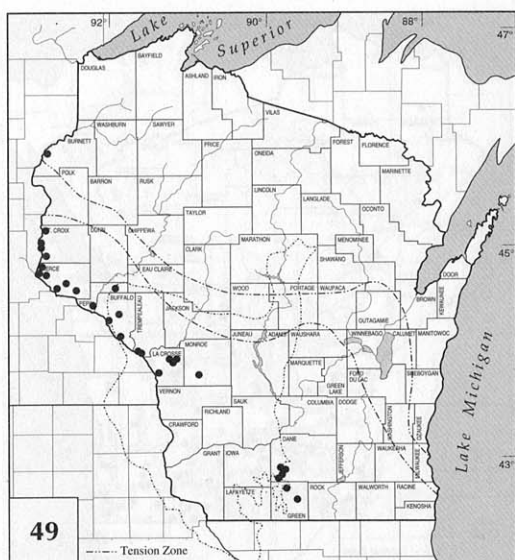
Native Americans used the long shiny leaves produced during the summer to make fragrant baskets.



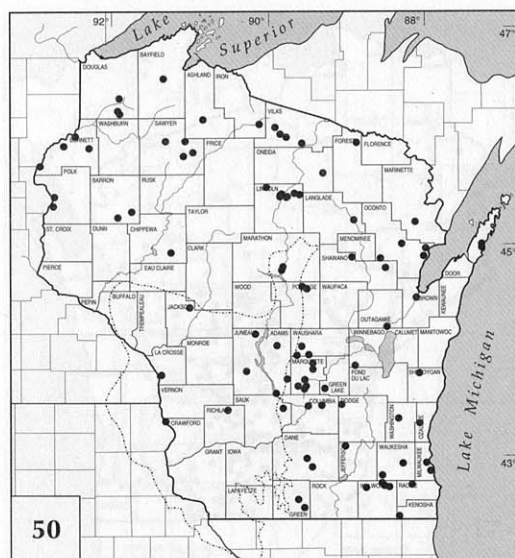
48. *Koeleria macrantha* (Ledeb.) Schult. [*K. cristata* Pers.; *K. pyramidata*]. JUNE GRASS, PRAIRIE JUNE GRASS. Circumboreal and throughout most of Canada and the United States, common in the western states and on the prairies and plains; in Wisconsin lacking from the Northern Highlands and eastern deciduous forests, but regionally common in sandy jack pine, black oak or Hill's oak woodlands, **sand barrens**, dry or dry-mesic prairies, occasionally wet-mesic prairies (e.g., Young and Avoca prairies), sandy abandoned fields, sand dunes and other disturbed sandy places. (13) Flowering in early summer (throughout June and July).

Although for many years known as *Koeleria cristata*, and more recently treated as conspecific with the strictly European *K. pyramidata* (Lam.) P. Beauv. by several North American authors, according to Arnou (1994), these are two distinct species, with the correct name for all North American material being *K. macrantha*.



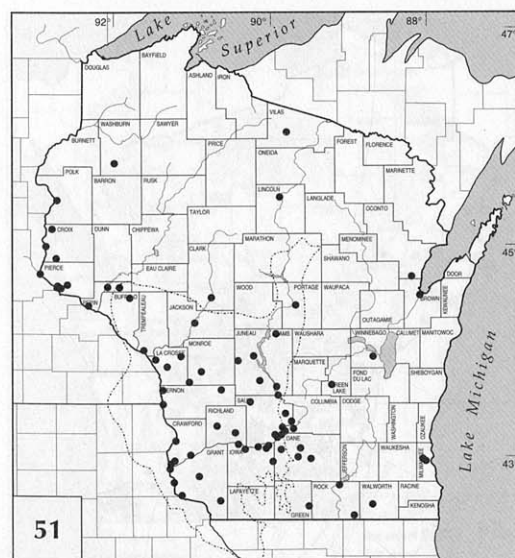


49. *Muhlenbergia cuspidata* (Torr. ex Hook.) Rydb. PRAIRIE OF PLAINS MUHLY. Typical of the northern Great Plains short-grass prairies and steppes, from Alberta to New Mexico, east to the Ozarks, Illinois and Michigan, rarely beyond; in Wisconsin locally common on the very steep, very dry, southwest-facing Mississippi River bluffs, which for all practical purposes have shortgrass or steppe vegetation, otherwise rare and scattered in southern Wisconsin just beyond the Wisconsin terminal moraine in Dane and Green counties (Curtis 1959), in sandy, gravelly or rocky, dry or **dry-mesic prairies**, rarely in abandoned limestone quarries. (4) Flowering throughout September, fruiting in October.



50. *Muhlenbergia glomerata* (Willd.) Trin. MARSH WILD-TIMOTHY, MARSH MUHLY. Eastern North America, from North Carolina to southern Canada and west to Nebraska, the Dakotas (rare) and rarely beyond; in Wisconsin widespread except for the southwest, mostly in moist or wet open ground, locally frequent in sedge meadows, fens, prairies, shrub carrs, bog mats, openings in tamarack swamps, and occasionally in moist woods. Flowering from mid July to mid September, fruiting from mid September to early October.

This species and the next (51) are somewhat allopatric in Wisconsin, but largely sympatric in the upper Midwest and not always readily separable. Nonetheless, they may be distinguished cytologically, geographically and ecologically. *Muhlenbergia glomerata*, a diploid, is basically a north-eastern (Appalachian) hydrophilic element, whereas the tetraploid *M. racemosa* is a mesic tallgrass prairie element (Pohl 1969). Curtis (1959) evidently scored both species as *M. racemosa* and listed bracken grasslands as the community of maximum presence.



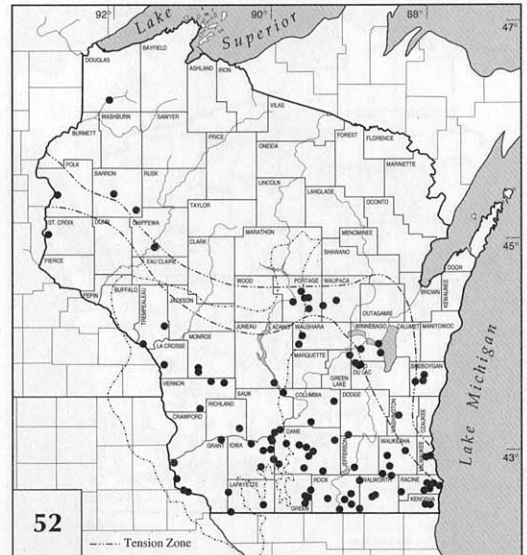
51. *Muhlenbergia racemosa* (Michx.) Britton, Sterns & Poggenb. UPLAND WILD-TIMOTHY. Western and central North America, from Alberta to Michigan and Illinois, in the Great Plains south to northern Texas and Arizona, also eastern Washington and Oregon; in Wisconsin infrequent, but most common southwestward, in moist, mesic or dry prairies, on sandstone or limestone rock outcrops and bluffs, and occasionally along roadsides, railroads and in disturbed places. (Including *M. glomerata*, 11) Flowering from early July to early September, fruiting from late September through October or later.

Similar to *Muhlenbergia mexicana* (L.) Trin. (with which it crosses), *M. sobolifera* (Muhl. ex Willd.) Trin. and especially *M. glomerata* (50), its eastern counterpart, all of which sometimes occur in Wisconsin prairies.

52. *Panicum leibergii* (Vasey) Scribn. [*Dichanthelium leibergii* (Vasey) Freckmann]. LEIBERG'S or PRAIRIE PANIC GRASS. Prairies and open woods, from the northern Great Plains of Alberta to Oklahoma, and in the Prairie Peninsula to Illinois and Michigan (New York); in Wisconsin infrequent to locally common south of the Tension Zone, in dry, wet-mesic or **mesic prairies**, in dry, bluff-top and sandy or gravelly hillside prairies, oak savannas and railroad right-of-way prairies. (10) Flowering from late May to late June (main sexual culms), mid June to early August (axillary, apomictic, autumnal shoots).

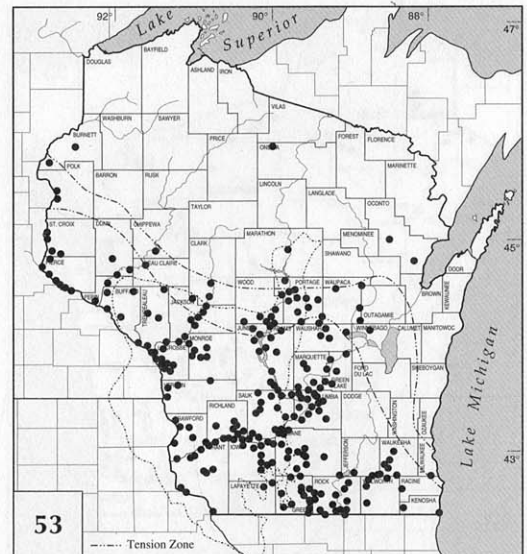
This lovely grass, a conservative prairie species, is now rarely seen; it survives only in our few mesic prairie relics.

At least eight other taxa of panic grass (*Panicum*) occur in Wisconsin grassland and savanna communities, notably *P. capillare*, *P. flexile*, *P. implicatum*, *P. praecocius* (prairies; 55), *P. columbianum*, *P. depauperatum*, *P. linearifolium* (sand barrens) and *P. meridionale* (juniper glades), all except the first two often assigned to the segregate genus *Dichanthelium*.



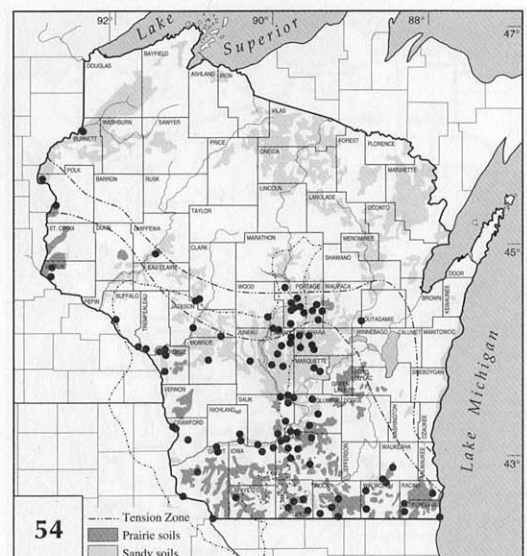
53. *Panicum oligosanthos* Schult. var. *scribnerianum* (Nash) Fernald [*Dichanthelium oligosanthos* (Schult.) Gould var. *scribnerianum* (Nash) Gould]. FEW-FLOWERED or SCRIBNER'S PANIC GRASS. Widespread from the eastern Great Plains and southern Canada to northern Mexico; in Wisconsin frequent south of the Tension Zone in dry, open, sandy or gravelly ground, including dry or **dry-mesic prairies**, steep high lime or sandy prairies, sandstone ledges, open oak woods, often in mesic to moist prairie relics along railroad rights-of-way, and sometimes weedy, spreading to fields and roadsides. (10) Flowering from late May to mid July (main sexual culms), late June to October (axillary, apomictic, autumnal shoots).

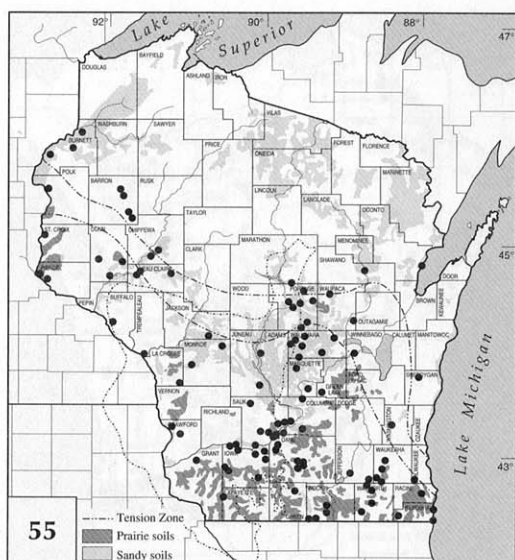
Wisconsin plants belong to the common phase of the species and may readily be distinguished from the southern var. *oligosanthos*.



54. *Panicum perlongum* Nash [*Dichanthelium perlongum* (Nash) Freckmann]. LONG-STALKED PANIC GRASS. A prairie and plains species (southern Manitoba to Texas, east to Indiana); frequent in central and south-central Wisconsin, rare and scattered elsewhere, particularly on dry-mesic to **dry prairies**, oak savannas, often on prairie hillsides, sand prairies, sandstone or limestone outcrops, ancient lavas at the Dells of the St. Croix and sometimes spreading to old fields and roadcuts. (7) Flowering from late May to mid June (main sexual culms), mid June to late July (axillary or basal, apomictic, autumnal shoots).

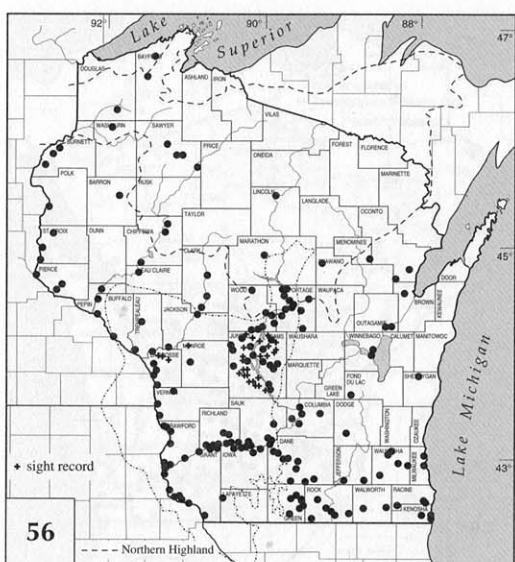
Morphologically intermediate between *P. linearifolium* Scribn., with which it is united by some authors (? Curtis 1959, Gleason & Cronquist 1991), and *P. depauperatum* Muhl., this perhaps a hint as to its origin.





55. *Panicum praecocius* Hitchc. & Chase [*Dichanthelium acuminatum* var. *villosum*; *D. villosissimum* (Nash) Freckmann var. *praecocius* (Hitchc. & Chase) Freckmann; *P. lanuginosum* var. *p.*]. EARLY OR PRAIRIE PANIC GRASS. Sand hills and dry prairies, from North Dakota south to Texas, east to Michigan; in our region basically a prairie species, frequent in central and southern Wisconsin on loam or sandy soils, most often in **oak barrens**, mesic to dry prairies, open oak woods, clearings, edges, fields and roadsides. (5) Flowering from mid June to early July (main sexual culms), late June to early September (axillary, apomictic, autumnal shoots).

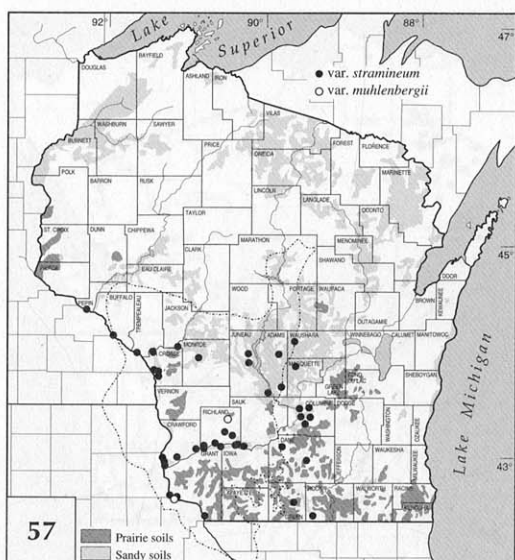
A member of the *Panicum lanuginosum* Elliott complex, and seemingly a link between it and the likewise variable *P. villosissimum* Nash.



56. *Panicum virgatum* L. SWITCH GRASS. One of the main tallgrass prairie and Great Plains species, common throughout much of the United States, northern Mexico and Cuba; common throughout much of Wisconsin except for the Northern Highlands (Precambrian shield) and the wooded northeast, in sunny, dry to moist sandy soils or less often seasonally marshy ground, in mesic to low prairies, swales, dunes, **sand barrens** and blowouts, riverbanks and sand bars, spreading into fields, roadsides, railroads and adjoining waste ground. (10) Flowering from July to early October.

Like Big Bluestem and Indian Grass, Switch Grass is late-blooming, thus betraying its southern origins. It is enormously variable due to various levels of polyploidy, with aneuploidy also reported (see work on Wisconsin populations by UW Dept. of Agronomy professor E. Nielsen 1944, 1947).

Switch Grass is easily established and therefore very suitable for prairie restorations. Although a major dominant farther west, Switch Grass was not as important in Wisconsin prairies.

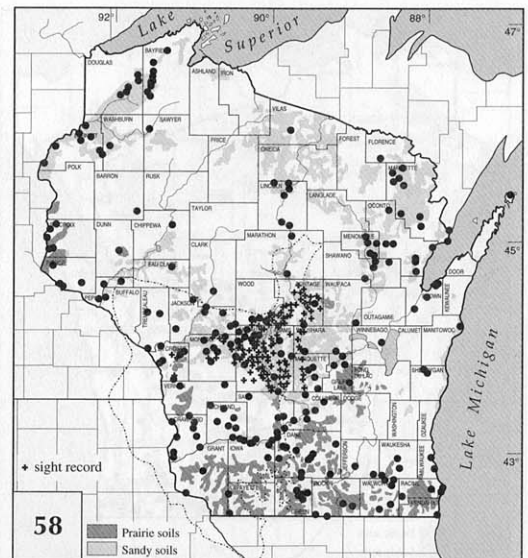


57. *Paspalum setaceum* Michx. [*P. ciliatifolium*]. HAIRY BEAD GRASS. Our only member of an enormous tropical and subtropical genus, *P. setaceum* ranges throughout the eastern half of the United States, from New Hampshire and southeastern Minnesota to Panama; occasional in southwestern Wisconsin, in dry or mesic, usually very sandy soil, in black oak woodlands, stabilized sand dunes and xeric sand prairies on the Mississippi and Wisconsin river terraces, and often spreading to fields, roadsides, railroads and waste places. Fruiting from early July through September or into October.

Our two intergrading varieties are the common var. *stramineum* (Nash) D. Banks, STRAW-COLORED HAIRY BEAD GRASS, and var. *muhlenbergii* (Nash) D. J. Banks, MUHLENBERG'S HAIRY BEAD GRASS, collected only twice. Seven other varieties have been recognized in the *Paspalum setaceum* complex (Banks 1966).

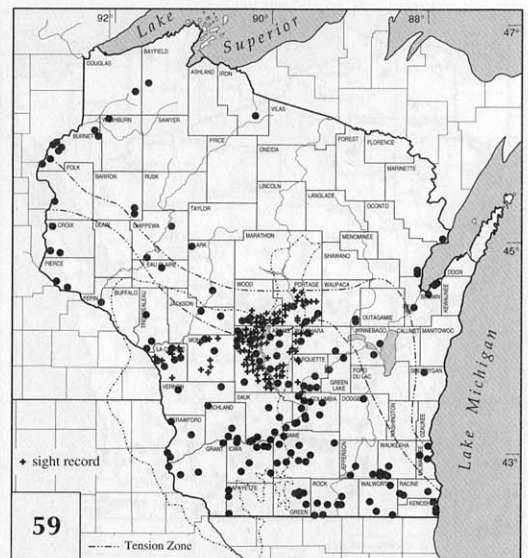
58. *Schizachyrium scoparium* (Michx.) Nash [*Andropogon scoparius* Michx.]. LITTLE BLUESTEM, PRAIRIE or BROOM BEARDGRASS. Abundant, enormously polymorphic and wide-ranging, from southern Canada and across most of the United States to Mexico, an abundant important constituent of tall- and mixed-grass prairies, on dry, rocky or sandy soil generally; in Wisconsin widespread and locally common in **dry prairies**, especially steep south-facing “goat prairies,” but also open oak woods, pine barrens, cedar glades, dunes, sand plains and shores, and spreading along roadsides, railroads and into old fields. (15) Flowering from mid July through September (mid October), fruiting from late August through October.

Although highly variable, all of our material belongs to ssp. *scoparium*. Only occasional specimens of ssp. *divergens* (Hack.) Gandhi & Smeins, not easily distinguished from ssp. *scoparium*, have been seen from the state. The genus *Schizachyrium* includes all *Andropogon* species with only one raceme (rame) at the end of each culm or culm branchlet.



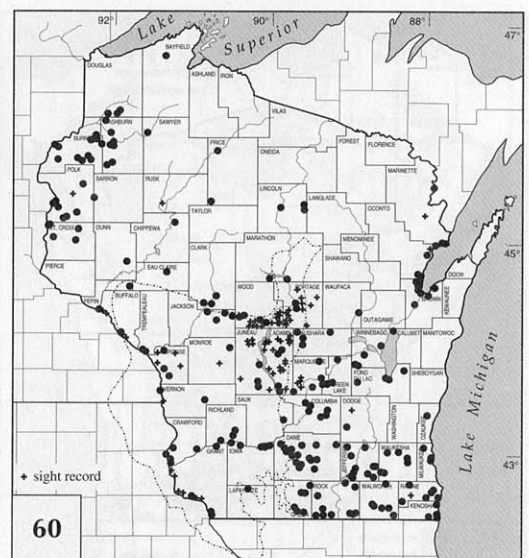
59. *Sorghastrum nutans* (L.) Nash. INDIAN GRASS. Prairies, open woods and fields throughout eastern and central United States, from southern Canada into central Mexico, often dominant or subdominant with *Andropogon gerardii* and *Schizachyrium scoparium* (on uplands), *Koeleria macrantha* (on slopes), or *Spartina pectinata* (in lowlands) in the tallgrass prairie; in southern and western Wisconsin mostly south of the Tension Zone, in **dry-mesic prairies**, open pine, oak or red cedar woods, spreading somewhat onto disturbed sandy fields, roadsides and railroads, especially in north-eastern and northwestern parts of the state. (10)

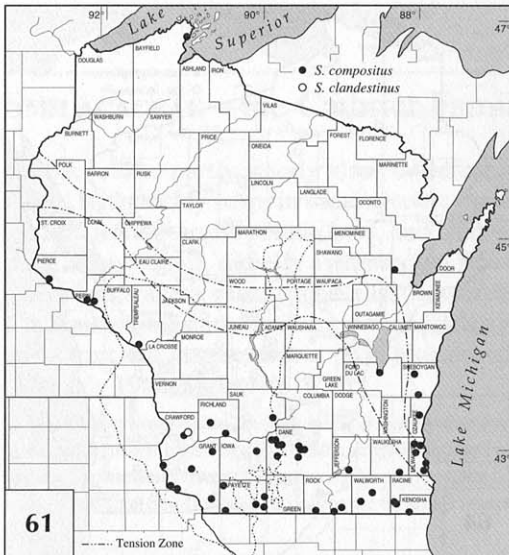
Another coarse, rhizomatous perennial and midsummer bloomer, characteristic of tallgrass prairie, the culms reaching up to 7' tall and growing either in dense stands or as single stems. Indian Grass produces a much thinner sod than Big Bluestem (33). Floristically, *Sorghastrum* is a small genus with South American (Argentinian) relationships.



60. *Spartina pectinata* Link. CORDGRASS, PRAIRIE CORDGRASS, SLOUGH-GRASS. From Newfoundland to Washington and Texas, a wide-spread prairie and plains species of an otherwise cosmopolitan coastal, mostly halophytic genus; locally frequent in Wisconsin in **wet prairies**, fens, sedge meadows, sandy shores, and dry to damp grassy to wet marly spots along roadsides and railroads, sometimes in dry sand. (9) Flowering in early fall.

The leaves are drawn out into a very long, threadlike tip and are sharply roughened on the margins. Seeds are rarely produced in most species of *Spartina*; reproduction and perennation are carried out almost entirely by rhizomes.

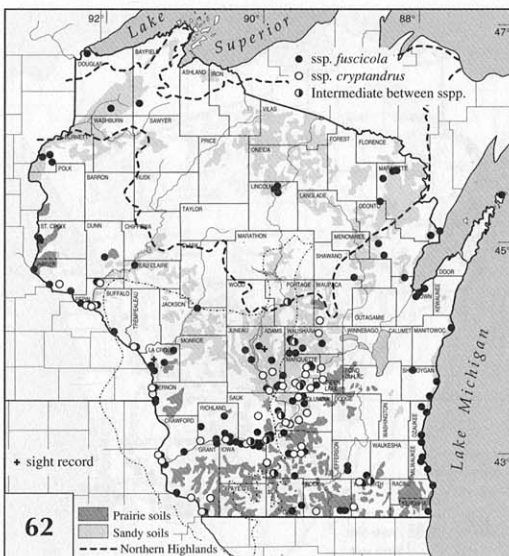




61. *Sporobolus compositus* (Poir.) Merr. [*Sporobolus asper*]. ROUGH or TALL DROPSEED. A near-transcontinental species of dry, often sandy soil, especially on prairies, plains and sometimes beaches, from Texas and New Mexico to Canada; rather rare in the southern third of Wisconsin, where thought by Fassett (1951) to be "probably adventive," possibly not present in undisturbed prairie, but now known to occur in the southwest on most **dry prairies** and a few mesic prairies as well, occasionally spreading to railroads, roadsides, gravel pits and other waste places. (3) Flowering and fruiting in late summer and early fall.

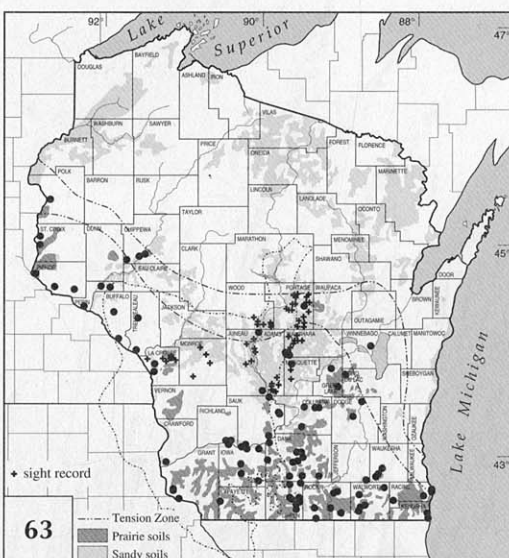
Plants of our range represent var. *compositus*.

***Sporobolus clandestinus* (Biehler) Hitchc. [*S. asper* var. *clandestinus*; *S. canovirens*].** Rough Dropseed, Rough Rush Grass. Our only and isolated record for this southern grass (Texas to southeast Iowa and Illinois, east to Florida and Connecticut) is from a sand prairie south of Bell Center in Crawford County.



62. *Sporobolus cryptandrus* (Torr.) A. Gray. SAND DROPSEED. Widespread in temperate North America, common from the northern Great Plains into Mexico and from the Atlantic coast to the Rocky Mountains and beyond; in Wisconsin mostly south of the Tension Zone, essentially absent from the Cambrian Shield, in dry, sandy soil, occasionally in relatively undisturbed, open to lightly wooded barrens, **cedar glades**, dunes and shores, but locally abundant and weedy in fields and along roadsides and railroads. (7) Flowering from mid June to mid September, fruiting from mid July to mid October.

Divisible on minor characters into ssp. *cryptandrus*, mostly along the Mississippi, Wisconsin and Black rivers and the beds of glacial lakes Wisconsin and Oshkosh, and ssp. *fuscicola* (Hook.) E. K. Jones & Fassett, ranging farther north and east, but like the former, lacking from the area of Precambrian rocks of the Northern Highlands.



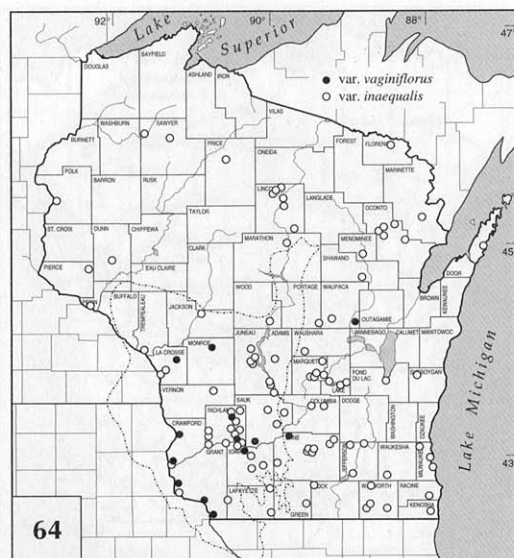
63. *Sporobolus heterolepis* (A. Gray) A. Gray. PRAIRIE or NORTHERN DROPSEED. A tussock grass *par excellence*, of Madro-Tertiary (southwestern and Mexican) floristic affinities, widespread on prairies from Quebec and Ohio to the mixed prairies of the northern and eastern Great Plains (Saskatchewan to Texas and northern New Mexico); in Wisconsin more or less infrequent south of the Tension Zone, where it is an indicator of unplowed and relictual **dry prairies**, often toward the bottoms of steep hill prairies and on river terraces where conditions are more mesic. (9) Like all Madro-Tertiary elements, flowering (August to early September) and fruiting (late August to early October, rarely November) in late summer and fall.

A major dominant of undisturbed dry-mesic and mesic prairies and a prevalent species of dry and wet-mesic prairies (Curtis 1959). A handsome grass, Prairie Dropseed is being planted more and more often not only in wildflower meadows and prairie restorations, but also in more formal gardens.

64. *Sporobolus vaginiflorus* (Torr. ex A. Gray) A. W. Wood. POVERTY GRASS, POVERTY DROPSEED. Throughout eastern North America, from (Nova Scotia) Michigan to South Dakota, south to Georgia, Nebraska, Arizona and Mexico; frequent in much of Wisconsin in dry sandy or gravelly open habitats, often on prairie hillsides, dry bluffs and **cedar glades**, most commonly as a weed along sandy or gravelly roadsides, railroads and even city sidewalks. (3) Flowering from mid August to early September or later, fruiting from late August into October.

Divisible into var. *vaginiflorus*, rare on dry bluffs and hillsides in southwestern Wisconsin, and the far more widespread and weedier var. *inaequalis* Fernald.

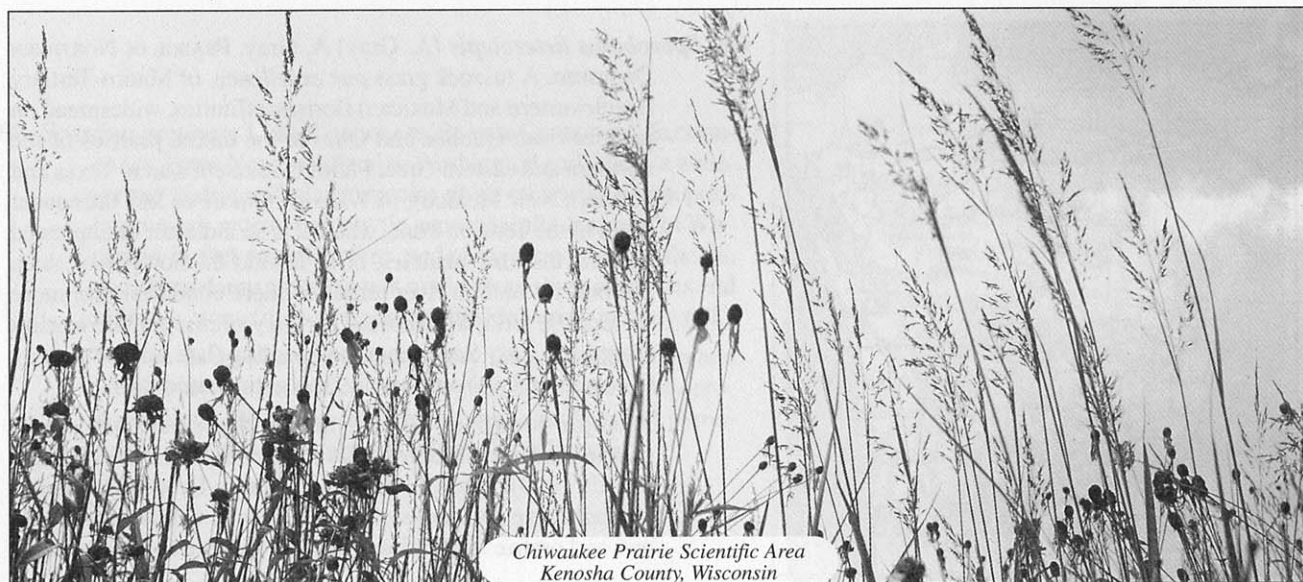
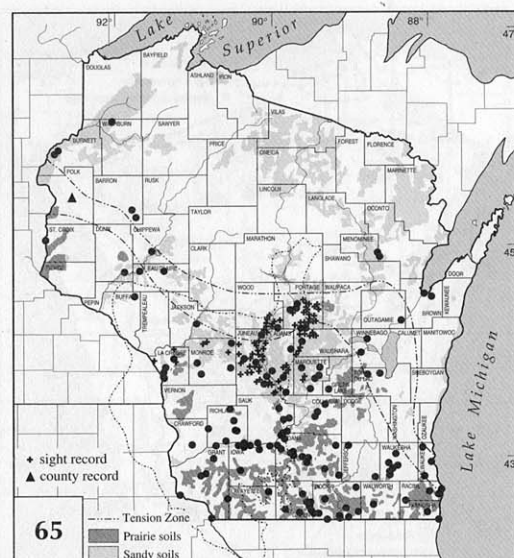
Sporobolus neglectus Nash, Small Dropseed, another delicate annual found in southeastern Wisconsin, is extremely similar except in spikelet size.



65. *Stipa spartea* Trin. [*Hesperostipa spartea* (Trin.) Barkworth]. NEEDLE OF PORCUPINE GRASS. Dry prairies and plains, extending from (Yukon) Alberta to northern New Mexico, eastward through the Great Plains to eastern Kansas and Indiana (Pennsylvania); in Wisconsin locally frequent south of the Tension Zone in open, sandy or gravelly soil, particularly in dry to **dry-mesic prairies**, sand prairies, open oak woods and dunes, sometimes spreading to roadsides and railroads. (9) A northern grass, it flowers in early summer.

The enormous and persistent twisted awn responds to changes in atmospheric moisture and, by coiling and uncoiling, ratchets and drills the sharp-pointed callus at the base of the fruit into the ground, thus helping to plant it.

The more slender *Stipa comata* Trin. & Rupr., Needle-and-thread, characteristic of Great Plains mixed prairies, reaches eastern Minnesota, but has been found in Wisconsin only along railroads as an introduction, though in some sand prairie relicts in Portage, Iowa and Rock counties it may well be native.

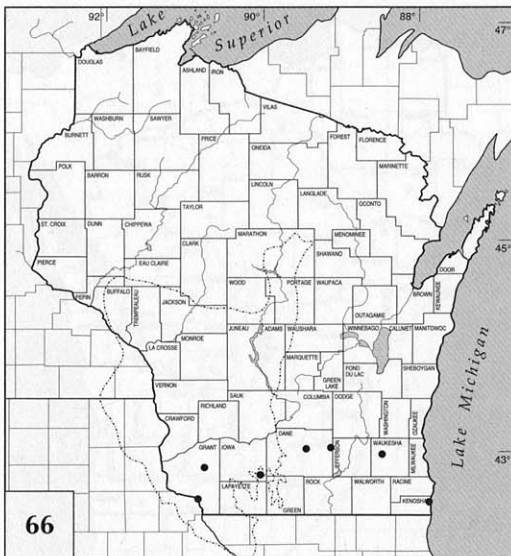
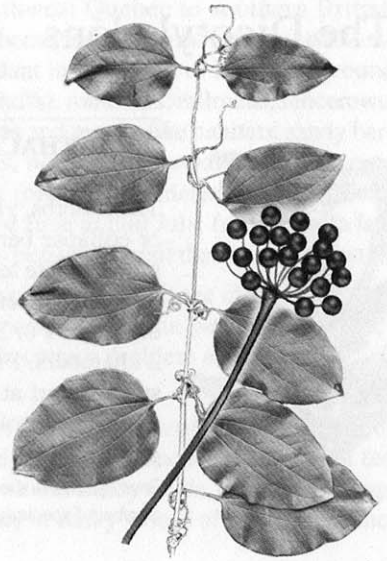


Chiwaukee Prairie Scientific Area
Kenosha County, Wisconsin

SMILACACEAE—the Catbrier Family

Herbaceous to partly woody vines or perennial herbs, from thick rhizomes or tubers, with prickly stems in some species; simple leaves, these usually with paired tendrils from near the petiole base, and blades commonly with 3 to 7 “parallel” main veins; small, radially symmetrical flowers borne in umbels (sometimes racemes or spikes), usually unisexual (the sexes on separate individuals), and with 6 greenish, whitish, yellowish or brownish tepals, 6 stamens and 1 superior pistil; and a fruit that matures into a small blue or red berry with (mostly) 1 to 6 seeds. (Mangaly 1968, McIntosh 1950)

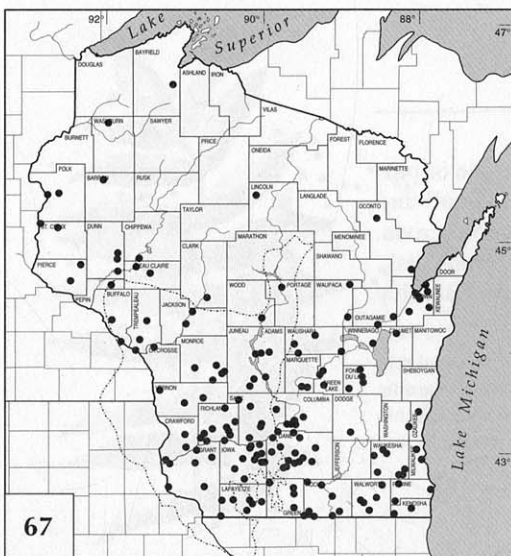
A small but cosmopolitan, mostly tropical family that includes the large genus *Smilax*, Catbrier or Greenbrier, to which all five Wisconsin representatives belong. *Smilax* has broad, net-veined leaves and axillary inflorescences that arise in the angle where a leaf joins the stem. The small, inconspicuous, fetid-smelling flowers are pollinated by small insects, mostly flies in our species.



66. *Smilax herbacea* L. [*S. h.* var. *h.*]. SMOOTH CARRION-FLOWER.

Mostly southern (Appalachian), from Quebec to Alabama, in the upper Midwest very rare (Wisconsin, Michigan, Illinois) or infrequent (Minnesota), including only strictly glabrous plants, these very rare in southern Wisconsin, where known only from cutover woods, grassy weedy banks and thickets in Dane, Grant and Iowa counties. Flowering in July, fruiting in September.

All pubescent specimens from Wisconsin previously identified as *Smilax herbacea* are now assigned to *S. lasioneura*, which may represent only a pubescent western variant, or occasionally to *S. illinoensis* Mangaly, which might have resulted from past hybridization of *S. lasioneura* with *S. ecirrhata* (Mangaly 1968).



67. *Smilax lasioneura* Hook. [*S. herbacea* L. var. *lasioneuron*

(Hook.) A. DC.]. HAIRY or COMMON CARRION-FLOWER. From mainly west of the Appalachian Mountains to Montana, south to western Florida and Oklahoma; in Wisconsin frequent (sporadic northward) in all kinds of open deciduous woods and thickets, from oak-pine woodland and **southern dry forests**, oak openings and edges of prairies, through rich maple-basswood to flood plain forests, especially along borders and clearings, stream banks, marsh margins and old pastures, overgrown relictual cemetery prairies, fencerows, roadsides and railroads (often with other climbing or sprawling vines). (15, as *S. herbacea*) Flowering from late May to mid July, fruiting from August to Thanksgiving, the dark, almost-black fruiting umbels favorite objects for dried flower arrangements.

CLASS MAGNOLIOPSIDA

The Dicotyledons



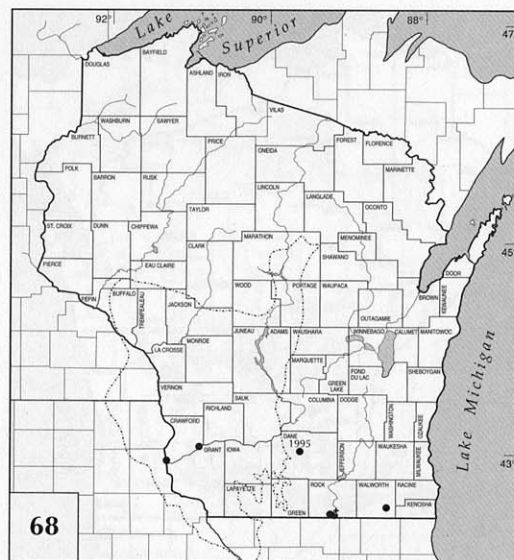
ACANTHACEAE—the Acanthus Family

These herbs, vines or small shrubs have distinctive vegetative characters: namely stems that shrink or collapse beneath each node when dry, notable development of bracts and bracteoles, and simple, opposite leaves. Flowers bisexual, from essentially regular to bilaterally symmetrical, the corolla generally tubular with a 5-lobed limb (as in *Ruellia*) or more often bilabiate. Stamens usually 4 or 2 (and 1 or 2 staminodes frequently present). Ovary superior, with 2 to 10 ovules in each of the 2 chambers. Fruit usually an elastically dehiscent capsule, in which the outer halves or “valves” spring apart at maturity, flinging out the seeds by pegs called “ejaculators” and leaving a persistent central column. (Long 1970)

Pantropical, in the New World abundant from Brazil to Mexico, but only marginally represented in the United States (7 indigenous species in the Northeast, 1 of these barely entering Wisconsin). The Acanthaceae are of slight economic importance. A number of species are cultivated for ornament, including Shrimp Plant, Clock Vine and Bear’s-Breech, and a few are dye plants.

- 68. *Ruellia humilis* Nutt. HAIRY RUELLIA (Endangered).** A widespread species polymorphic in the southern states, from Pennsylvania to southern Michigan and eastern Iowa, south to Florida and Texas; very rare in southern Wisconsin, in dry open ground, dry or dry-mesic prairies, but more often in disturbed prairie-like areas, including railroads, river terraces and bluffs; rarely established as an escape from cultivation along weedy roadsides (as at Middleton, Dane County, where collected in 1995). Possibly introduced from farther south, but found locally in prairie remnants, albeit naturally open habitats, and collected very early (the earliest Wisconsin specimens are without date but were collected ca. 1849 to 1862). Flowering from the end of June to mid-September, fruiting from the end of July to September.

Ruellia humilis increases through self-seeding in gardens and may eventually become more noticeable as an adventive. The only Minnesota collection, just across the Wisconsin state line, was apparently introduced (Ownbey & Morley 1991).

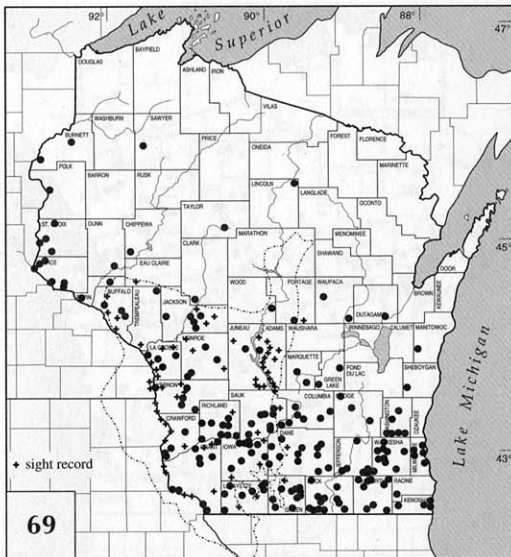


ANACARDIACEAE—the Cashew or Sumac Family

Shrubs or small trees with resinous tissues, sometimes poisonous, and simple or pinnately compound leaves. Flowers in branching inflorescences, mostly small and numerous, bisexual or unisexual (including North American species), 3- or 5-merous. Stamens (in ours) usually 5, arising from or under the edge of a nectariferous disk. Pistil 1, the developed ovary 1-chambered, 1-seeded. Fruit usually a drupe. (Barkley 1937, Brizicky 1962, Fassett 1940)

Predominantly tropical, but extending into temperate Europe, Asia and America, where its principal representatives are sumacs, poison-oak, poison sumac and poison-ivy, the latter three well known for causing contact dermatitis in people allergic to them. The family is a source of edible seeds (cashew and pistachio “nuts”) and fruits (mango), some ornamental plants (notably the Smoke-tree), and various products, including tannic acid, resin, oils and lacquers.

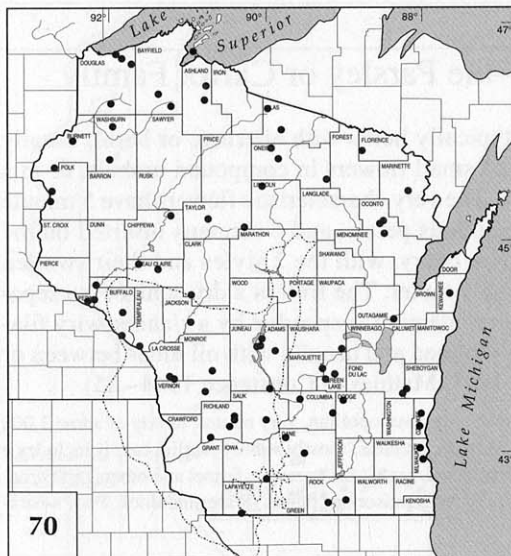




69. *Rhus glabra* L. SMOOTH SUMAC. Temperate North America, from New England and southwest Quebec to southern British Columbia, south to northern Florida, Texas, Nevada and Mexico; in Wisconsin abundant in dry, more or less open ground (plains, slopes, banks, bluffs), roadsides, railroads, fencerows, dry or **dry-mesic prairies** and prairie-like habitats, sandy barrens, abandoned fields, borders of woods and clearings, including oak openings (often with pines, oaks, hickories). (12) Flowering from mid June to mid July, fruiting from late July into October (fruits persisting until the following June).

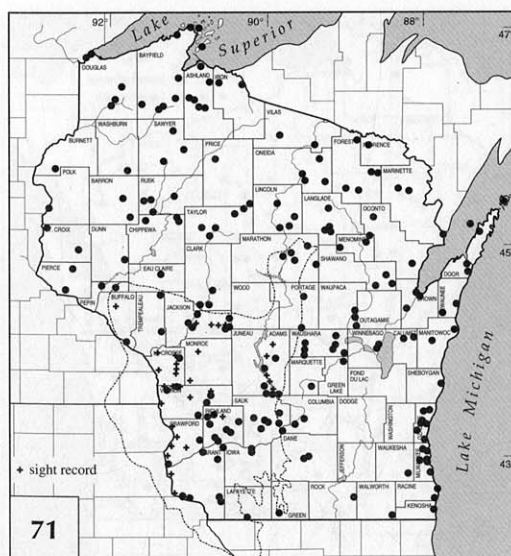
Smooth Sumac forms uniform, often large clones that suppress other plants and contribute to the patchwork appearance of prairies. It can become a problem weed in disturbed prairies.

Rhus copallina L. [including var. *latifolia*], Shining or Winged Sumac, is local in central Wisconsin and along the west side of Green Bay in old sandy fields, prairie openings on bluffs, and open, sandy or rocky woods of oak and/or pine.



70. *Rhus* × *pulvinata* Greene [*R. glabra* var. *borealis* Britton, not *R. borealis* Greene]. HYBRID SUMAC. Generally local in north-eastern United States and southern Canada, but rather frequent to common in the Appalachians and Upper Midwest; in Wisconsin frequent in habitats similar to those of its parents: edges of dry, sandy, rocky or loamy woods (oak, pine-oak, aspen), thickets, roadsides, fields, banks, fencerows, prairies and prairie-like areas, often on formerly pastured or cultivated hillsides reverting to forest.

This polymorphic series of presumed hybrids and hybrid segregates is derived from crosses between *R. glabra* and *R. hirta*. Judging from herbarium records, these hybrids are about half as frequent in Wisconsin as *R. glabra* itself, but given the difficulty in identifying specimens without fruit, are probably more common. According to Voss (1985), these are more common in Michigan than pure *R. glabra*.

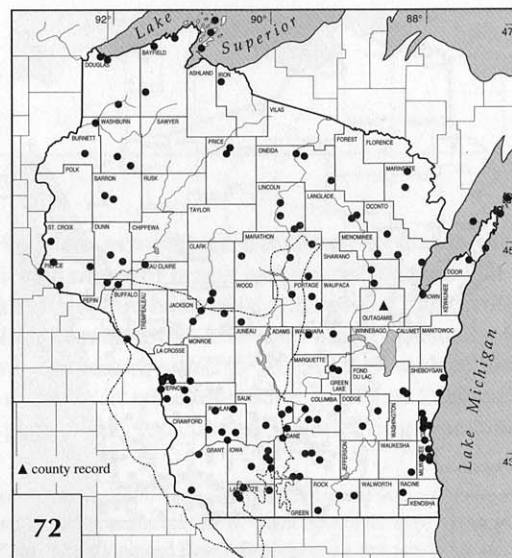


71. *Rhus hirta* (L.) Sudw. [*R. typhina* L.]. STAGHORN SUMAC. Nova Scotia to Minnesota, southward to Iowa and at upper elevations to northern Georgia and northern Alabama; common almost anywhere in Wisconsin in sandy, gravelly or rocky, open or partly shaded habitats: thin, deciduous, mixed or coniferous woods, **oak barrens**, clearings, borders and thickets, wooded or brushy slopes, bluffs and cliffs, roadsides, fields, banks, sand and gravel pits, sometimes moist shores, very rarely in prairies. (10) Flowering from early June to mid July, fruiting from early August through November (fruits persisting through the following June).

Staghorn Sumac is frequently cultivated for its fine autumn color, and some of our collections, especially those with lacinate leaflets, represent garden escapes.

72. *Toxicodendron rydbergii* (Small ex Rydb.) Greene [*Rhus radicans* var. *r.*; *T. radicans* var. *r.*]. RYDBERG'S or WESTERN POISON-IVY. A cordilleran and Great Plains element, from British Columbia to Arizona and Texas, east in glaciated territory through Minnesota and Iowa to Quebec and New England (on a few Virginia mountaintops); in Wisconsin common to abundant, chiefly associated with woods (**southern wet forests**, rich deciduous to dry oak, oak-pine or aspen woods), also on sandy shores and cobblestone beaches, dry prairies, old fields and fencerows, frequently invading cut-over woodland, railroads and waste ground; preferring sandy, gravelly or rocky soil, but also in black organic or clayey soil. (25) Flowering from early June to early August, fruiting from early July through the winter, its white drupes persisting to the following June.

This is the common northern non-climbing poison-ivy often included in a collective *Rhus radicans* L. The climbing southern *Toxicodendron radicans* ssp. *negundo* (Greene) Gillis, Common Poison-Ivy, extends into Wisconsin river valleys.



APIACEAE [UMBELLIFERAE]—the Parsley or Carrot Family

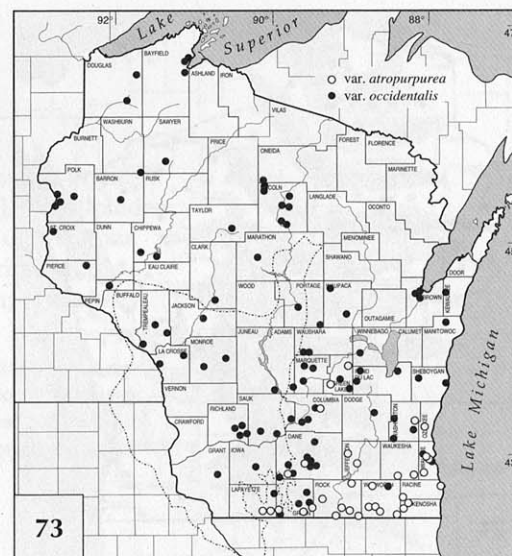
Easily recognized, the umbellifers are typically herbs with alternate or basal, usually compound leaves, sheathing petioles, and small flowers in compound umbels, or in a few genera (e.g., *Eryngium*), dense heads. The very characteristic flowers have 5 minute or obsolete sepals, 5 incurved, soon-deciduous petals, and 5 stamens inserted on the margin of a flat disk on top of the inferior ovary, with the 2 styles and their swollen bases (stylopodium) arising from the disk's center. The fruit is a dry schizocarp separating at maturity into 2 mericarps, these remaining suspended by a slender wiry filament, each mericarp 1-seeded, commonly ribbed and usually with oil tubes between or under the ribs. (Crawford 1970, Fassett 1941, Mathias & Constance 1944–45)

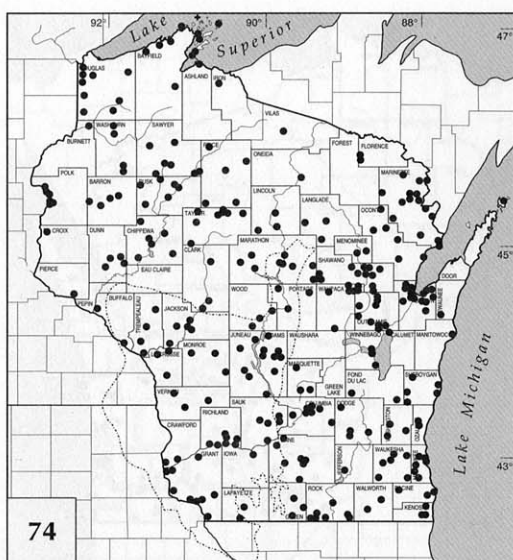
Particularly diverse in north-temperate regions, this nearly cosmopolitan, very natural family of some 3,000 species is closely related to the less highly evolved, more tropical, mostly woody Araliaceae. It includes a large number of food plants (celery, parsnips, carrots), condiments (dill, caraway, fennel and others) and ornamentals (Gout-weed, Masterwort), as well as several deadly poisonous plants (Water-hemlock, Fool's-parsley and Poison-hemlock).



73. *Angelica atropurpurea* L. var. *atropurpurea*. COMMON GREAT ANGELICA, with leaves glabrous beneath, is widespread in northeastern North America, from Labrador to Minnesota, and Illinois to West Virginia and Delaware; local in south-east Wisconsin in marshes, shores, **southern sedge meadows**, swales, fens, stream and lake banks, borders of mixed woods, particularly characteristic of springy habitats such as shaded seepage slopes. (9) Flowering from late May through July, fruiting from late June to early October.

Angelica atropurpurea var. *occidentalis* Fassett. WESTERN GREAT ANGELICA, with leaflets minutely pubescent beneath, is, except in the northeast, frequent in Wisconsin, adjoining eastern Minnesota, eastern Iowa (and northwestern Illinois?) in similar habitats and with the same phenology as the typical variety, but also often in northern sedge-meadows and tamarack swamps. Authors unfamiliar with Wisconsin's flora do not give Western Great Angelica taxonomic recognition despite its obvious geographical-morphological reality.

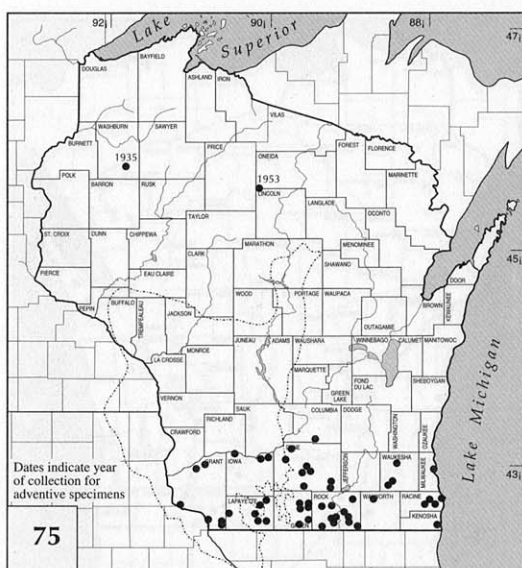




74. *Cicuta maculata* L. COMMON WATER-HEMLOCK. Wet places throughout much of temperate eastern and central North America; common throughout Wisconsin in moist to wet, deciduous, mixed or coniferous woods and thickets, marshes, shores, sedge meadows, **wet-mesic prairies**, shrub carrs, stream banks, swales, sloughs and ditches. (14) Flowering from late June to early September, fruiting from late July to mid October.

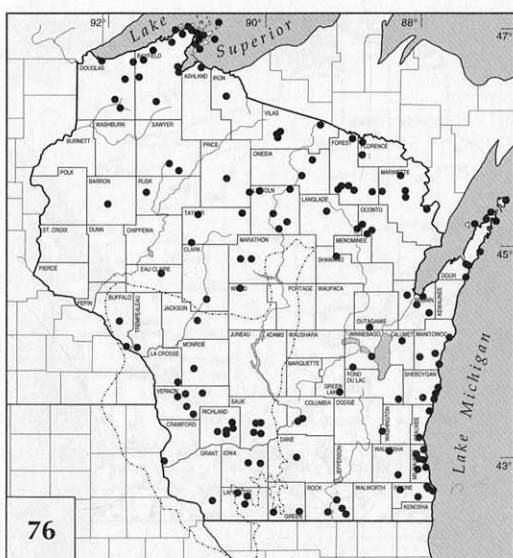
This harmless-looking, white-flowered herb has “tuber-like roots, resembling small sweet potatoes and with the fragrance of parsnips, [that] are deadly poisonous” (Fernald 1950, p. 1095). A European relative, Poison-hemlock, was given to Socrates so as to cause his death.

Daucus carota L., Wild Carrot, Queen-Anne’s-lace, is a smaller plant also with white petals but more finely divided leaves. This pernicious, if lovely, Eurasian weed is not only thoroughly naturalized in such Wisconsin communities as roadsides, old fields and waste places but also invades disturbed woods, prairies and other habitats.



75. *Eryngium yuccifolium* Michx. RATTLESNAKE-MASTER. Mostly a grassland, coastal savanna or open woodland perennial herb, widespread from Florida and Texas to New Jersey and southeastern Minnesota; in Wisconsin locally common only in dry-mesic to **wet-mesic prairie** remnants in the southern tiers of counties (at the two northern stations, with their dates of collection, undoubtedly adventive). (6) Flowering from early July to late August, fruiting from late July well into October or later.

This remarkable species is unlike any other native plant in our area in its strap-shaped, yucca-like leaves with parallel venation (really an expanded midrib) and remotely spiny margins, and in its densely flowered, spherical heads (really contracted umbels). It has many relatives in South America, Mexico, the southeastern and western United States, and even several in the Mediterranean region and Near East.

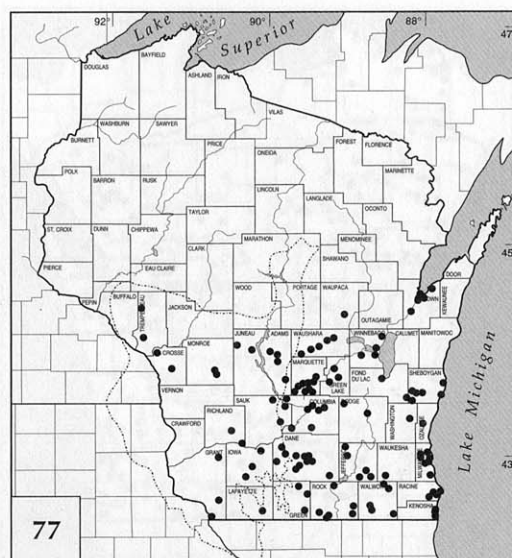


76. *Heracleum lanatum* Michx. [*H. maximum* W. Bartram; *H. sphondylium* L. ssp. *montanum* (Schleich. ex Gaudin) Briq.]. COW-PARSNIP. Widespread in North America, from Alaska and Labrador south to Georgia, Kansas and California (also disjunct, to Siberia); locally frequent throughout Wisconsin in rich, damp, open to shady bottomlands, streamsides, borders of mesic to moist hardwood forests of black ash, elm or silver maple, peaking in **southern dry-mesic forests** (according to Curtis 1959, but most often seen in damp soil of disturbed floodplains, borders of woods and along roadsides), as well as in white cedar swamps, wet thickets, sedge meadows and low prairies, and often weedy on roadsides, pastures and ditches. (4) Flowering from late May to early August, flowering from the end of May through September (fruits may persist until the following spring).

This giant among our umbellifers, to 9' tall and with large, compound leaves and broad, flat umbels, is aptly named after Hercules, a Greek hero of great strength.

77. *Oxypolis rigidior* (L.) Raf. COWBANE, WATER DROPWORT. Eastern North America, from Florida and coastal Texas north to New York and Minnesota; infrequent in the southern half of Wisconsin, in moist habitats, especially marshes, fens and black-soil mesic, wet-mesic and **wet prairies**, often near springs, borders of lowland deciduous woods, swamps of tamarack (with poison sumac) or white cedar, boggy stream-sides, swampy thickets, and moist ditches and swales. (8) Flowering from late July through September, fruiting from mid August to mid October.

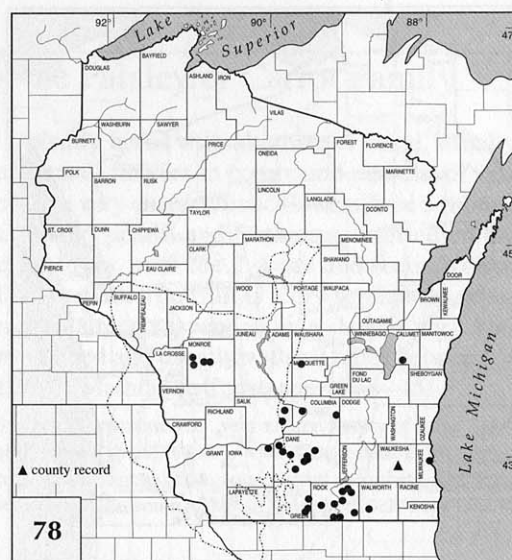
Cowbane bears a superficial resemblance to the less frequent Water-parsnip, *Sium suave* Walter, from which it differs in its entire or irregularly toothed leaflets (versus finely and uniformly toothed in *O. rigidior*) and larger fruits. *Sium* is a less frequent plant of similar habitats, including swales in wet prairies, but occurs more often in marshes, swamps and shores.



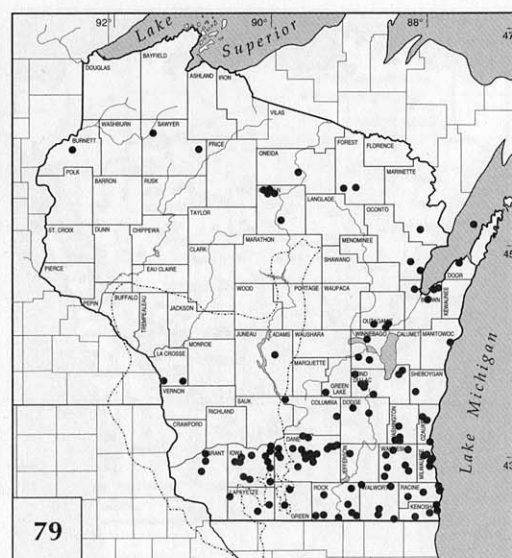
78. *Polytaenia nuttallii* DC. PRAIRIE-PARSLEY (Threatened). A prairies and plains herb, widespread from Kansas, Mississippi and Texas, north to southeastern-most Minnesota and Indiana; in Wisconsin now local in dry to **wet-mesic prairies** along railroads, in oak barrens and cut-over white oak, poplar or oak-hickory forests, and on quartzite outcrops and cliffs in the Baraboo Hills; formerly probably not as rare, but its numbers now drastically reduced due to agricultural destruction or degradation of its habitats. (3) Flowering from late May through June, fruiting from mid July to early November.

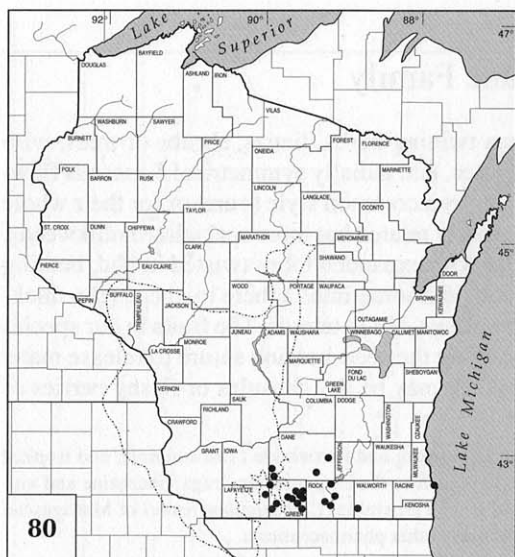
Named for its discoverer, Thomas Nuttall (1786–1859), who accompanied the Astoria Party in its 1811 exploration of the upper Missouri River, and who was thus able to describe for the first time many, even the most common, of our prairie species.

Pastinaca sativa L., Wild Parsnip, a ubiquitous Old World weed especially in southern Wisconsin, is a most pestiferous invader of prairies, virgin or restored.



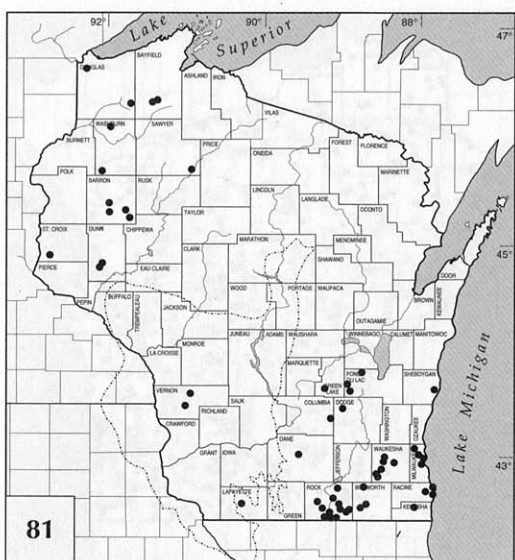
79. *Taenidia integerrima* (L.) Drude. YELLOW PIMPERNEL. An easily recognized, elegant (even delicate) species of mostly open, dry to mesic, rarely moist, eastern deciduous forests, from Georgia and Texas north to Quebec and southeastern-most Minnesota; in Wisconsin in sunny woods and thickets, mainly in the southeast, locally abundant in sandy, gravelly or rocky oak openings, open oak woodlands, and **southern dry forests** of oak-hickory or red oak, and, northward, sporadically in jack pine, aspen and maple-basswood, less often in streambank thickets or swampy deciduous woods, only rarely in prairies, and also as a weed along fencerows, roadsides and railroads. (6) Flowering from early May to early July, fruiting from late June through August.





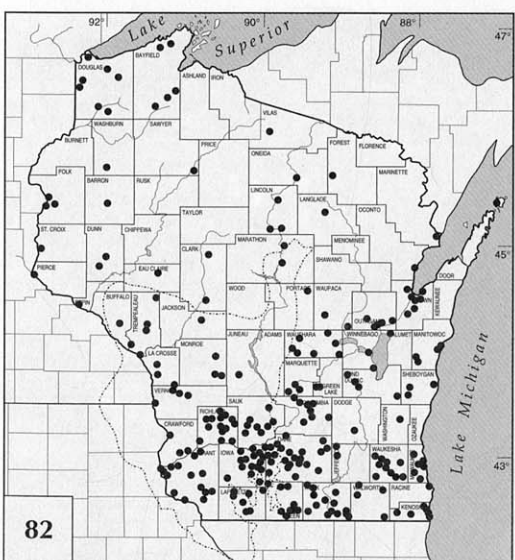
- 80. *Thaspium trifoliatum* (L.) A. Gray var. *flavum* S. F. Blake.** MEADOW-PARSNIP (Special Concern). Prairies, woods and thickets in the eastern and central United States, chiefly in the southern reaches of the Prairie Peninsula from eastern Kansas and Nebraska to southern Michigan and Ohio, eastward to New York and south to Alabama; local in south-central Wisconsin, most frequent on moist to **mesic prairies**, marshy ground near rivers, and rocky oak or oak-hickory woods and thickets, rarely along fencerows, roadsides and railroads. (6) Flowering from early May to early July, fruiting from early August through September.

Frequently confused with the much more common species of *Zizia* (both *Z. aurea* and *Z. aptera*, although more closely resembling the latter), but with all flowers pedicellate (in *Zizia* the central flower in at least some umbellets is sessile) and with fruits prominently winged on all sides (rather than merely ribbed).



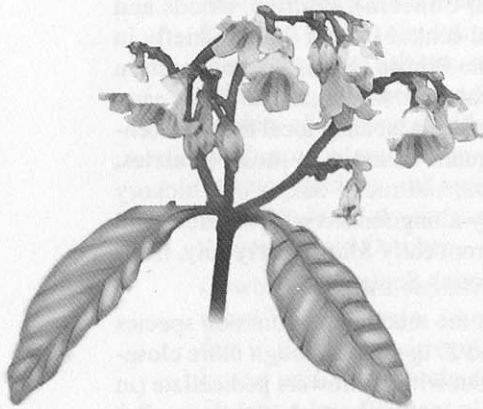
- 81. *Zizia aptera* (A. Gray) Fernald.** HEART-LEAVED GOLDEN ALEXANDERS. Spanning the North American continent, from New England and Georgia to Colorado and British Columbia; in Wisconsin occasional in the southeastern and rare in the northwestern quarters, in the former locally common in moist to **mesic prairies**, drained or burned marshland, prairie relics on roadsides or railroads, and bur oak groves, but rarely in dry limy prairies and (in the northwestern part of the state) sandy pine barrens. (5) Flowering from early May to late June, fruiting from late June to late August.

Strongly resembling *Zizia aurea* (82) and nearly identical to *Thaspium trifoliatum* (80), but unlike the former, with most or all of its basal leaves undivided and heart-shaped at the base. All three species are common throughout the tallgrass prairie region, with Common Golden Alexanders preferring moist prairies and lowland thickets, and Heart-leaved Golden Alexanders and Meadow-parsnip reaching greater prevalence in more mesic, upland prairies and savannas.



- 82. *Zizia aurea* (L.) Koch.** COMMON GOLDEN ALEXANDERS. Widespread, from Georgia and Texas north to Quebec and Saskatchewan; very common in southern Wisconsin, less frequent northward, in open, mesic to wet habitats, especially abundant in mesic to **wet prairies** (with *Gentiana*, *Liatris*, *Valeriana*), fens, grassy meadows, old fields, roadsides, openings and thickets on streambanks, rights-of-way and fencerows, less often in dry prairies and in deciduous woods of all kinds, but there especially in open mesic spots. (11) Flowering from mid May through July, fruiting from mid June to early September.

See comments under the previous two species (80, 81).



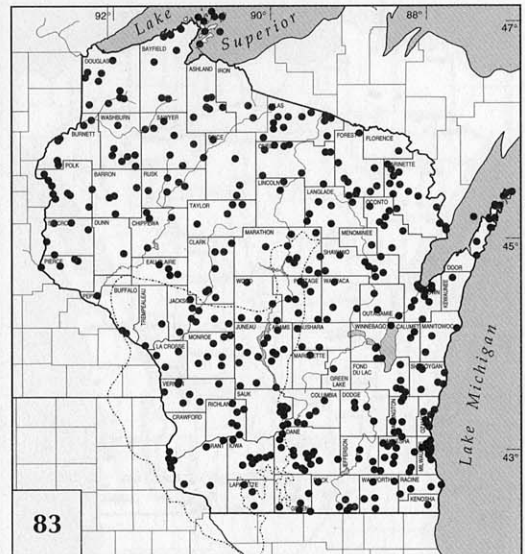
APOCYNACEAE—the Dogbane Family

Chiefly tropical and subtropical, often twining herbs, lianas, shrubs or trees, with mostly opposite, simple leaves, milky juice, and radially symmetrical 5-merous flowers with a pistil of 2 carpels united either by a common style (ours) or for their whole length. The corolla, unlike that of the closely related but more specialized milkweeds, is often funnellform or slenderly tubular with expanded lobes twisted in bud, bearing stamens that often come together around, and sometimes adhere to, the single, thickened, stigmatic cap, their pollen not in pollinia, but in tetrads. The fruits in our species are paired elongate follicles that open along the seed-bearing suture to release many silky-comose seeds, but in the tropics they may be dry capsules or fleshy berries or drupes. (Rosatti 1989, Woodson 1938)

Its many ornamental plants include Oleander, Frangipani and Periwinkle (*Vinca minor*), and tropical species yield many toxic alkaloids and glucosides such as the antileukemic drugs vincristine and vinblastine, derived from the commonly cultivated Rosy Periwinkle (*Catharanthus rosea*) of Madagascar, tranquilizing drugs derived from *Rauvolfia*, and many other pharmaceuticals.

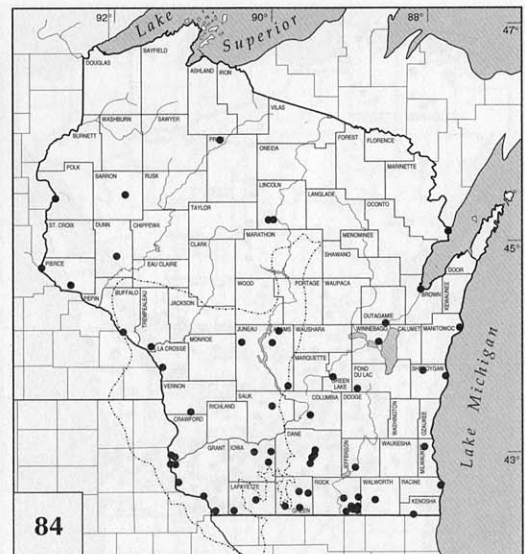
83. *Apocynum androsaemifolium* L. SPREADING DOGBANE. Throughout temperate North America to Alaska, south in the mountains to Georgia and Arizona (lacking south of South Dakota); common throughout Wisconsin, in upland dry oak, pine and/or aspen to mesic forests, especially **northern dry forests**, with *Gaultheria*, *Pteridium* and *Vaccinium*, in jack pine, black oak or bur oak savannas, thickets, clearings and forest margins, sometimes in prairies but more often along roadsides, railroads, fencerows, open or sparsely wooded hillsides, sandy old fields, occasionally borders of sedge meadows and other damp sites; usually associated with woody plants in diverse sunny and grassy or partly shady and brushy habitats. (18) Flowering from mid June through August, fruiting from the end of August into October.

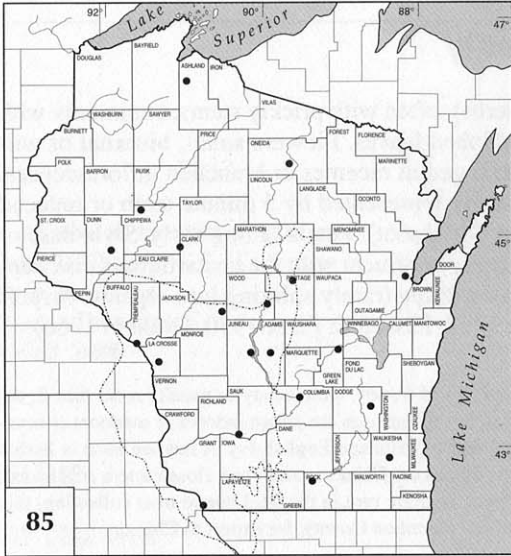
This species is known to hybridize and backcross with our other taxa.



84. *Apocynum cannabinum* L. INDIAN-HEMP, HEMP DOGBANE. Throughout temperate North America, abundant from New York to Alberta and all of the Great Plains, south to the Gulf and west to the Pacific; infrequent across the southern two-thirds of Wisconsin in open habitats such as edges of sedge meadows, wet prairies, cattail marshes, shores of rivers, and dry, wet or **mesic prairies**, often in sandy, gravelly or rocky places with mixtures of weeds and flood plain or prairie species (on Mississippi River bluffs from open woods above through talus-slope thickets to weedy communities at the base), forming colonies along roadsides, railroads, banks, even on mine tailings, but not collected from fields or pastures; in habitats similar to those of *A. sibiricum*, with which it is often confused. (10) Flowering from mid June to early August, fruiting from mid August through September.

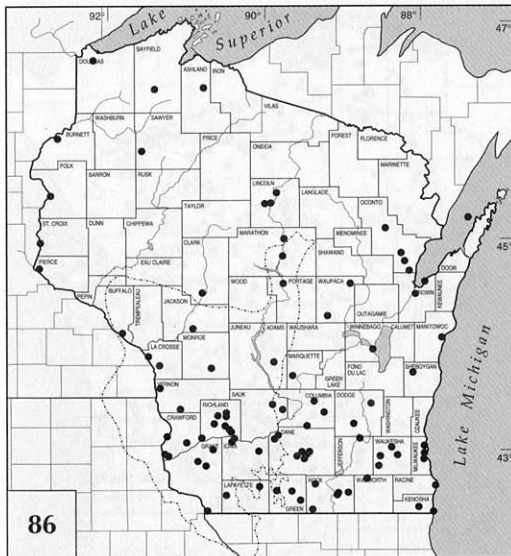
Highly variable in pubescence, leaf shape and petiole length due to hybridization with **83** and **86**.





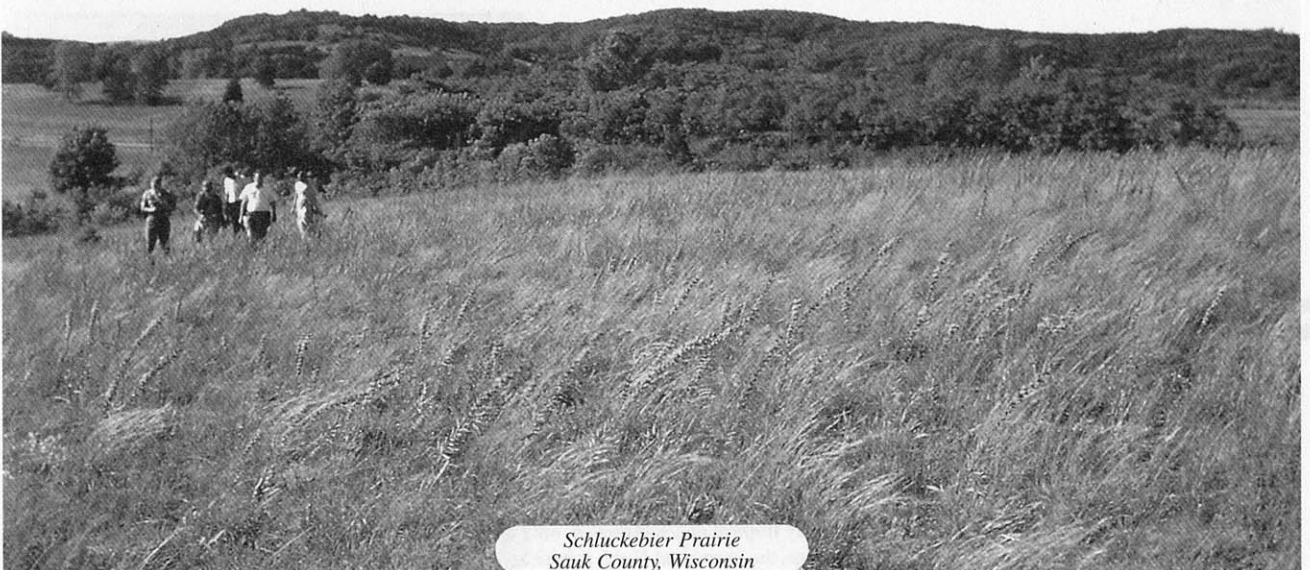
85. *Apocynum* × *floribundum* Greene [*A.* × *medium*]. HYBRID DOGBANE. Newfoundland to British Columbia, south to Virginia, Tennessee, Texas and New Mexico (essentially the same range as *A. androsaemifolium*); occasional throughout Wisconsin in open woods and borders, prairies (often rocky), old fields, railroads and waste ground generally, seldom on lakeshores. Flowering from (late May) June, fruiting from late August into September.

Comprised of a polymorphic series of putative hybrids and backcrosses combining the characters of *A. androsaemifolium* and either *A. cannabinum* or *A. sibiricum*, or both (see Anderson 1936a, Johnson et al. 1998, Woodson 1938).



86. *Apocynum sibiricum* Jacq. CLASPING INDIAN-HEMP, DOGBANE. Throughout much of southern Canada and the cool-temperate United States (Newfoundland south in the mountains to West Virginia, on all of the Great Plains, and west to British Columbia); in Wisconsin frequent in dry to moist, usually open habitats, especially prairies, **fens** and similar grassy areas (formerly pastured openings, field edges, cemeteries, churchyards), also riverbanks, marsh edges, abandoned fields and fencerows, readily colonizing disturbed gravelly sites such as railroads, roadsides and weedy waste places. (2) Flowering from June to mid August, fruiting in September.

There is some doubt as to whether this taxon is sufficiently distinct from *A. cannabinum* to warrant recognition as a separate species. The chief differences are in its ± cordate, subsessile lower stem leaves. More common and slightly weedier than *A. cannabinum*, it has been treated as *A. cannabinum* var. *hypericifolium* (Aiton) A. Gray.



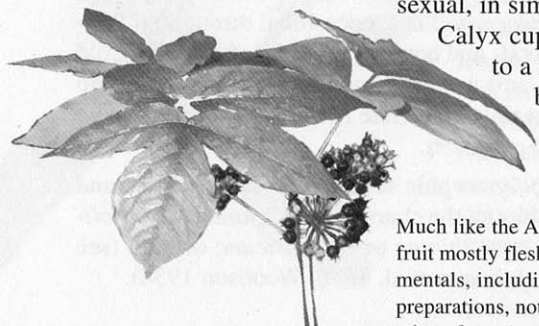
Schluckebier Prairie
Sauk County, Wisconsin

ARALIACEAE—the Ginseng Family

Trees, shrubs or woody vines (sometimes herbs), often with prickly stems, commonly with either palmately or pinnately compound or lobed leaves. Flowers small, bisexual or unisexual, in simple umbels that are usually arranged in racemes or branched inflorescences.

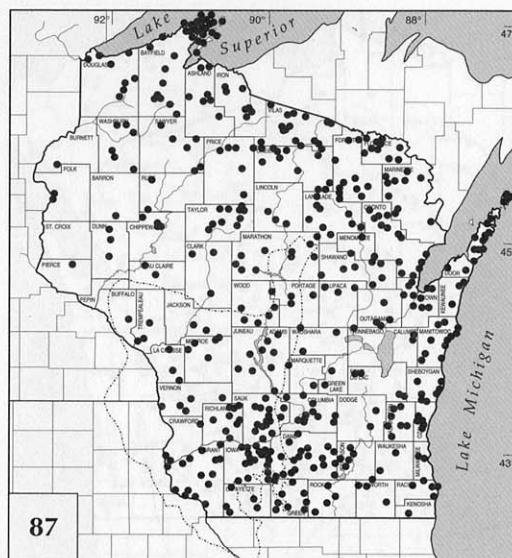
Calyx cup-shaped or inconspicuous, usually represented by 5 minute teeth or reduced to a rim around the top of the ovary (or absent). Petals falling early. Style base or bases generally swollen and usually confluent with the nectariferous disk capping the ovary. Fruit a berry or a drupe (rarely splitting into separate carpels as in the Apiaceae). (Fassett 1937, Fassett & Elser 1950, Graham 1966)

Much like the Apiaceae, but mostly tropical to subtropical and woody, with the styles usually more than 2, the fruit mostly fleshy or pulpy and oil tubes usually absent. Several species are grown indoors or outdoors as ornamentals, including the southern Devil's Walking-stick, False-aralia and English Ivy. A few are used in herbal preparations, notably the famed Ginseng, a name derived from the Chinese name for a close eastern Asiatic relative of our American *Panax quinquefolius*. Having become quite rare in the wild due to over collecting, this species is grown commercially in Wisconsin, especially in Marathon County, for export to China.



87. *Aralia nudicaulis* L. WILD SARSAPARILLA. A transcontinental subarctic and north-temperate species (south in the mountains to Georgia, Indiana, Missouri, Colorado and Washington); very common in dry to moist woods throughout Wisconsin, whether deciduous (oak-hickory, maple-basswood, etc.), coniferous (pine, spruce-fir) or mixed (northern hemlock hardwoods), upland or swampy, common in white pine-red maple and aspen-birch **northern dry mesic forests**; very rarely collected in open deciduous woods with prairie species nearby. (17) Flowering from mid May to late June, fruiting from the end of May through August. Fruits form about three weeks after anthesis and persist through the summer.

Ubiquitous in woodlots, including those known to have been savannas in historic time. It is fire resistant at restoration sites (R. A. Henderson, pers. comm.) and is suspected of having been a component of forest-derived, but not prairie-derived savannas (Bray 1957).

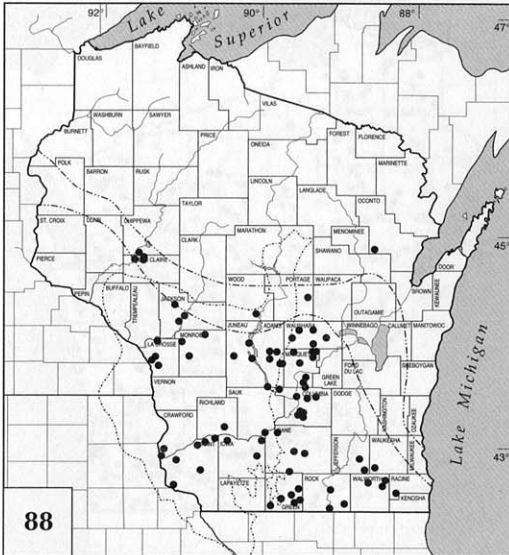


ASCLEPIADACEAE—the Milkweed Family

Of this highly specialized family, our species are erect herbs or rarely perennial vines, yet in the tropics most are lianas and some even trees. Milkweeds have opposite or whorled, less commonly alternate, leaves, milky juice, 5-merous flowers, and paired follicles containing numerous silky-tufted seeds. The 5 stamens are fused to the corolla tube (forming a column, from which arise 5 hoods, each usually with a horn) and to the style (forming a 5-angled gynostegium, with elongate grooves between the anthers). The pollen of each anther sac is agglutinated into a pollinium, with the pollinia of adjacent sacs of neighboring anthers joined by translator arms attached to a central black "gland." When the leg of a visiting insect such as a wasp slips into a groove, it becomes caught, and can only free itself by extracting the pollinium-pair, which is soon transported to another flower, inserted into another groove, and so delivered to the stigmatic surface. (Noamesi & Iltis 1958, Rosatti 1989, Woodson 1954)

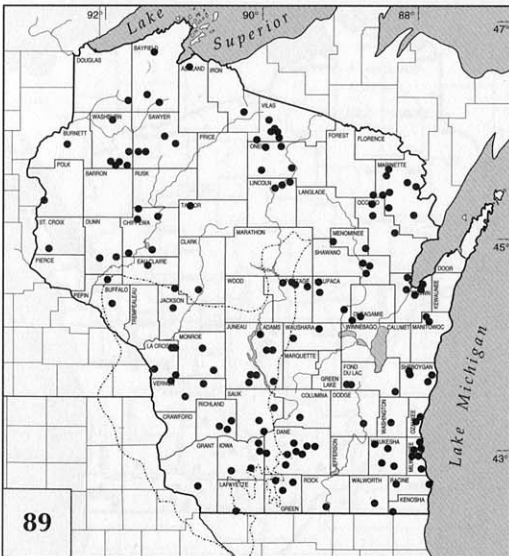
Primarily tropical and subtropical, only a few genera (when broadly defined) ranging into temperate zones, the prominent North American genus being *Asclepias* (150 spp., 14 in Wisconsin).





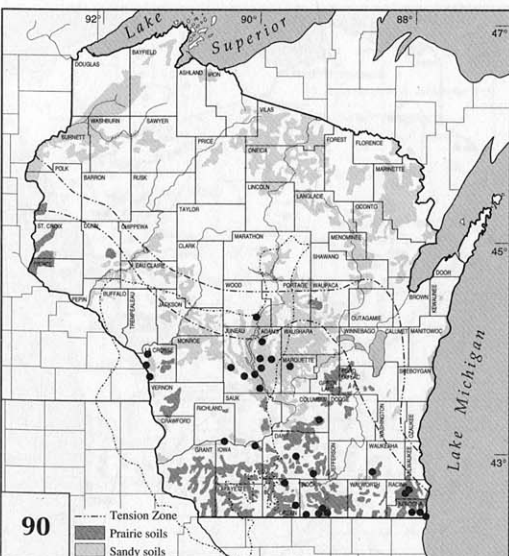
88. *Asclepias amplexicaulis* Sm. CLASPING MILKWEED. From the Atlantic Coastal Plain (New England to Florida) to the eastern Great Plains (Texas, Nebraska and southeastern Minnesota); mostly in southern Wisconsin south of the Tension Zone, in dry, usually sandy, sunny **oak barrens**, sand prairies and savannas, sandstone ridges and often sandy roadsides, abandoned fields, and other open, somewhat disturbed, sandy habitats with sparse vegetation. (6) Flowering from mid June to mid July.

Clasping Milkweed is a distinctive species with solitary terminal umbels, two to five pairs of clasping leaves with \pm crisped margins and greenish-purple (not red or purple) flowers.



89. *Asclepias exaltata* L. TALL OR POKE MILKWEED. A typical mesophytic to moist deciduous forest Appalachian element with a "white pine-hemlock-northern hardwoods" range, from the mountains of northern Georgia and eastern Tennessee to Delaware and beyond to New England and Ontario, west to southern Illinois and eastern Minnesota; in Wisconsin rather uncommon in densely shaded to open, moist to dry woods and savannas, from **southern dry-mesic forests**, edges of woods, and under trees in savannas to rich maple-beech or even swampy woods, now and then surviving in roadside thickets and fields. (6) Flowering from mid June to mid July.

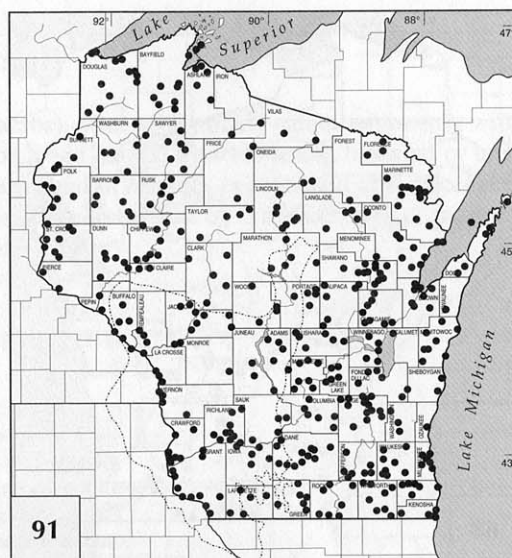
Poke Milkweed is seldom abundant at any one location, but "In some woodlands, where this species is known to grow, years may go by without it[s] being evident, only to show up irregularly in massive numbers" (Swink & Wilhelm 1994, p. 129).



90. *Asclepias hirtella* (Pennell) Woodson [*Acerates* h.]. TALL GREEN OR PRAIRIE MILKWEED. A distinctive Ozarkian tallgrass prairie and savanna element, from eastern Oklahoma to (barely) southern Minnesota and Michigan, more local eastward through Ohio to southeastern Ontario and West Virginia (central Tennessee and southwestern Kentucky); rare in Wisconsin, mainly in mesic to **wet-mesic prairies** in central and south-central parts of the state, and sometimes surviving on roadsides and other dry to moist, sandy, open places. (5) Flowering from July to August.

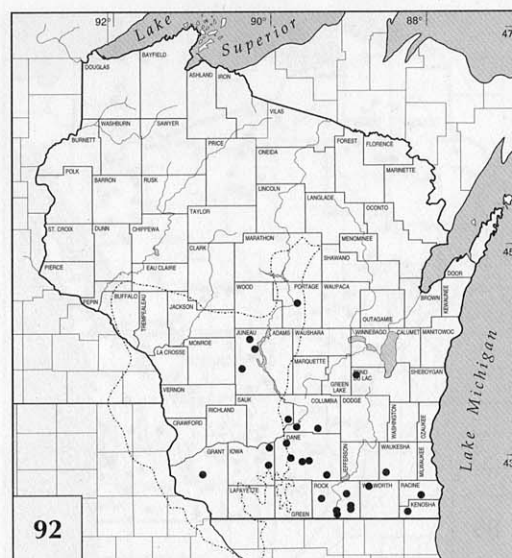
91. *Asclepias incarnata* L. SWAMP MILKWEED. From Kansas and the Carolinas north to the Canadian border, and scattered elsewhere (Florida to New Mexico); in Wisconsin ubiquitous in wet, acidic to calcareous, open habitats such as shores of lakes and rivers, edges of swamps, bogs, woods and thickets, **fens**, wet to wet-mesic prairies, swales and ditches; often in alluvial soils. (8) Flowering from mid June to mid August.

This is one of our taller, showier milkweeds, and the only one growing in saturated soils. Its branched stems have one or more umbels of numerous flowers, richly colored purplish-pink and often whitish in the center. It is a favorite of Monarch butterflies.



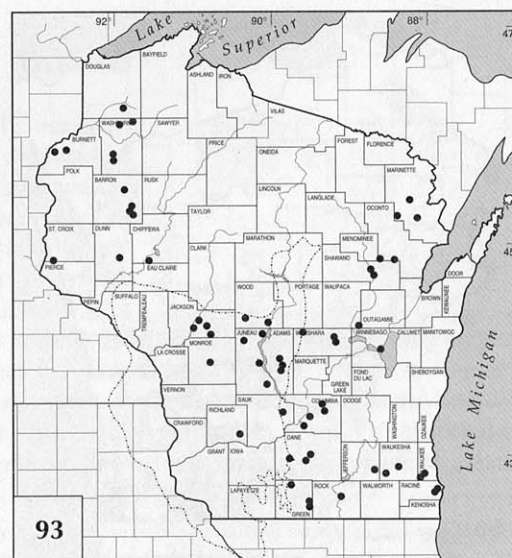
92. *Asclepias lanuginosa* Nutt. [*Acerates* L.; *Asclepias nuttalliana* Torr. sensu Woodson] WOOLY MILKWEED (Threatened). A rather rare central and northern Great Plains element, from Kansas and Iowa to southern Saskatchewan, east to northern Illinois; in Wisconsin rare in gravelly and sandy **dry prairies**, hill prairies, along railroads (especially on cuts through crumbling sandstone), and on sand flats near the Wisconsin River. (3) Flowering from late May to July.

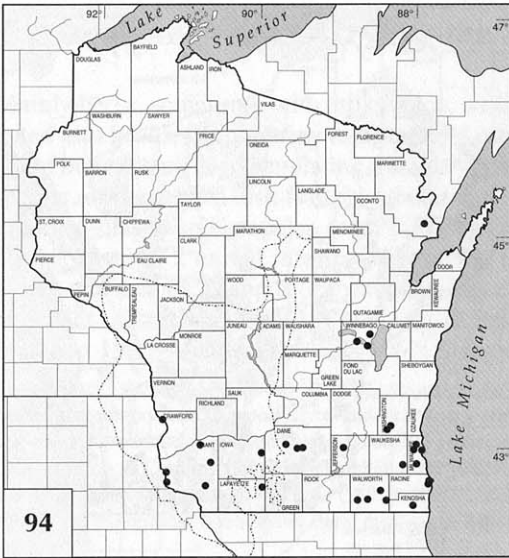
"A very odd and infrequently collected species having essentially the same distribution as *A. ovalifolia* and occasionally associated with it" (Woodson 1954, p. 176).



93. *Asclepias ovalifolia* Decne. DWARF or OVAL-LEAVED MILKWEED (Threatened). A northern Great Plains element, from South Dakota (Black Hills) to southern Saskatchewan, Iowa, northern Illinois and northern Michigan; in Wisconsin occasional in sandy to black-soil, dry to mesic prairies, savannas and woodlands (oak, jack pine and/or aspen), **southern dry forests**, and occasionally on sandy roadsides. (3) Flowering from early June to mid July.

Young sterile plants of *Asclepias syriaca* (96) can be easily confused with this species.

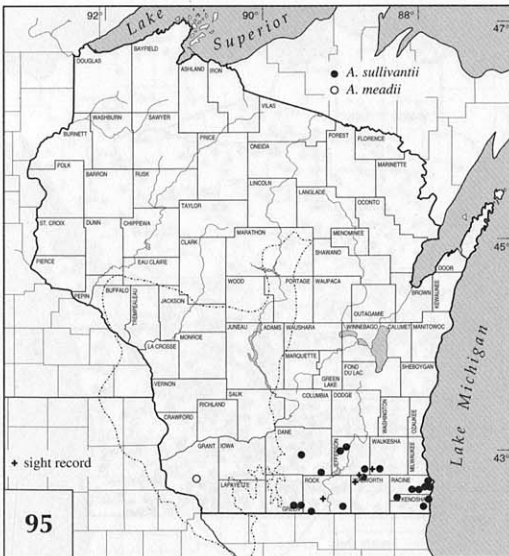




- 94. *Asclepias purpurascens* L. PURPLE MILKWEED (Endangered).** Once undoubtedly a frequent component of the mesic savannas, open oak woodlands and deep-soil prairies of the tallgrass climax, from the edge of the Great Plains (Arkansas, Iowa, Wisconsin) across the Prairie Peninsula to Ohio and southern Ontario, eastward mostly on the Coastal Plain from North Carolina to Massachusetts, today a rare species northward and eastward; in southern and eastern Wisconsin on rocky wooded slopes, edges of open or disturbed oak woods, **wet-mesic prairies** and prairie relics along railroads, and rarely along roads in ditches and hedges. (2) Flowering from mid June to mid July.

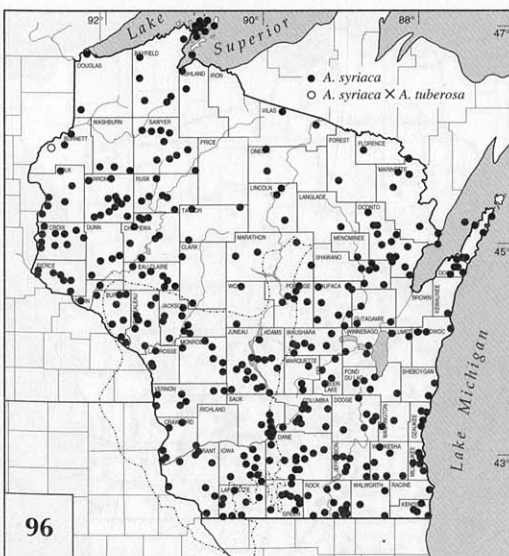
Easily mistaken for *Asclepias syriaca*, Common Milkweed (96), but with a terminal umbel and glabrous corolla lobes, and also *A. sullivantii*, Sullivant's Milkweed (95), but the leaves with evident petioles and wedge shaped at the base.

Purple Milkweed favors mesic prairies and edges of open woodlands and brushy roadbanks that simulate original savanna borders and prairie thickets.



- 95. *Asclepias sullivantii* Engelm. ex A. Gray. SMOOTH OR SULLIVANT'S MILKWEED (Threatened).** East-central Great Plains from Oklahoma and eastern Nebraska to southern Minnesota, east in the Prairie Peninsula to Ohio and southern Ontario, very much in the western range of *Asclepias purpurascens* (which it resembles); rare in eight southern Wisconsin counties, in **fens** and low to mesic prairies, surviving in prairie remnants along railroads and (rarely) as isolated plants along roadsides after the native vegetation has been destroyed. (4) Flowering in July.

***Asclepias meadii* Torr. ex A. Gray. MEAD'S MILKWEED (Extirpated).** An Ozarkian element endemic to midwestern mesic prairies, now rare and local throughout its range, extremely rare in Iowa and Illinois, formerly in Indiana and Wisconsin, where it had been collected once from near Lancaster, Grant County. Not having been found since 1879, it is presumed to have been extirpated in Wisconsin. Many seedlings have been transplanted into protected prairies in Illinois, Iowa and Wisconsin, representing a minor prairie restoration success.



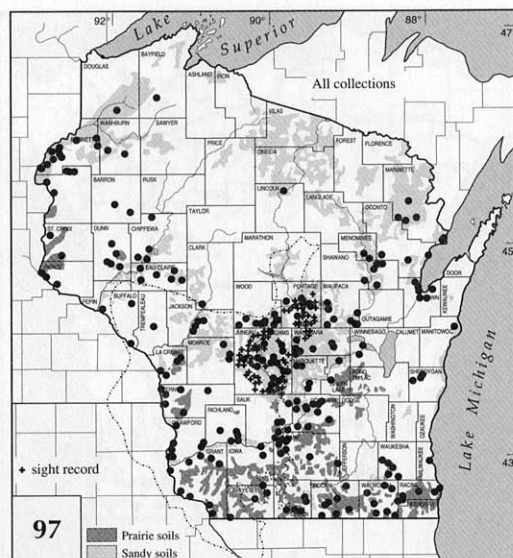
- 96. *Asclepias syriaca* L. COMMON MILKWEED.** Unlike its rare mimics (94 and 95) very common and aggressively widespread in northeastern and central North America, from the Great Plains of Kansas to southeastern Manitoba, east to North Carolina and New Brunswick; extremely common throughout Wisconsin, and one of our commonest native plants, in prairies (**wet-mesic prairies**), fields, pastures, roadsides and railroad embankments, also dunes near Lake Michigan; generally weedy in disturbed sunny habitats, forming nearly pure stands in recently bulldozed city lots. (15) Flowering from early June to early August.

The favorite food of Monarch Butterfly caterpillars, which are now declining due to indiscriminant pesticide spraying in Wisconsin, destruction of the overwintering grounds in mountain forests in Michoacan, Mexico, and possibly other factors not yet understood.

97. *Asclepias tuberosa* L. ssp. *interior* Woodson [including ssp. *terminalis* Woodson]. BUTTERFLY-WEED, ORANGE MILKWEED. From northern Mexico and the southern Rocky Mountains to Minnesota, east to the Atlantic from the Gulf and Florida to New England; in Wisconsin in **dry-mesic prairies**, steep calcareous “goat prairies,” fields and roadsides; particularly common in the sandy areas of the central part of the state. (11) Flowering from mid June to August.

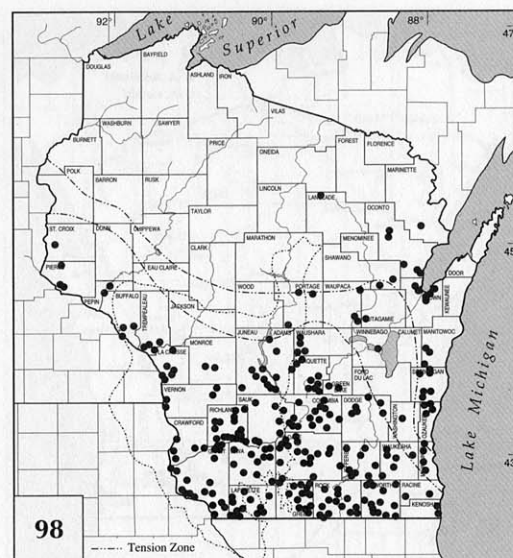
This is a variable species, divisible on leaf shape (Woodson 1947, 1954) into a Floridan, eastern, central and western subspecies, the latter two in Wisconsin, but of questionable reality and here united.

Unique in its color, and “as our only milkless milkweed—with alternate leaves besides” (Voss 1996, p. 92), this is a spectacular plant in the wildflower garden and prairies, where it should not be picked, increasingly rare as it has become in many areas.

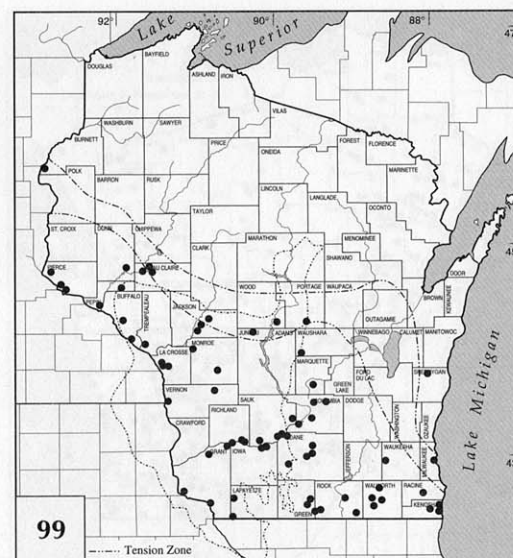


98. *Asclepias verticillata* L. WHORLED MILKWEED. For us, a most distinctive species, but with many southwestern and Mexican relatives, from the Great Plains to the Atlantic (Texas to Manitoba, Florida to Massachusetts); in Wisconsin very common south of the Tension Zone in dry sandy soils, especially mesic to **dry prairies** and open woodlands with prairie flora, commonly weedy on roadsides, pastures and abandoned fields. (9) Flowering from July to early September.

Of the 150 or so species of *Asclepias*, all (with rare exceptions) have the same distinctive flower, pod (follicle) and seed structure, exude a sticky, milky sap wherever the plant has been cut or broken, and disperse their seeds via the autumn winds with the aid of a tuft of long, silky hairs (coma) attached to them. *Asclepias verticillata* itself is a distinctive, slender plant with numerous, narrowly linear, whorled or opposite leaves and white or greenish flowers in several small umbels from the upper nodes.



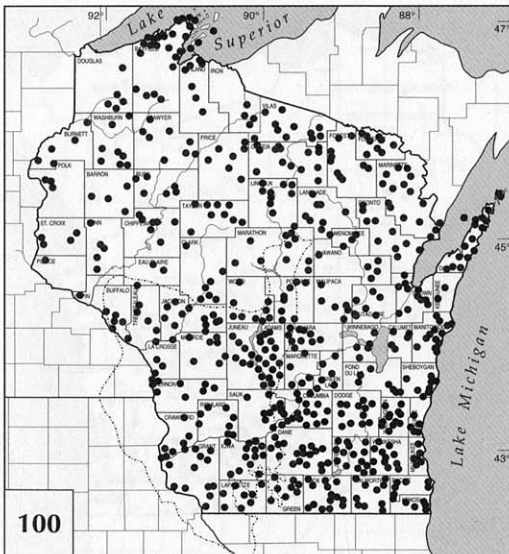
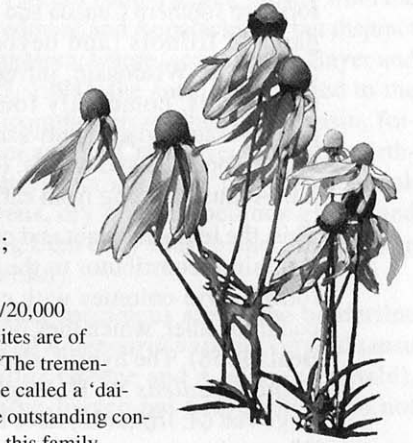
99. *Asclepias viridiflora* Raf. [*Acerates* v.]. SHORT GREEN MILKWEED. Truly widespread, throughout the Great Plains, prairies and coastal savannas from northeastern Mexico to Manitoba, Georgia and Long Island; in Wisconsin occasional south of the Tension Zone in sandy, mesic or **dry-prairie** relics, on “goat prairies” and dry hillsides, sometimes with limestone outcroppings, and along railroads, rarely spreading to old sandy fields and pastures. (5) Flowering from early June to late August.



ASTERACEAE [COMPOSITAE]—the Sunflower Family

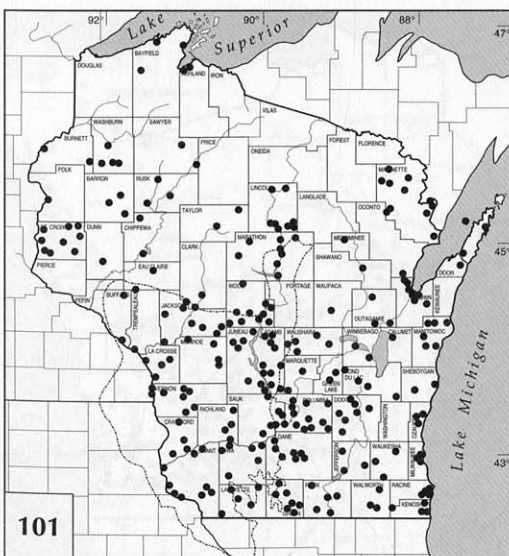
Mainly herbs, sometimes with milky juice, with individual flowers densely aggregated into heads, the common receptacle of each head with an encircling involucre of bracts, each head simulating a single “flower.” Flowers either all tubular and regular, or the central disk flowers tubular and regular and the marginal ray flowers strap-shaped and irregular, or all the flowers strap-shaped. Anthers united into a tube. Pistil of 2 united inferior carpels, but the fruit a 1-seeded achene, commonly crowned by a pappus (the modified calyx) consisting of hairs, bristles, awns or scales. (Barkley 1964, 1978; Beals & Peters 1967; Johnson & Iltis 1964; Melchert 1960; Mickelson & Iltis 1967; Salamun 1964; Shinnors 1941)

Evolutionarily the most advanced family of dicots and the largest family of vascular plants (1,100 genera/20,000 species), cosmopolitan but especially abundant in temperate to subtropical, semiarid regions. Composites are of considerable economic importance, more than 200 genera contributing food plants and ornamentals. “The tremendous numbers of Composites in [xeric] and all other prairies would suggest that...the prairie should be called a ‘daisyland’ instead of a ‘grassland’” (Curtis 1959, p. 269). Asters, goldenrods, sunflowers and silphiums are outstanding contributors to the brilliant late summer floral displays in Wisconsin, where there are some 265 species in this family.



- 100. *Achillea millefolium* L. ssp. *lanulosa* (Nutt.) Piper** [*A. m.* var. *occidentalis*]. YARROW, MILFOIL. Subarctic American; ubiquitous throughout Wisconsin in a variety of sunny habitats, from disturbed areas such as sand bars of lakes or rivers, railroad yards, abandoned fields, roadsides and pastures, to prairies, open woods and juniper glades, an indicator of **mesic prairies**. (17) Flowering from June through mid October, the peak from mid June through July, fruiting from July to mid October.

The *Achillea millefolium* polyploid complex consists of a circumboreal series of morphologically barely discernible subspecies, varieties and ecotypes. Our evidently native plants are mostly tetraploid ($2n = 36$ chromosomes), less often pentaploid ($2n = 45$) or hexaploid ($2n = 54$), the Eurasian ssp. *millefolium*, cultivated here in gardens and rarely escaped, hexaploid (see Warwick & Black 1982). Wild plants with light to deep pink rays, once referred to ssp. *millefolium*, are now known to represent both the native subspecies and Eurasian cultivated forms (Gervais 1977).

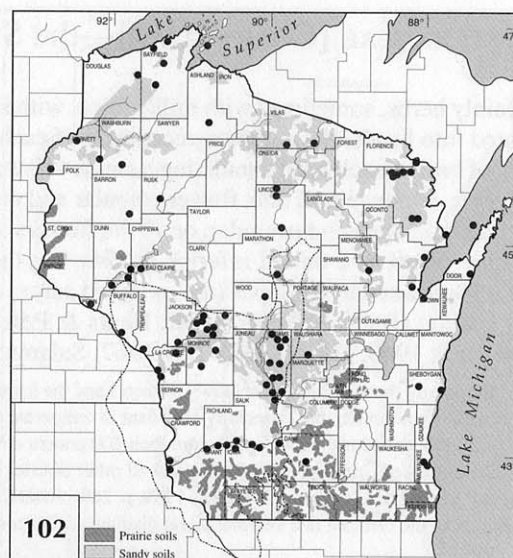


- 101. *Ambrosia artemisiifolia* L. COMMON OR SHORT RAGWEED.** Quebec and Florida to Texas, Kansas and the Pacific Northwest; throughout Wisconsin, but approaching the northern limits of its range in the northwest and west-central counties, in **dry prairies** and woodlands, but above all a serious weed of ruderal habitats, in cities, on roadsides, railroad embankments and cultivated cereal fields, becoming abundant in any disturbed, overgrazed and often sterile soils. (12) Flowering from late July to late September, fruiting from early September to late October.

Now in North America a weedy pioneer (Payne 1970, for map), but perhaps in pre-Columbian times a rather uncommon native of eastern North America in such ecologically open habitats as rocky bluffs, dry prairies or gravelly beaches.

102. *Ambrosia psilostachya* DC. [*A. coronopifolia*]. PERENNIAL or WESTERN RAGWEED. Native from northern Mexico and California to southern Canada and the Great Plains, east to Michigan and Illinois (and beyond as an occasional weed); throughout Wisconsin, infrequent but locally abundant in sandy soils, commonly found on **sand barrens**, sandy prairies, sandy glacial outwashes, sandy beaches, sandblows, and dry open upland woods. (6) Flowering from mid July to mid August, fruiting from early September to mid October.

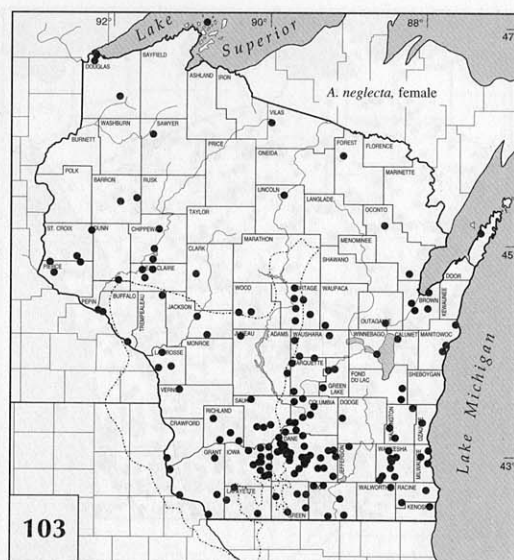
This, the least abundant and only perennial of our ragweeds, is a minor contributor to the ragweed pollen loads. It may form hybrid colonies with common ragweed where both occur together, which they often do (Payne 1970, Wagner & Beals 1958). The hybrid, also perennial, is called *Ambrosia* × *intergradiens* W. H. Wagner. Rare hybrids with Giant Ragweed (*A. trifida* L.) have been reported, but not yet from Wisconsin.



103. *Antennaria neglecta* Greene, female plants. FIELD PUSSY-TOES. Widespread from New England to the southern Northwest Territories, south to Virginia, Oklahoma and eastern Colorado; more common in southern than in northern Wisconsin, in sandy pastures, oak openings, **oak barrens**, cedar glades, pine barrens, dry pine woods, dry oak woods, and according to Curtis (1959) in all but the wet prairies. (17) Flowering from mid April to early (late) June, fruiting from late May through July.

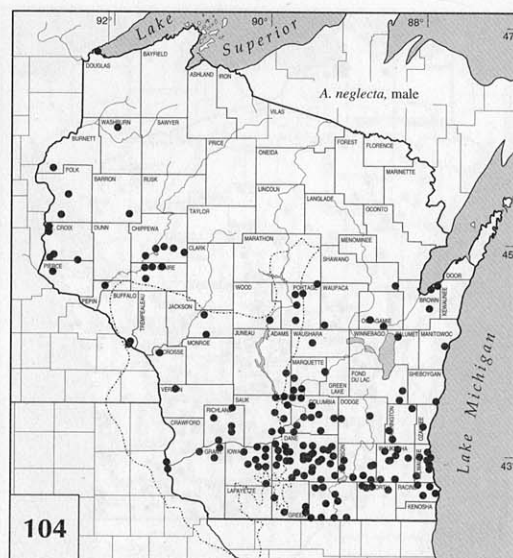
One of two sexual diploid species in Wisconsin (the other being *Antennaria plantaginifolia*, 105, 106). Although easily distinguished from each other, both intergrade with various polyploid taxa (Beals 1968, Beals & Peters 1967), from which they are difficult to tell apart (all of our collections here mapped were named by *Antennaria* specialists E. W. Beals and/or R. J. Bayer).

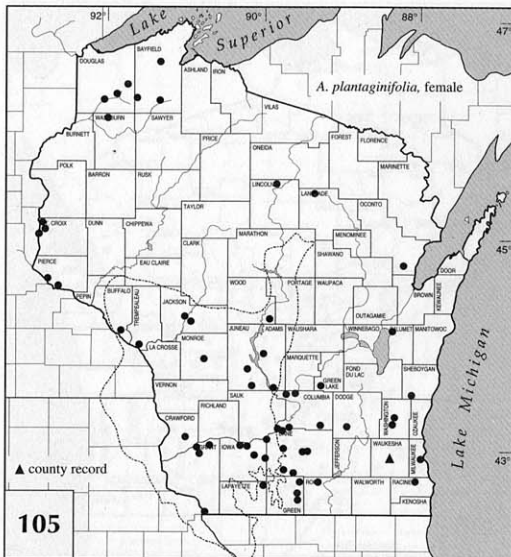
The large number (17) of habitats indicated by Curtis (1959) undoubtedly rests on a certain amount of taxonomic confusion.



104. *Antennaria neglecta*, male plants. FIELD PUSSY-TOES. In the same sorts of woodlands and prairies as female plants (103), but absent from large portions of northern Wisconsin, raising interesting questions about reproduction in this species. Flowering from mid April to early (late) June.

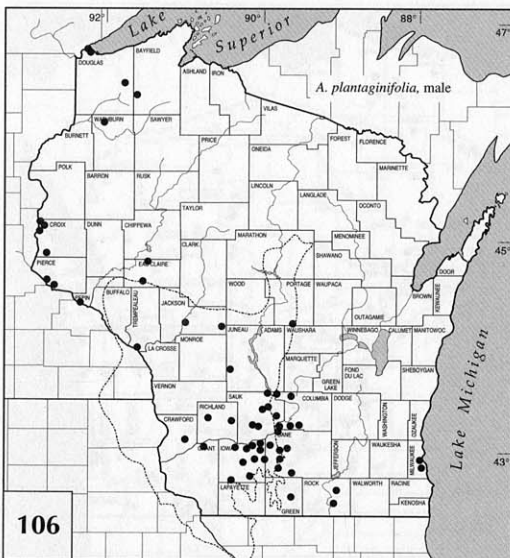
Both sexes are apparently widespread and very common in the Great Plains.



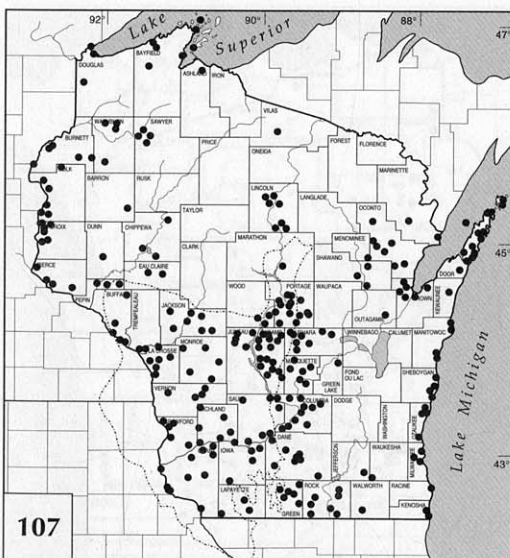


- 105. *Antennaria plantaginifolia* (L.) Richardson, female plants.** PLANTAIN PUSSY-TOES. Eastern United States, mostly from the Atlantic Coast, the Piedmont and Appalachians, but disjunct to Wisconsin and Minnesota, where, according to Bayer and Stebbins (1982, 1987, 1994), the species is limited to the Driftless Area; most common in southern Wisconsin, following the Mississippi and St. Croix rivers into the northwestern part of the state, occurring in dry places such as oak openings, **sand barrens**, dry prairies, bedrock glades and pastures. (5) Flowering from early May to mid July, fruiting from early June to mid July.

A good many herbarium specimens are on the borderline between this species and *Antennaria parlinii* Fernald sensu lato (including *A. fallax* Greene and *A. munda* Fernald), another common, large-leaved but polyploid taxon not mapped here.



- 106. *Antennaria plantaginifolia*, male plants.** PLANTAIN PUSSY-TOES. In the same habitats as female plants (105). This species is predominantly diploid and sexual, with male and female plants occurring in about equal numbers. Flowering from early May through June (or later).

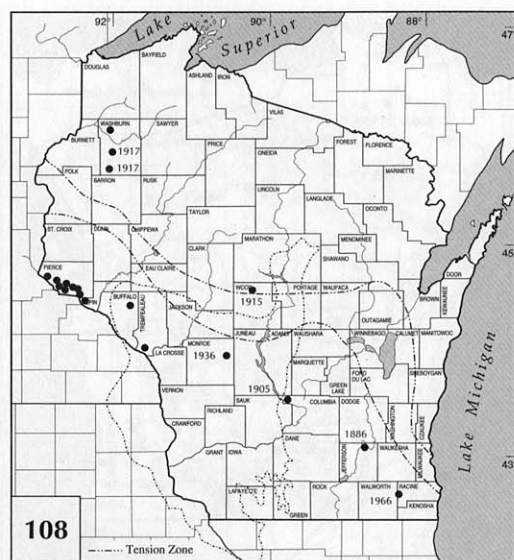


- 107. *Artemisia campestris* L. ssp. *caudata* (Michx.) H. M. Hall & Clem.** [*A. caudata*; *A. c.* var. *calvens*]. WORMWOOD. A variable North American native of wide distribution, part of a circumboreal complex with many races, most common in the eastern and central United States, from Canada south to Florida, Texas and Arizona; in Wisconsin very common in ecologically open habitats such as dry, often steep high lime prairies, sandy **dry prairies**, sandstone and limestone cliffs and their talus slopes, sunny black oak-jack pine barrens, inner beaches and dunes on Lake Michigan, sandbars in rivers, and often weedy on disturbed sandy roadsides, overgrazed or abandoned sandy fields, and even waste places in cities. (12) Flowering from late July to mid September, fruiting from mid September through October (or later).

Although a number of segregates have been named, particularly in arctic, subarctic and alpine regions, our specimens are all referable to ssp. *caudata* (including both glabrescent and grayish-pubescent plants).

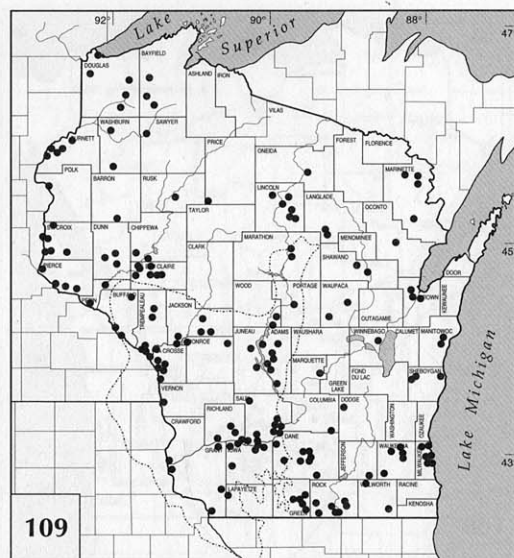
- 108. *Artemisia frigida* Willd. PRAIRIE SAGEWORT (Special Concern).** A subarctic to boreal steppe plant, widespread from Eurasia and Alaska to the Rocky Mountains of New Mexico, east on the northern and western Great Plains, in short and mixed grasslands to Nebraska, Minnesota and barely into Wisconsin; here on **dry-mesic prairies**, exposed limestone bluffs, talus slopes, and Mississippi River sand terraces in Pierce, Pepin, Buffalo and Trempealeau counties, rarely adventive elsewhere in disturbed areas such as on railroad and road cuts. (1) Flowering in August and September, fruiting in October.

The dates on the map indicate years of collection for adventive specimens.



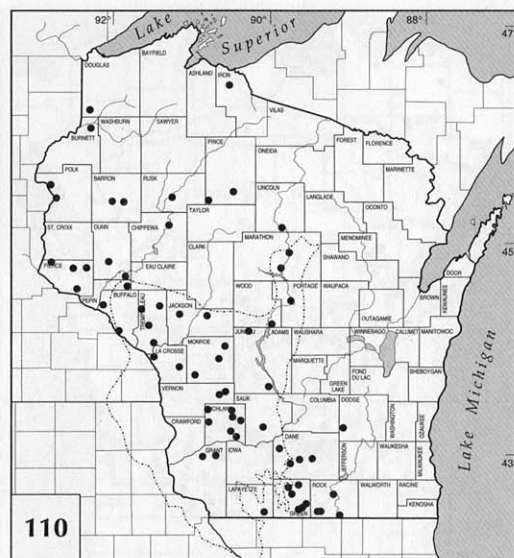
- 109. *Artemisia ludoviciana* Nutt. ssp. *ludoviciana*. WHITE SAGE, LOUISIANA SAGEWORT.** A widespread, highly complex species of western North America and the Great Plains, from Texas deep into Canada, with seven (according to Keck 1946) allopatric geographic subspecies, this one native as far east as Manitoba and Illinois (but mostly adventive northward and eastward); characteristic of Wisconsin **dry-mesic prairies**, dry sandy prairies, as well as deep-soil mesic and even moist prairies, but often somewhat weedy on railroads and roadsides. (4) Flowering and fruiting from (late July) mid August through mid October.

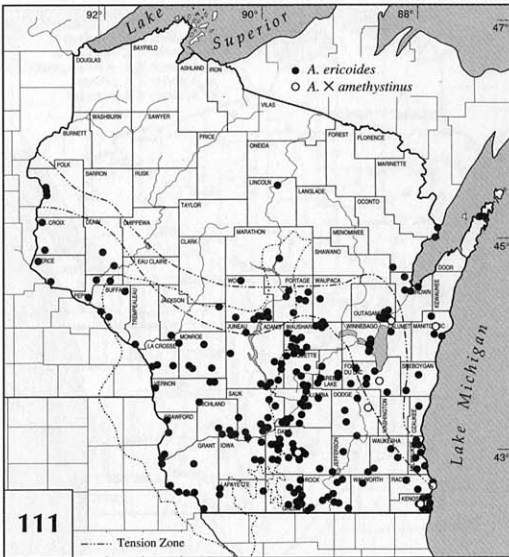
Native Americans burned this plant to repel insects, as did the early European settlers as an incense.



- 110. *Artemisia serrata* Nutt. TOOTHED SAGE, SAW-LEAF MUGWORT.** A localized prairie species endemic to the upper Mississippi River Valley, extending from central Illinois to Wisconsin, eastern Minnesota and northwestern Iowa; in the western half of Wisconsin in rich, moist, sandy soils along rivers and streams, in wet to **wet-mesic prairies**, low wet meadows, marshy roadsides, floodplain pastures and ditches. (4) Flowering and fruiting in August and September.

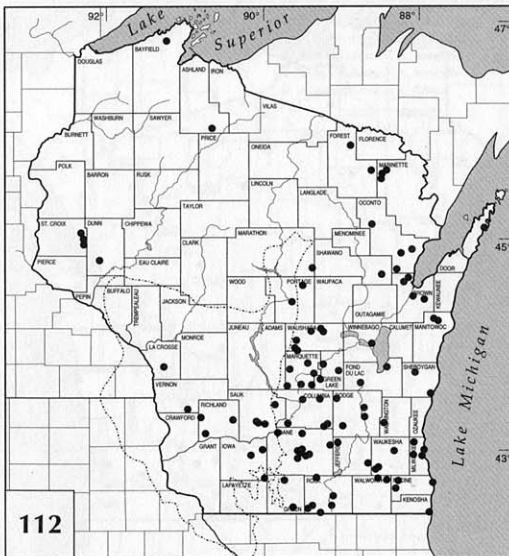
This is one of our very few regional endemic species, "one of a select group of prairie plants which originated in the area of Illinoian glaciation and which increased their ranges into the area of Wisconsin glaciation sometime between the retreat of that ice and the present" (Mickelson & Iltis 1967, p. 218). Toothed Sage is a tetraploid ($2n = 36$ chromosomes) evidently derived from the western diploid *Artemisia longifolia* Nutt. ($2n = 18$) of western Ontario and the northern Great Plains.





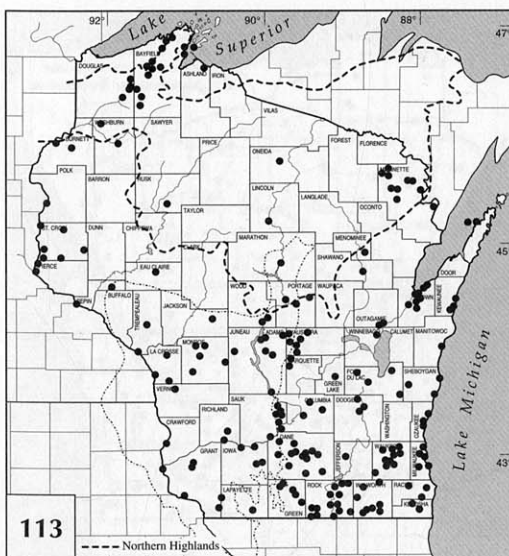
- 111. *Aster ericoides* L.** [including var. *prostratus* and f. *caeruleus*].
HEATH OR WHITE PRAIRIE ASTER. Almost transcontinental, Maine to southern Saskatchewan, south to Virginia, Texas, northern Mexico and southeastern Arizona; in Wisconsin most abundant in open, sandy and sunny places, including woodlands, but chiefly on sandy, gravelly or rocky, dry to **dry-mesic prairies**, less commonly in mesic to wet-mesic prairies, open black oak or jack pine woods, surviving in such grassy areas as old cemeteries, orchards and fencerows, frequently weedy in disturbed areas, especially along roadsides, railroads, sandy fields, gravel pits and quarries, sometimes on sandy riverbanks, lakeshores and pine plantations. (9) Flowering in late August to late October, fruiting early September to October.

Aster \times *amethystinus* Nutt. [*A. ericoides* \times *A. novae-angliae*]. Occasional in Wisconsin, occurring both as apparently fertile F_1 individuals as well as hybrid swarms. The parents are evidently not genetically, but rather ecologically isolated.



- 112. *Aster firmus* Nees** [*A. lucidulus* (A. Gray) Wiegand; *A. puniceus* var. f.]. SHINY-LEAVED ASTER. Northeastern North America, from West Virginia to the Ozarks, north to New York and South Dakota; abundant in southeastern and eastern Wisconsin, very spotty westward, in marshes, sedge meadows, wet to wet-mesic prairies, **fens**, tamarack bogs, swampy deciduous or mixed ash-alder-cedar woods and wet thickets (especially along rivers and near lakes), occasionally in moist depressions in upland woods, ditches, wet fields and low pastures. (6) Flowering from the end of August to early October, fruiting from late September into October.

Subglabrous and with pale, sky-blue flowers, the more southerly *Aster firmus* is close to the hispidulous, deep-blue flowered *A. puniceus* (127) and often combined with it. Specimens difficult to place most likely involve hybridization with *A. hesperius* A. Gray, *A. lanceolatus* (especially) or *A. praenaltus* Poir., rather than with *A. puniceus*.



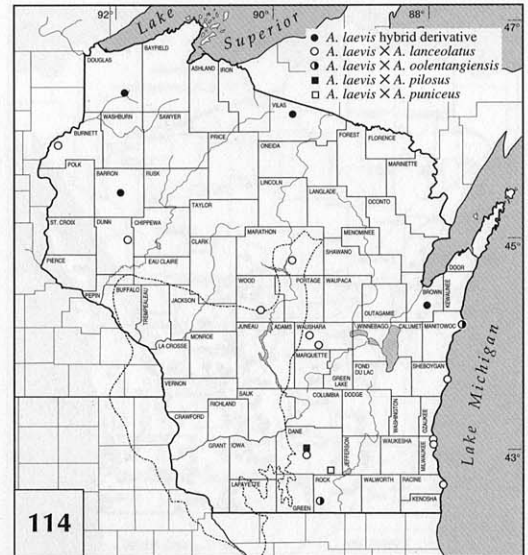
- 113. *Aster laevis* L.** SMOOTH OR SMOOTH BLUE ASTER. A highly variable species, transcontinental, from Georgia and Arkansas to British Columbia; common and widespread in Wisconsin except in the Northern Highlands, mostly in dry to mesic open woods of oak, pine, aspen or red cedar, barrens and edges of lowland forests, dry to **mesic prairies**, sometimes weedy in fields, commonly on shaded or partly open banks, clay bluffs along Lake Michigan, roadsides, railroads and fencerows, occasionally on lakeshores and various disturbed habitats such as quarries, gravel pits, pastures, and even fallow vegetable gardens. (13) Flowering from (mid) late July to early October, fruiting from late September to mid November.

One of the more attractive asters, Smooth Aster succeeds as a wildflower in dry sunny sites.

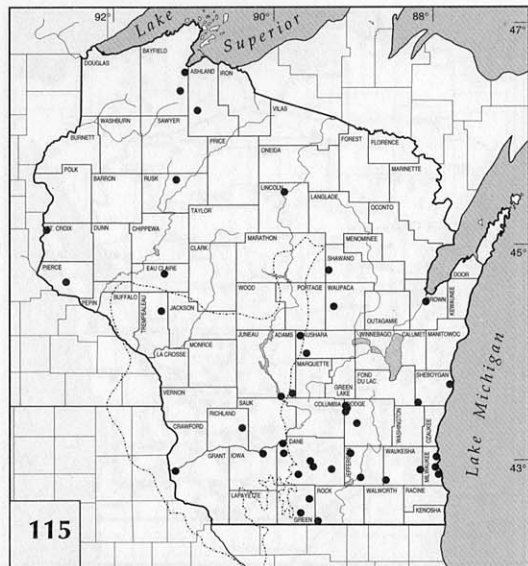
See 114 for putative hybrid derivatives.

- 114. *Aster laevis* hybrid derivatives.** Some of our specimens evidently contain genes of other *Aster* species, these hybrids sometimes identifiable as being derived from crosses between *A. laevis* and *A. lanceolatus*, *A. oolentangiensis*, *A. lateriflorus*, or even *A. pilosus* or *A. puniceus*; however, as often as not, atypical herbarium specimens can only be assigned to “near *A. laevis*.”

According to Shinnars, in “The genus *Aster* in Wisconsin” (1941, p. 398), “Hybrids are challenging, and the attention which they have attracted tends to give an exaggerated idea of their frequency or importance.” Nevertheless, for the botanist who knows the asters and thinks he has found a hybrid, it is always important to carefully document all other *Aster* species growing nearby as possible parents.

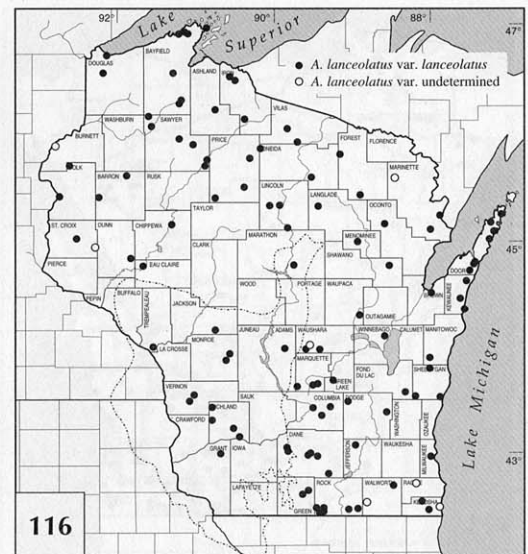


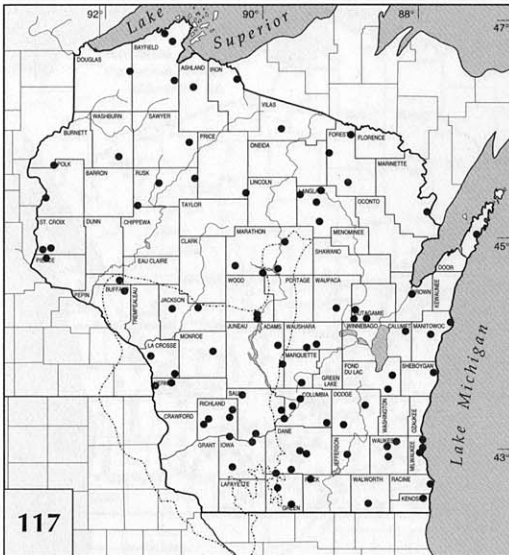
- 115. *Aster lanceolatus* Willd. var. *interior* (Wiegand) A. G. Jones.** [*A. tradescantii* of authors, not L.; *A. simplex* var. *i.* and *A. l.* ssp. *i.*]. INLAND PANICLED ASTER. A Midwest taxon, from the eastern edges of the central Great Plains, Nebraska to the Ozarks, east to New York and southern Ontario; generally distributed in Wisconsin in rich, moist, sandy, clayey or mucky soils, such as marshy pastures, moist prairies and rights-of-way (with mixtures of prairie and marsh plants and weeds), along old channels and sandbars of rivers, sometimes at the edges of deciduous woods and bogs, lowland savannas and shrub carrs, and as a weed in moist fallow fields. (14) Flowering from mid August through September.



- 116. *Aster lanceolatus* var. *lanceolatus* [A. simplex var. *ramosissimus*].** WHITE PANICLED or MARSH ASTER. From the base of the Rocky Mountains, ubiquitous over most of the Great Plains, and the dominant phase eastward in the Prairie Peninsula to Nova Scotia and New Jersey; in Wisconsin common in marshy ground or sometimes more mesic places, on stream banks and lakeshores, sloughs and swales, marshes, low prairies, sedge meadows, shrub carrs and low open woods, sometimes on rights-of-way and in wet ditches. (14) Flowering from mid August to mid October.

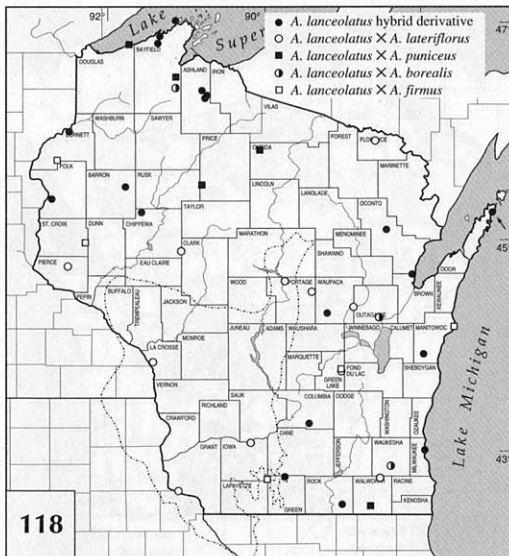
An abundant, weedy and highly variable species, superficially similar to *A. lateriflorus* and *A. pilosus*. It was treated by Shinnars (1941) as a variable species with two varieties, but three varieties are recognized for Wisconsin (and for *A. lanceolatus* as a whole) by Jones (1980, 1989), Gleason and Cronquist (1991) and others, although there is much intergradation and in Wisconsin no local geographic differentiation.





- 117. *Aster lanceolatus* var. *simplex*** (Willd.) A. G. Jones [*A. paniculatus* var. *simplex*; *A. simplex* Willd.]. BRANCHED PANICLED ASTER. Newfoundland and Nova Scotia to North Carolina, west to the eastern Great Plains, from central Saskatchewan to Oklahoma; common throughout Wisconsin in low, damp to marshy ground, along the shores of lakes, rivers and streams, lowland thickets, mesic to wet prairies, **fens**, edges of marshes, swamps, bogs and low woods (and, rarely, spruce-fir or hemlock-hardwoods), often locally common in old fields, pastures, ditches, fencerows and rights-of-way. (14) Flowering from early August to mid October.

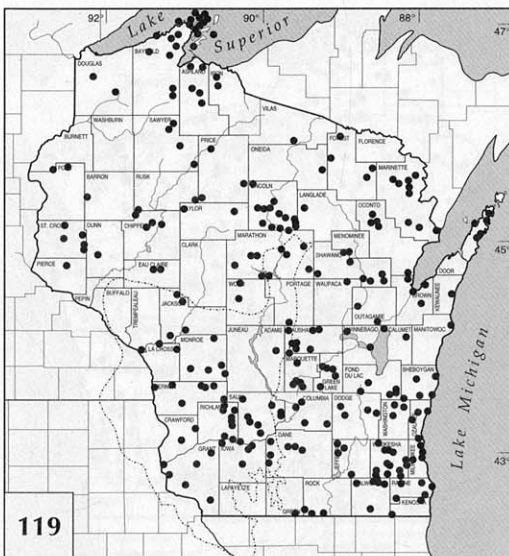
Semple and Chmielewski (1987), who treated this species in a very broad sense, considered var. *simplex* to be synonymous with var. *lanceolatus*. However, at the same time they described two additional infraspecific taxa under *A. lanceolatus*, namely var. *hirsuticaulis* Semple & Chmiel. and var. *latifolius* Semple & Chmiel., and attributed both to Wisconsin.



- 118. *Aster lanceolatus* hybrid derivatives.** There seem to be a large number of natural hybrids involving *A. lanceolatus*, which occasionally crosses, and thus intergrades, with species of chromosome base number $x = 8$. For Wisconsin these include *A. borealis* (Torr & A. Gray) Prov., *A. firmus*, *A. laevis*, *A. lateriflorus*, *A. ontarionis* Wiegand and *A. puniceus*; and perhaps also *A. hesperius* A. Gray and apparently even members of section *Cordifolii*, such as *A. drummondii* Lindl.

The taxonomy of *Aster lanceolatus* is complicated by several levels of polyploidy ($2n = 32, 48, 64$), Pleistocene survival in several "survivia," both east and west, and the ability of the species to be a promiscuous hybridizer.

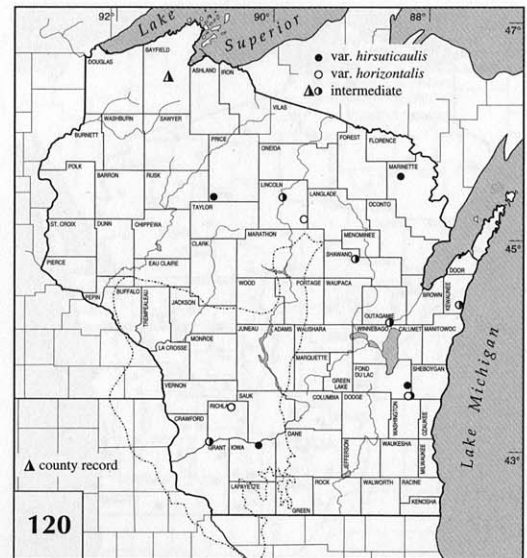
See note and map under **114**.



- 119. *Aster lateriflorus* (L.) Britton var. *lateriflorus*.** CALICO ASTER, SIDE-FLOWERING ASTER. Eastern North America from Nova Scotia south to Florida, west to the very eastern edge of the Great Plains, from Manitoba south to east Texas; abundant throughout Wisconsin in dry to moist forests, woodlands and thickets, especially along borders, trails and clearings, on floodplains and in fens, most common in the southern hardwood forests (**southern wet forests**), from black, white and red oak to mesic maple-basswood and maple-beech woods, northern hemlock-hardwoods and second-growth white pine, red maple and birch woods; also on clay bluffs along Lake Michigan and Lake Superior. (11) Flowering from late July to early October.

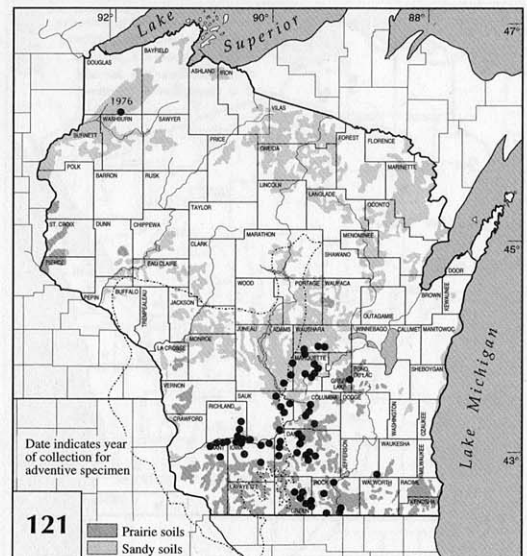
Another very common, highly variable species (see **120**), often weedy in grazed woods and semi-shady gardens, where it is the last autumn flower to bloom. Calico Aster occasionally forms putative hybrids with, among others, *A. cordifolius* L., *A. laevis*, *A. ontarionis*, *A. puniceus* and possibly also other species (*A. borealis*?).

120. *Aster lateriflorus* varieties. Although the vast majority of our plants can be referred to var. *lateriflorus* (119), some are probable hybrids involving any number of other species, and a few others are referable to the weakly distinguished var. *hirsuticaulis* (Lindl. ex DC.) Porter [including var. *tenuipes*; *A. tradescantii* of authors] or the more definite var. *horizontalis* (Desf.) Farw. [*A. l.* var. *pendulus*], both of which appear to be highly local in Wisconsin. These (as well as other varieties whose ranges do not extend to Wisconsin) are poorly defined and of doubtful taxonomic validity.



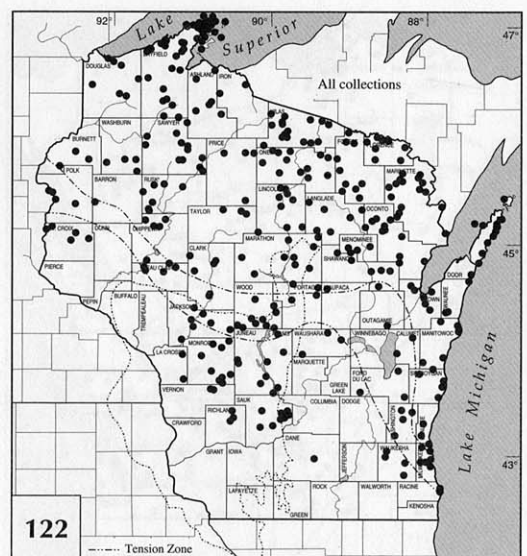
121. *Aster linariifolius* L. [*Ionactis l.*] FLAX-LEAVED ASTER. A most distinctive eastern North American endemic, from New Brunswick to Wisconsin, south especially on the Atlantic Coastal Plain to northwestern Florida, the Arkansas Ozarks and east Texas; confined in south-central Wisconsin to dry, open, sandy or rocky places such as bluff tops, outcrops (e.g., Monticello Rock Outcrop, Green County), sandy and gravelly prairies and black oak barrens associated with them, occasionally on dry lakeshores, roadside banks and abandoned fields, and, at the old site of Utley, Marquette County, on quarry walls (rhyolite); preferring acidic soils. (6) Flowering from late August to mid October, fruiting from mid October into November.

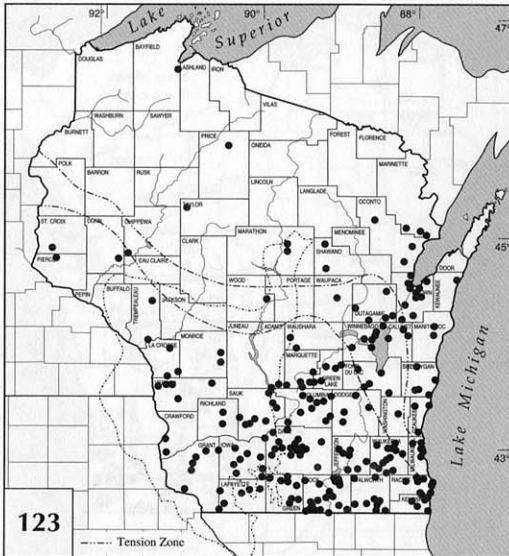
Flax-leaved Aster is still locally common, but the number of extant sites for it has been declining rapidly over recent decades. The Douglas County specimen, suspiciously disjunct, may represent a one-time waif or inaccurate herbarium label.



122. *Aster macrophyllus* L. BIG-LEAVED ASTER. Northeastern North America, with the "white pine-hemlock-northern hardwoods" range, from the Appalachians of Georgia, the Carolinas, and Tennessee to Quebec, west to Minnesota; ubiquitous throughout northern and eastern Wisconsin in almost all woods except the wettest, from dry Hill's oak-aspen-white oak through maple-basswood, hemlock-hardwoods and intermediate types, to wet-mesic white cedar-balsam fir and boreal forests, rarely on edges of swamps or bogs, also in pine barrens, oak-hickory woods, closed savannas and thickets, including wooded dunes, moraines, rocky bluffs at Devil's Lake State Park, and relic pine and/or hemlock stands on cliffs in the Driftless Area; thriving in cut- or burned-over tracts and roadsides at forest edges. (14) Flowering from late July through September, fruiting from late September through October.

Several varieties and forms, at least four of those recognized by Fernald (1950), occur in Wisconsin. In agreement with most authors we consider them not worthy of taxonomic recognition.

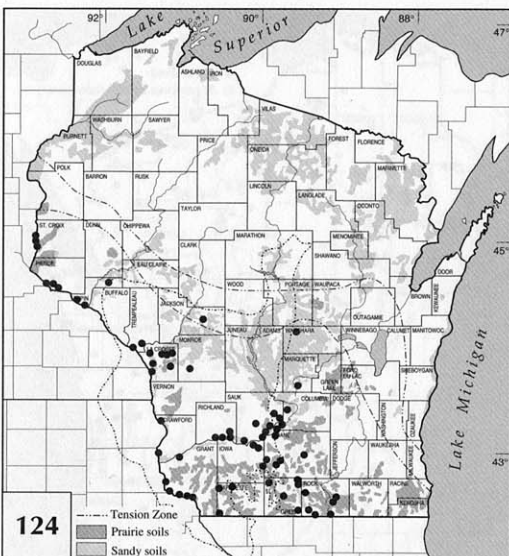




- 123. *Aster novae-angliae* L. NEW ENGLAND ASTER.** Rich damp ground, in the highest Appalachians from the Carolinas and Alabama north to Nova Scotia, west into the eastern Great Plains from southern Manitoba to eastern Kansas, occasionally beyond; abundant in Wisconsin mostly south of the Tension Zone in diverse, usually mesic to wet, open habitats, especially in mesic to **wet-mesic prairies**, marshes, sedge meadows, fens and swales, also in moist woods and thickets, stream banks and lake shores, often in disturbed, sometimes dry ground such as fields, pastures, ditches and railroad ballast, and somewhat weedy on roadsides, fencerows and quarries. (9) Flowering from late August to early October.

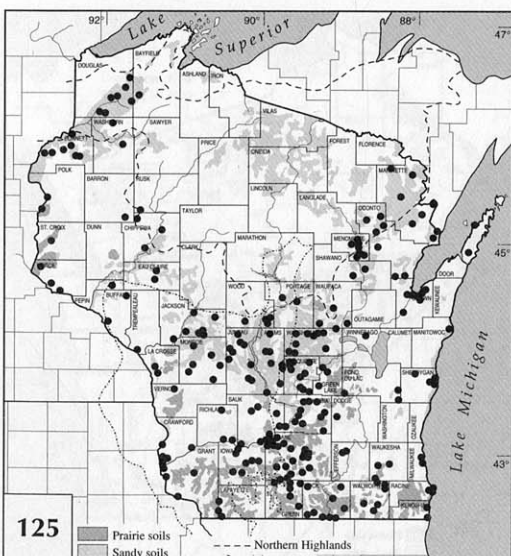
New England Aster, the showiest of our native species, is the most important *Aster* from a horticultural standpoint. Some of our herbarium records may therefore represent escapes from cultivation.

New England Aster forms hybrids with *Aster ericoides* (111).



- 124. *Aster oblongifolius* Nutt.** [including vars. *angustatus* and *rigidulus*]. AROMATIC ASTER. A xerophyte of dry prairies, bluffs, sand blows and cliffs, throughout the Great Plains from Saskatchewan to Texas (New Mexico), east to Arkansas (Alabama) and Indiana, very rarely to Pennsylvania and the North Carolina mountains; in Wisconsin south of the Tension Zone, in very dry, rocky or sandy prairies on terrain ranging from undulating to precipitous, most often on bluffs of calcareous sandstone (i.e., sandstones overlain by dolomites) or limestone, sandstone or quartzite, as well as on outcrops, boulders and talus, gravelly hillsides, high lime prairies (e.g., Thousands Rock Point, Iowa County), **dry prairies**, (e.g., Schluckebier Sand Prairie and Spring Green Preserve, Sauk County); rarely in open scrub oak-jack pine woods or grassy brushy roadcuts or banks undergoing succession from prairie (5). Flowering from early September to early October.

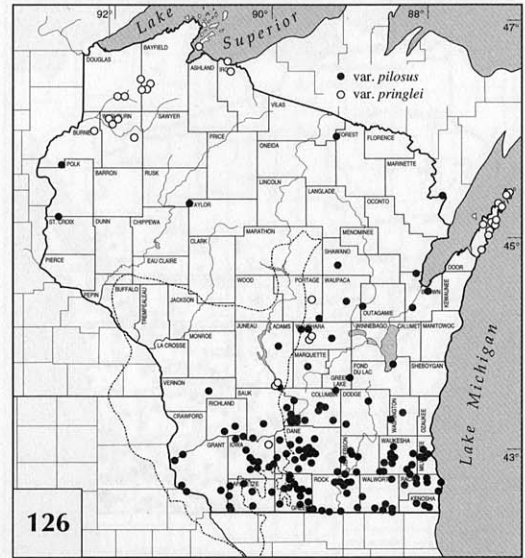
Like so many prairie species, Aromatic Aster is now fairly rare in Wisconsin, less frequent than the map may suggest.



- 125. *Aster oolentangiensis* Riddell** [*A. azureus* Lindl.]. SKY-BLUE ASTER, PRAIRIE HEART-LEAVED ASTER. Prairies and dry open woods from western New York and southern Ontario to Minnesota (South Dakota) and eastern Kansas, south to western Tennessee, northwestern Mississippi and eastern Texas; locally common throughout much of Wisconsin but absent on the acidic archean bedrock of the Northern Highlands, mostly in dry sandy, gravelly or rocky soil, especially in dry to **dry-mesic prairies** or occasionally in mesic or wet-mesic prairies, in open upland northern pine woods, oak woods and oak openings, black oak and/or jack pine savannas, red pine and/or white pine woods, aspen stands, lakeshores, calcareous bluffs, cliffs, ledges, limestone flats (Brown County) and Lake Michigan dunes (Manitowoc County), and along roadsides, railroad rights-of-way and similar dry sites (14). Flowering from mid August to early October, fruiting from late September through October.

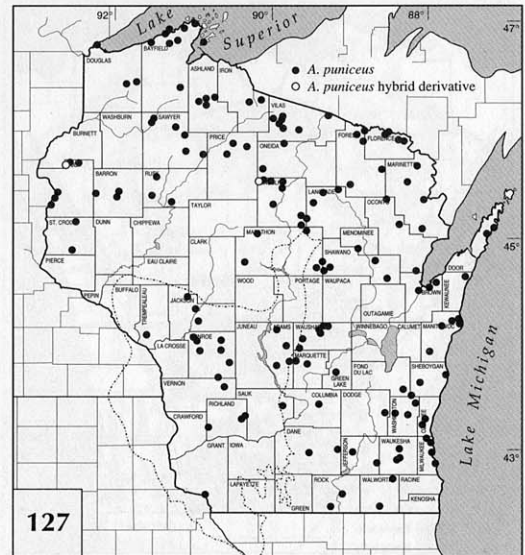
- 126. *Aster pilosus* Willd. HAIRY OR FROST ASTER.** Widespread in eastern North America, from Nova Scotia and Maine to northwestern Florida, west to southeastern Minnesota, eastern Nebraska and Louisiana; in southern Wisconsin very common in **dry-mesic prairies** and borders of woods, more rarely on sandy shores, edges of marshes and low prairies, but now, with almost all mesic prairies destroyed, in dry to mesic, disturbed grassy hill-sides, fields, fencerows, pastures, railroads, roadsides and waste ground, especially vacant lots, city streets and mine tailings. (4) Flowering from late August to mid October.

Several named varieties occur in Wisconsin, but only var. *pilosus* and the glabrous, chiefly northeastern var. *pringlei* (A. Gray) S. F. Blake deserve recognition, the latter on sandy or stony shores, including lakes Michigan (Door County) and Superior (Ashland and Iron counties), glacial lake barrens, and occasionally in dry open oak woodlands elsewhere. Considered native but quite weedy, *A. pilosus* nonetheless makes a lovely garden plant in October, being the last aster to bloom.



- 127. *Aster puniceus* L. SWAMP ASTER.** Quite variable and widely distributed, the aggregate species from Newfoundland to central Saskatchewan, south in the mountains to Georgia and Alabama, west to the edge of the northern Great Plains; frequent throughout Wisconsin on peaty, mucky or sandy soils, in bogs and swamps of cedar, tamarack, spruce and fir, in boggy depressions in mixed or deciduous woods, lowland hardwoods, thickets and marshes, **northern sedge meadows**, fens and seepage slopes; generally in marshy or swampy, open or shaded ground (streamsides, lakeshores, ditches and pastures, rarely on sandy hillsides or cliffs that are moist from runoff water or seepage). (9) Flowering from early August to mid October, fruiting from mid September into October.

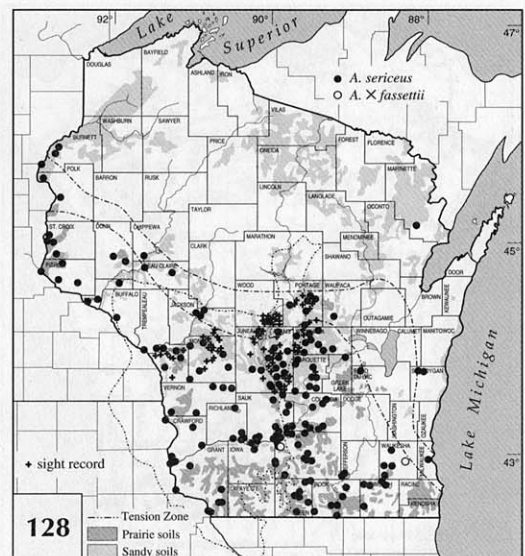
Similar morphologically and ecologically to the chiefly mid-western *Aster firmus*, which is more frequent and more likely to grow in wet prairies. Our plants are quite uniform, but rare specimens show good evidence of hybridization involving *A. lanceolatus* and *A. praealtus* Poir.

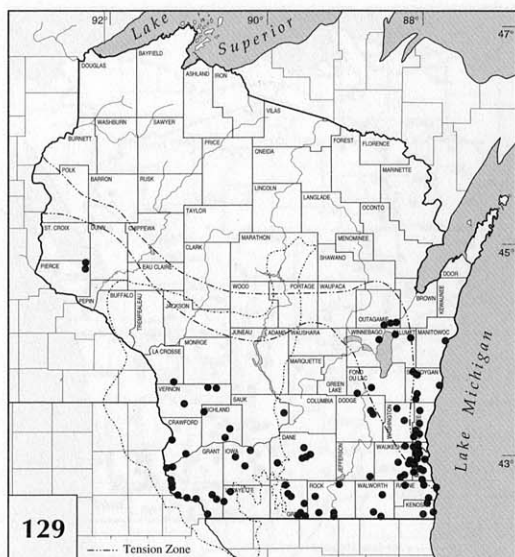


- 128. *Aster sericeus* Vent. SILKY ASTER.** Dry open woods, bluffs, prairies and barrens, on the eastern Great Plains from eastern Texas to Manitoba, east to western Ontario and Tennessee; locally abundant in southern and western Wisconsin in and south of the Tension Zone, in open, sandy, gravelly or rocky **dry prairies** on level to rolling sands, sandy and gravelly hillsides, sandstone outcrops and limestone bluffs, sometimes under oaks, jack pine or red cedar but usually in the open; also in sandy old fields and roadsides. (7) Flowering from mid August to early October, fruiting from late September to late October.

Like many of its prairie associates, Silky Aster is now much rarer than the map would suggest, surviving mostly on very steep, rocky "goat prairies" unlikely to be plowed or over-grazed.

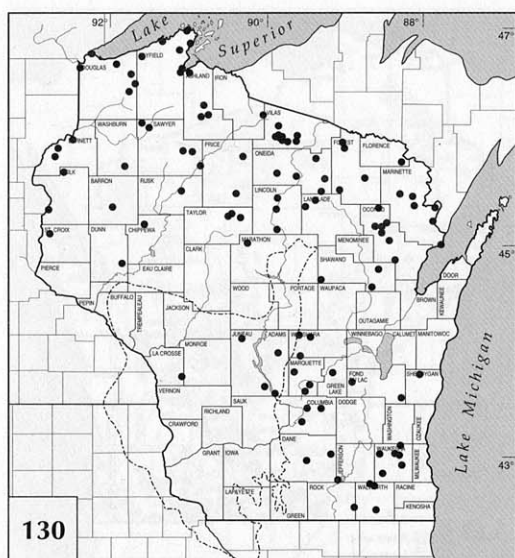
Aster × *fassettii* Iltis, unpublished [*A. ericoides* × *A. sericeus*]. **FASSETT'S ASTER.** This rare sterile hybrid, exactly intermediate, has been collected only twice.





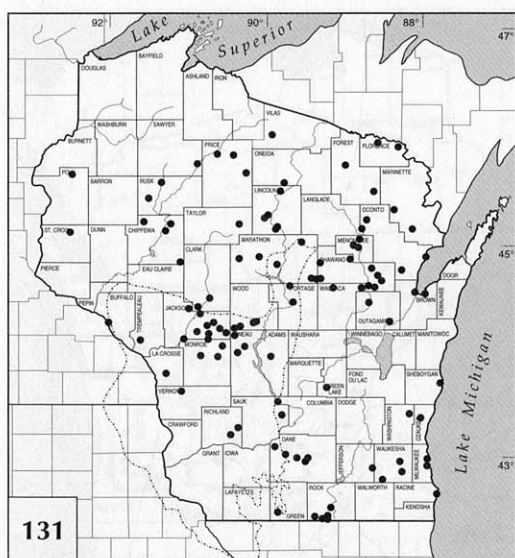
- 129. *Aster shortii* Lindl. SHORT'S ASTER.** A Midwest speciality, from the Appalachian Plateau (Alabama and Georgia to southwest Pennsylvania) to Missouri, southern Michigan and southeastern Minnesota; locally frequent in southern Wisconsin in **southern dry-mesic forests** (oak with basswood, maple, elm, ash, ironwood, walnut), oak-hickory and maple-beech woods and rarely cedar glades; often on thinly wooded, rocky banks and calcareous slopes with prairie vegetation and brush encroachment, often in cut-over woods, shrubby clearings, thickets, limestone quarry edges, partly shaded roadsides and fencerows. (10) Flowering from the end of August to mid October, fruiting from mid October into winter.

This aster is not listed by Curtis (1959) as prevalent in the ground layer of the oak opening, nor do any herbarium specimens give savanna or oak opening as the habitat. Nonetheless, *Aster shortii* has morphological, physiological, ecological and biogeographical characteristics of classic savanna species.



- 130. *Aster umbellatus* Mill. var. *pubens* A. Gray [*A. pubentior*].** HAIRY FLAT-TOP ASTER. A northwestern, puberulent phase of the species, mostly from Michigan to North Dakota and Alberta, south to Nebraska (see **131**).

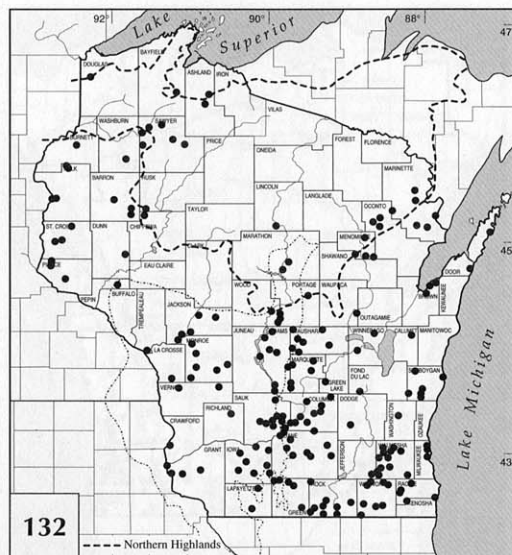
The var. *pubens* is sometimes considered a species, in which case the correct name is *A. pubentior* Cronquist, but other authorities make it a variety of *A. umbellatus* (Shinners 1941) or reduce it to a synonym of the latter (Jones 1989). The two taxa intergrade considerably in the Great Lakes region, including in Wisconsin, where both types are about equally common and sometimes grow together.



- 131. *Aster umbellatus* var. *umbellatus*.** FLAT-TOP ASTER. Eastern North America, the collective species from Newfoundland to the northern Great Plains in Alberta (see **130**), the typical variety to Minnesota, south to northern Illinois, Kentucky, and in the mountains to Georgia and Alabama, and west through southern Arkansas to Texas, apparently lacking in the Ozarks and much of the Prairie Peninsula; throughout Wisconsin in diverse habitats, mostly in marshy, swampy or peaty ground, also in sandy or rocky uplands (such as **bracken grasslands**), north of the Tension Zone in spruce-cedar-ash swamps, moist fir-yellow birch-hemlock woods, and second-growth aspen, white birch, pine or red maple stands, edges of tamarack or sphagnum bogs; more ecologically restricted in the south, there in fens, low prairies, sedge meadows, shrub carrs, openings in low sandy woods, drained, burned or cut-over lowlands, margins of tamarack bogs and cranberry marshes, weedy in drainage ditches, roadsides and old grassy fields. (16) Flowering from late July to late August, fruiting from mid August to mid October.

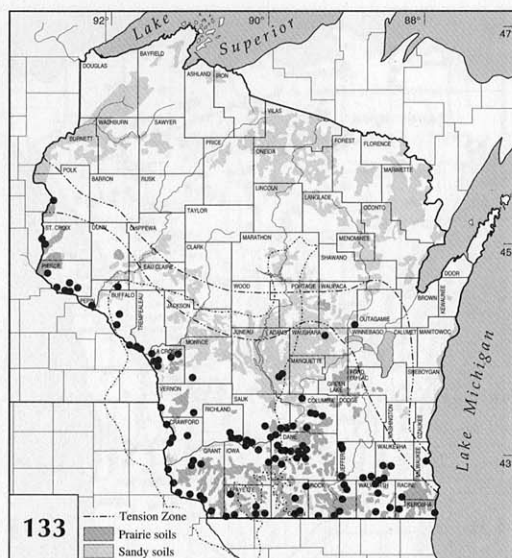
- 132. *Aster urophyllus* Lindl. [*A. sagittifolius* Willd.].** ARROW-LEAVED ASTER. Widespread in the eastern and central United States; in Wisconsin very common except in the Northern Highlands, from dry oak, poplar, or occasionally pine woods to mesic maple-beech forests, especially along woodland borders and openings, peaking in **southern dry-mesic forests**, moist bottomland forests, thickets, roadsides, fencerows, pastures, fields and old cemeteries, occasionally in marshy or low places. (12) Flowering from mid August to late October, fruiting from late September into October.

Arrow-leaved Aster is most commonly found in open woods and woodland borders with other asters, goldenrods and grasses. It scarcely occurs in prairies except those that were formerly grazed and now suffer from much brush encroachment, implying that oak openings were probably its original habitat. Drummond's Aster, *Aster drummondii* Lindl., is locally common in habitats similar to those of the closely related *A. urophyllus*, and the two tend to hybridize freely.



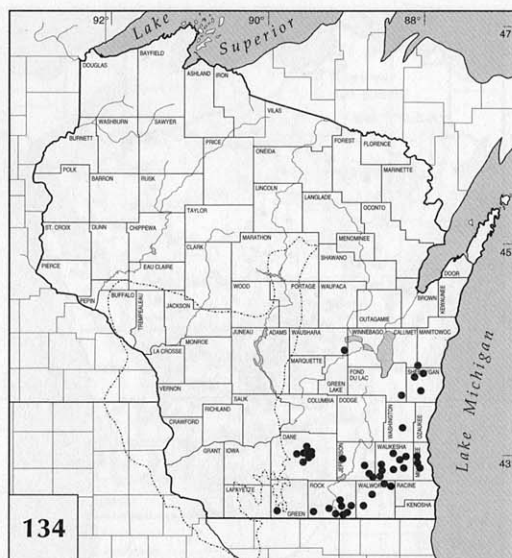
- 133. *Brickellia eupatorioides* (L.) Shinn. var. *corymbulosa* (Torr. & A. Gray) Shinn. [*Kuhnia e.* var. *c.*].** FALSE BONESET. Widespread from New Jersey and Florida westward, this variety is a widespread Great Plains grassland element, from Ohio to Montana and Arizona; in Wisconsin south of the Tension Zone, most common in dry-mesic to **dry prairies**, rocky or sandy prairie relics on steep calcareous bluffs, rarely on sand dunes, including sand terraces of the Mississippi River, but absent from the sandy level prairies of the Central Plain, occasionally along roadsides or railroads. (8) Flowering from (July) August into October, fruiting from late August through October.

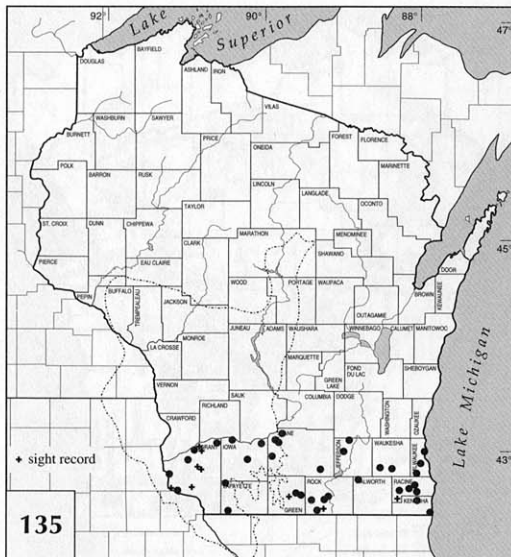
Superficially similar to Tall Boneset, *Eupatorium altissimum* (145), which has opposite, triple-veined (instead of mostly alternate, one-veined) leaves. False Boneset is a member of a large southwestern and Mexican genus, a so-called Madro-Tertiary element.



- 134. *Cacalia atriplicifolia* L. [*Arnoglossum atriplicifolium* (L.) H. Rob.].** PALE INDIAN-PLANTAIN. In open forests of the eastern United States, from eastern Oklahoma, Alabama and western Florida, north to New York and Wisconsin; like all Wisconsin cacalias, conspicuous but rare, in dry to dry-mesic (often oak-elm) or even swampy open woods, thickets, oak openings and borders, dry to **wet prairies** and railroad embankments, rarely weedy in fields and roadsides. (2) Flowering from mid June to mid September, fruiting from mid August to mid October or later.

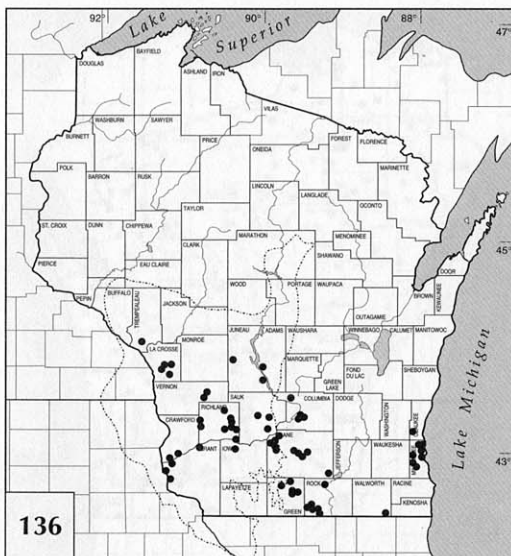
Like many species characteristic of open forests, Pale Indian-plantain grows well in moist to mesic prairies.



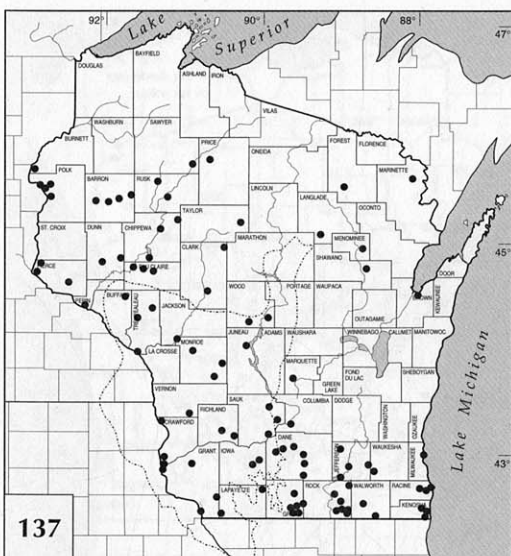


- 135. *Cacalia plantaginea* (Raf.) Shinnars [*Arnoglossum plantagineum* Raf.; including *C. tuberosa* Nutt.].** PRAIRIE INDIAN-PLANTAIN (Threatened). Centered in the central United States from Ohio and southern Ontario to southeastern Minnesota (northeastern South Dakota), south on the eastern Great Plains to Alabama and Texas; a localized species of Wisconsin prairies, most commonly in rich, moist, sandy, alluvial soils along rivers and streams, or on springy, peaty ground, especially in **wet-mesic prairies**, less frequently, and in small populations of up to 12 plants, on dry high lime prairies (sometimes with *Cirsium hillii*) and the dry-mesic lower slopes of prairie bluffs. (6) Flowering from mid July through August, fruiting from late August (through October?).

A conspicuous plant, formerly abundant, now rare due to the near elimination of the deep-soil prairies by agriculture. Its leaves resemble *Plantago major* L. in their parallel venation, in both cases (also in *Eryngium yuccifolium*) an evolutionary reduction of the leaf to a midrib, followed by an expansion.



- 136. *Cacalia suaveolens* L. [*Hasteola suaveolens* (L.) Pojark., *Synosma suaveolens* (L.) Britton & A. Br.].** SWEET INDIAN-PLANTAIN. A species of open, moist, low woodlands of the north-central United States, from the Appalachians in Georgia to southern New England, west to southeastern Missouri and southeastern Minnesota; in southern Wisconsin in damp, rich to wet, peaty soil, usually in marshes, sedge meadows, **wet prairies** and marshy places along creeks and rivers, often in transition zones between lowland woods or thickets and marshes, also ditches. (3) Flowering from late July to late September, fruiting from late September through October.

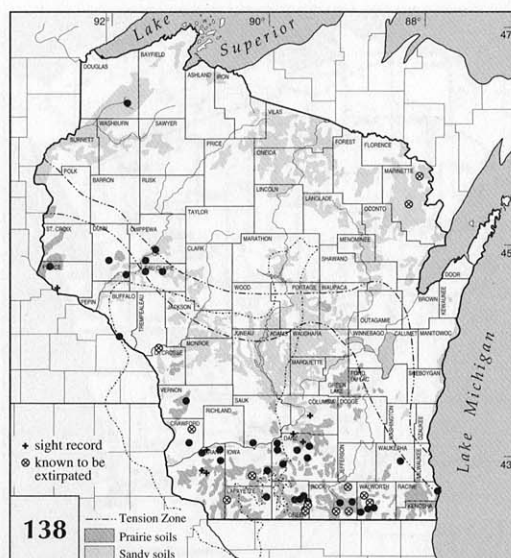


- 137. *Cirsium discolor* (Muhl. ex Willd.) Spreng.** FIELD OR PASTURE THISTLE. Southeast Canada to Minnesota, south in the mountains to the Carolinas, northern Louisiana and eastern Kansas; not uncommon in southern and southwestern Wisconsin in sunny open woods, wet to dry-mesic prairies, an indicator of **mesic prairies**, often on prairie relics along railroads, less commonly on lakeshores and in sedge meadows, and occasionally weedy in roadside ditches and well-drained, waste places. (10) Flowering from mid July to early September, fruiting from early August through September.

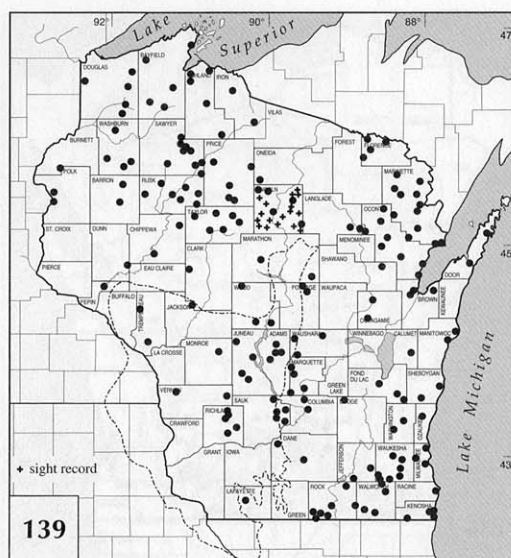
The thistles—there are 12 species of *Carduus* and *Cirsium* in Wisconsin—are truly beautiful plants. They include everything from locally occurring native species needing protection to rare adventives and abundant introduced weeds.

138. *Cirsium hillii* (Canby) Fernald [*C. pumilum* ssp. *h.*]. PRAIRIE OF HILL'S THISTLE (Threatened). North-central United States, from central Minnesota to South Dakota, Iowa, central Illinois and western New York and the Lake Huron-Georgian Bay Islands in Ontario; in southern and western Wisconsin now rare and local on **dry-mesic prairies** and steep, calcareous hill prairies, as well as in deep-soil or sandy prairie relics along railroads; apparently introduced in Douglas and Marinette counties. (2) Flowering from mid June through July (August), fruiting from late July to mid August (mid September).

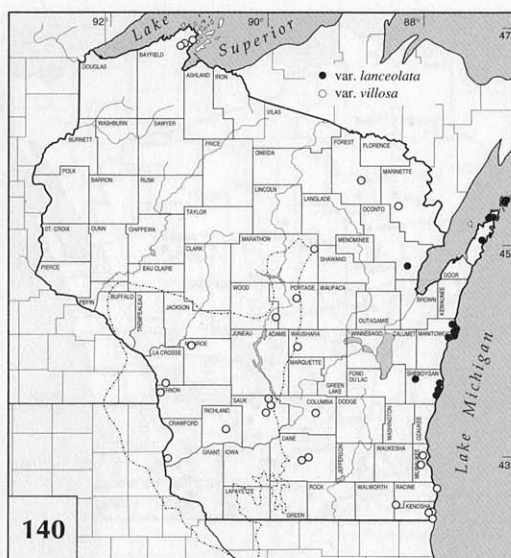
Hill's Thistle, a Midwest prairie endemic, is a perennial closely related to the eastern *Cirsium pumilum* (Nutt.) Spreng. sensu stricto, which ranges from Maine to North Carolina and is a biennial.

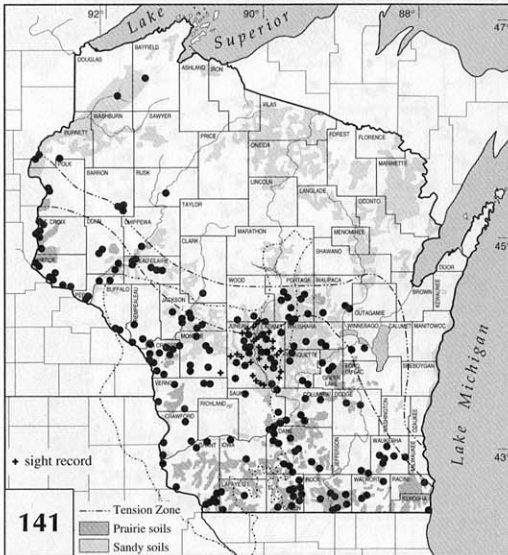


139. *Cirsium muticum* Michx. SWAMP THISTLE. From Newfoundland, Hudson Bay and Saskatchewan to North Carolina and Texas; throughout Wisconsin in open moist habitats, most prevalent, especially in the south, in **wet prairies**, rather rare in wet-mesic and mesic prairies, common in poorly drained, highly organic, mucky soil at edges of bogs, in wet sedge meadows, around springs and in tamarack swamps; in northern Wisconsin often in moist spruce-fir-white cedar or aspen-paper birch woods, rarely as a roadside weed in burned, second-growth, sandy woods. (12) Flowering from mid July to mid September, fruiting from mid August to early October.

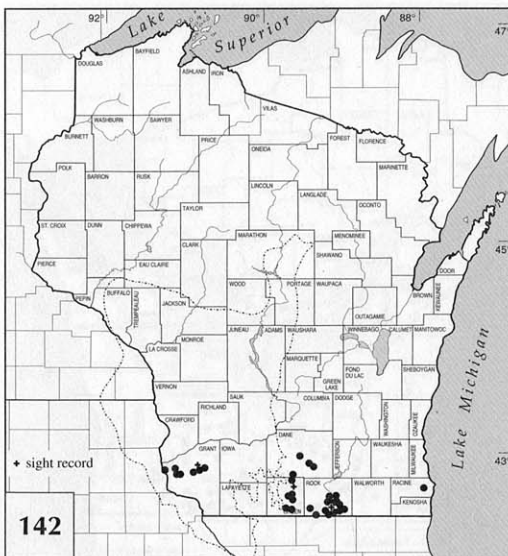


140. *Coreopsis lanceolata* L. SAND COREOPSIS (Special Concern). Dry, sandy, gravelly or rocky places, the overall range from the north shore of Lake Superior to New England and Florida, west to Wisconsin, Oklahoma and Texas (cultivated and escaped elsewhere). In Wisconsin var. *lanceolata* is locally common along Lake Michigan, on the edges of older sand dunes and in sandy open woods near the lake (one station each in Sheboygan and Oconto counties in similar sandy sites slightly inland). The majority of our material belongs to var. *villosa* Michx., with pubescent stems and leaves, but current authorities do not consider it worthy of recognition. It is sporadic along roadsides and other waste places, apparently as an escape from cultivation. It is native to the south and east of Wisconsin. (2) Flowering from early June to late August, fruiting from early July to late September.



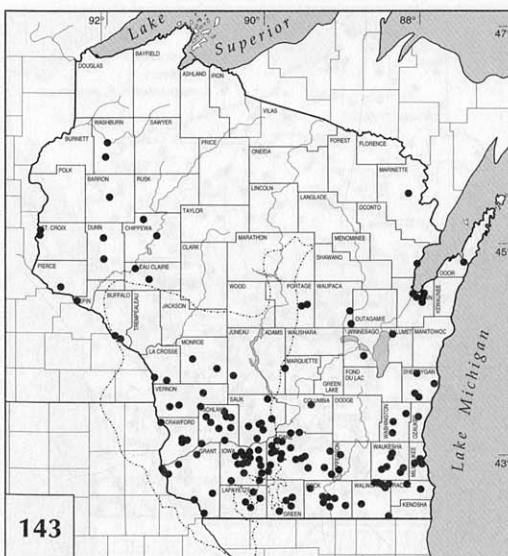


- 141. *Coreopsis palmata* Nutt. PRAIRIE COREOPSIS.** Widespread in the tallgrass prairie, from the eastern Dakotas to the Ozarks and Texas, east in the Prairie Peninsula; in Wisconsin very common within and south of the Tension Zone, especially abundant in mesic to **dry prairies**, xeric “goat prairies,” and—before ill-advised herbicide spraying for “weeds” in the 1960s wiped out much biodiversity—along railroads and roadsides; also in various other dry open habitats, including open, sandy jack pine, scrub oak, or bur oak stands and savannas. (13) Flowering from mid June to October, fruiting from August to November.



- 142. *Echinacea pallida* (Nutt.) Nutt. PALE PURPLE CONEFLOWER** (Threatened). A widespread prairies and plains species once common from eastern Montana to Iowa, eastern Kansas, Arkansas, Illinois and Kentucky, south to Texas, and irregularly introduced eastward; in Wisconsin now rather rare in Dane, Grant, Green, Racine and Rock counties in **mesic prairies**, railroad rights-of-way and roadsides, less frequent in dry open habitats such as gravelly slopes and gravel pits. (3) Flowering from late June to August, fruiting from August onward (the plants stay upright and dry slowly, and the fruits persist into winter).

Echinacea purpurea (L.) Moench, Purple Coneflower, a widespread, more southerly species common in the Ozarks and Midwest but not native to Wisconsin, was planted in the Curtis Prairie restoration of the University of Wisconsin-Madison Arboretum, where it has become well-established and periodically even dominant.



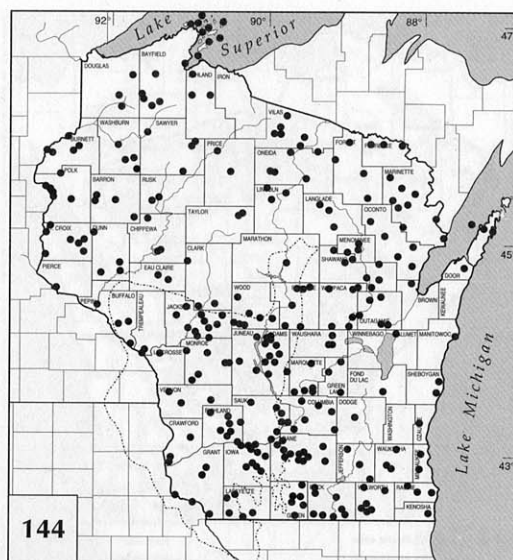
- 143. *Erigeron pulchellus* Michx. var. *pulchellus*. ROBIN'S-PLANTAIN.** Most of eastern North America, from Georgia and eastern Texas north to Maine and Minnesota; in Wisconsin in **southern dry-mesic forests** of oak or oak-hickory, mesic maple-basswood or maple-birch, especially in grassy openings and cedar glades, locally abundant on grassy or brushy hillsides, partly shaded ravines and banks, cleared woodland, prairie pastures and dry prairies on bluffs and ridges, occasionally in sandy fields and old quarries. (11) Flowering from mid May to mid June, fruiting from mid June into July.

Two other varieties are local beyond our borders.

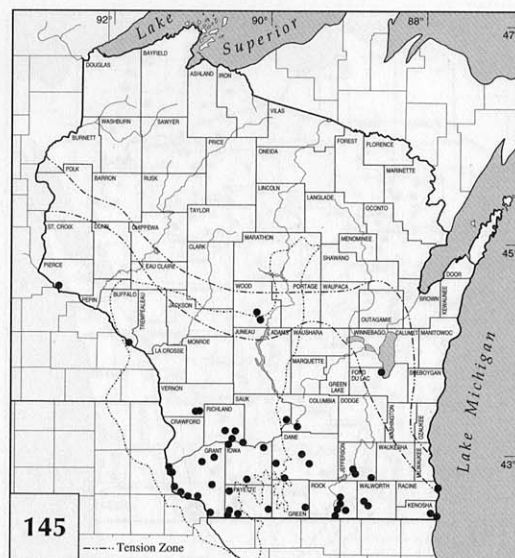
Today, this spring ephemeral occurs with such dry prairie indicators as Lead-plant, Little Bluestem, Shooting-star and Prairie-smoke, as well as those more tolerant of disturbance such as Pussy-toes, Sand Cress and Puccoon. However, Robin's-plantain is probably one of the species that reached high presence values in oak savannas during prehistoric times.

144. *Erigeron strigosus* Muhl. ex. Willd. DAISY FLEABANE Ubiquitous on the Great Plains from the Rocky Mountains eastward and weedy throughout much of the United States and southern Canada; very common throughout Wisconsin, especially in mesic to **dry prairies**, sand plains and blowouts, barrens, lakeshores and river terraces, oak openings, disturbed woods and borders, and open brushy or wooded hillsides and bluffs; very weedy (but innocuous) along roadsides, railroads, abandoned fields, pastures, fencerows, quarries and gravel pits; sometimes in low ground but usually in dry places with sandy or gravelly, poor or worn soils. (15) Flowering from early June to early October; fruiting from late July to late October.

Infrequent plants, morphologically intermediate between *Erigeron strigosus* and *E. annuus* (L.) Pers. have been called var. *septentrionalis* (Fernald & Wiegand) Fernald, but it is not clear whether these are hybrids or variant types of *E. strigosus*.

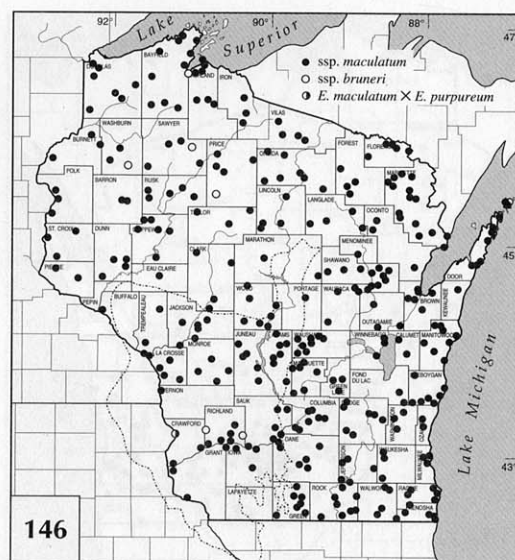


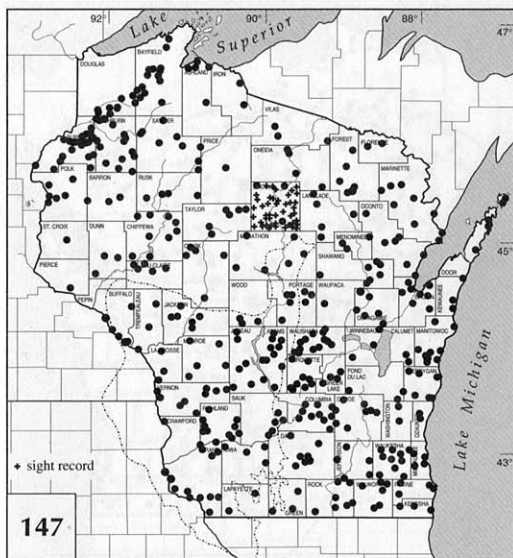
145. *Eupatorium altissimum* L. TALL BONESET. Widespread in the eastern United States from New Jersey to Minnesota, eastern Nebraska and Texas, rather infrequent and sporadic in southwestern Wisconsin on dry rocky limestone (dolomite) prairies, less often on **mesic prairies** and wooded bluffs, and rarely locally abundant on bare sterile mine tailings (in Benton, Lafayette Co.). (1) Flowering from late July into early September, fruiting from mid-August to October.



146. *Eupatorium maculatum* L. SPOTTED JOE-PYE-WEED. Widespread in northern North America from ocean to ocean, south in the mountains to Tennessee, to Illinois and New Mexico; throughout Wisconsin, characteristic of wet prairies and especially northern sedge meadows, in marshes, **alder thickets**, wet woods, lowlands, and along streams and lakes, less common in bogs or drier habitats. (11) Flowering from early July through September, fruiting from late July into October.

Most of our plants are the typical eastern ssp. *maculatum*, but the western ssp. *bruneri* (A. Gray) G. W. Douglas of the northern Great Plains (Nebraska to Manitoba) is occasionally encountered as well.

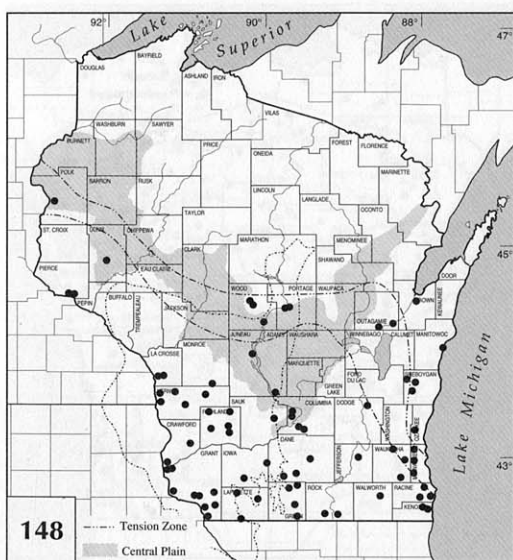




- 147. *Eupatorium perfoliatum* L. var. *perfoliatum*.** BONESET, COMMON BONESET. Nearly ubiquitous from Nova Scotia and Florida west to the Dakotas and northeastern Texas; throughout Wisconsin, common in open moist habitats such as sandy lakeshores, sand bars, beaches, sedge meadows, wet prairies, **fens**, southern lowland forests, northern damp cedar-hemlock or tamarack-spruce-popular woods, shrub carrs, swamps, marshes, streamsides and wet cliffs, rarer in drier habitats, though often very weedy in heavily grazed pastures or gravelly dry hillsides. (12) Flowering from late June through September, fruiting from late July to early October.

Local varieties occur beyond our range.

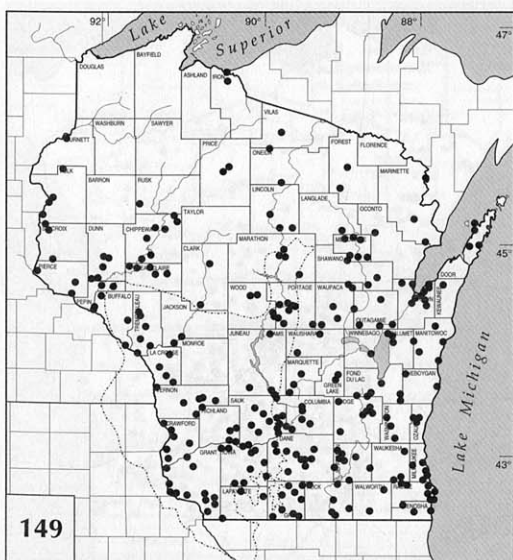
Surprisingly, Boneset and several other sedge-meadow species have been turning up, albeit in low densities, in upland oak woodlands in which controlled fires are being used as a management tool (R. A. Henderson, pers. comm.).



- 148. *Eupatorium purpureum* L. [including var. *holzingeri*].** PURPLE JOE-PYE-WEED. In the eastern deciduous forest and Prairie Peninsula from New England and the Appalachians to Minnesota and eastern Oklahoma; in Wisconsin infrequent in the southern half, nearly lacking from the region of the Central Plain, mainly in the dry and **southern dry-mesic forests** dominated by oaks, and in mesic to damp maple, basswood and elm woods south of the Tension Zone, less common on thinly wooded bluffs, rarely in mesic prairies, lakeshores and marshes, and (in the Wisconsin River bottoms) in dense underbrush of moist sloughs subject to seasonal inundation. (5) Flowering from (mid) late July to mid August, fruiting from August through September.

Very similar to the more common *Eupatorium maculatum* (146), Spotted Joe-pye-weed, but in drier habitats and with only 4–8 very pale pinkish to purplish flowers per head.

Like *Solidago ulmifolia* and other oak woodland species, Purple Joe-pye-weed proliferates during savanna and woodland restoration.

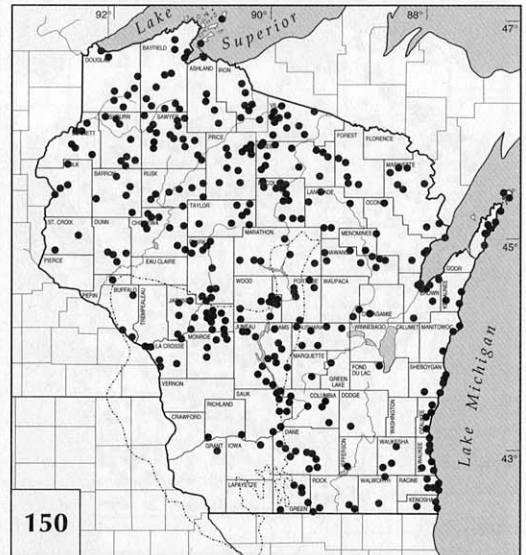


- 149. *Eupatorium rugosum* Houtt. var. *rugosum* [including var. *tomentellum*].** WHITE SNAKEROOT. Widespread, abundant and variable (but hardly subdividable except for one variety of the southern Appalachians), from northern Florida north to Nova Scotia and west to the eastern Great Plains; in Wisconsin abundant except in the extreme northwest in dry, mesic or moist woods, most prevalent in **southern dry-mesic forests**, woodlands and savannas, wet woods and thickets, shady ravines, riverbanks and floodplains, less frequently on lakeshores, bluffs and cliffs, abundant in disturbed woods, along trails and openings, and weedy in urban areas; flourishing in light shade and deep soil generally. (10) Flowering from late July through September, fruiting from (late July) August to early October.

The leaves and stems of White Snakeroot contain tremetol, a toxin that causes “trembles,” a fatal disease of cattle. Tremetol is soluble in milkfat and, when transmitted to other animals or humans, causes the notorious “milk sickness,” common in some parts of the Midwest during the early days of settlement.

150. *Euthamia graminifolia* (L.) Nutt. var. *graminifolia* [*Solidago graminifolia* (L.) Salisb. var. g.]. GRASS-LEAVED GOLDENROD. Transcontinental, the collective species from Newfoundland to British Columbia, south to Virginia, Missouri and New Mexico; the glabrous typical variety common throughout most of Wisconsin in mesic to moist prairie remnants, moist to dry fallow fields and **northern sedge meadows**, also on edges of marshes, bogs, and moist maple-basswood and hemlock-yellow birch-maple woods, rarely in open deciduous woods, somewhat weedy along fencerows, open sandy or clayey roadsides and railroad rights-of-way. (14) Flowering (late July) early August into October, fruiting from late August into October.

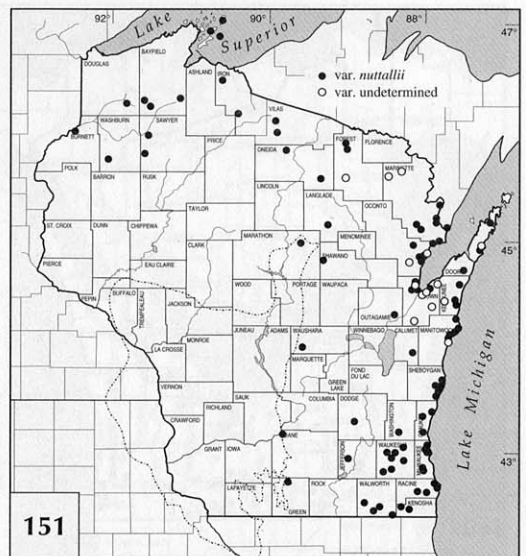
A polymorphic species with several varieties, ecogeographically distinctive or not, of which this is the most common.



151. *Euthamia graminifolia* (L.) Nutt. var. *nuttallii* (Greene) W. Stone [*Solidago g.* var. *nuttallii* (Greene) Fernald]. NUTTALL'S GRASS-LEAVED GOLDENROD. A minor phase with very short, spreading pubescence, sympatric with var. *graminifolia*, but extending westward only as far as Minnesota; generally distributed in eastern and northern Wisconsin. (14) Flowering and fruiting as in var. *graminifolia*.

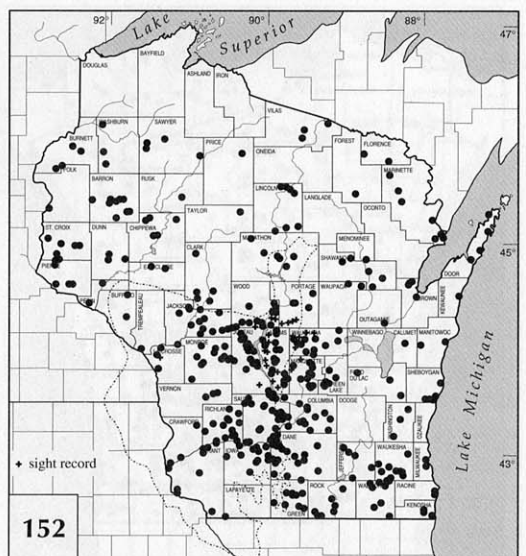
About one-fifth of our material is referable to var. *nuttallii*, which appears to be only slightly discrete geographically and not at all discrete ecologically within our range.

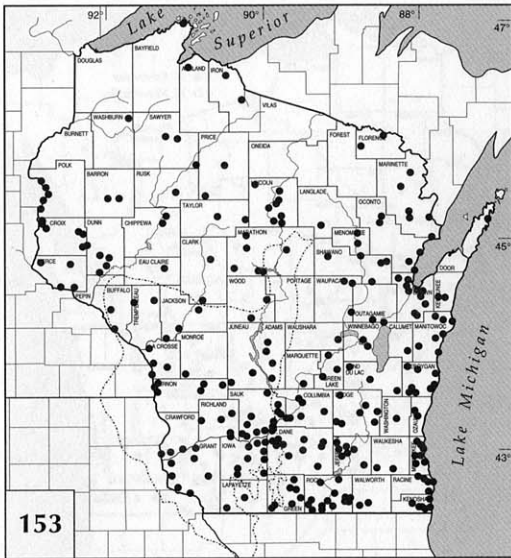
Less common than the variable and widespread *Euthamia graminifolia* is *E. gymnospermoides* Greene (*Solidago g.*), Viscid Grass-leaved Goldenrod, a western species reaching its eastern range limit south of the Tension Zone in dry sandy fields, sandy prairies, and at the edges of jack pine and/or black oak woods.



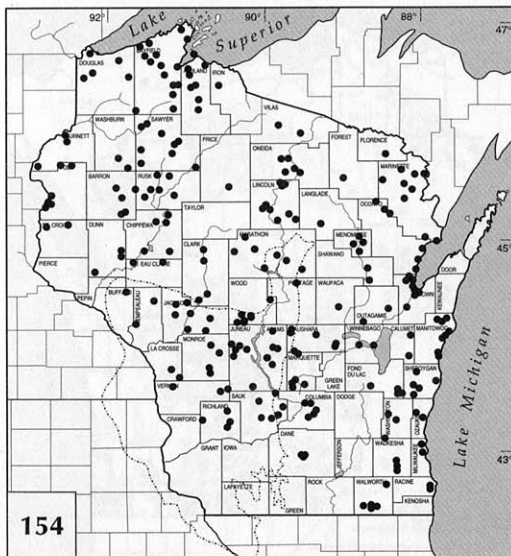
152. *Gnaphalium obtusifolium* L. sensu stricto. FRAGRANT OR OLD-FIELD CUDWEED, CATFOOT, RABBIT'S-TOBACCO. Widespread in eastern North America from Florida and Texas north to Nova Scotia and Manitoba; throughout Wisconsin very common in sandy fields, roadsides, prairies, **sand barrens** and occasionally in open dry woods. (11) Flowering from August to early October, fruiting in September and October.

Unlike most sand prairie annuals, which are only ephemerally or peripherally present, *Gnaphalium obtusifolium* belongs to a guild of persistent species that includes Geyer's Spurge (*Chamaesyce geyeri*), Common Cotton-weed (*Froelichia floridana*), Slender Knotweed (*Polygonum tenue*) and Coastal Joint-weed (*Polygonella articulata*) (Plumb 1979).

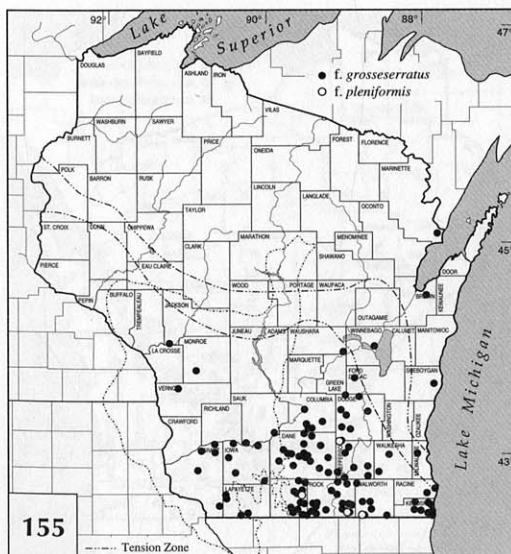




- 153. *Helenium autumnale* L. var. *autumnale*** [including var. *canaliculatum*]. COMMON SNEEZEWEED. A polytypic species, throughout much of temperate North America; abundant in all but northernmost Wisconsin, in sunny or shady moist areas such as river bottom floodplain forests, low open woods with alder, willow, elm, ash, red-osier dogwood, silver maple and yellow birch, on sand and gravel bars of rivers and lakeshores, meadows of *Carex*, in low swales or marshes, and peaking in **wet prairies**. (7) Flowering from mid July to mid October, fruiting from August through October.



- 154. *Helianthus giganteus* L.** TALL or SWAMP SUNFLOWER. An eastern taxon, from the Appalachians of Georgia and the North Carolina Piedmont to Maine, west to southern Manitoba; very common throughout most of Wisconsin but lacking in six southern or southwestern counties, although most abundant in the north in a wide variety of habitats: sedge meadows, riverbanks, lake margins, **alder thickets**, mesic to dry poplar woods, and clearings in northern hardwoods; especially common along wooded roadsides, abandoned fields and other disturbed woodlands; in southern Wisconsin in moist to mesic prairies, marshes, thickets, open woods, and along railroads and roadsides. (4) Flowering from July to mid September, fruiting from late July to October.



- 155. *Helianthus grosseserratus* M. Martens.** SAW-TOOTH SUNFLOWER. A western element of the southern Great Plains, from Louisiana and Texas to Minnesota, east in the Prairie Peninsula (as a striking component of the tallgrass prairie) to Ohio and (introduced?) beyond to New England; in southern Wisconsin common in **wet-mesic prairies**, less frequent in mesic to dry-mesic prairies (absent from dry and sandy prairies), in moist thickets, marshes, ditches, along streams, lakes, railroads, roadsides and fencerows. (11) Flowering from July to early October, fruiting from late August to October.

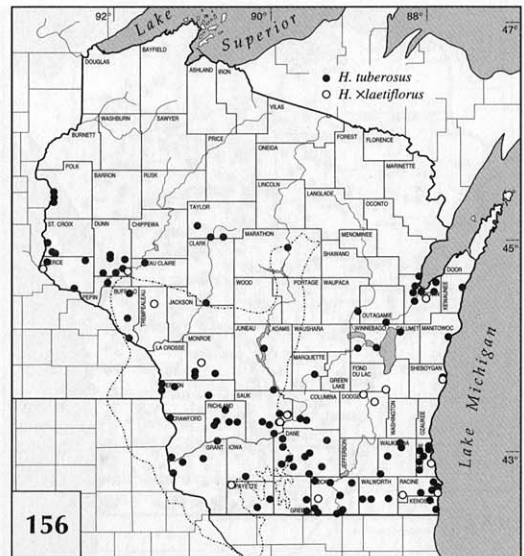
It can be difficult or impossible to try to sort out specimens of our various native and introduced sunflowers. However, the majority of common prairie species, including Sawtooth Sunflower and Swamp Sunflower (154) of wet meadows and moist ground generally, and Naked-stemmed (157) and Stiff Sunflower (158) of dry to mesic prairies, are readily identifiable.

156. *Helianthus* × *laetiflorus* Pers. [*H. pauciflorus* × *H. tuberosus*].

HYBRID PRAIRIE SUNFLOWER. Widely scattered in the eastern and midwestern United States and adjacent Canada; in southern Wisconsin sporadic in dry to moist soil along roadsides, railroads, fields, waste ground and other disturbed sites, rarely in native prairie. Flowering from August to early October.

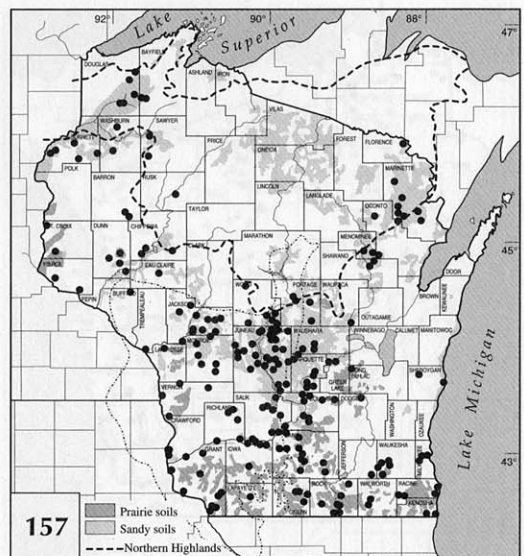
Supposedly a series of hybrids resembling *H. pauciflorus*, but occasionally tuber-bearing and with yellow disk florets as in *H. tuberosus*, in other characters intermediate between those of the postulated parents (Clevenger & Heiser 1963).

***Helianthus tuberosus* L. JERUSALEM ARTICHOKE.** Nearly throughout the eastern United States and southern Canada and across the Great Plains; common in the southern half of Wisconsin in rich or moist soils along streams and rivers, **shrub carrs**, open woods, prairies, fencerows, roadsides and railroads, often on sandy beaches and in waste places; frequently in low open areas with native weedy species of prairies and marshes. (1) Flowering from late July to early October.



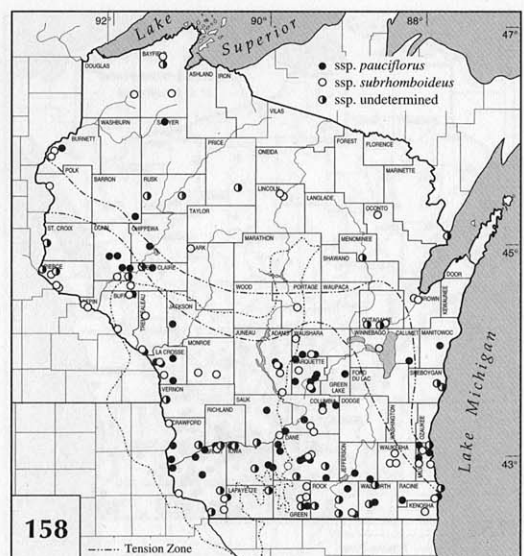
157. *Helianthus occidentalis* Riddell ssp. *occidentalis*. NAKED-STEMMED SUNFLOWER. A very distinctive, basally leaved subspecies of a mostly Midwest prairie species ranging from eastern Minnesota south through the Ozarks into eastern Texas, east to northern Ohio and scattered in the East and South; widespread throughout Wisconsin but lacking from the Northern Highlands, especially common in very sandy, dry to **mesic prairies**, sandy oak and jack pine barrens, calcareous “goat prairies,” and on sandy roadsides, fields and railroads. (13) Flowering from mid July to mid September (early October), fruiting from August to October.

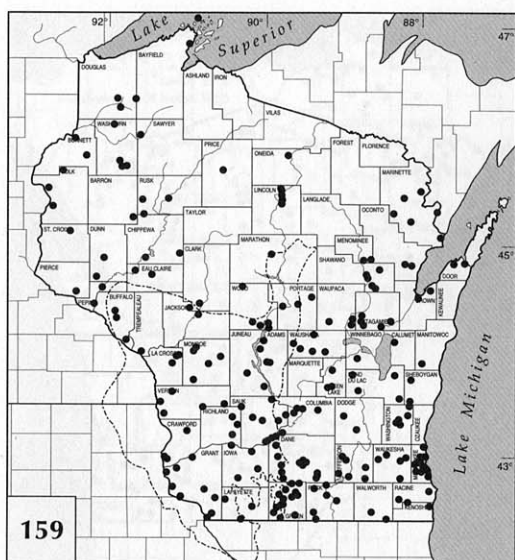
The epithet *occidentalis*, meaning western, is a nineteenth century misnomer; the species' range extends only to eastern Minnesota.



158. *Helianthus pauciflorus* Nutt. ssp. *pauciflorus* [*H. rigidus* (Cass.) Desf.; *H. laetiflorus* var. *rigidus*]. STIFF OR PRAIRIE SUNFLOWER. A Midwest subspecies (Indiana to southern Manitoba and eastern Texas, occasional eastward (introduced?); in Wisconsin mainly south of the Tension Zone in wet to dry prairies, most common in dry-mesic and **mesic prairies**, sand prairies, sand barrens and terraces, dry, steep, calcareous “goat prairies,” and roadsides and railroads. (8) Flowering from late July through September.

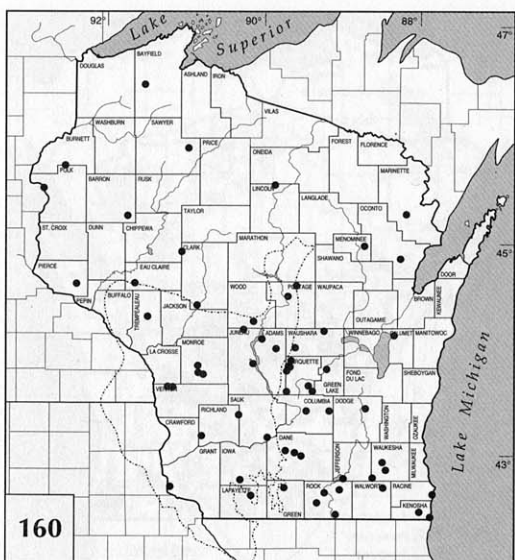
A very distinctive but complex species represented in our region by two intergrading subspecies (or varieties) and a named putative hybrid (156) (Clevenger & Heiser 1963, Heiser et al. 1969). Most Wisconsin specimens are ssp. *pauciflorus*, although ssp. *subrhomboideus* (Rydb.) O. Spring & E. E. Schill. [*H. laetiflorus* var. *subrhomboideus*; *H. rigidus* var. *subrhomboideus*], of the northern Great Plains, from southern Alberta to western Texas and Wisconsin (eastward as a weed), is almost as frequent.





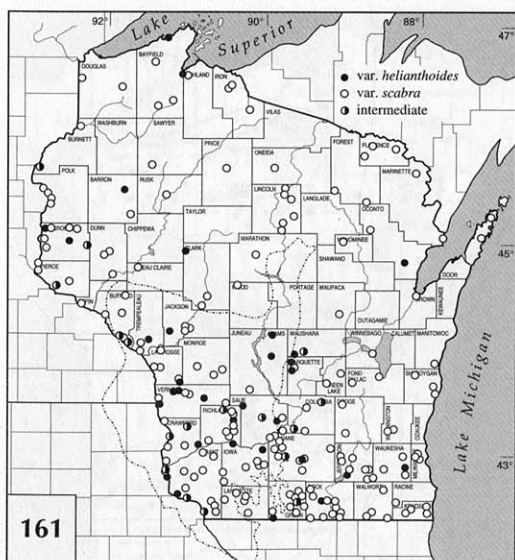
- 159. *Helianthus strumosus* L. ROUGH-LEAVED SUNFLOWER.** Throughout the eastern United States to the edge of the Great Plains from Texas to Minnesota; very common throughout Wisconsin, especially in the southern half, abundant in oak woods (**southern dry forest**), oak openings, edges of woods and thickets, in mesic to moist prairies, sand prairies, limestone or sandstone bluffs and ledges, lakeshores, roadsides, railroads and fencerows; uncommon in very wet or very dry areas. (15) Flowering from late July through September, fruiting from August through October.

Similar to and often confused with *Helianthus tuberosus* (156) and *H. decapetalus* L., the latter occasional throughout Wisconsin in closed to open oak woods and thickets, less often in open or moist areas along roadsides, railroads and lakeshores (but not in prairies).



- 160. *Helianthus strumosus* approaching *H. hirsutus* Raf. HAIRY or ROUGH SUNFLOWER.** Frequent nearly throughout Wisconsin, chiefly associated with open woodlands, especially oak but also jack pine, as well as dry to mesic prairies, sandy or gravelly banks, roadsides, old fields and fencerows; usually on uplands and slopes. Flowering in August and September, fruiting from August to October.

Helianthus hirsutus, "itself a borderline species" (Heiser et al. 1969), is very closely related to *H. strumosus*, each consisting of a complex of poorly defined morphological races. In eastern and southern states the two may deserve taxonomic recognition, but in the northern part of their range, including Wisconsin, the distinctions ascribed to them (stem pubescence and petiole length) seem particularly inconsistent. Intermediates occur so frequently that we have been discouraged from attempting to maintain them as specifically distinct. Herbarium specimens with hirsute or scabrous stems have been mapped as "approaching *H. hirsutus*."



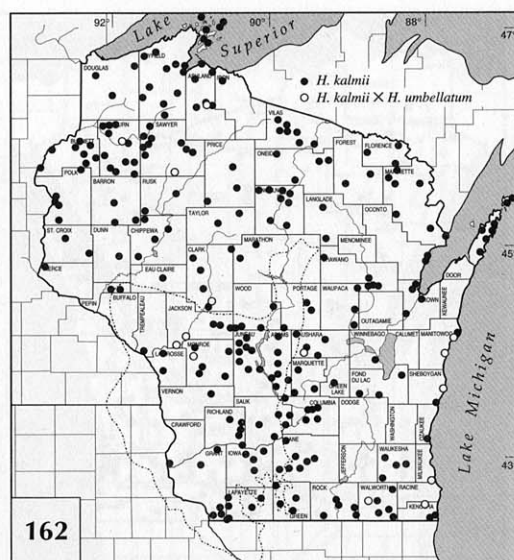
- 161. *Heliopsis helianthoides* (L.) Sweet. FALSE SUNFLOWER.** Common throughout Wisconsin, in the south and west in wet to dry-mesic prairies, although most common in **mesic prairies**, often in and on the edges of open, cut-over woods, in thickets, on floodplains, lakeshores, low or abandoned fields, and along roadsides and railroads; in the north along wooded roadsides and lakes and streams. (12) Flowering from June to early October, fruiting from July to October.

Two slightly differentiated forms occur in our region: the smooth-stemmed, Appalachian-centered var. or ssp. *helianthoides*, infrequent in the southwestern Wisconsin, and the rough-stemmed, Great Plains and prairie-centered var. or ssp. *scabra* (Dunal) Fernald [ssp. *occidentalis* T. R. Fisher], to which most Wisconsin specimens can be referred.

Being very shade tolerant, False Sunflower is likely more of a savanna than a prairie species.

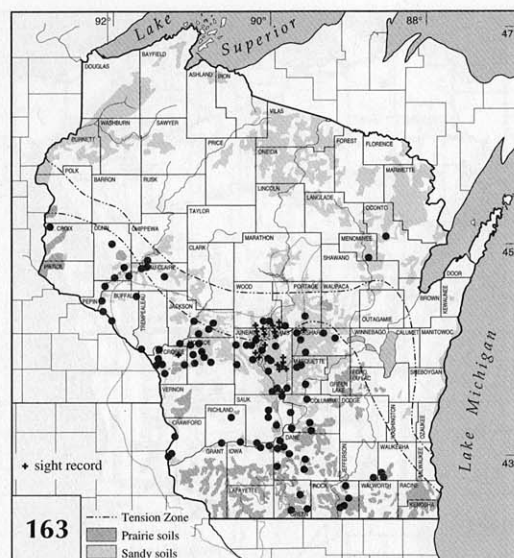
- 162. *Hieracium kalmii* L.** [including var. *fasciculatum*; *H. canadense* Michx.] CANADA HAWKWEED. Cool temperate North America from Canada's maritimes and northeastern states to British Columbia, evading the Great Plains; common throughout Wisconsin, especially in the **bracken grasslands** north of the Tension Zone, mostly on sandy, slightly acid soil with jack pine, aspen, oaks and pines; on sandy lakeshores and rivers, weedy on sandy roadsides, railroad tracks, in pastures, gravel pits, quarries and sandy fields. (14) Flowering from mid July to mid October, fruiting from late July through October.

Most of our plants can be referred to the slender var. *kalmii*, with thinner leaves and more open inflorescences and a few to the robust extremes called var. *fasciculatum* (Pursh) Lepage, with thicker leaves and shorter, stiffer peduncles, with all possible intermediates bridging the gap. Hybrids with *H. umbellatum* L. sensu lato [*H. scabriusculum* Schwein.] and *H. scabrum* [*H. × fassettii* Lepage] are occasionally found.



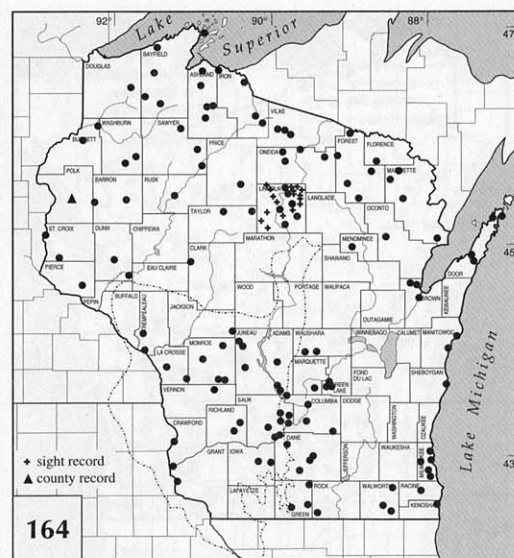
- 163. *Hieracium longipilum* Torr. ex Hook.** LONG-HAIRED HAWKWEED.

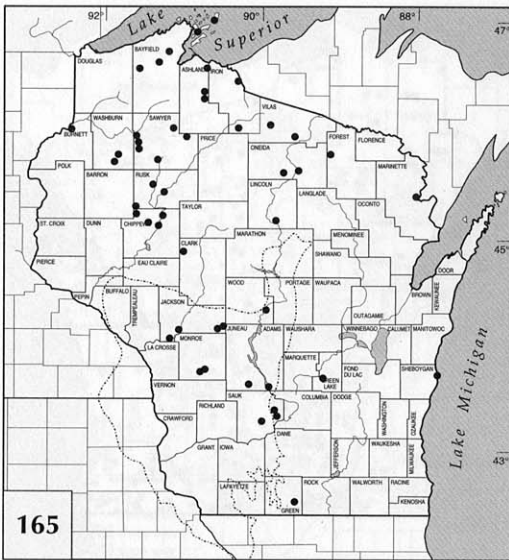
A beautiful and characteristic sand prairie dweller from Indiana and Michigan to (mostly) eastern Minnesota and Oklahoma (Louisiana); in southwestern Wisconsin most prevalent in and characteristic of dry sandy prairies, especially along the Chippewa, Wisconsin and Trempealeau rivers and on railroad rights-of-way, the **sand barrens** of central and southwestern Wisconsin, occasionally on steep dry prairies, and in jack pine woods, and rarely weedy in abandoned fields and roadsides; equally frequent on disturbed and undisturbed soils. (9) Flowering from early July through mid August, fruiting from late July through late September.



- 164. *Hieracium scabrum* Michx. var. *scabrum*.** ROUGH HAWKWEED.

A species of dry open woods, from the Appalachians of northern Georgia to Nova Scotia, west to Missouri, Minnesota and southwestern Ontario; relatively common throughout Wisconsin, especially in **southern dry-mesic forests** and in the northern hardwoods region, in jack pine or red pine woods, oak woods and oak openings, rarely in more mesic woods, lakeshores, streambanks, sandy prairies and sunny hillsides, pastures, fields and railroads; on both sandstone and limestone, but mostly in dry sandy soil. (5) Flowering from late July to late September, fruiting from September into early October.

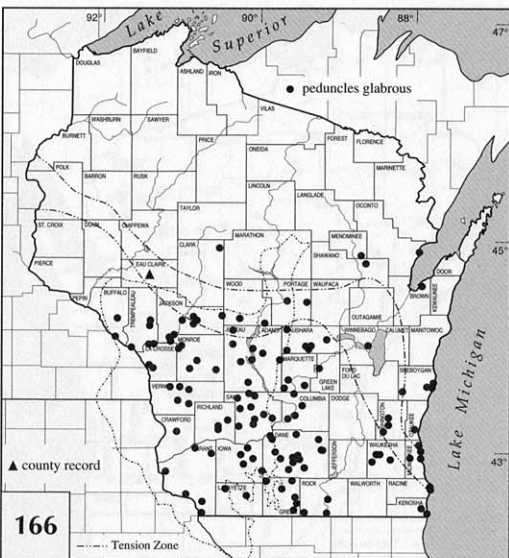




165. *Hieracium scabrum* var. *tonsum* Fernald & H. St. John.

SMOOTH-STEMMED HAWKWEED. Maine and southern Quebec to northern Michigan and adjoining Ontario, overlapping the previous; in Wisconsin scattered in habitats similar to those of var. *scabrum* (164), but more abundant in the northern hardwood region, in black oak, sugar maple, *Acer-Populus* and spruce-fir-hemlock-*Thuja* woods, sandy plains, lakeshores and pastures. Flowering from late July to early September, fruiting from late August to late September.

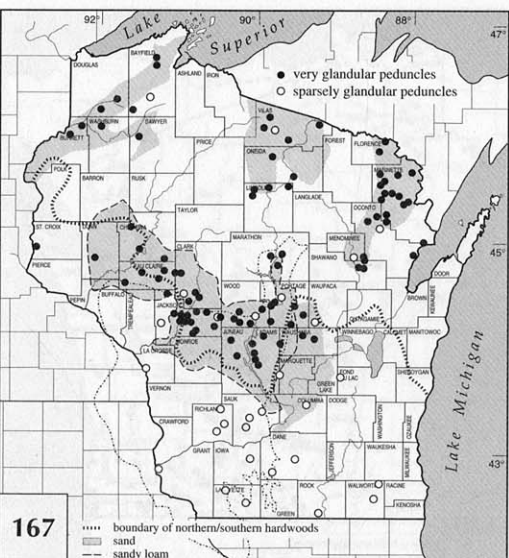
The two varieties may occur together in Iron, Vilas and Washburn counties, and in the latter a rare specimen intermediate between them. The common name of var. *tonsum* is a misnomer, because the stem may be minutely bristly.



166. *Krigia biflora* (Walter) S. F. Blake ssp. *biflora*. FALSE-DANDELION.

Widespread in eastern North America from New England to the eastern edge of the Great Plains, south to Georgia (?) and in the southern Rocky Mountains; in Wisconsin common in the Southern Forest-Prairie Province in rocky woods and sandy areas south of the floristic Tension Zone, mostly in open oak-hickory, maple-basswood and jack pine-scrub oak woods, **wet prairies**, and weedy on roadsides, railroads and open thickets. (13) Flowering from late May to mid July (August), fruiting from June through July (October).

Nearly identical to the next (167), but consistently lacking glandular pubescence.



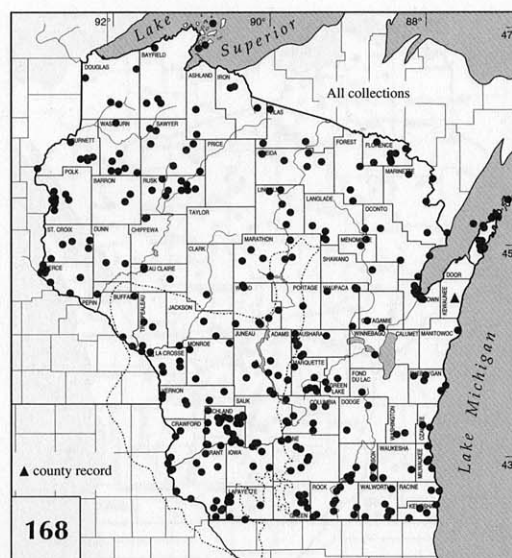
167. *Krigia biflora* ssp. *glandulifera* (Fernald) H. H. Iltis. FALSE-DANDELION.

Mostly in the region of northern hardwoods, from the southern Appalachians to New England, Iowa, Minnesota and Colorado and New Mexico; in Wisconsin relatively common in sandy areas within and north of the Tension Zone, on roadsides, lakeshores, or in oak or jack pine woods, on sandy hillsides and open fields, less common in aspen woods, sedge meadows and alder-white cedar swamps. Flowering from (late May) early June to mid July (September), peaking ca. 10 days later than in ssp. *biflora*, this perhaps related to its more northerly range; fruiting from June sporadically through August (October).

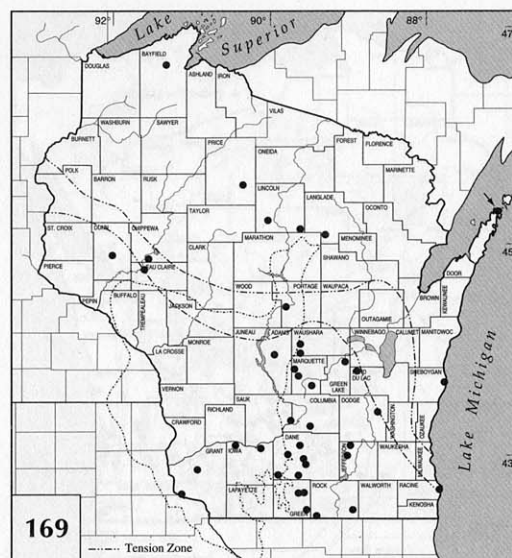
Krigia virginica (L.) Willd., Virginia Dwarf-dandelion, is locally abundant in dry open sandy habitats, especially sand barrens and jack pine woodlands, but also along roadsides and railroads near the Wisconsin River in Dane, Sauk, Iowa and Richland counties.

168. *Lactuca canadensis* L. TALL WILD LETTUCE. Subcontinental, from Florida to Nova Scotia and Saskatchewan to Texas; in Wisconsin all over in a great variety of habitats, prevalent in wet to **mesic prairies**, on roadsides, sandy fields, limestone bluffs, and in disturbed maple-hemlock, aspen and river bottom woods, shaded ravines and marshes. (14) Flowering from late June into September, fruiting from July through September.

A weedy species, *Lactuca canadensis* is very variable, with four varieties based on leaf shape: var. *canadensis*, infrequent across the southern two-thirds of Wisconsin, and the more common var. *latifolia* Kuntze and var. *longifolia* (Michx.) Farw., both throughout the state. (Variety *obovata* Wiegand, to be expected in Wisconsin, is not reported by Johnson & Iltis 1964.) What with these “varieties” more often than not occurring in the same population, our map does not differentiate between them.



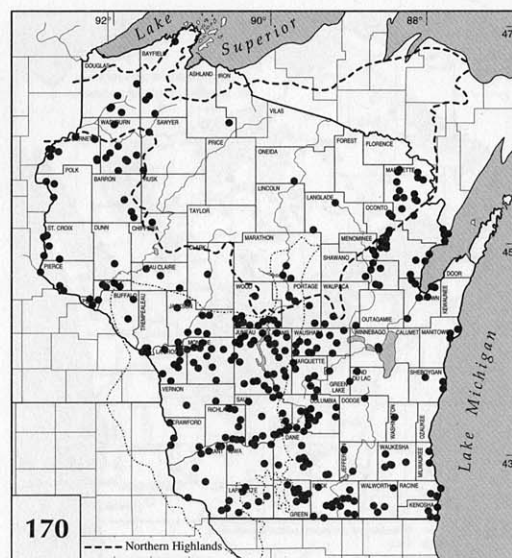
169. *Lactuca ludoviciana* (Nutt.) Riddell. PRAIRIE WILD LETTUCE. Widespread from the Pacific Coast across the Great Plains to Mississippi and Saskatchewan, east to northern Illinois (Indiana?); scattered or rarely locally common throughout southern and central Wisconsin, but mostly lacking in the Driftless Area except near the Wisconsin River, most abundant in upland **dry-mesic prairies**, in deep-soil and sandy prairies, often on roadsides or railroads; in northern Wisconsin introduced on roadsides, railroads, coal yards and sandy fields. (6) Flowering from July through mid September, fruiting from late July to October.

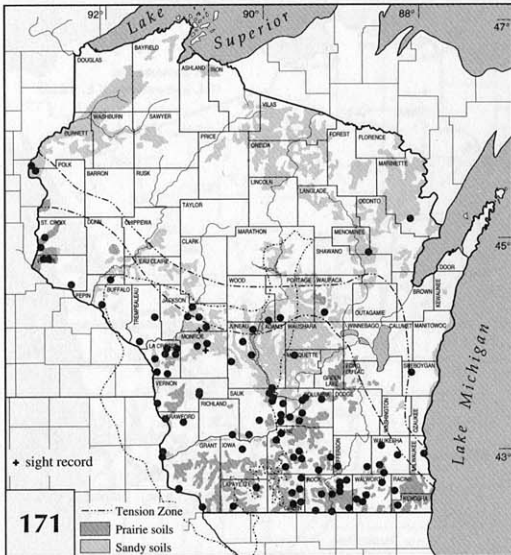


170. *Liatris aspera* Michx. [including var. *intermedia*]. ROUGH BLAZING-STAR. Eastern and central United States (and occasionally Ontario), from northern Florida and the Carolinas to Ohio and North Dakota, in the eastern Great Plains south to Texas; throughout Wisconsin, but rare in the central Northern Highlands, most common on **mesic prairies** such as are found along railroads, on dry, especially sandy prairie relics, becoming less common in open woods, on bluffs and river banks, and in willow thickets, often associated with jack pine and scrub oak. (13) Flowering from mid July to mid September (October), fruiting from (late July) August through September (October).

Many of our specimens can be referred to the mainly eastern var. *intermedia* (Lunell) Gaiser, but in Wisconsin the two have nearly identical ranges and intergrade freely.

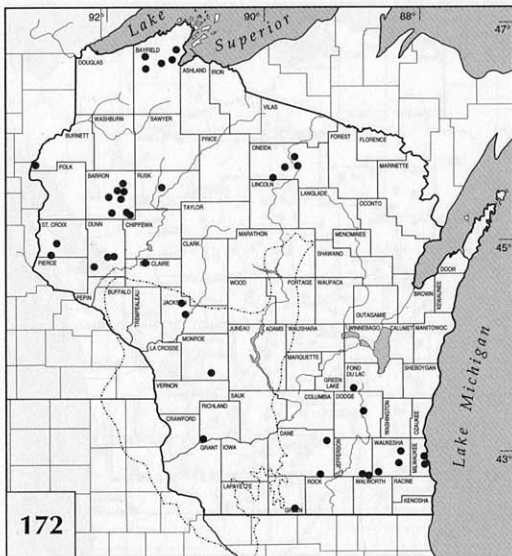
Hybrids or introgressants between this species and *Liatris ligulistylis* are known to occur in Wisconsin, as are the more easily identified hybrids between it and *L. cylindracea*.





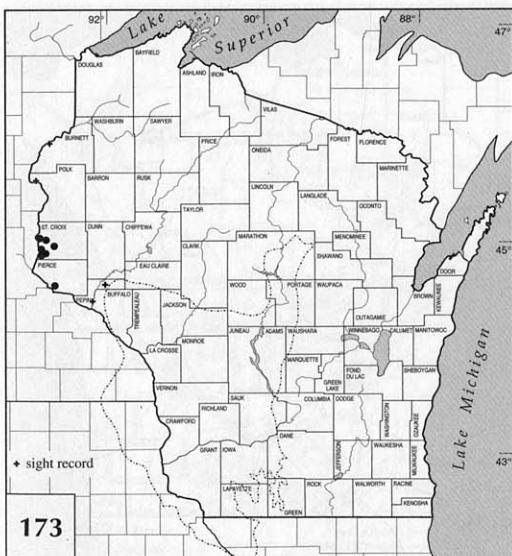
171. *Liatris cylindracea* Michx. FEW-HEADED BLAZING-STAR. A species of dry sandy or rocky soils from southern Ontario and western New York (Niagara) westward to eastern Minnesota and Missouri; in Wisconsin reaching greatest prevalence in **dry prairies** south of the Tension Zone, also on dry limestone (dolomite) bluffs, sandy river banks, and rarely on roadsides or railroads. (7). Flowering from mid July to early September, fruiting from August into October.

A hybrid between this species and *Liatris aspera* [*L. × gladewitzii* (Farw.) Shinnars] is known from Crawford and Rock counties.



172. *Liatris ligulistylis* (A. Nelson) K. Schum. NORTHERN PLAINS BLAZING-STAR. The upper Great Plains counterpart to the eastern *L. aspera*, from southern Alberta south to New Mexico and east to South Dakota, Minnesota, Arkansas and Illinois; in Wisconsin rather sporadic (as it is throughout its range), most abundant in **mesic prairies**, especially deep-soil railroad prairies, on roadsides, less common on shores of lakes and edges of swamps, low prairies and in dry sandy places; in northern Wisconsin adventive on sandy roadsides and railroad embankments. (2) Flowering in July and August, fruiting from August to early September.

This species often grows near or with *Liatris aspera*, and hybrids, especially introgressants between the two, appear to be relatively frequent. These are mapped with the parental species they most resemble (see Johnson & Iltis 1964).

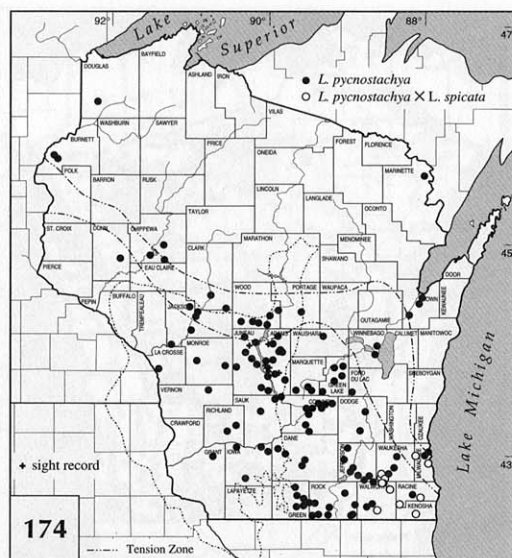


173. *Liatris punctata* Hook. var. *nebraskana* Gaiser. DOTTED BLAZING-STAR (Endangered). A highly variable xerophyte of the mixed grasslands, from southern Saskatchewan to southwestern Michigan, southward to northern Mexico, Texas and northwestern Arkansas; rare in Wisconsin, in sand prairie relics and **dry-mesic prairies** on sandstone bluffs and terraces along the Chippewa, St. Croix and Mississippi rivers in the far western part of the state. (1) Flowering in August, fruiting into September.

Our plants are part of the common phase of the species, var. *nebraskana*, weakly segregated from the more western var. *punctata* and chiefly Mexican var. *mexicana* Gaiser.

174. *Liatris pycnostachya* Michx. THICK-SPIKE BLAZING-STAR. A western Great Plains species, from the Dakotas south to Louisiana and Texas and east to Indiana; in Wisconsin typical of wet and **wet-mesic prairies**, locally common on mesic prairies, in wet, sometimes rather calcareous sedge-grass meadows (fens), peat marshes, bogs, wet roadsides and wet prairie relics along railroads south of the Tension Zone. (9) Flowering from July to early September, fruiting from (mid July) August through September.

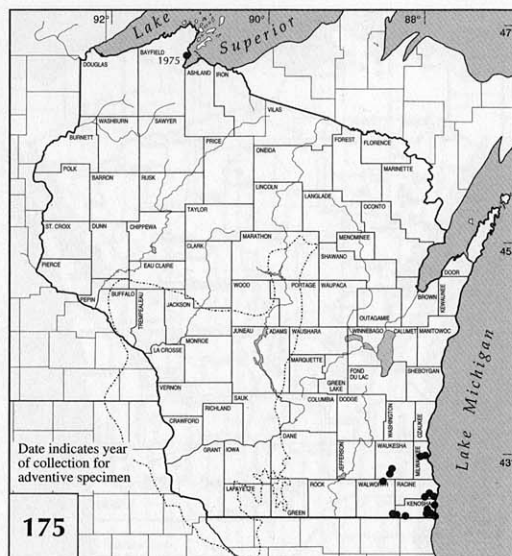
Liatris pycnostachya co-occurs with *L. aspera*, *L. ligulistylis* and *L. spicata* (commonly hybridizing with the latter wherever they overlap), but is mostly lacking in the five southeastern counties where *L. spicata* is relatively common.



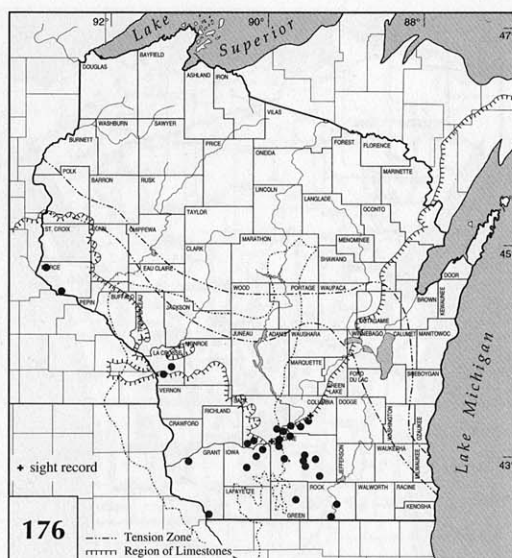
175. *Liatris spicata* (L.) Willd. SESSILE-HEADED or MARSH BLAZING-STAR, GAY-FEATHER (Special Concern). Eastern United States, from Long Island to Florida, west to Wisconsin, Illinois and Mississippi (Louisiana); in Wisconsin occurring only in the extreme southeast (at the Bayfield County station, surely adventive), in sandy, rather calcareous, moist to **mesic prairies** and sandflats along the Lake Michigan shore. (4) Flowering in late July and early August, fruiting in August and early September.

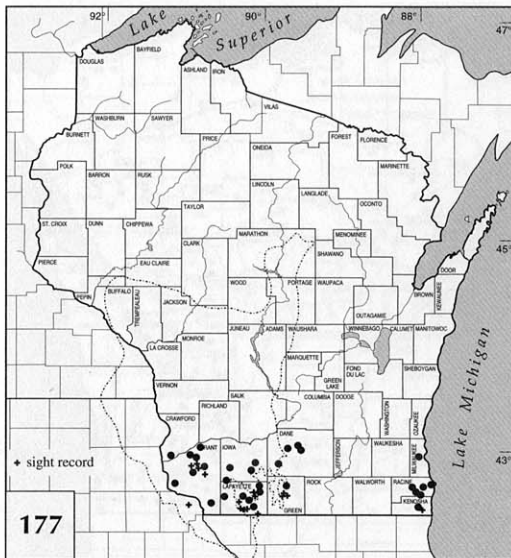
A rare and beautiful species, here at the very edge of its range. Although once locally abundant, it is now probably threatened, because its habitat is all but swallowed up by agriculture and development. Hybrids with the closely related, but less catholic, *Liatris pycnostachya* are further mentioned above (174).

This Gay-feather, which thrives in full sun and ordinary soil, is much in demand by gardeners and florists, who use it in bouquets. Farmers in southwestern Wisconsin are now growing it to supply commercial markets.

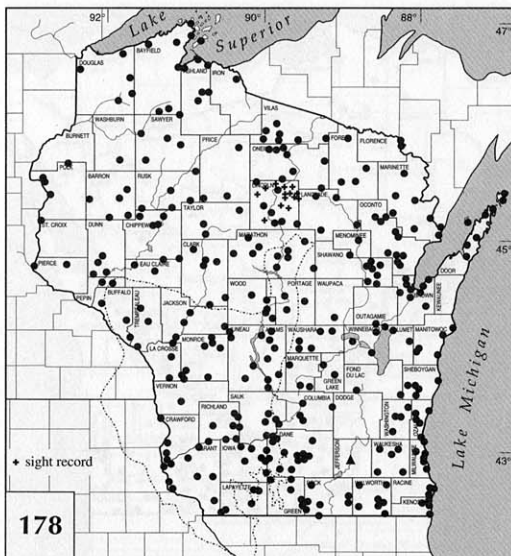


176. *Microseris cuspidata* (Pursh) Sch. Bip. [*Agroseris* c.; *Nothocalais* c.]. PRAIRIE DANDELION (Special Concern). A western Great Plains species, from Montana to Oklahoma, east to Wisconsin and Illinois; in southern Wisconsin rare and sporadic, mainly on sandy or rocky, steep, calcareous prairies and bluffs, **dry-mesic prairies**, gravelly hillsides and along railroads; in Pierce County on sand terraces of the Mississippi River. (2) Flowering throughout May and into June, fruiting from mid May through June.

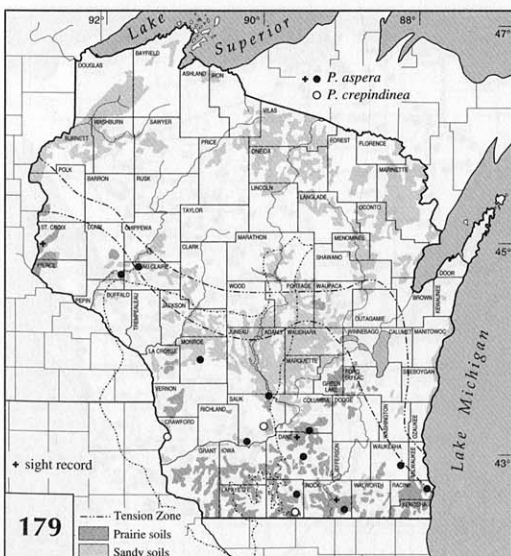




177. *Parthenium integrifolium* L. WILD QUININE, EASTERN FEVERFEW (Threatened). Eastern United States, from Georgia to northeastern Texas, north to New York, Ohio and the eastern edge of the Great Plains; in Wisconsin once probably a common and typical species of mesic and **wet-mesic prairies**, now rare, and restricted to prairie relics, open bur oak woods, railroads and roadsides in the southern two tiers of counties. (3) Flowering from late June to early September, fruiting from mid August to October (a species that is, however, notorious for poor fruit set).



178. *Prenanthes alba* L. RATTLESNAKE-ROOT, LION'S-FOOT. Eastern North America, widespread from western Quebec to Saskatchewan, south through New England to Georgia, Tennessee, eastern Missouri and northwestern Arkansas; in Wisconsin very common throughout in many habitats, most abundant and prevalent in the **southern dry-mesic forests**, but also mesic to dry forests as well as low woods, and common in lowland prairies, limestone bluffs and sandy shores, less common in northern coniferous forests and deer yards, jack pine woods, alder thickets and white cedar-hardwoods, often weedy on roadsides. (18) Flowering from early August to early October, fruiting from mid August through October.

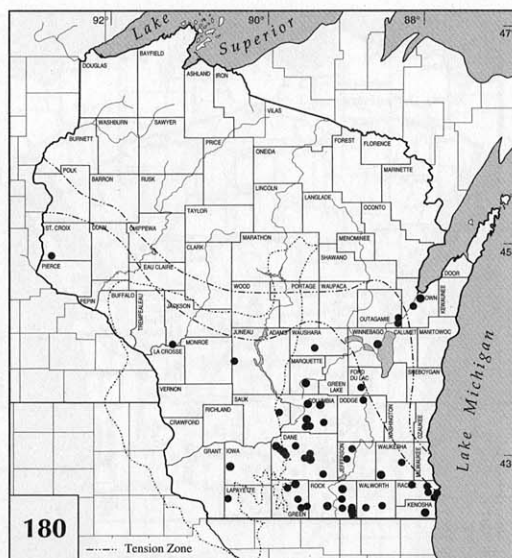


179. *Prenanthes aspera* Michx. ROUGH WHITE-LETTUCE (Endangered). Central United States, from the eastern Great Plains of Nebraska south to Arkansas and east to Ohio; in Wisconsin a very rare species of both sand prairies and steep, rocky, calcareous, dry prairies (**wet-mesic prairies** [?] fide Curtis 1959). (2) Flowering from early August to September, fruiting in October.

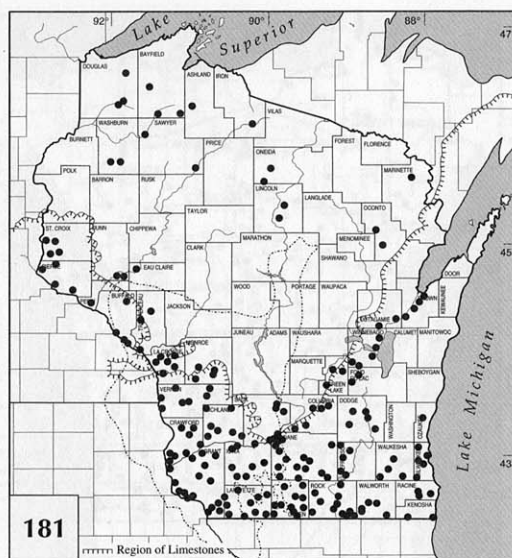
Prenanthes crepidinea Michx. GREAT OR MIDWESTERN WHITE-LETTUCE (Endangered). A tall forest herb of the eastern United States deciduous forest region, from western New York to southeasternmost Minnesota, south to West Virginia and Kentucky (Arkansas); in Wisconsin (as in Pennsylvania, Minnesota, Arkansas and Missouri) a very rare species, collected only once each from **wet-mesic prairies** in Crawford and Green counties and recently from a seepage area in an oak-maple forest in the Baraboo Hills. (1) Flowering in September.

- 180. *Prenanthes racemosa* Michx.** GLAUCCIOUS WHITE-LETTUCE. North-eastern Great Plains, from Alberta and North Dakota to Missouri, east to Quebec and New Jersey, also in the Rocky Mountains to Colorado; in Wisconsin at one time a prevalent species of deep-soil, dry to **wet-mesic prairies** except in the Driftless Area, now relatively rare, restricted to relic prairies mostly on railroad rights-of-way and rocky or gravelly hill prairies south of the Tension Zone. (7) Flowering from (the end of August) early September to October, fruiting from mid September to mid October.

Doubtfully divisible into subspecies. The typical (and according to Gleason & Cronquist 1991, eastern) subspecies has relatively small heads with fewer involucre bracts and flowers. In the western part of the range, but extending east to Maine, is the common phase, ssp. *multiflora* Cronquist. Both variants are present in Wisconsin; but because they seem to lack ecological or distributional distinctness in the local flora, we are not convinced that taxonomic recognition is meaningful.



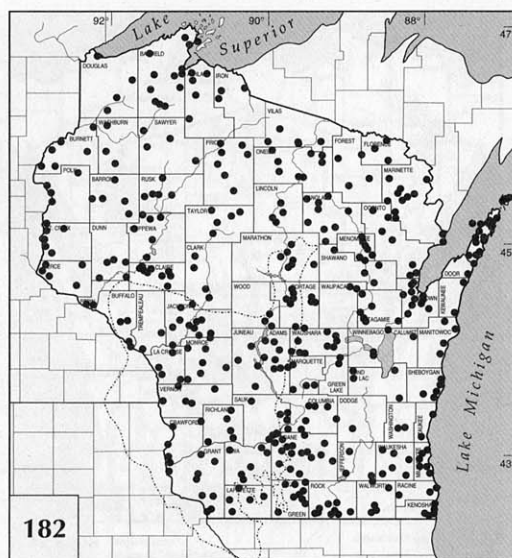
- 181. *Ratibida pinnata* (Vent.) Barnhart.** YELLOW CONEFLOWER. A typical tallgrass prairie species, from eastern South Dakota and southern Minnesota south to northeastern Texas, east in the Prairie Peninsula and beyond to Tennessee, Florida and Ontario; very common in southern and southwestern Wisconsin, occasional elsewhere, a characteristic species of mesic to wet prairies, most prevalent in **wet-mesic prairies**, less frequent in xeric "goat prairies," often in degraded dry prairies and along railroads and roadsides; in the north in isolated (adventive?) colonies along forest edges. (11) Flowering from July to early October, fruiting from late September through October.

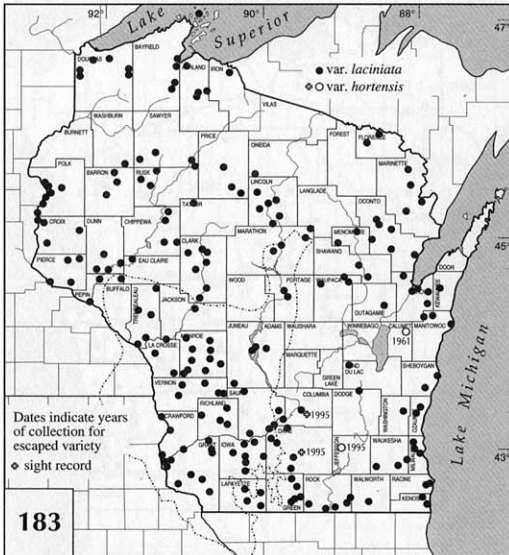


- 182. *Rudbeckia hirta* L. var. *pulcherrima* Farw. [*R. serotina*].** BLACK-EYED SUSAN. Transcontinental but with the regional variability divisible into the mostly Appalachian var. *hirta*, the southern var. *angustifolia* (T. V. Moore) Perdue, and the Prairie Peninsula and eastern Great Plains var. *pulcherrima*; in Wisconsin very common throughout in wet to dry-mesic prairies, peaking in **wet-mesic prairies**, savannas, fields, along roadsides and railroads, fencerows and other open habitats. (13) Flowering from mid June through September (October), fruiting from late July to October.

Our plants are chiefly or wholly referable to var. *pulcherrima*, an aggressive weed with a center of distribution to the west and southwest of us, but which has spread east to the Atlantic Coast, west to British Columbia and south into Mexico.

The coneflowers and black-eyed susans are sturdy and beautiful, qualities that impress gardeners. *Rudbeckia hirta*, the most abundant and best-known coneflower, is planted as a component in mixtures of wildflower seed.



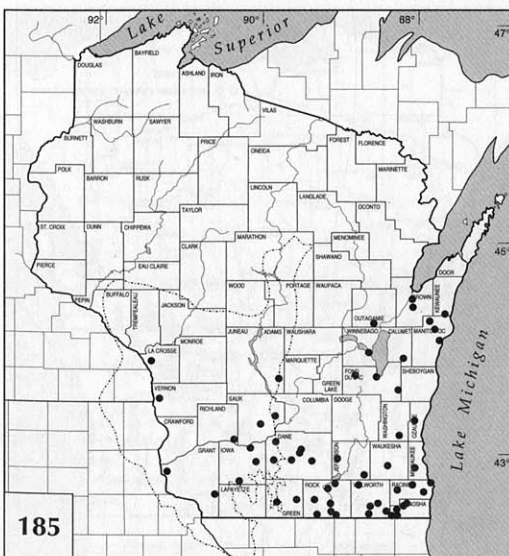


- 183. *Rudbeckia laciniata* L. CUT-LEAF CONEFLOWER.** Nova Scotia to southern Manitoba and the eastern Great Plains, south to Florida and along the Rocky Mountains to Arizona; common throughout Wisconsin, characteristic of shaded or partly shaded floodplains and streambanks, in open **southern wet forests**, thickets and clearings, including moist slopes, ravines and streambanks in mesic woods, wet prairies, sloughs, open meadows near lakes and streams, less often along roadsides and railroads; in the north chiefly along roads at the edges of lowland forests and wet thickets. (13) Flowering July to early October, fruiting from August to October.

The “double-flowered” var. *hortensis* L. H. Bailey, rarely collected, is a garden escape.



- 184. *Rudbeckia subtomentosa* Pursh. SWEET CONEFLOWER.** Regionally endemic to the central United States and the southeastern edge of the Great Plains (Michigan to Iowa, south to Louisiana and eastern Oklahoma); occasional to rare across southernmost Wisconsin, in prairies, marshes, river bottoms, or low habitats along railroads and roadsides; most common in the large complex of relatively undisturbed bottomland habitats (edges of woods, lowland savannas, thickets, marshes, mesic or **wet-mesic prairies**) along the lower Wisconsin and Sugar rivers. (3) Flowering from late July to early September.

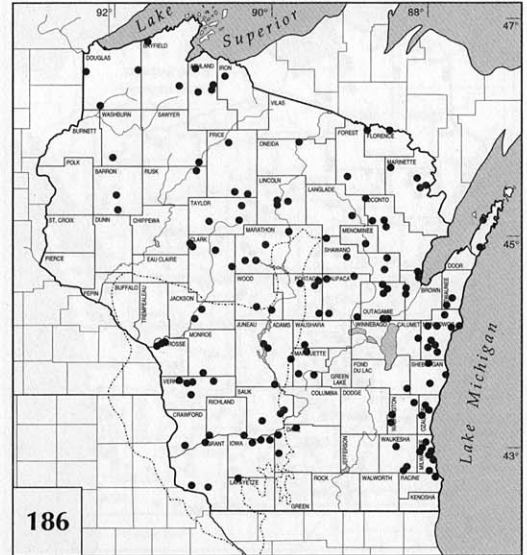


- 185. *Rudbeckia triloba* L. THREE-LOBED CONEFLOWER.** Widespread in the eastern United States (New York to Minnesota and eastern Kansas, south to western Florida and eastern Oklahoma) and with regional varieties in the East and far South; in southern Wisconsin locally frequent in second-growth woods and thickets along river bottoms, weedy prairies, old fields, and borders of marshes and fens; often cultivated and escaping along roadsides, fencerows, railroads and waste places near areas of human activity, including dumps, vacant lots, alleys and unkempt yards. Flowering from August to mid October, fruiting over winter (achenes present from October until the following April).

Considered to be native in our region, although often inhabiting severely disturbed communities. “Its ecology is difficult to assess...” (Swink & Wilhelm 1994, p. 654).

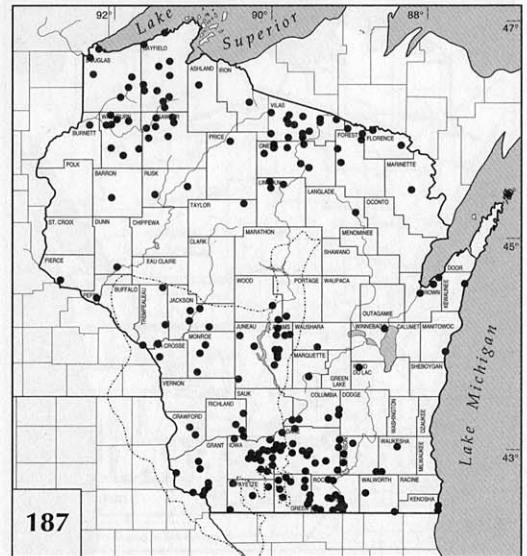
- 186. *Senecio aureus* L.** [*S. a. var. gracilis*; *Packera aurea* (L.) A. Löve & D. Löve]. GOLDEN RAGWORT, HEART-LEAVED GROUNDSEL. The most widespread species of subg. *Packera* in eastern North America, in wet, often shady habitats throughout the eastern deciduous forest and boreal forest from northern Florida and Texas to Newfoundland and Hudson Bay; frequent throughout Wisconsin, typically in wet, shady habitats, but also in **wet-mesic prairies**, rich to lowland woods and thickets, including swamp forests, streambanks and seepage slopes, pastures, tamarack bogs, alder swamps and other damp or wet areas. (11) Flowering from mid May in the southern part of the state to mid July in the north, fruiting from mid June to mid July.

Similar to *Senecio pseudoreus* (188) except the latter lacks rhizomes and has basal leaves that are only slightly cordate or rather abruptly contracted to the petiole (instead of \pm strongly cordate) at the base.



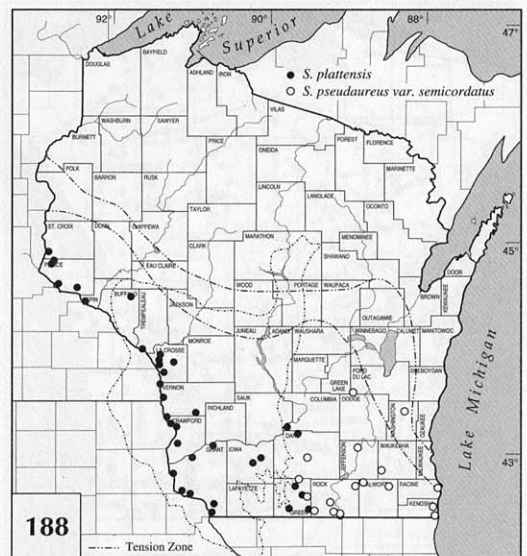
- 187. *Senecio pauperculus* Michx.** [*Packera paupercula* (Michx.) A. Löve & D. Löve]. NORTHERN MEADOW GROUNDSEL, NORTHERN MEADOW RAGWORT. Widespread in meadows, streambanks, open woods and moist calcareous cliffs across northern North America from Newfoundland to Georgia, westward south of Hudson Bay to Alaska and Oregon and along the Rocky Mountains to Colorado; common throughout much of Wisconsin in mesic prairies, **bracken grasslands**, meadows, savannas, open woods, bogs and streambanks. (6) Flowering from mid May through July, fruiting in June and July (to mid September in the far north).

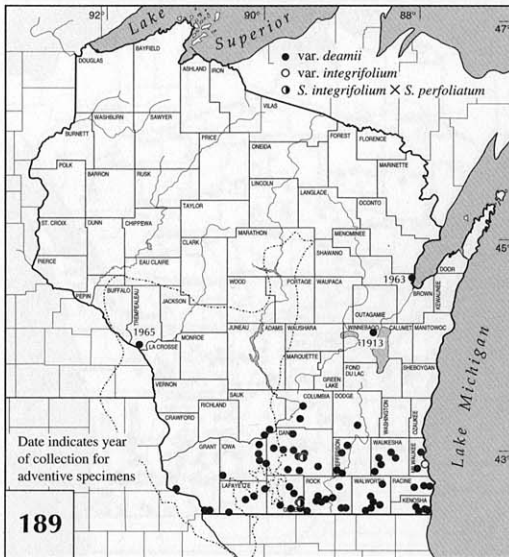
Encompassing many morphological and cytological races (four in Wisconsin), hybridizing and sometimes intergrading with other "packeras" where their ranges overlap. Northern Meadow Ragwort is very similar to *Senecio plattensis* (188), but grows in moister sites and has a less persistent tomentum, narrower, unlobed basal leaves, and less deeply cut stem leaves.



- 188. *Senecio plattensis* Nutt.** [*Packera plattensis* (Nutt.) W. A. Weber & A. Löve]. PRAIRIE RAGWORT (Special Concern). Common throughout the prairies and plains of central North America, from Canada south to Texas (irregularly eastward); infrequent in western and south-central Wisconsin in dry prairies and prairie-like habitats, mostly on bluffs and gravel terraces of the Mississippi floodplain. Flowering from May to late June, fruiting in June.

Senecio pseudoreus Rydb. var. *semicordatus* Mack. & Bush [*Packera pseudoreus* (Rydb.) W. A. Weber & A. Löve var. *semicordata* (Mack. & Bush) T. M. Barkley]. WESTERN HEART-LEAVED GROUNDSEL. A wet-prairie herb in the drainages of the Mississippi and Missouri rivers (disjunct in the Black Hills), reaching its eastern range limit in moist prairies, fens and sunny, springy sites in the southeastern quarter of Wisconsin. Flowering from (mid) late May through June.

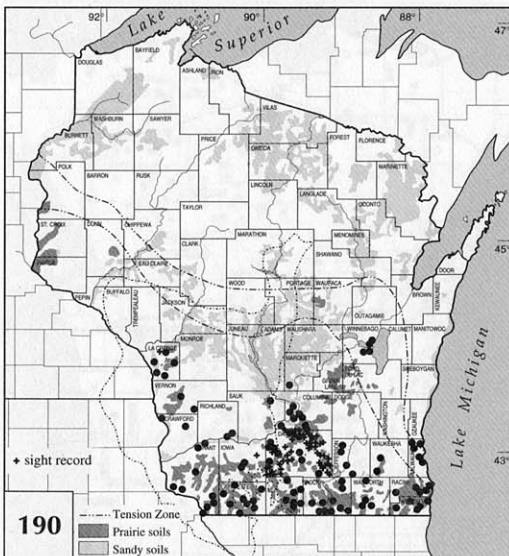




189. *Silphium integrifolium* Michx. var. *deamii* L. M. Perry. PRAIRIE ROSINWEED. From Alabama to Texas and on the eastern Great Plains north to Nebraska, Wisconsin and southern Michigan; in the southern quarter of Wisconsin once common in tall-grass, **wet-mesic prairies**, but also in wet to dry prairies, railroad rights-of-way and along roadsides; rarely adventive (or escaped) farther north. (8) Flowering from late June to early September, fruiting from September to mid October.

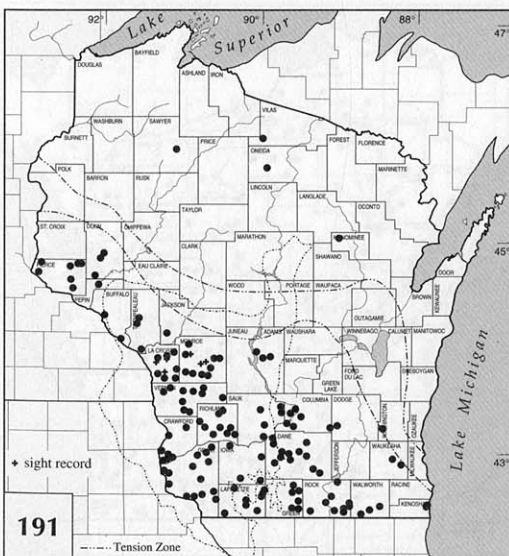
Essentially all ours are the glandular var. *deamii*, but var. *integrifolium*, adventive from south and east of Wisconsin, is represented by one collection from Milwaukee County plus a second one mapped by Settle and Fisher (1970). A third variant, var. *neglectum* Settle & T. R. Fisher, has been attributed to our region as well.

Hybrids between *Silphium integrifolium* and *S. perfoliatum* are variously intermediate, and have been collected on Curtis Prairie, UW-Madison Arboretum and on a railroad prairie relic west of Brodhead, Green County.



190. *Silphium laciniatum* L. COMPASS PLANT. A most distinctive tall-grass prairie indicator, from the eastern Great Plains (South Dakota to northeastern Texas) eastward to Alabama and in the Prairie Peninsula to Ohio; locally once common in southern Wisconsin, now between plow and cow (see Curtis 1959, p. 426) rather rare, especially in **mesic prairies**, but also in wet or dry, rocky *Bouteloua-Schizachyrium* prairies, occasionally persisting because of deep roots as a relic along roadsides. (7) Flowering in July and August, fruiting from late July to early October.

Reports of hybrids between *Silphium laciniatum* and *S. terebinthinaceum*, such as from Benedict Prairie, Kenosha County, may be based on juvenile, relatively unlobed leaves of *S. laciniatum* or doubtfully on plants of the southern *S. terebinthinaceum* var. *pinnatifidum* (Elliott) A. Gray (but see Fisher 1959). In Wisconsin, *S. laciniatum* grows in generally drier sites, and where the two species grow together (e.g., Faville Prairie), blooms earlier (pers. obs.), so that here, unlike farther south, hybrids are less expected.

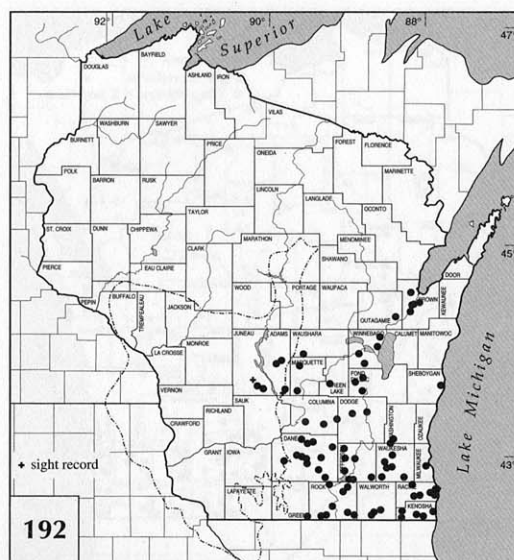


191. *Silphium perfoliatum* L. CUP PLANT. Eastern deciduous forest from southern Ontario to Georgia, west to the edges of the Great Plains (North Dakota to northeast Oklahoma); in Wisconsin chiefly in the southwest half on the edges of low woods, low wet prairies, and river and stream banks of **southern wet forests**, common along open or shaded roadsides, fields and other rich and moist habitats; in the north adventive (?), usually along wooded roadsides. (9) Flowering from July through September, fruiting from September to October.

A Native American medicinal species, Cup Plant is persisting and spreading slightly from long-ago introductions in the Bad River, Lac du Flambeau and Menominee reservations.

- 192. *Silphium terebinthinaceum* Jacq. PRAIRIE-DOCK.** Characteristic of tallgrass prairies, from northern Arkansas to southeastern Wisconsin, eastward in the Prairie Peninsula to Ohio and southern Ontario, and scattered beyond (Mississippi to North Carolina); in Wisconsin sharply limited to the last (Wisconsin) glaciation (mostly absent from the Driftless Area, this perhaps simply a climatic coincidence), typically in deep-soil prairies, occurring in all but the driest prairies, but especially in **wet-mesic prairies**, and, unable to withstand grazing (Curtis 1959), now found only in prairie relics, railroad rights-of-way and roadside openings, and occasionally persisting along barbed wire fences as the last survivor of the prairie flora. (7) Flowering from July to early September, fruiting from late August to September.

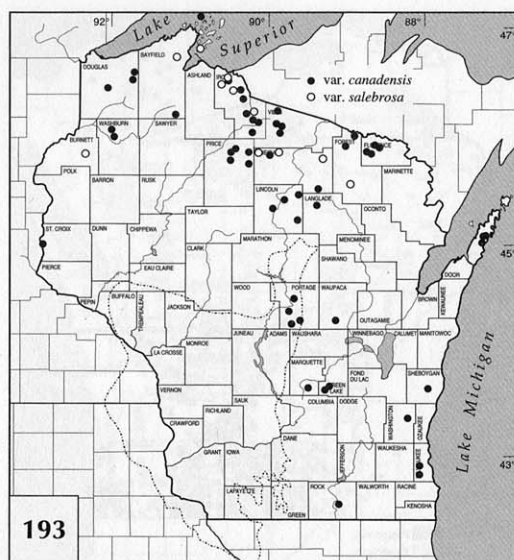
Conspicuous even when not in flower owing to its very large basal leaves, which, like those of *Silphium laciniatum* (190), align their edges in a north-south direction (blades facing east-west), hence the common name of the latter.



- 193. *Solidago canadensis* L. var. *canadensis*.** COMMON OR CANADA GOLDENROD. Northeastern North America (Newfoundland and Massachusetts, west in the coniferous forest to Hudson Bay, the northeastern Great Plains of Minnesota and beyond); chiefly in northern and eastern Wisconsin, occasional along roadsides, fields, slopes, fencerows and edges of marshes, swamps, **alder thickets** and open woods. (20) Flowering from (late July) early August to early September, fruiting from August to October.

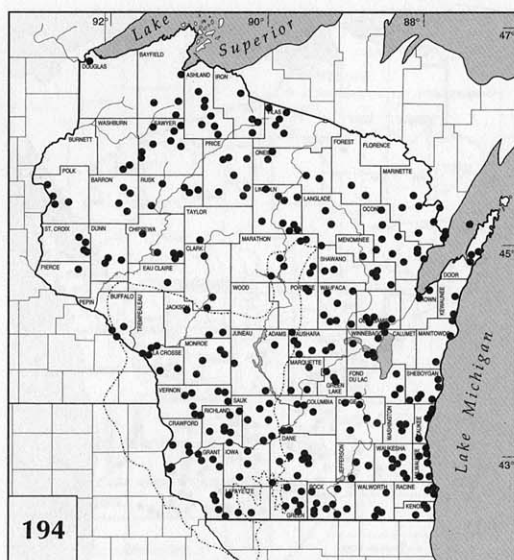
Solidago canadensis is a polyploid complex (see Croat 1972, Gleason & Cronquist 1991) plagued by hybridization, east-west clinal variation and much weediness, with at least four of the five or more varieties represented in Wisconsin. Though Curtis (1959) lumps all varieties together (hence his fidelity value of 20), they do have different ecological amplitudes and therefore deserve recognition.

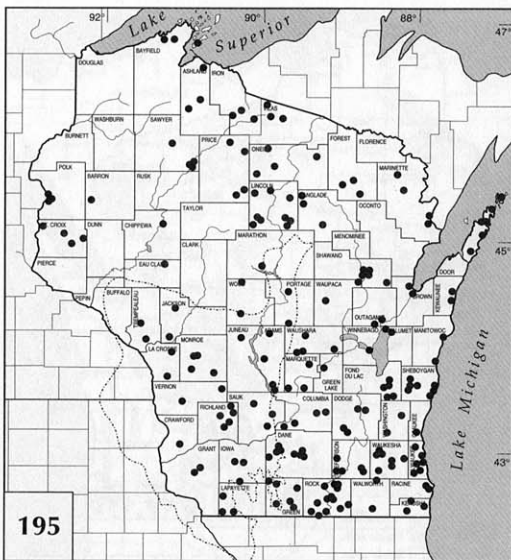
Rare plants from far northern Wisconsin appear to be var. *salebrosa* (Piper) M. E. Jones (*S. elongata*, *S. lepida*), a boreal and cordilleran element with northeastern extensions.



- 194. *Solidago canadensis* L. var. *hargeri* Fernald** [Salamun's (1964) *S. c.* var. *gilvocanescens*, a name properly belonging to a western variety]. COMMON OR CANADA GOLDENROD. Eastern and central United States, from Connecticut south to Virginia and west into the Great Plains and, irregularly, New Mexico; abundant in Wisconsin in open to partly shaded, often degraded habitats, in fields, prairies, edges of bogs, **alder thickets**, marshes, woods, sandy beaches, dry to moist ditches, roadsides and railroads, occasionally in open deciduous woods and jack pine-black oak barrens. (20) Flowering from (mid) late July to (mid) late September, fruiting from late August to October.

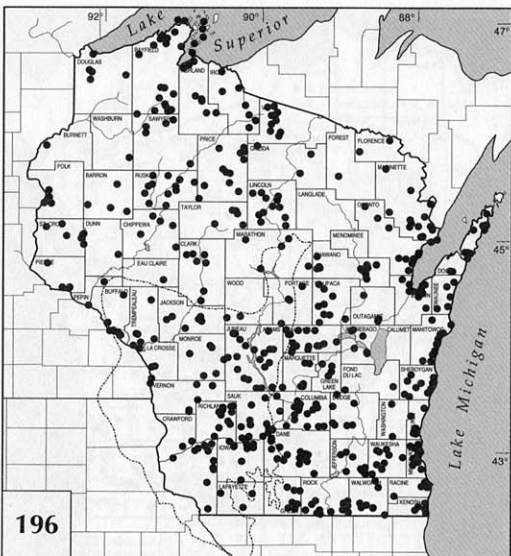
This diploid variety (Semple & Ringius 1983) is similar to, and even more common than, the hexaploid var. *scabra* (195), but some authors do not distinguish between them.





- 195. *Solidago canadensis* L. var. *scabra* Torr. & A. Gray** [*S. altissima* L. of Fernald 1950, Salamun 1964 and Semple & Ringius 1983]. COMMON, CANADA or TALL GOLDENROD. Eastern North America, from Quebec to northern Florida, west to the Great Plains; widespread throughout Wisconsin but more common in the south, most frequently in open moist to dry fallow fields, disturbed prairies, old pastures, dry open roadsides, steep sloping banks, railroad embankments, brushy roadsides, fencerows, open sandy areas, and along edges of, or rarely in, open deciduous woods and jack pine-black oak barrens. (20) Flowering from (early) mid August to September (early October), fruiting from late August to early November.

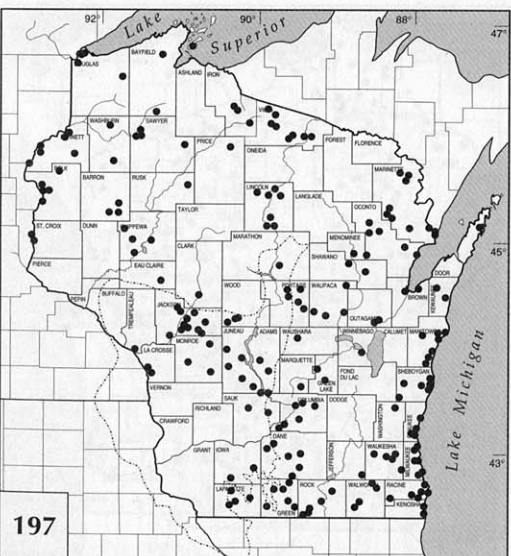
A hexaploid similar to the diploid var. *hargeri* (194), from which extremes are often difficult to distinguish, with var. *hargeri* typically flowering two to four weeks later.



- 196. *Solidago gigantea* Aiton** [including vars. *pitcheri* and *serotina*]. LATE or GIANT GOLDENROD. Widespread (except the Southwest) over most of the United States and southern Canada; abundant throughout Wisconsin in moist rich soils, in shade or sun, marshes, fens, roadside ditches, banks of lakes and streams, edges of bogs and moist sandy beaches, less common in dry to **wet prairies**, fallow fields, along railroad embankments and brushy roadsides, in the latter habitats often associated with *S. canadensis*. (16) Flowering from late July to September, fruiting from August to October.

Strongly resembling *Solidago canadensis* (193-195), with which it may hybridize, except for its very smooth stem (glabrous up to the inflorescence) and earlier blooming date (by two to three weeks).

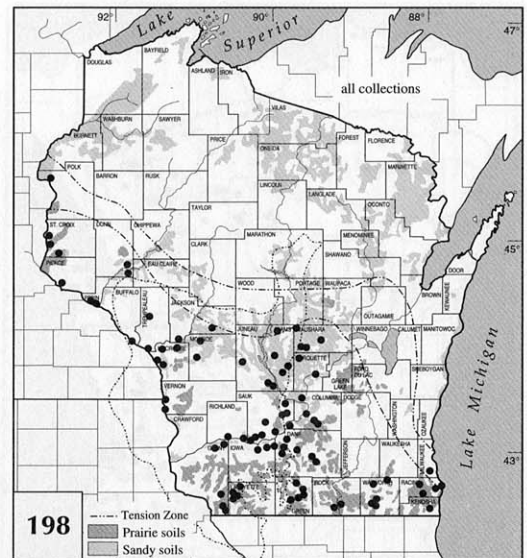
For the record, goldenrods are no more guilty of causing hay fever than any other species producing insect-transported pollen. The real cause is mainly ragweed pollen, especially that of *Ambrosia trifida* L.



- 197. *Solidago juncea* Aiton.** EARLY GOLDENROD. Eastern North America, from southern Canada south in the mountains to northern Georgia and Alabama, and west to northeastern Minnesota and Missouri; common throughout Wisconsin, especially abundant in sandy or loamy open fields, along railroad embankments and weedy fencerows, less common in wet-mesic to **mesic prairies** and fields, along brushy roadsides, on steep roadbanks, and rarely at the edges of open deciduous woods. (12) Flowering from late June to mid September, fruiting from late July to October.

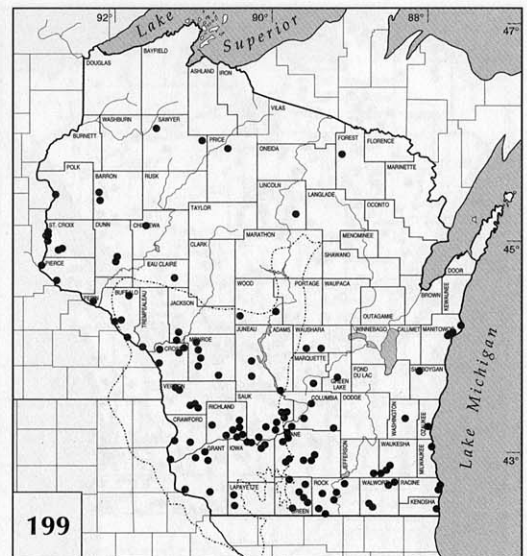
Early Goldenrod intergrades with *Solidago missouriensis* (198) (Semple & Ringius 1983), of which it seems to be an eastern North American sister species.

- 198. *Solidago missouriensis* Nutt.** [including var. *fasciculata*]. MISSOURI GOLDENROD. Ubiquitous in the prairies and Great Plains from Texas to Canada, barely reaching Ontario, in the East intergrading with *S. juncea* (197) of moister habitats; in Wisconsin frequent in prairie areas south of the Tension Zone, in dry to **mesic prairies** on gentle sunny slopes, river terraces, along roadsides and railroad rights-of-way, sometimes in sandy prairies, on or adjacent to blowout dunes, and on steep hillsides. (9) Flowering from (late July) early August to September, fruiting from mid August to October. Several of our specimens from south-central and southwestern counties have been assigned to var. *missouriensis* by Salamun (1964), one of several weakly defined western phases of this species. These plants are very close to var. *fasciculata*, and at least in Wisconsin appear to be inseparable from var. *missouriensis*. As with many widely distributed taxa, here is an example of a morphological cline reflecting the East-West climatic continuum.



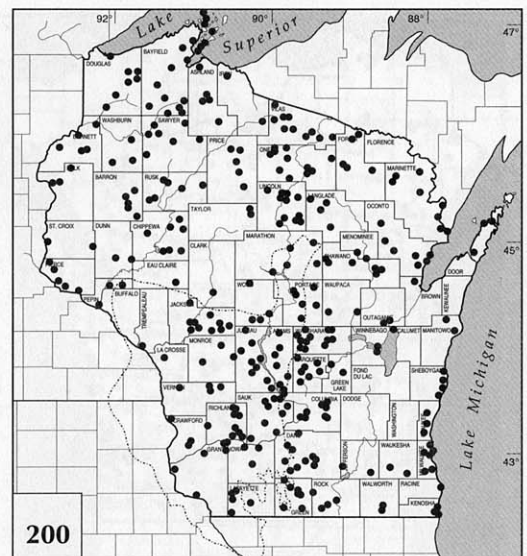
- 199. *Solidago nemoralis* Aiton ssp. *decemflora* (DC.) Brammall** [*S. n.* var. *d.*; *S. n.* var. *longipetiolata*]. FIELD OR OLD-FIELD GOLDENROD. On the Great Plains and Prairie Peninsula; in Wisconsin in habitats similar to those of ssp. *nemoralis* (200), though more common in southwestern Wisconsin. Flowering and fruiting as for ssp. *nemoralis*.

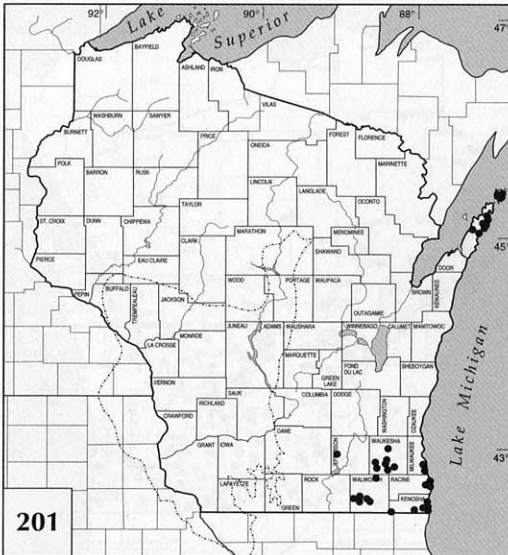
According to Brammall and Semple (1990), this subspecies is tetraploid and basically occupies the Great Plains region, reaching eastward into adjacent portions of the eastern deciduous forest and westward to the foothills of the Rocky Mountains. It is very similar to the typical subspecies, but the two can be separated by a suite of quantitative characters, recently amplified through studies conducted by Semple et al. (1990). Unlike *Solidago missouriensis*, these taxa reflect cytological differences as well.



- 200. *Solidago nemoralis* Aiton ssp. *nemoralis*.** FIELD OR OLD-FIELD GOLDENROD. A variable species of open, sunny prairies, plains and woodlands, widespread from Texas to Canada and east to the Atlantic; very common throughout Wisconsin on dry, sandy, clayey and sterile soils in abandoned fields, pastures, along roadbanks, on mesic to **dry prairies**, railroad embankments, edges of oak woods, and in jack pine and black oak barrens and blowout dunes. (14) Flowering from mid August to September (October), fruiting from early September to October.

This subspecies consists of both diploids and tetraploids, and occupies the portion of the overall species range that coincides with the deciduous forest of eastern North America (Brammell & Semple 1990).

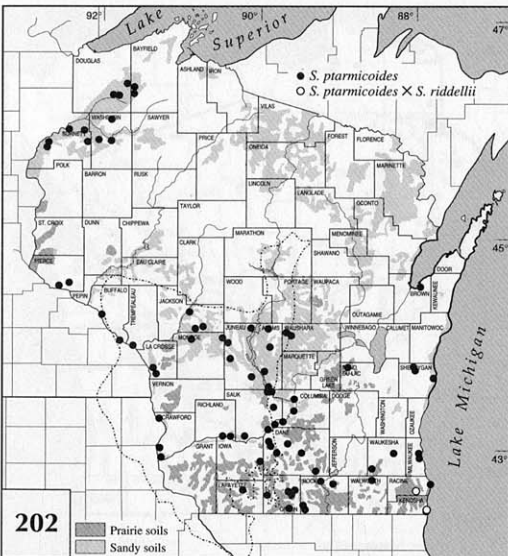




201. *Solidago ohioensis* Riddell. OHIO GOLDENROD (Special Concern).

A Midwest neoendemic restricted totally to glaciated territory, from northern Illinois to Minnesota and, in the Prairie Peninsula, to Ohio and southwest Ontario; in Wisconsin a rare indicator of wet alkaline meadows, **wet prairies**, especially those underlain by calcareous substrate, and fens in southeastern Wisconsin, often with *Gentianopsis procera*, also in moist to dry depressions between old beach ridges in Door County. (5) Flowering from mid August to late September, fruiting from late August to October.

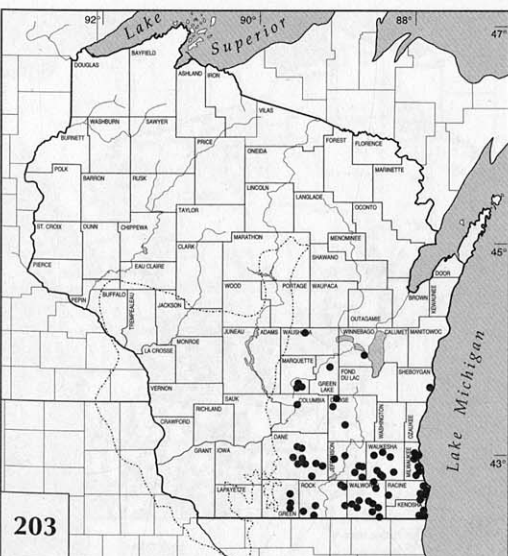
Similar to *Solidago riddellii* (203) and, in the branching pattern of the open, flat-topped inflorescence, *S. ptarmicoides* (202), the latter rarely forming hybrids with both these species. Those with *S. ohioensis* are called *S. × krotkovii* B. Boivin, which has been reported, but not collected, from Kenosha County. See notes under 202, 203.



202. *Solidago ptarmicoides* (Nees) B. Boivin [*Aster p.* (Nees) Torr. & A. Gray; *Unamia p.*]. UPLAND WHITE GOLDENROD. A calci-

philic prairie element, widespread from the Upper Great Plains (South Dakota to Saskatchewan) to James Bay and western Quebec, south to Colorado, Arkansas, Great Lakes dunes, and, scattered, down the Appalachians to Georgia; across southern Wisconsin and reappearing in sand barrens in the northwest, locally common in sandy, gravelly or rocky, often calcareous **dry prairies**, especially steep “goat” or gravel hill prairies, occasionally in rich, dense, moist prairies and interdunal swales near Lake Michigan; more or less local and limited in its ecology. (4) Flowering from late July to late September, fruiting from late August to mid October.

Easily recognized by its narrow leaves, flat-topped inflorescences, and especially the white flowers, this peculiar goldenrod masquerades as an aster. It never hybridizes with asters, but occasionally with the other species of *Solidago* in the *Oligoneuron* group [*S. ohioensis* (201), *S. riddellii* (203), *S. rigida* (204)] and *S. canadensis* (193–195).

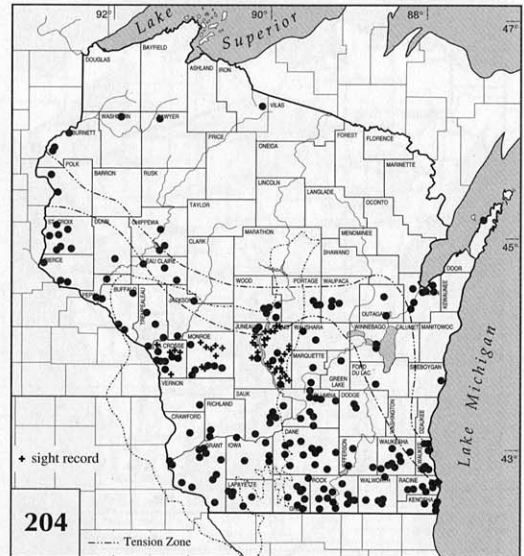


203. *Solidago riddellii* Frank. ex Riddell. RIDDELL'S GOLDENROD. An

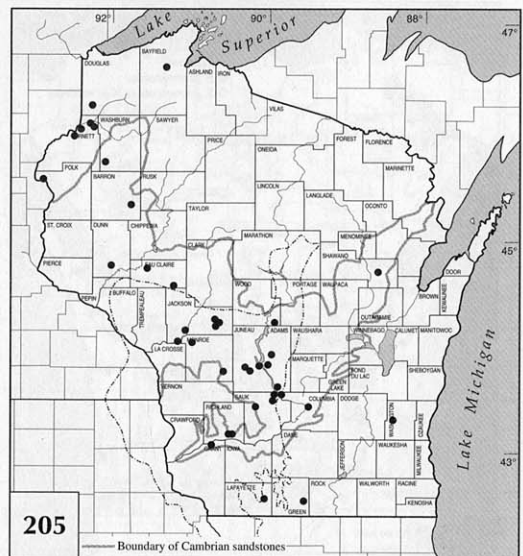
ecologically specialized meadow and fen species, with scattered disjunct populations in central North America, from Missouri and Minnesota to Manitoba, east through the southern Great Lakes states to Ohio and southwest Ontario; in Wisconsin restricted to the southeastern alkaline sedge meadows, **fens**, wet prairies, edges of marshes, and rarely in moist roadside ditches. (5) Flowering from early August to late September, fruiting from September to October.

Hybrids are known of *Solidago riddellii* with *S. ohioensis* (201) and with *S. ptarmicoides* (202) [*S. × bernardii*]. J. P. Bernard (in a personal communication to Salamun, see 1964, pp. 378–379) reported seeing both of these on a Kenosha County prairie (undoubtedly the wet calcareous Chiwaukee Prairie), but so far only a few collections of *S. × bernardii* (mapped with *S. ptarmicoides*, 202) have been made.

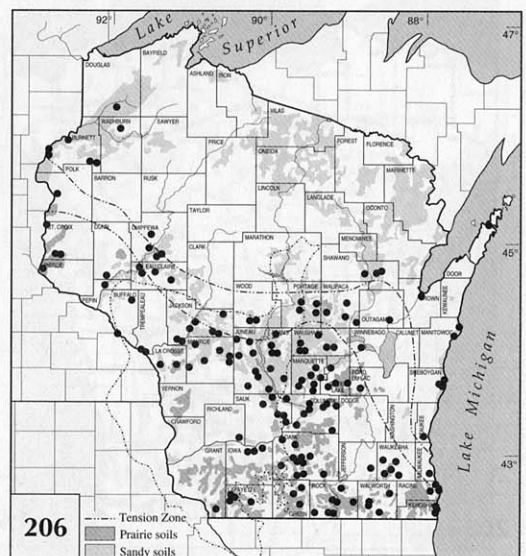
- 204. *Solidago rigida* L. STIFF GOLDENROD.** Abundant throughout the Great Plains (New Mexico to Alberta), east in the prairie “wedge” to Ohio and southwest Ontario, and scattered beyond, both in dry prairie-like habitats and as a weed in the eastern United States; in Wisconsin widespread in dry to mesic or **wet-mesic prairies**, sometimes a common weed in overgrazed pastures, spreading beyond the limits of the prairie areas into northern and eastern Wisconsin on sandy soils along roadsides, railroad rights-of-way and occasionally on sandy lakeshores. (10) Flowering from early August to late September, fruiting from early September into October.
- Divisible into three infraspecific taxa, justified by the recent study of Heard and Semple (1988). Equally common in Wisconsin are ssp. (or var.) *rigida*, a midwestern-northeastern tetraploid race ($2n = 36$), and ssp. *humilis* (Porter) Heard & Semple [*S. r.* var. *h.*], a partly sympatric, diploid ($2n = 18$) prairies-and-plains race.

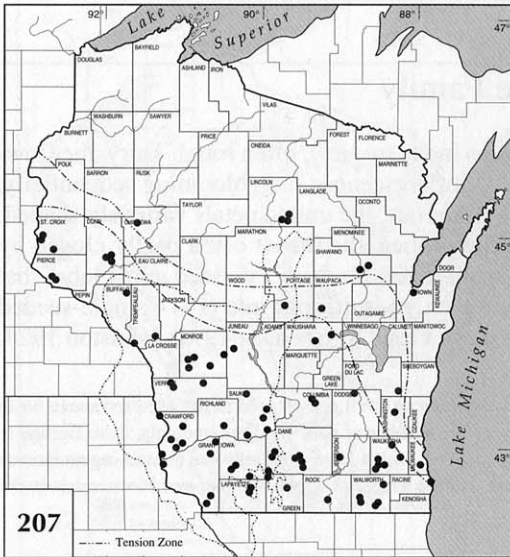


- 205. *Solidago speciosa* Nutt. var. *jejuniifolia* (E. S. Steele) Cronquist.** SHOWY GOLDENROD. A polymorphic species, widespread in open habitats of the eastern United States from the southern Atlantic Coastal Plain to the eastern Great Plains (Texas to the Dakotas), the Black Hills and New Mexico; var. *jejuniifolia* a local Midwest variant (Indiana to Illinois and Minnesota); in northwestern and central Wisconsin, following the area of outcropping Cambrian sandstone, in sandy soils along roadsides, river terraces, in bur oak and black oak openings and in open jack pine stands. (9) Flowering from (mid) late July to late August (early September), fruiting from late August to October.

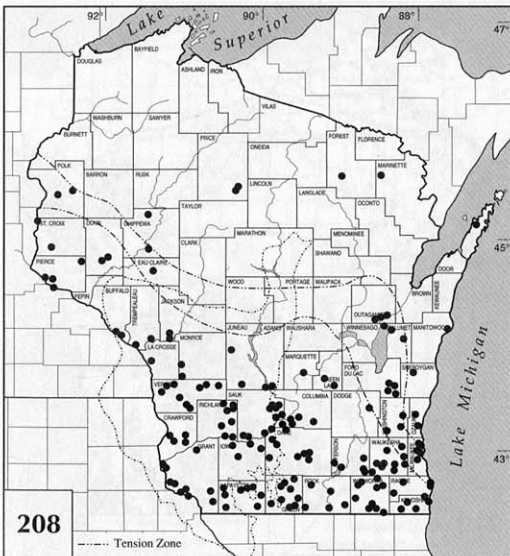


- 206. *Solidago speciosa* var. *rigidiuscula* Torr. & A. Gray.** SHOWY GOLDENROD. The generally smaller, stiffer, more scabrous variety of the North American prairies and plains floristic province (Texas to Minnesota), occurring sporadically westward to Wyoming and New Mexico and occasionally east in the Prairie Peninsula as far as Ohio and central Tennessee; in Wisconsin locally common south of the Tension Zone in **mesic prairie** remnants and on sandy soils along roadsides, in open fields, ridges, outcrops, river terraces and open black oak and jack pine woods, eastward chiefly along sandy roadsides, railroad rights-of-way, and on sandy beaches and dunes along the shores of Lake Michigan. (9) Flowering from (late July) early August to early October, fruiting from mid August to late October.



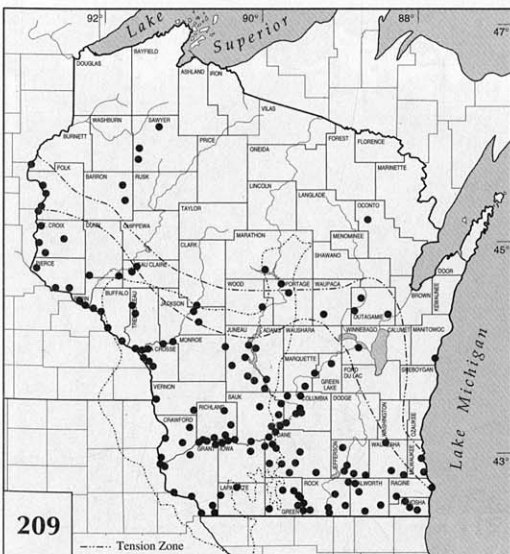


- 207. *Solidago speciosa* var. *speciosa*.** SHOWY GOLDENROD. The more robust variety, scattered in open habitats through much of the eastern deciduous forest region, especially in the Midwest prairie transition, and to the southern coastal plain of the Carolinas; chiefly in western and southwestern Wisconsin south of the Tension Zone, in remnant, often sandy, **mesic prairies**, abandoned fields, roadsides, open sandstone bluffs, steep roadbanks, neglected cemeteries and sometimes in black oak savannas or open jack pine woods; spreading northward and eastward along sandy roadsides and railroad rights-of-way. (9) Flowering from mid August to September, fruiting from early September to mid October.



- 208. *Solidago ulmifolia* Muhl. ex Willd.** ELM-LEAVED GOLDENROD. Throughout the eastern deciduous forest, from the southern Great Plains (east Texas to southeast Minnesota) east in the Midwest prairie transition to Ohio, and scattered from Nova Scotia to Florida; in Wisconsin associated chiefly with the deciduous **southern dry-mesic forests**, most common at the edges of sugar maple-basswood woods, oak woods, and sometimes birch-aspen woods, frequently along bushy roadsides, wooded gravelly hills and sandy outcroppings, and occasionally on steep, dripping wet sandstone cliffs and brushy rock outcrops in the Driftless Area. (12) Flowering from late July to early October, fruiting from late August to October.

Our plants represent var. *ulmifolia*.



- 209. *Vernonia fasciculata* Michx. ssp. *fasciculata*.** COMMON OR SMOOTH IRONWEED. A widespread polymorphic complex, in the Midwest (ssp. *fasciculata*) from the southern Great Plains (eastern Oklahoma to Minnesota) and across the Prairie Peninsula to Ohio and Kentucky; in Wisconsin locally abundant south of the Tension Zone, occasional in the north, especially in **wet-mesic prairies**, tall forb communities along railroads, open lakeshores and riverbanks, open river-bottom forests, swamps and marshes, and often a prominent weed in low overgrazed pastures. (5) Flowering from mid July into September (peaking in early August), fruiting from late July through September (peaking in late August).

A member of a large pantropic genus with many species in the Southeast.



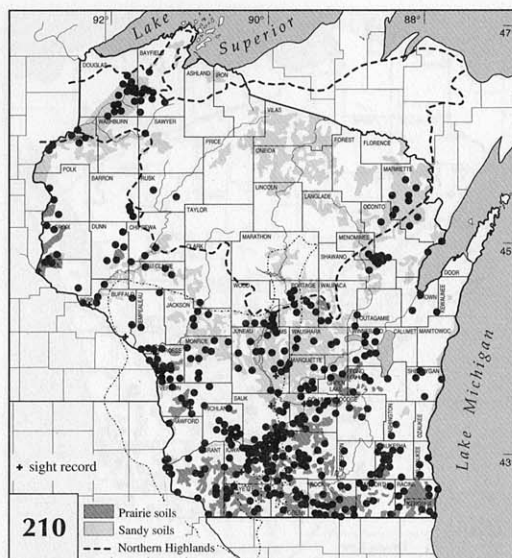
BORAGINACEAE—the Borage Family

Ours are herbs (sometimes shrubs or trees in the tropics), often rough-hairy, the flowers commonly in helicoid cymes (coiled inflorescences that, blooming sequentially, elongate and straighten with maturity), 5-merous, the united petals variously shaped, mostly with a slender tube and spreading lobes, the throat often partly closed by “scales.” Much like the mints, the 2-carpellate pistil is deeply divided into 4 lobes that surround the central gynobasic style and then, in fruit, split into (1–) 4 single-seeded nutlets, these sometimes bearing barbed prickles. (Al-Shehbaz 1991; Johnston 1924, 1952; Kruschke 1946)

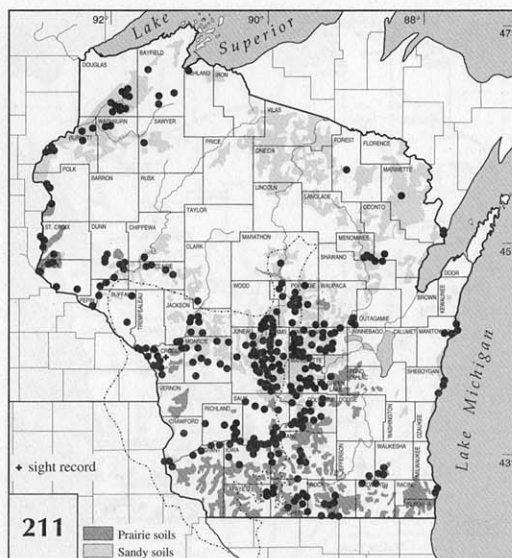
Mostly in temperate and subtropical, seasonally dry regions, well represented in the Mediterranean basin and western United States. Here belong an appreciable number of cultivated ornamentals, from Borage to Lungwort, Heliotrope and Forget-me-not. The puccoons, which have stout taproots containing an intense purple dye, were used as contraceptives by certain Native American tribes and inspired biochemists in the development of oral contraceptives.

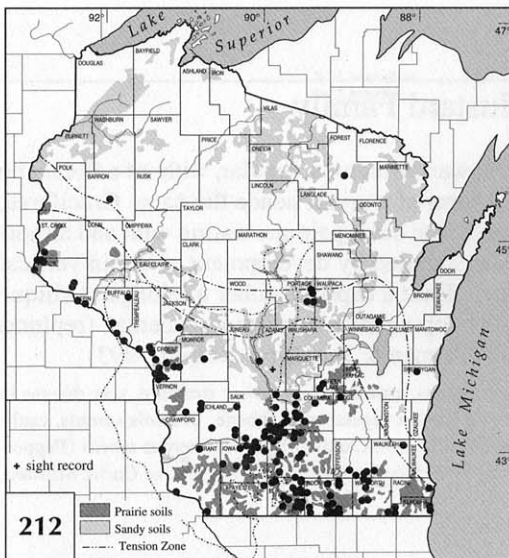
- 210. *Lithospermum canescens* (Michx.) Lehm. HOARY PUCCOON.** Calciphilic heliophile centering on the Ozarks and Cumberlandlands, from the eastern edge of the Great Plains (northeastern Oklahoma to Saskatchewan) to the Appalachians (Pennsylvania to Georgia); in Wisconsin common in well-drained, calcareous or sandy, dry to mesic prairies (or even in seasonally moist prairies along Lake Michigan), open woods such as jack pine and **oak barrens**, on bluffs, and sometimes on roadsides and railroads; uncommon east of the Niagara escarpment and lacking from the South Superior Uplands. (15) Flowering from late April to late June, fruiting from early June to late July.

Together with Bird’s-foot Violet, Shooting-star and Blue-eyed-grass, the puccoons are early prairie bloomers, flowering long before the taller midsummer species reach the peak of their development and hide the characteristic showy spring flowers in their shade.



- 211. *Lithospermum carolinense* (Walter ex J. F. Gmel.) MacMill. ssp. *croceum* (Fernald) Cusick [*L. c.* var. *croceum*]. HAIRY or PLAINS PUCCOON.** An arenophile (Lat. *arena*, sand, + Gk. *philos*, loving) centering on the southern Great Plains from the east Texas prairies to the Nebraska sandhills, eastern Minnesota to Michigan and very scattered beyond to southern Ontario, and on the Coastal Plain from Texas to Virginia; in Wisconsin characteristic of dry, especially sandy soil, in **sand barrens** and oak and pine woodland (especially black oak savannas), in sandy prairies and old sandy fields, on bluffs and ridges, and along roadsides and railroad rights-of-way in southern and western parts of the state, local eastward to the dunes along Lake Michigan. (9) Flowering from early May through July (August), fruiting from late June to mid September (the white shiny nutlets may persist on the dead stems until the following spring). “Puccoon” is the Native American name for the dye derived from the sap, especially in the roots, of this and other Boraginaceae.





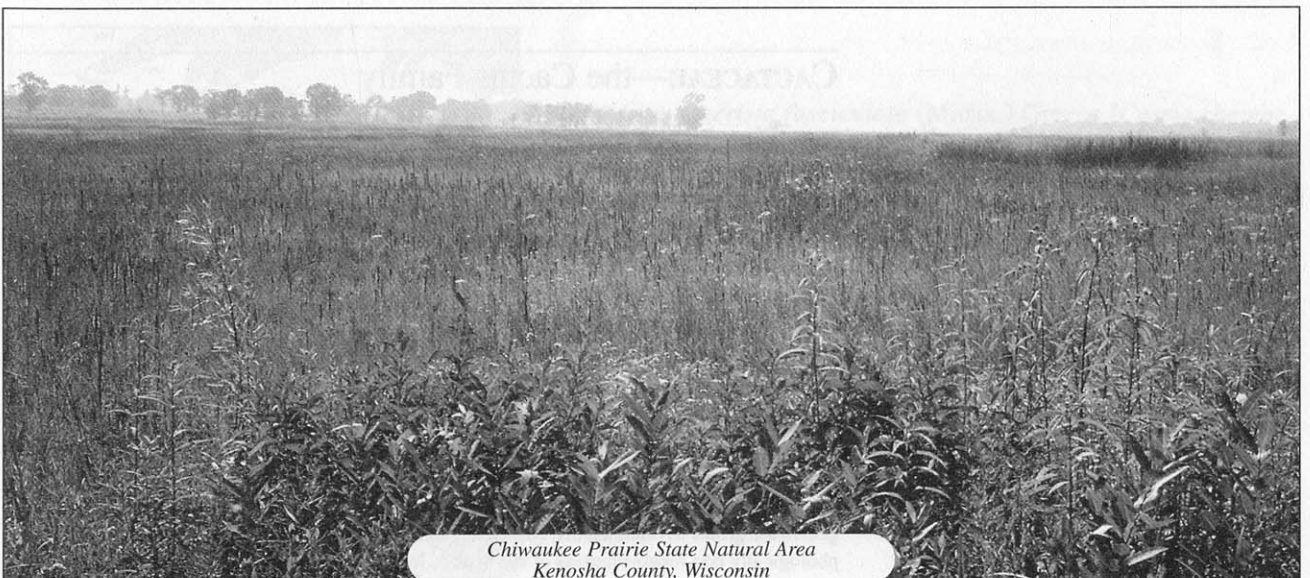
- 212. *Lithospermum incisum* Lehm.** FRINGED OR NARROW-LEAVED PUC-COON. Widespread throughout the dry far-western prairies and desert grasslands of the Great Plains from northern Mexico to southern Canada, and from the Great Basin to southern Ontario; in Wisconsin locally common in the south in dry disturbed open ground and sandy or gravelly calcareous soil of hillsides, bluffs, **dry prairies**, old fields and rarely along railroads; collected twice in the north, presumably as introductions. (6) Flowering from early May to mid June, fruiting from mid June to late September.

The early chasmogamous flowers are showy, with lemon yellow corollas with irregular, almost fringed lobes, unlike the later cleistogamous ones (not present in the previous two species), which are small and sometimes apetalous but produce abundant shiny white nutlets.



- 213. *Onosmodium bejariense* A. DC.** [*O. molle*, in greater part]. MARBLE-SEED, FALSE-GROMWELL (Special Concern). Divisible into four morpho-geographic taxa (Turner 1995) of central and eastern North America, from Texas north to Saskatchewan, east to the Carolinas and southern Ontario; in Wisconsin represented by two varieties restricted to the region of limestones, both rare to locally common: var. *hispidissimum* (Mack.) B. L. Turner in the north and east in dry calcareous blufftop prairies, brushy and/or weedy openings on rocky wooded slopes, and sandy soils along rivers and floodplains; and var. *occidentale* (Mack.) B. L. Turner in the Driftless Area, on dry, rocky or gravelly, usually disturbed (grazed) prairies on limestone bluffs, ridges and hillsides, from the most xeric *Schizachyrium-Bouteloua* to rich dry-mesic prairies, prairie pastures, roadsides and utility rights-of-way. Flowering from early June to mid July (sporadically to mid September), fruiting from mid July to mid October.

Some of our specimens appear to be intermediate between the varieties (Cochrane 1976).



Chiwaukee Prairie State Natural Area
Kenosha County, Wisconsin

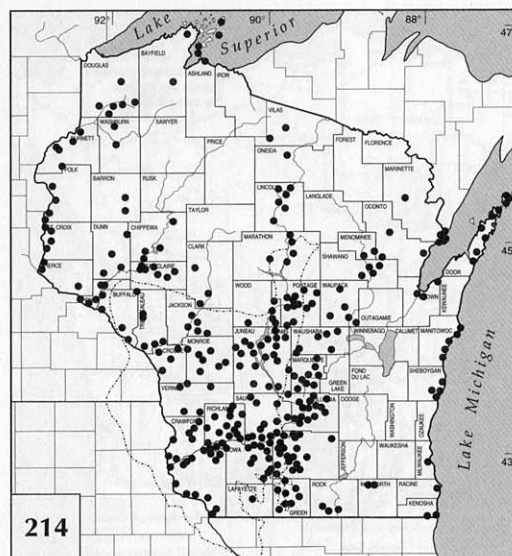


BRASSICACEAE [CRUCIFERAE]—the Mustard Family

Herbs with acrid watery juice and alternate leaves. Flowers 4-merous, regular, without a floral cup or tube, typically in racemes. Petals arranged in the form of a cross, hence the name Cruciferae, usually narrowed into a slender base (claw). Stamens 6, the outer pair alternating with and almost always shorter than the 4 inner ones. Ovary superior, 2-celled by development of a thin vertical partition (septum) connecting the 2 parietal placentae. Fruit a capsule, either a (elongate) silique or (short) silicle, the 2 valves falling away from the hoop-shaped, persistent placentae (replum) and the membranous septum (or rarely indehiscent). (Patman & Iltis 1962, Rollins 1993)

A very large family, chiefly in temperate to cold, and also alpine regions, uniform in its flower structure, very diverse in its fruits, and difficult taxonomically. It includes many well-known garden vegetables (cabbage, Brussels sprouts, cauliflower, kohlrabi, turnip, kale, etc.), some ornamentals (Honesty, Wallflower, Candytuft) and numerous weeds (Peppergrass, Yellow Rocket, Tumble Mustard), among them the recently introduced and extremely aggressive Garlic Mustard, *Alliaria petiolata*.

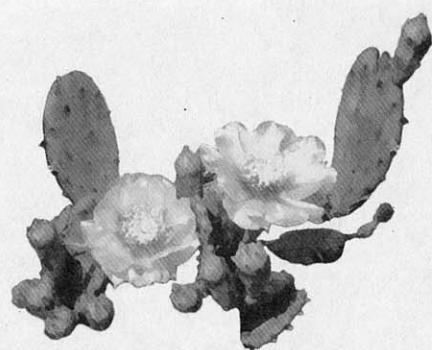
214. *Arabis lyrata* L. SAND CRESS, LYRATE ROCK CRESS. Transcontinental, from (Siberia) Alaska to Vermont and south to Missouri and (in the mountains) to Georgia; in Wisconsin very common, particularly in the Driftless Area, in a large number of "open" habitat communities, most abundant in very sandy or rocky, sunny places such as beaches and dunes, sand flats, sandy, gravelly or rocky dry prairies, in open, dry woods and **cedar glades**, on sandstone cliffs and rocky slopes, less commonly on limestone cliffs and quartzite outcrops; frequently weedy in sandy pastures, gravel pits, railroad embankments and roadsides. (11) Flowering from April to September, fruiting from mid May through September.

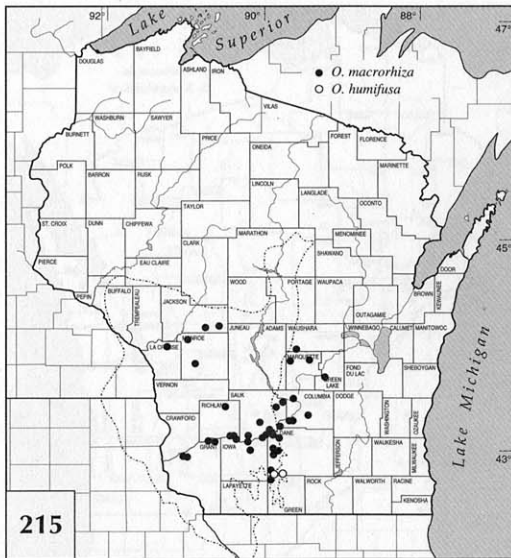


CACTACEAE—the Cactus Family

Highly specialized stem-succulent subshrubs, shrubs or trees, mostly of semi-deserts and deserts, arid grasslands, and tropical America, often in montane regions with a highly seasonal climate. Mature stems generally without true leaves, often globose, cylindric or flattened, provided with cushion-like areoles from which emerge hair, spines, bristles, and the solitary, mostly regular and perfect flowers. Sepals and petals generally numerous, not clearly differentiated, all basally united and \pm fused to the inferior ovary. Stamens numerous, arising from the well-developed floral cup. Pistil of 3 to 10 carpels, the 1-celled ovary with as many placentae along the walls as there are carpels and stigmas. Fruit a many-seeded, dry to fleshy berry. (Benson 1982, Ugent 1963)

A large family of over 1,000 species that are entirely American, with the possible exception of a mistletoe-like, sticky-fruited epiphyte, reaching Patagonia and British Columbia (with a few genera—as introductions—having found their way to other areas of the world). Members of many genera are grown as ornamentals, but our three native prickly-pears are largely of interest as morphologically odd representatives of the Madro-Tertiary geoflora.





- 215. *Opuntia humifusa* (Raf.) Raf.** [*O. compressa* J. F. Macbr.; *O. rafinesqueii*]. EASTERN PRICKLY-PEAR. Widespread, from Florida (Mexico) to the Atlantic coastal sands of Massachusetts, west to Kansas and Oklahoma, doubtfully separable in our region from the next; very rare in southern Wisconsin in dry sand prairies and on sandstone ledges. Flowering in early July.

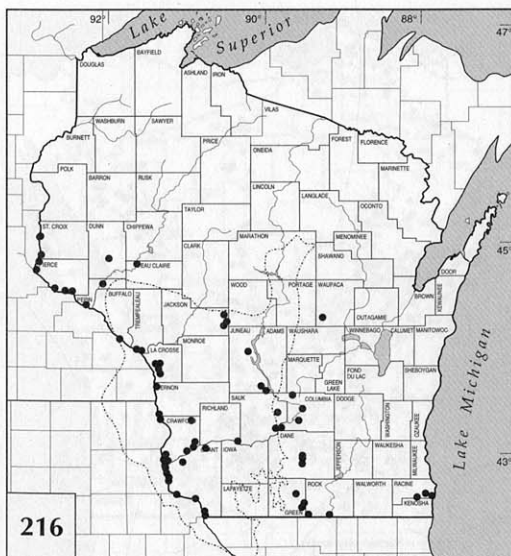
***Opuntia macrorhiza* Engelm.** PLAINS PRICKLY-PEAR. A widespread Madro-Tertiary element of sandy habitats from Mexico north to Idaho and Michigan; in southwestern and central Wisconsin in sands and on and at the base of sandstone bluffs, mainly along the Wisconsin and Black rivers, in dry sand prairies, **cedar glades**, open jack pine-oak woods and sand barrens. (5) Flowering from mid June to July, fruiting from mid July to October.

Opuntia fragilis (Nutt.) Haw., Little Prickly-pear, diminutive and inconspicuous, with obovoid segments, characteristic of dry rocky or sandy Great Plains mid-grasslands, is rare in Wisconsin, mostly on very dry quartzite outcrops and cedar glades.

CAESALPINIACEAE—the Caesalpinia or Senna Family

One of the three classical subfamilies of the old Leguminosae, this largely paleotropical group of mostly trees, shrubs and lianas is distinguished from the Mimosaceae and Fabaceae by technical characters of the “caesalpinaceous” corolla (which, also mostly 5-merous, is only somewhat irregular compared to the more advanced peas and beans) and androecium (consisting of 1 to 20, but mostly 10, distinct or variously fused stamens that do not ensheath the pistil nor project far beyond the free petals). The leaves, like those of its close relatives, are pinnate or bipinnate, the fruit is a leguminous pod, and the seeds have a large basal embryo. (Fassett 1939, Isely 1975)

A large family (2,000 species) only marginally represented in our temperate flora, with four genera (five, if *Cercis*, Redbud, is indeed native, which is very doubtful) reaching the southern and warmest parts of Wisconsin. They are *Gleditsia* (Honey Locust), *Gymnocladus* (Kentucky Coffee-tree), and two genera formerly placed into an all-inclusive *Cassia*, namely *Senna* and *Chamaecrista*.

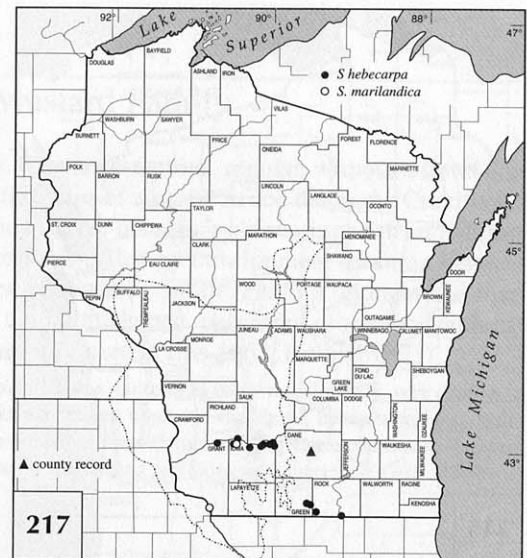


- 216. *Chamaecrista fasciculata* (Michx.) Greene** [*Cassia chamaecrista*, *Cassia* f.]. PARTRIDGE-PEA, LOCUST-WEED. An annual heliophyte throughout the South, and west to the Great Plains from Texas to Nebraska and southern Minnesota; in Wisconsin locally abundant on sunny alluvial sands of the Mississippi, St. Croix and Wisconsin River bottoms, on sandy banks, eroding slopes and bases of sandstone bluffs, occasionally on summits of limestone bluffs in **dry-mesic prairies** or prairie openings in oak-poplar-paper birch woods; like many plants of sandy disturbed soil, spreading to old fields, grassy or sandy roadsides, railroads and quarries. (2) Flowering from early July to early October, fruiting from late August through early October.

217. *Senna hebecarpa* (Fernald) H. S. Irwin & Barneby [*Cassia* h.; *C. marilandica* sensu Fassett 1939]. WILD SENNA. North-eastern United States, from western North Carolina, Tennessee and Illinois to Massachusetts and southern Wisconsin; local in Wisconsin, confined to floodplains of the lower Wisconsin River and its tributaries (e.g., Blue River, Black Earth and Mill creeks) and the Rock and Sugar rivers near the Illinois border, in moist to mesic borders of **southern wet-mesic forests**, stream banks, sandy, moist or mesic roadsides and cleared wet alluvial pastures. (1) Flowering from early July to mid August, fruiting from the end of August to early October.

The very similar, more southerly *Senna marilandica* (L.) Link (*Cassia medeageri* Shafer of Fassett 1939) (Special Concern) has been collected with the above at Avoca and again in Grant County, for both species their northwestern-most stations.

These handsome plants lend themselves to cultivation in gardens.



CAMPANULACEAE—the Bellflower Family

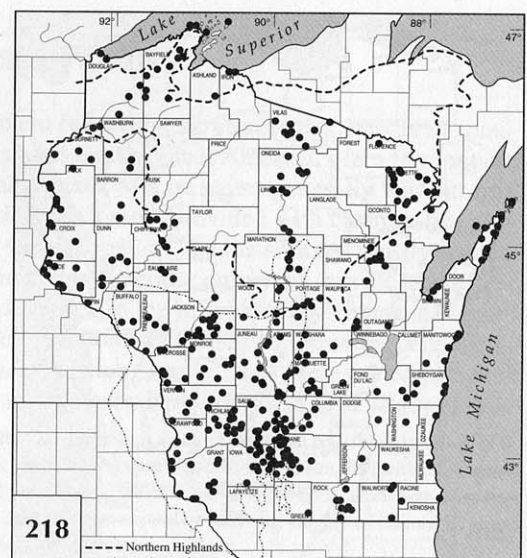
This mostly herbaceous family of over 2,000 species is sharply divided into: the temperate subfamily Campanuloideae (or Campanulaceae) with a regular, bell-shaped, 5-lobed corolla, free anthers and 3 to 5 carpels (e.g., *Campanula*, *Triodanis*); and the advanced subfamily Lobelioideae (or Lobeliaceae), marvelously diverse in tropical mountains of Hawaii, Latin America and central Africa, with a tubular, strongly bilabiate, resupinate (inverted by 180°) corolla, 5 united anthers forming a tube into which the pollen is shed, only to be pushed out, piston-like, by the brushy stigma, and an ovary with 2 semi-inferior carpels. In *Lobelia* (with 6 species in Wisconsin) the fruit is commonly a capsule, releasing its dust-like seeds by valves or pores (or in the tropics, fleshy and animal-dispersed). (Mahony 1929, McVaugh 1943, Shetler 1963)

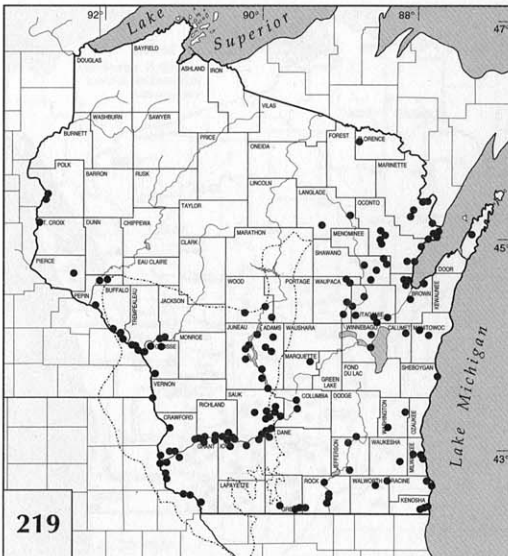
Economically, the family is important only for the large number of ornamentals cultivated for their often quite showy flowers. One of the campanulas, *C. rapunculoides*, is a persistent, if attractive, weed in Wisconsin gardens and fields.



218. *Campanula rotundifolia* L. HAREBELL, BLUEBELL. A complex, circumpolar species, from the Arctic south to New Jersey, Ohio, the northern Great Plains, the Rocky Mountains of New Mexico and northern California (Eurasia); in Wisconsin frequent in diverse, dry to damp open habitats such as sandy woods (pine, oak, aspen), sandstone or limestone bluffs, cliffs, outcrops and ledges, dry to dry-mesic prairies and **cedar glades**, also on shores and dunes, spreading into fields and along embankments and roadsides (the straight row of dots on Map 218 through the acidic Northern Highlands follows U.S. Highway 51). (14) Flowering from June through September, fruiting from July to mid November.

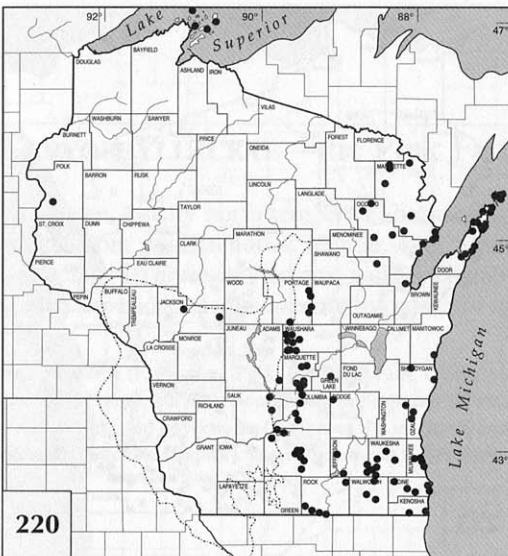
Triodanis perfoliata (L.) Nieuwl., Venus' Looking-glass, one of a group of sand barrens annuals, extends north in Wisconsin to Jackson and Waushara counties, where locally common in sandy barrens, open oak or pine woodlands, and fields and roadsides.





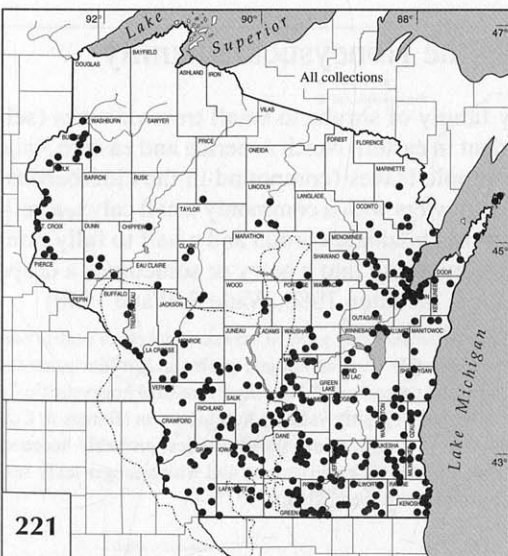
- 219. *Lobelia cardinalis* L. CARDINAL-FLOWER.** Widespread in the eastern North American deciduous forest biome (New Brunswick to the Mississippi in southeastern Minnesota, south to Florida and Texas); in Wisconsin infrequent, more local than but growing with *L. siphilitica* (221), in wet, shaded or sunny, neutral soil of floodplains (**southern wet forest**), wooded riverbanks, swampy thickets, sloughs, ponds and seepage areas in deciduous woods, less often in marshes, wet meadows and ditches. (4) Flowering from the second week of July to the beginning of October, fruiting from the third week of August through November.

This native perennial, with its stunning brilliant red flowers, is one of the few plants in our flora to be pollinated by our Ruby-throated Hummingbird. For naturalizing in moist sunny areas, gardeners use both Cardinal-flower and Great Blue Lobelia (221), the shorter blue flowers of which are pollinated by bees.



- 220. *Lobelia kalmii* L. KALM'S or FEN LOBELIA.** A transcontinental, subarctic to temperate North American calciphile (Newfoundland and Hudson Bay to northern British Columbia, south to New Jersey, Ohio, Iowa and Washington), all stations except for a few in Colorado in glaciated territory; in Wisconsin on damp or wet, often calcareous shores, meadows and ledges, locally frequent in **fens**, shrub carrs, low neutral to calcareous prairies, and sandy, gravelly or marly lakeshores and spring borders, also on interdunal flats and limestone pavements on Lake Michigan and in rock crevices along Lake Superior. (4) Flowering from July to the beginning of October, fruiting from August to mid October.

White-flowered plants (f. *leucantha* Rouleau) are occasional.

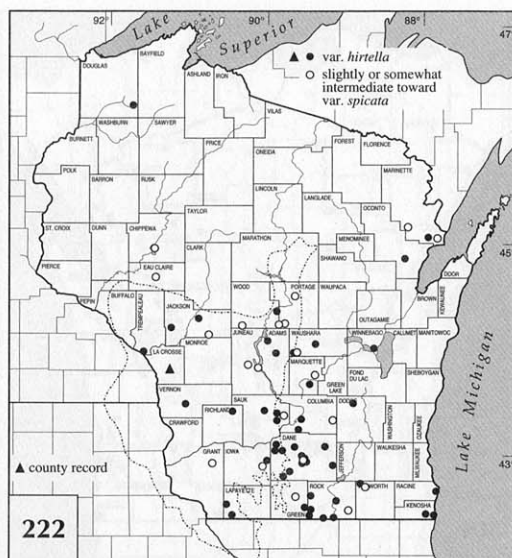


- 221. *Lobelia siphilitica* L. var. *siphilitica*. GREAT BLUE LOBELIA.** Widespread in the eastern North American deciduous forest biome (Maine to Minnesota, south in the mountains to Alabama, the Ozarks and the edge of the Great Plains); in Wisconsin in moist to wet, neutral or somewhat calcareous ground, occasional to common in all but the northern counties in low woods, wet hollows, streamsides, deciduous forests and occasionally white cedar woods, clearings, marshes, **fens**, swales, pastures and pond edges. (7) Flowering from (end of June) late July to mid October, fruiting from September to early October.

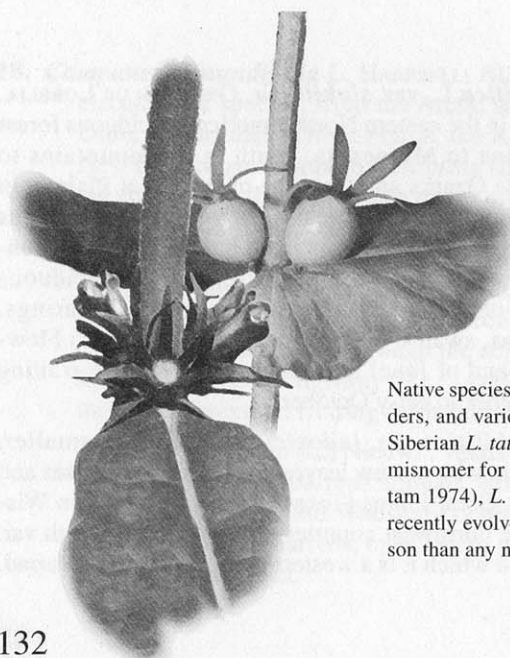
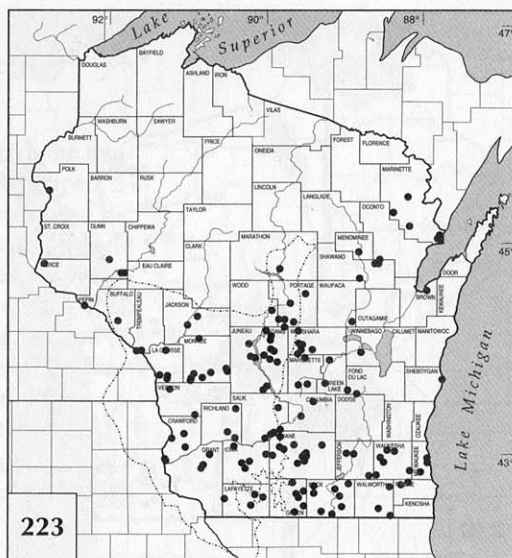
Lobelia siphilitica var. *ludoviciana* A. DC., a smaller, glabrous plant with narrow leaves, grows from Arkansas and the southern Great Plains (Texas) to Manitoba and in Wisconsin in the northwest counties, and intergrades with var. *siphilitica*, to which it is a western, ecogeographic vicariad.

222. *Lobelia spicata* Lam. var. *hirtella* A. Gray. HAIRY PALE SPIKED LOBELIA. Apparently an Ozarkian element, widespread into the northern Great Plains, eastward across the Upper Midwest to the Gaspé region of Quebec and New England; in Wisconsin frequent, growing in the same habitats and having the same distribution as var. *spicata* (223), of which it is evidently the western, more pubescent, xeromorphic vicariad, and with which in Wisconsin it freely intergrades. (15) Flowering from late May to late July, fruiting from August to mid September.

A highly variable species, composed of several more or less weakly defined varieties or "races."



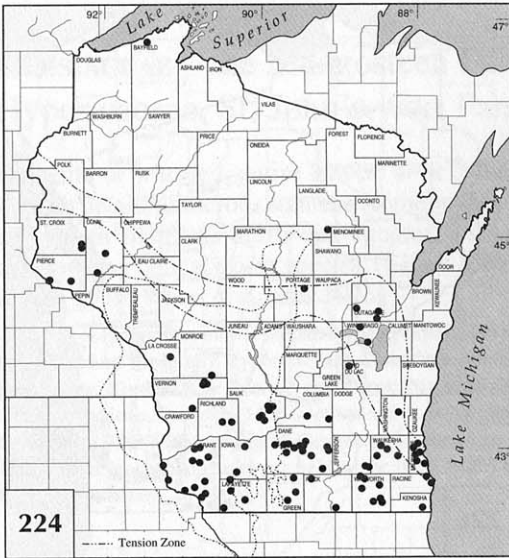
223. *Lobelia spicata* Lam. var. *spicata* [including var. *campanulata*]. PALE SPIKED LOBELIA. Widespread in temperate eastern North America, from the southern Appalachians and Interior Plateaus north to the Canadian border (Quebec to North Dakota); occasional to locally frequent in Wisconsin, not in the northern part of the state, in sandy, loamy or mucky soils of mesic to wet prairies, infrequently in "goat prairies", thinly wooded bluffs, cedar glades (an odd habitat, hardly represented at all by specimens), ridges and hillsides, clearings in woods (pine, oak, aspen), grassy or wooded embankments, edges of marshes, also pastures and old fields; essentially a plant of prairies, savannas and open woods but somewhat weedy and often growing in disturbed habitats. (15) Flowering from late May to early September, fruiting from late July through September.



CAPRIFOLIACEAE—the Honeysuckle Family

A small Arcto-Tertiary family of shrubs to small trees or vines (seldom herbs), most abundant in eastern North America and eastern Asia, with opposite, usually simple leaves (compound in the elderberries) and mostly (4-) 5-merous flowers with a commonly small calyx, a bell-shaped to tubular, sometimes bilabiate corolla and a half to fully inferior, 2- to 5-locular ovary maturing into a berry or sometimes a drupe or capsule. (Ferguson 1966, Salamun 1980, Wade & Wade 1940)

Native species of either *Lonicera*, Honeysuckle, or *Viburnum* may grow in savanna thickets or prairie borders, and various Asiatic species are favorite ornamentals. Two commonly grown in Wisconsin are the Siberian *L. tatarica* and the Japanese *L. morrowii*, the parents of *L. × bella* ("beautiful honeysuckle," a misnomer for this dreadful shrub if there ever was one). A highly variable hybrid swarm (Barnes & Cottam 1974), *L. × bella* is a terribly efficient invader of woods, thickets and prairies, probably because, recently evolved and locally selected by our human-disturbed environment, and with a longer leafy season than any native shrub, it is perfectly adapted to our disturbed habitats.

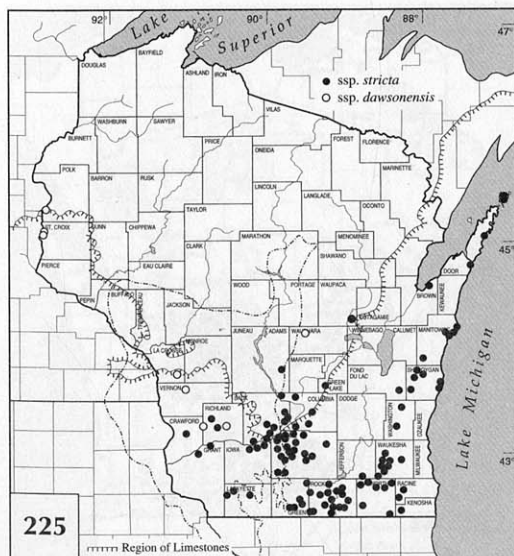
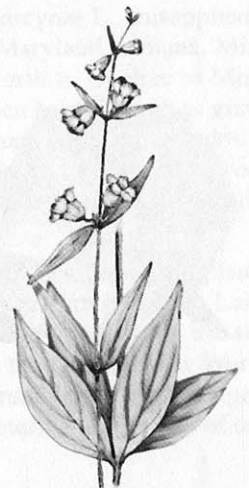


- 224. *Triosteum perfoliatum* L.** LATE HORSE-GENTIAN, WILD-COFFEE, TINKER'S-WEED. A member of a classical Arcto-Tertiary genus (8 species eastern Asiatic, 3 eastern North American), throughout the eastern deciduous forest, from the Carolinas to Massachusetts and, through southern Michigan and eastern Minnesota, to the edge of the central Great Plains in Kansas and northeast Oklahoma; almost entirely confined to southern Wisconsin, in dry (oak-hickory), open or pastured woods, **southern dry-mesic forests**, oak savannas and open oak woodlands, thickets and brushy fields, and gravelly or rocky ridges, less often in rich woods or in the open in old fields and along railroads and fencerows; preferring heavy soils and avoiding the central sand plains. (7) Flowering from mid May to early July, fruiting from early August to October.

CARYOPHYLLACEAE—the Pink Family

This large, mostly north temperate, herbaceous family has opposite, simple, entire leaves arising from swollen nodes, regular, 4- or 5-merous flowers with separate or united sepals, free petals, 10 or fewer stamens, and a 1-chambered ovary that matures into a few- to many-seeded superior capsule opening by valves or apical teeth. (Maguire 1951, Schlising & Iltis 1962)

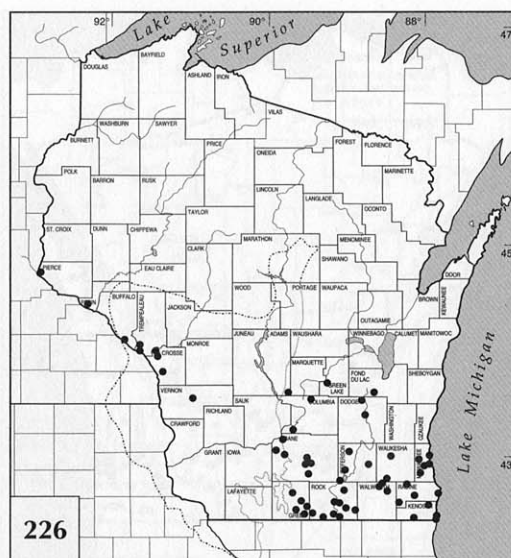
Garden plants (Carnation, Pink, Baby's-breath, Catchfly) and weeds (chickweeds, White Campion, Soapwort, Spurrey) abound, but native species of prairies and savannas are few. Caryophyllaceae (from *carya*, Greek name of the walnut, and *phyllon*, leaf) refers to the aroma of crushed walnut leaves, which led to the use of the ancient name for the clove (a spice), and thence to the Clove Pink, *Dianthus caryophyllus*.



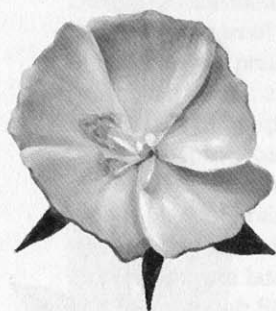
- 225. *Arenaria stricta* Michx.** ROCK SANDWORT. Widespread in North America (Alaska to Texas), with a third subspecies, *ssp. texana* (Robins.) Maguire, occurring in the Ozarks and southern Great Plains. The southeastern *ssp. stricta* is common in dry or rocky habitats of southern and eastern Wisconsin on tops of calcareous sandstone or limestone bluffs, rock outcrops in the very steep, very **dry prairies** beneath them, sandy or gravelly hill-sides, sand prairies, open woods, sand dunes along Lake Michigan, and rarely wooded rock outcrops recently converted from prairie. The northern *ssp. dawsonensis* (Britton) Maguire [var. *litorea* (Fernald) B. Boivin] (Special Concern) is rare on a few bluffs in central and western Wisconsin, adjoining Minnesota, and north to Newfoundland and Alaska. (7) Flowering and fruiting from late May through July (September).

Arenaria lateriflora L., Grove Sandwort, a circumboreal and subarctic species, is common in Wisconsin south of the Tension Zone, but then not reappearing again until Hudson Bay, in dry to moist, open deciduous woods and thickets, moist to mesic prairies, pastures and wooded riverbanks.

226. *Silene stellata* (L.) W. T. Aiton var. *scabrella* (Nieuw.) E. J. Palmer & Steyer. STARRY CAMPION. Eastern and central United States (Georgia to Massachusetts, west to the edge of the eastern Great Plains of Texas to North Dakota), with var. *stellata* more southern and eastern and the barely different var. *scabrella* more western, extending east to Michigan and Tennessee; locally frequent in southeastern Wisconsin and occasional in western Wisconsin, but nearly lacking from the Driftless Area except in its western river valleys, in open upland oak woods, mesophytic or sandy woods, woods borders, cedar glades, riverbanks and sand terraces (Pepin County), sometimes in prairie borders, deep-soil prairies and grassy ditches, and occasionally along railroads, roadsides and fencerows. (6) Flowering and fruiting from early July to mid August (September).



CISTACEAE—the Rock-rose Family

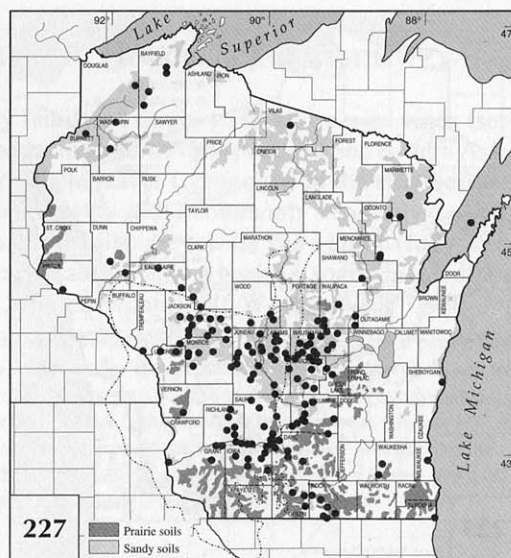


A small, north-temperate, mostly Mediterranean group represented in Wisconsin by dwarf subshrubs or herbs with conspicuous but short-lived yellow flowers (*Helianthemum*, *Hudsonia*) or minute dark reddish flowers (*Lechea*) of 5 unequal sepals, 3 or 5 petals all crumpled up in bud, few to numerous stamens and 3 fused superior carpels that ripen into a leathery capsule. (Brizicky 1964a, Daoud & Wilbur 1965)

Cleistogamy, the occurrence of self-pollinating flowers that set seed without opening, is widespread in the family. Several species of Cistaceae are frequent to common in Wisconsin's dry to mesic prairies, open woodlands, barrens, sandy flats and dunes, abandoned fields, and sandy or rocky ground generally; our other *Helianthemum*, *H. bicknellii*; 3 species of *Lechea*, Pinweed, a distinctive but taxonomically difficult genus; and *Hudsonia tomentosa* Nutt., False Heather or Beach-heath, a sporadically distributed, mat-forming, evergreen shrub restricted with us to sand barrens (often in blowouts; see Curtis 1959, p. 311) and sandy shores (especially dunes along the Great Lakes and near the Wisconsin River).

227. *Helianthemum canadense* (L.) Michx. COMMON ROCK-ROSE. Eastern North America, from Georgia, Mississippi and Missouri north to Nova Scotia and Minnesota; common in southern and central Wisconsin, following the Cambrian sandstone northeastward and reappearing on outwash plains in the Northwest, in dry sandy prairies (with *Cladonia* spp., long-haired hawkweed, Virginia dwarf dandelion, horsemint and other common sand barrens associates), open jack pine woods, black oak barrens, bur oak openings, prairie-like habitats on sandstone slopes, bluffs and outcrops, and also on sandy lakeshores. (15) Flowering from mid May to mid July, fruiting from (early June) July to mid October.

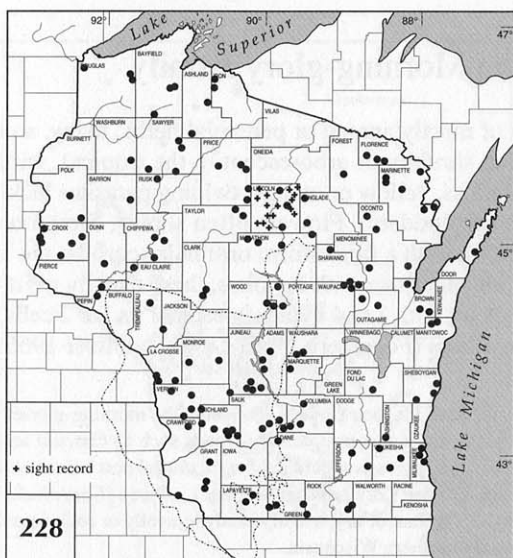
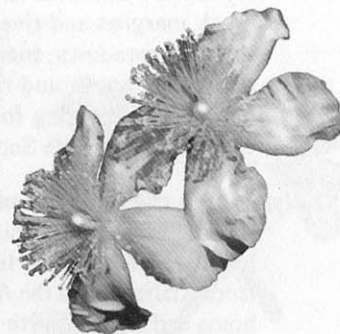
Helianthemum bicknellii Fernald, Bicknell's Rock-rose, blooms 2–3 weeks later and occurs in the same habitats. "On a frosty late November morning, if you are lucky, you may see crystals of ice protruding from cracks in the lower part of the stem, hence [for both our *helianthemums*] another common name, Frostweed" (Swink & Wilhelm 1994, p. 391).



CLUSIACEAE—the Mangosteen Family [including Hypericaceae, St. John's-wort Family]

Opposite or whorled, entire leaves, 4- or 5-merous flowers with yellow, orange or pinkish petals, numerous stamens (sometimes a set number in *Hypericum*) often united by their filaments into 3 to 5 bundles, a single pistil of 3 to 5 carpels with many ovules being typical of our species. (Gillett & Robson 1981, McLaughlin 1931, Utech & Iltis 1970, Wood & Adams 1976)

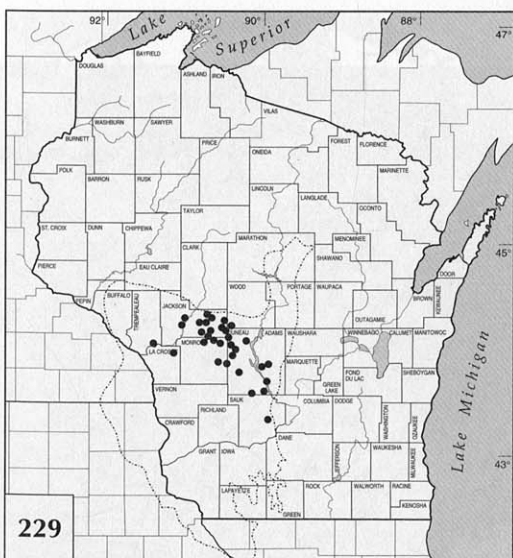
A highly polymorphic, mostly tropical woody family, but with all of our species belonging to subfamily Hypericoideae (or family Hypericaceae). Some hypericums are weeds such as the European *Hypericum perforatum*, Common St. John's-wort, thoroughly naturalized in our area along roads and in fields and disturbed prairies. Our other 14 species are native, occurring in marshes, bogs, lakeshores and moist woodlands. Most have translucent-dotted (punctate) leaves, due to oil-filled cavities that are visible especially with a hand lens when leaves are held to the light. Many of our species are closely related, and readily hybridize in nature.



228. *Hypericum pyramidatum* Aiton [*H. ascyron* L., misapplied].

GREAT OR GIANT ST. JOHN'S-WORT. Maryland, Indiana, Missouri and northeastern Kansas, north to Quebec to Minnesota; in Wisconsin in wet and open habitats such as gravelly riverbanks, **alder thickets**, sphagnum sedge meadows, mesic forest edges and drainage ditches. (3) Flowering from late June to mid September, fruiting from mid July to early October.

According to some European authorities, American plants represent the same species as that in eastern Asia (e.g., Lake Baikal region). Botanists who accept this opinion use the parenthetical name above for both the Old and New World plants. This tall (up to ca. 2 m) ± shrubby herb has the largest leaves, flowers (4 to 6 cm in diameter), and capsules of our species of *Hypericum*.



229. *Hypericum canadense* L. CANADIAN ST. JOHN'S-WORT. Eastern

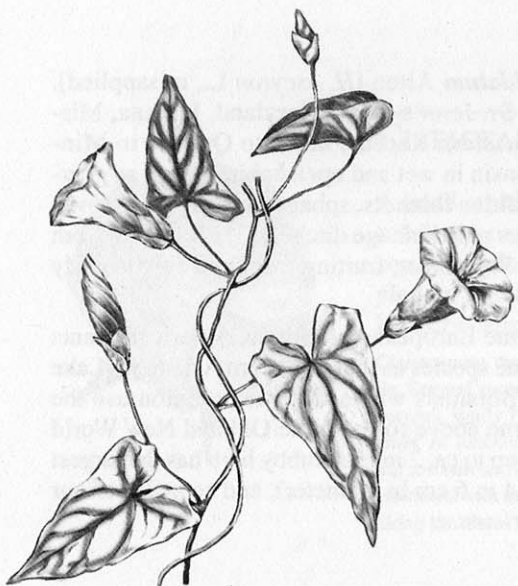
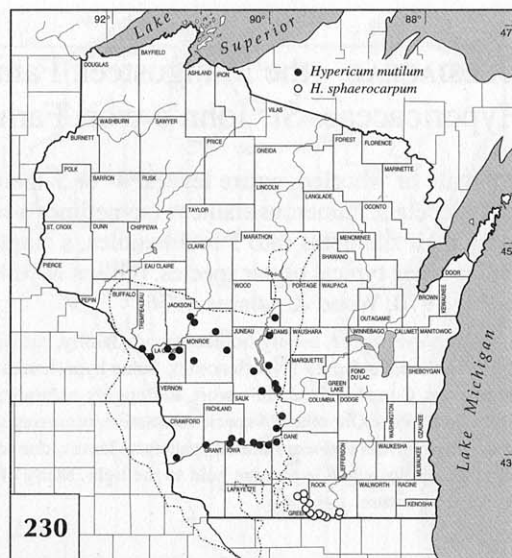
North America from Georgia to Alabama to Newfoundland, west to Iowa, the Black Hills and southeastern Manitoba; in Wisconsin mostly in the northern Driftless Area, in **wet-mesic prairies**, sandy-peaty roadsides, along railroads, wet sandy meadows, swales and marshes, moist sandstone ledges and heath-sedge bogs. (1) Flowering from early June to late August, fruiting from mid July through late August.

Hypericum punctatum Lam., Spotted St. John's-wort, occurs throughout Wisconsin (except the northern quarter) along weedy forest borders, open wooded slopes, floodplain thickets, dry to moist fields, and sometimes in wet prairies.

Hypericum perforatum L., Common St. John's-wort, a cool-to warm-temperate, almost cosmopolitan European weed (once terribly aggressive in western North America until finally controlled by an introduced Australian beetle), is ubiquitous in Wisconsin in almost any open, weedy, grassy habitat, including various sorts of prairies.

230. *Hypericum mutilum* L. ST. JOHN’S-WORT. Eastern North America, from Florida and Texas to Minnesota and Newfoundland; in Wisconsin, mostly in the lower Wisconsin River Valley and the Driftless Area, on sandstone cliff ledges, sandy creek margins and river flats, moist sandy or black muck lowland meadows, **mesic prairies**, swales and desiccated temporary pools, and rarely in moist woods or abandoned fields. (1) Flowering from July to September, fruiting from early August to late September.

Hypericum sphaerocarpum Michx. ROUND-FRUITED ST. JOHN’S-WORT (Threatened). This subshrub is a Midwest endemic in low to mesic prairies, limestone outcrops and cedar glades, from Alabama and the Arkansas Ozarks and adjoining Oklahoma and Kansas north to Wisconsin and (barely) Michigan; in Wisconsin very local, confined to rich, moist or mesic prairies with scattered willows, dogwood and bur oak; rarely weedy along railroads. Flowering from late June to mid August, fruiting from mid July through August.



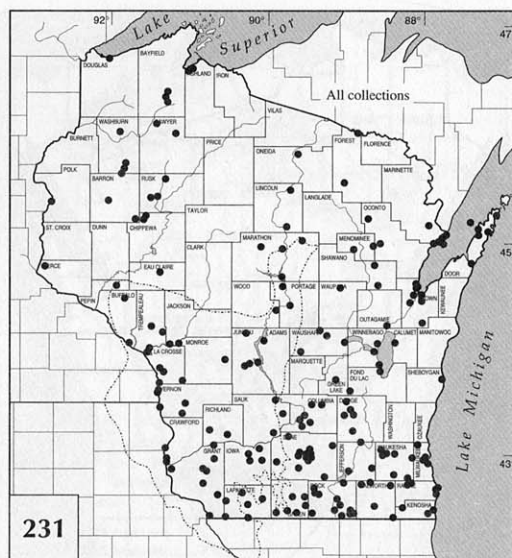
CONVOLVULACEAE–the Morning-glory Family

A widely distributed family of mostly annual or perennial herbs, many, and most of ours, vines (but often shrubby or arborescent in the tropics), with alternate leaves (or almost leafless, yellow or orange, twining parasites lacking chlorophyll in *Cuscuta*, the dodders). Flowers often showy, 5-merous except for the 2-carpellate pistil, with a funnelform or tubular corolla, the 5 stamens attached to its base and alternate with its lobes, these usually twisted in the bud, and a superior ovary with 1 to 4 ovules in each of its 1 or 2 cells. Fruit a variously dehiscent capsule. (Fogelberg 1937, Lewis & Oliver 1965, Wilson 1960b)

The family includes a few plants cultivated for their flowers (*Ipomoea*, the morning-glories) or tubers (*I. batatas*, the Sweet-potato), and a few troublesome weeds such as *Cuscuta* and *Convolvulus arvensis*, Field Bindweed, an aggressive, perennial, agricultural pest beloved by neither farmer, gardener nor prairie enthusiast. *Calystegia spithamea* (L.) Pursh (*Convolvulus* s.), Low Bindweed, often overlooked, is a plant of dry, usually sandy, gravelly or rocky open woods, clearings and prairies of mostly northern Wisconsin.

231. *Calystegia sepium* (L.) R. Br. ssp. *angulata* Brummit [*Convolvulus* s.] HEDGE BINDWEED. Extremely variable, our subspecies from North Carolina to New Mexico, north to Massachusetts, the northern Great Plains and Washington; common except in north-central Wisconsin, usually on dry to wet-mesic but especially **mesic prairies**, disturbed upland woods, old fields, pastures, fencerows, roadsides and railroads, also in lowland habitats such as edges of bottomland woods and thickets, lakeshores, streamsides, sedge meadows, shrub carrs and disturbed areas such as ditches, dikes and boat landings. (10) Flowering from June to early October, fruiting from early August to November.

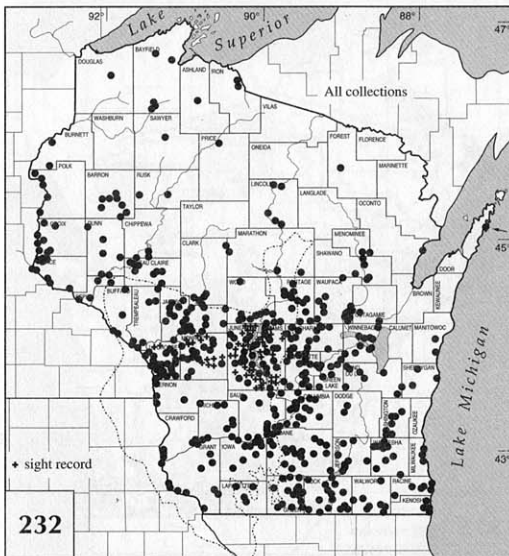
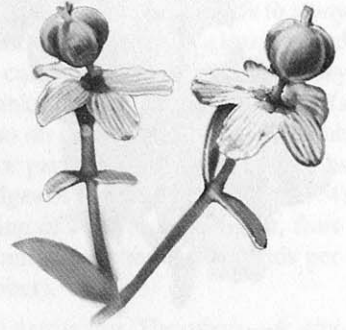
Originally described from Europe. North American forms have been divided into many poorly defined species, subspecies and varieties. Several have been attributed to Wisconsin, but because no one has done a detailed study of our plants, we assume most are native and map them here as *Calystegia sepium* ssp. *angulata* [including ssp. *americana*].



EUPHORBIACEAE—the Spurge Family

A huge (7,500 species), mostly warm-temperate to tropical family so diverse that it is virtually impossible to characterize it in any simple way. All of ours are herbs, but shrubs and trees are common in the tropics, usually with acrid milky juice, opposite, simple to compound leaves, and stipules that are sometimes glandlike. Flowers nearly always unisexual and with or without a perianth, the pistillate consisting uniformly of a single pistil of 3 carpels usually forming a capsular schizocarp, with each of the 3 segments dehiscent to release its single seed. In *Euphorbia* sensu lato (1,500 species) the compact inflorescence acts as a “false flower,” called a cyathium, which consists of several staminate flowers (that look like single stamens) surrounding a single pistillate flower inserted in a cup-like involucre usually bearing glands, the whole effectively mimicking a complete flower. (Fassett 1933, Richardson et al. 1988, Webster 1967)

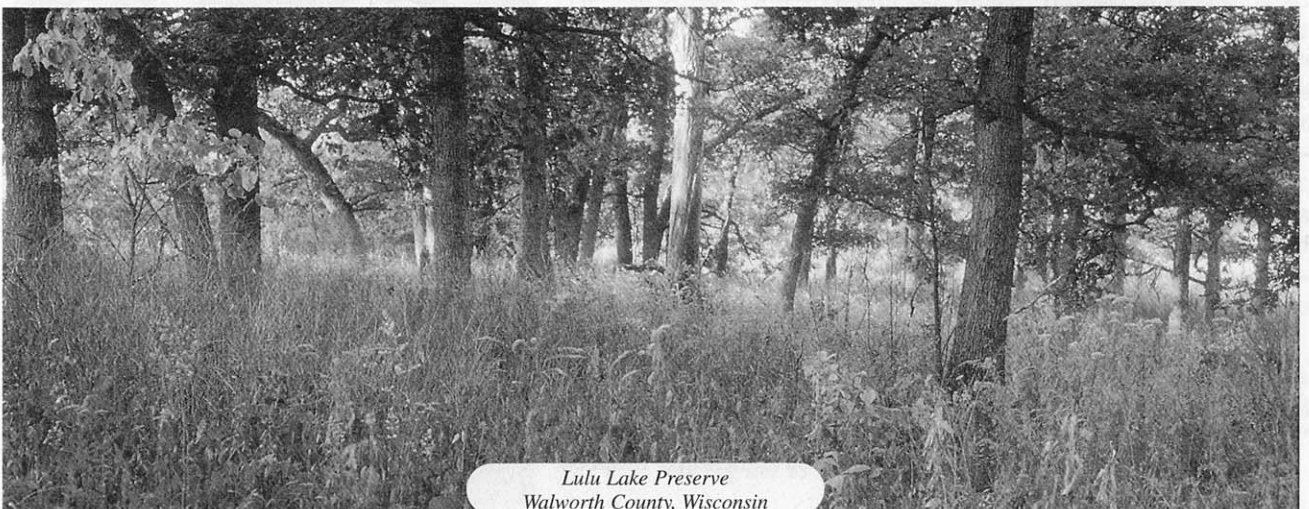
The best-known members of this interesting family are the economically important *Manihot esculenta* (cassava, tapioca), *Croton* (oils, resins), *Ricinus communis* (castor oil), *Hevea brasiliensis* (commercial rubber) and *Euphorbia* (ornamentals, including Poinsettia). Many species are poisonous, and many persistent weeds.



- 232. *Euphorbia corollata* L. FLOWERING SPURGE.** Widespread in the eastern United States and the eastern Great Plains on dry to moist, sandy or loamy soils; primarily in the southern two-thirds of Wisconsin, prevalent in open, sandy or gravelly, sunny native communities, there, with its snow-white flowers, dominating visually many a dry to mesic prairie, in jack pine or scrub **oak barrens**, cedar glades, sandstone ridges, limestone bluffs, sand flats, blowouts and lakeshores, commonly weedy in abandoned fields, roadsides, railroads, fencerows, and occasionally quarries or city lots. (15) Flowering from late May to mid September, fruiting from early July to late September.

Most northern Wisconsin stations are believed to be recent introductions (Fassett 1933), although Flowering Spurge was known from Lincoln County as early as 1893.

Euphorbia esula L., Leafy Spurge, a most aggressive agricultural weed, often invades and becomes permanently naturalized in fields and roadsides and also dry to mesic prairies. Because of its deep root system (up to 2 m or more), it is virtually impossible to eradicate.



Lulu Lake Preserve
Walworth County, Wisconsin

FABACEAE—the Pea or Bean Family

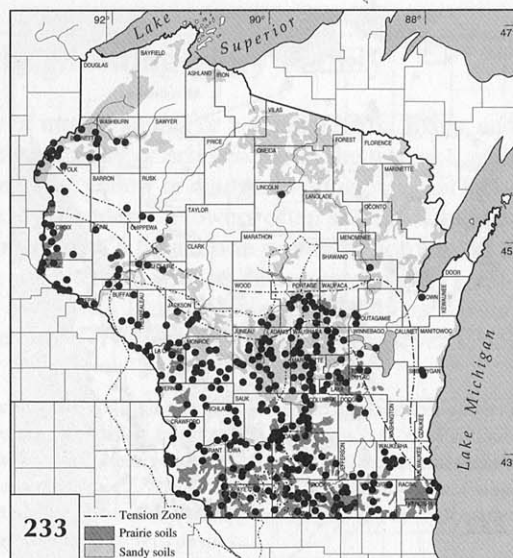


This, the most specialized subfamily (Papilionoideae) of the “old” Leguminosae, includes over 12,000 species of mostly herbs, but with trees and lianas common in the tropics. Flowers typically papilionaceous, i.e., bilaterally symmetrical with an upper larger petal (“standard”) enclosing two lateral (“wings”) and two lower petals, the latter fused into a “keel” enfolding the stamens and pistil. Stamens (5) 10, usually with 9 of the filaments connate into an open sheath around the pistil and the 10th (uppermost) free. Fruit a legume, i.e., a dry, several-seeded “pod” opening down one or both sutures, or sometimes jointed or permanently closed. (An actively evolving family, with variations in flower and fruit themes abounding.) (Fassett 1939; Isely 1975, 1981; Welsh 1960)

A family of great importance, yielding forage and food (vegetables, seeds) crops, ornamentals, timber trees and other products. After the composites and grasses, the legumes are the largest family on prairies, very important ecologically because of the ability of their symbiotic root bacteria to fix nitrogen. *Robinia pseudoacacia*, Black Locust, an introduction from the Ozarks (or southeastern mountains?), is a persistent invader of woods and sandy prairies, and it takes heroic efforts to eradicate it.

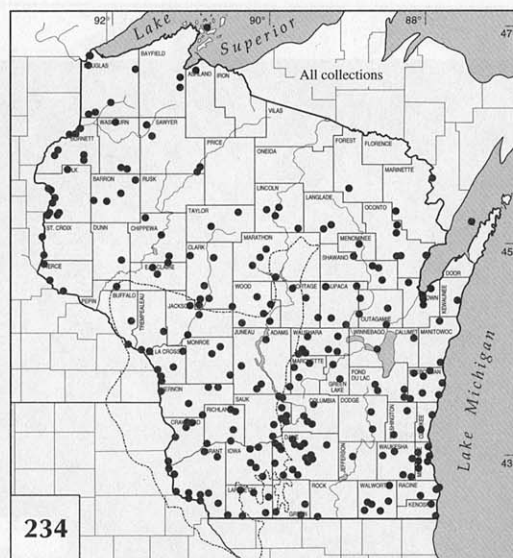
- 233. *Amorpha canescens* Pursh. LEAD-PLANT.** The only prairie species of a small North American genus, common on the Great Plains from New Mexico to southern Saskatchewan, and east in the prairie “wedge” to northern Indiana; in Wisconsin common mostly south of the Tension Zone on mesic to **dry prairies** and open sandy woods, on dry rocky bluffs (sandstone, limestone, quartzite, basalt), xeric sand prairies and prairie patches on sandy or rocky ground, occasionally in low prairies, fields and lakeshores, more or less open oak and/or pine woods, including oak openings, jack pine barrens and cedar glades, and along sandy roadsides and railroads. (15) Flowering from the end of May to mid September, fruiting from early July to early October.

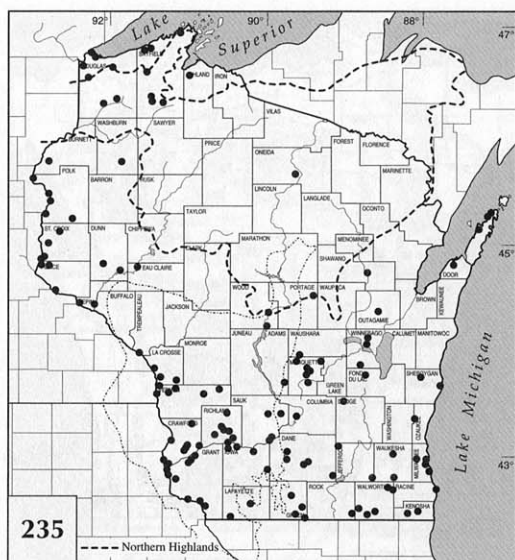
Like the doctrine of signatures of medieval medicine, the leaden-gray pubescence of the leaves suggested to early miners in southwestern Wisconsin the presence of lead. Note that the corolla is reduced to a single petal (the banner).



- 234. *Amphicarpaea bracteata* (L.) Fernald.** [including var. *comosa* (L.) Fernald]. **HOG-PEANUT.** Widespread throughout the eastern United States, also southeast Canada and eastern Mexico; abundant throughout Wisconsin (except in the extreme northeast), in dry to moist, deciduous or mixed woods and thickets, oak openings (savannas), northern or **southern dry-mesic forests** and lowland forests, especially common where more or less disturbed and sunny, as along trails, banks, borders and clearings, on brushy roadsides, fencerows, overgrown fields, unmowed ditches, marshy or swampy ground, and dry to wet prairies. (19) Flowering from August to mid September, fruiting from September to early October.

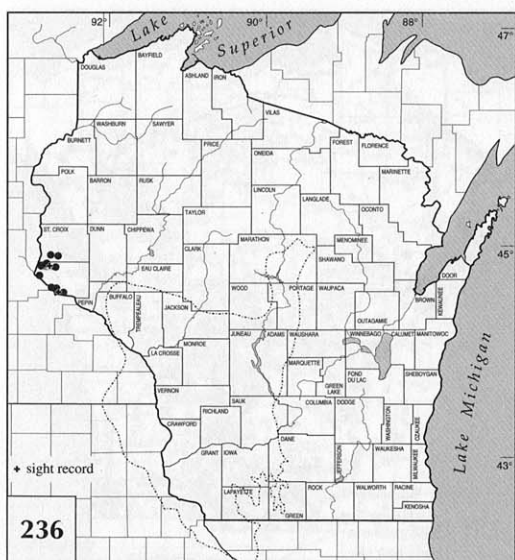
Most of our specimens belong to var. *bracteata*, but frequent specimens are the poorly defined var. *comosa*. The latter, slightly more southern in Wisconsin, prefers more open habitats. Since the two forms are wholly sympatric, the recognition of these varieties as environmentally induced forms would be more appropriate.





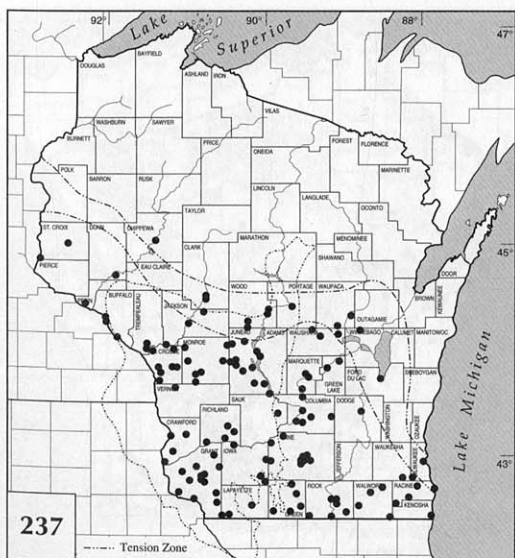
- 235. *Astragalus canadensis* L. CANADA MILK-VETCH.** Throughout most of southern Canada, eastern and central United States, and the Great Plains (Saskatchewan to Utah and Texas), and disjunct to Siberia, a locally variable *Astragalus* (see Barneby 1964, Fassett 1939, Isely 1984); in most of Wisconsin but avoiding the Canadian Shield (Northern Highlands), infrequent to locally common from Lake Michigan bluffs to stony shores of Lake St. Croix, mostly along borders, clearings and trails in dry upland (often cut-over) woods and on grassy and/or shrubby roadside banks, railroad cuts, bluffs, cliffs and sandstone outcrops, also on dry to **mesic prairies**, oak openings, and other sunny or partly shaded habitats such as lakeshores, stream banks, edges of quarries and sand pits. (4) Flowering from the beginning of June to late August, fruiting from late October through November (a few seeds persist on the plant into December).

Our most common species of *Astragalus*. The others—*A. alpinus* L., *A. crassicaarpus* (236) and *A. neglectus* (Torr. & A. Gray) E. Sheld.—are all among the rarest plants in our flora.



- 236. *Astragalus crassicaarpus* Nutt. GROUND-PLUM, PRAIRIE-PLUM** (Endangered). A widespread and characteristic polymorphic species of the western prairies and Great Plains, from Alberta and the Rocky Mountain foothills to Manitoba, Wisconsin, western Missouri, Texas and New Mexico (with endemic subspecies in Texas and Tennessee), our plants belonging to the var. *crassicaarpus* (see Barneby 1964); rare to locally common only in extreme western Wisconsin on dry and **dry-mesic prairie** relics on hills, bluffs and river terraces. (1) Flowering in May.

Astragalus crassicaarpus is an indicator of undisturbed prairie soils, the larger surviving populations occurring on high lime prairies on steep south- and southwest-facing bluffs with western Great Plains species that are rare or uncommon in our state [e.g., *Artemisia frigida* (108), *Dalea villosa* (240), *Calylophus serrulatus* (Nutt.) P. H. Raven, *Pedimelum esculentum* (251)] and other prairie associates such as *Cirsium hillii* (138) and *Onosmodium bejariense* (213).

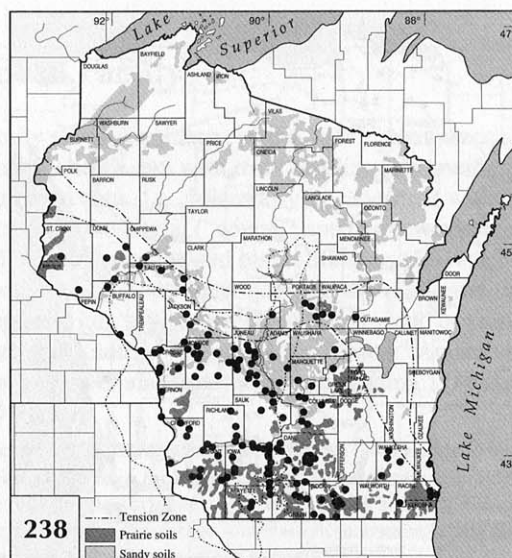


- 237. *Baptisia alba* (L.) Vent. var. *macrophylla* (Larisey) Isely** [*B. lactea* (Raf.) Thieret var. *lactea*; *B. leucantha* Torr. & A. Gray.]. WHITE or MILKY WILD INDIGO. A widespread prairie and eastern Great Plains species, its range and habitat much the same as the next (238), restricted in Wisconsin to south of the floristic Tension Zone, generally on richer, moister soils than *B. bracteata*, predominantly on deep-soil, **wet-mesic prairies** as are still surviving mostly along railroads, moist sand prairies, rarely in dry prairies; occasionally in open, sandy or rocky woodlands, lake and river shores, and edges of bottomland fields, swales and sloughs. (9) Flowering from late May to early August, fruiting from late July to early October.

This beautiful stately plant, a “tumbleweed” when dry, is now infrequent, though long persistent in fencerows and roadsides (at least until the herbicide spraying of “weeds” during the 1950s and 1960s).

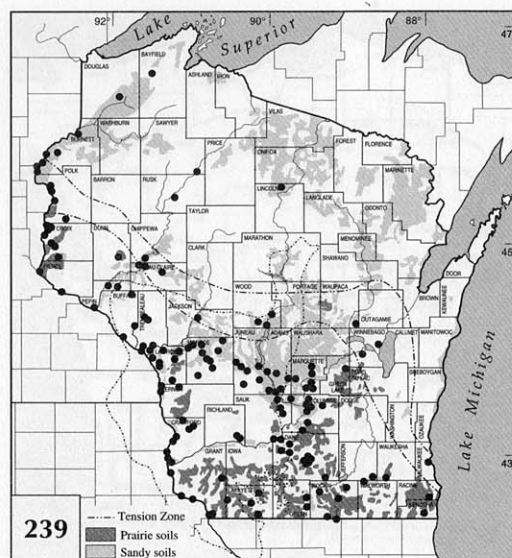
238. *Baptisia bracteata* Muhl. ex Elliott var. *glabrescens* (Larisey) Isely [*B. leucophaea* var. *g.*; *B. b.* var. *l.*]. CREAM OF PLAINS WILD INDIGO. A species of the prairies and southern Great Plains, from eastern Texas (and Mississippi) to southeastern Minnesota, then east in the Prairie Peninsula to Ohio (var. *glabrescens*), but with a disjunct population like so many others, e.g., *Lespedeza leptostachya* (248), in the Southeast, from (North) South Carolina to Alabama (var. *bracteata*); infrequent in the southwestern half of Wisconsin, its distribution characteristic of but not confined to prairie relics, mostly in sandy, dry to mesic prairies, dry high lime prairies, sandstone and limestone bluffs, sandy or gravelly hillsides and banks, and in open oak woods, oak openings and pine relics, abandoned fields, roadsides and rarely even in pastures (livestock avoid eating it because of its alkaloids). (7) Flowering from late April to late June (early July), fruiting from mid July to late October.

Baptisia, like *Silphium*, is basically a southeastern genus, with a few species having become adapted to the prairies and plains.



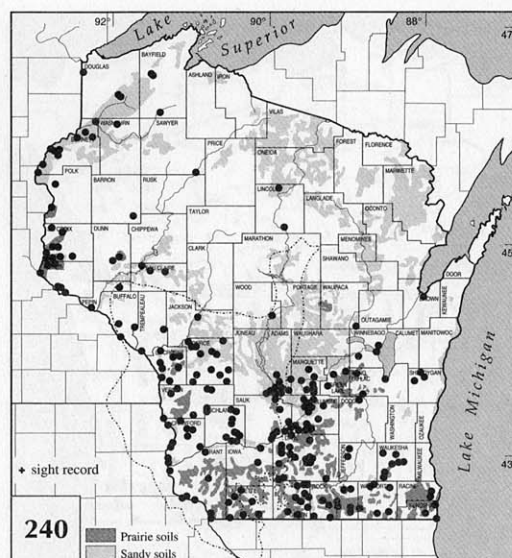
239. *Dalea candida* Michx. ex Willd. var. *candida* [Petalostemon c.]. WHITE PRAIRIE-CLOVER. The most widespread of the nearly 160 New World, mostly southwestern and Mexican *Dalea* spp. (Barneby 1977), from the central Great Plains (Saskatchewan to Texas) east to southern Ontario, Indiana and scattered to Tennessee and Alabama; in Wisconsin characteristic of dry to mesic prairie remnants, sand prairies (rarely on sand terraces and dunes), open, sandy or rocky woods (black and/or white oak) and cedar glades, less common along roadsides and railroads in sandy soils. (8) Flowering from late June through August (September), fruiting from mid July to early October. The distributions and habitats of *Dalea candida* and the far more common *D. purpurea* (240) in Wisconsin are essentially the same, and they often grow together. These species have long been known as *Petalostemon candidum* and *P. purpureum*.

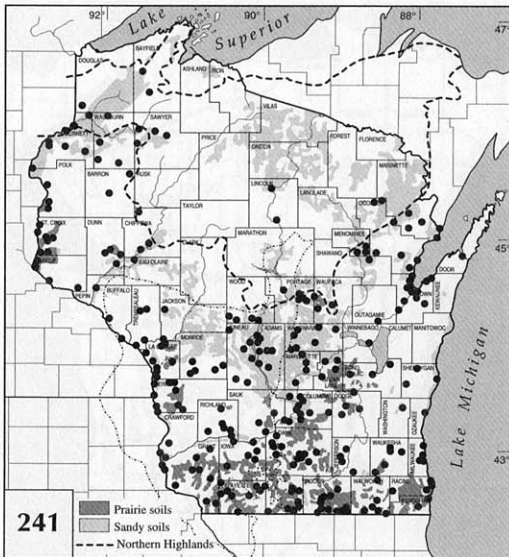
"White prairie-clover is browsed by all classes of livestock and soon disappears with overgrazing" (McGregor 1986, p. 441).



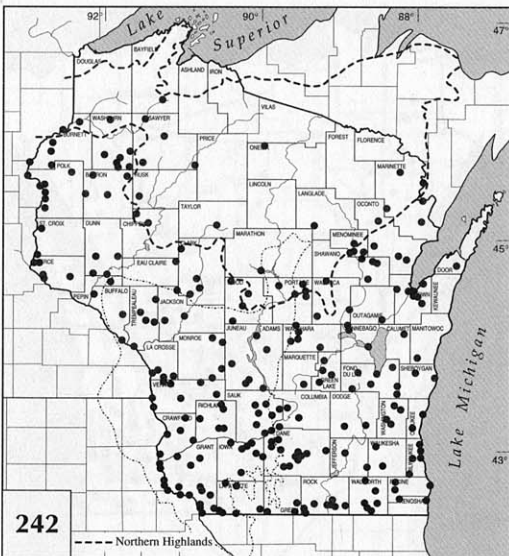
240. *Dalea purpurea* Vent. [Petalostemon p.]. PURPLE PRAIRIE-CLOVER. From the southern Canadian Great Plains to New Mexico, north Texas and east in the Prairie Peninsula to Indiana and beyond; locally frequent in the southwestern half of Wisconsin, characteristic of mesic to dry prairie remnants, sand prairies and oak openings, as well as moist prairies, often in open scrub oak-jack pine woodlands and dolomite or quartzite glades, rarely spreading along roadsides, railroads and old fields; at one time common on flat to gently rolling prairie, now generally seen on bluffs, ridges, cliffs and outcrops, gravelly hillsides and sand terraces. (8) Flowering from July to late September, fruiting from late July to late October.

Dalea villosa (Nutt.) Spreng. (*Petalostemon v.*), Silky or Downy Prairie-clover (Special Concern), reaches its eastern range limit in western Wisconsin in sandy prairies, barrens and juniper savannas along the St. Croix River. Populations may be relatively large and should sustain themselves as long as natural habitats remain and grazing is excluded.

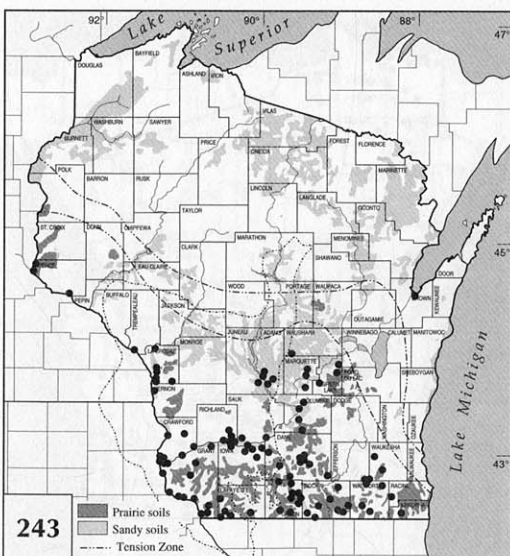




- 241. *Desmodium canadense* (L.) DC. CANADA TICK-TREFOIL.** Characteristic and widespread in the northern Great Plains, to the Prairie Peninsula and beyond (Oklahoma and Nebraska to Manitoba, east to Maryland, New England and Quebec); in Wisconsin widespread (except in the Northern Highlands), common on dry to wet, most prevalent on **wet-mesic prairies**, low sunny meadows, dry sandy fields, open oak woodlands and savannas, borders of upland woods (jack pine, oak, aspen), thickets and fencerows, often along roadsides and railroads, sandy hillsides, gravelly calcareous ridges, and similar sites (causeways, dikes bordering cranberry marshes, lakeshores, etc.); far more shade-tolerant than *D. illinoense* (243). (9) Flowering from late June to early September, fruiting from mid July to late October.



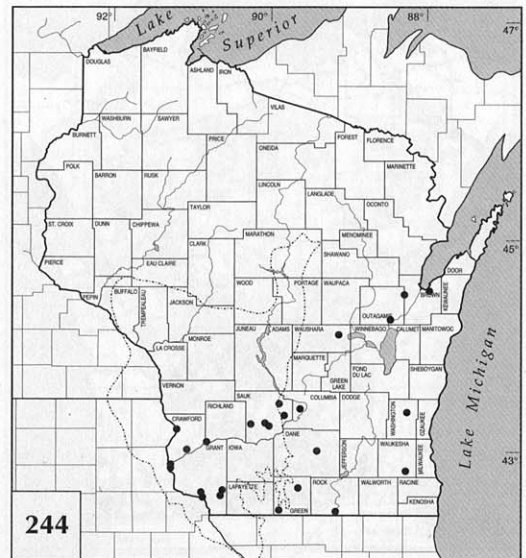
- 242. *Desmodium glutinosum* (Muhl. ex Willd.) A. W. Wood [*D. acuminatum*]. CLUSTER-LEAF TICK-TREFOIL.** Throughout the eastern deciduous forests from the Atlantic across to the Great Plains [Florida to Texas (northeastern Mexico), north to southern Canada]; nearly throughout Wisconsin except in the Northern Highlands, in dry to mesic, less often damp, hardwood (deciduous) forests, reaching greatest prevalence in the **southern dry-mesic forests**, in rich black oak-white oak, oak-hickory, and oak-birch or oak-white pine woods, common in oak-maple and maple-basswood communities and white oak and black oak savannas; in loamy or clayey or less often sandy or gravelly soils. (11) Flowering from July to mid August (occasionally early September), fruiting from late July to early October.



- 243. *Desmodium illinoense* A. Gray. PRAIRIE OR ILLINOIS TICK-TREFOIL.** Characteristic of the eastern southern Great Plains, from northeast Texas to Nebraska and Minnesota, east in the tallgrass prairies to Ohio; in Wisconsin locally frequent on dry to moist, but mostly **mesic prairies** south of the Tension Zone, concentrating along the Mississippi and Wisconsin rivers and the central sand plain, in oak openings (e.g., Blue Springs, Eagle and Genesee state natural areas) and nearby open sandy or gravelly slopes, ridges and bluffs and edges of dry oak woods; surviving mowing (and even herbiciding?) and sometimes persisting along grassy, unshaded roadsides and railroads with mixtures of weeds and prairie or upland-thicket species. (8) Flowering from July to late August, fruiting from July to mid September (mid October).

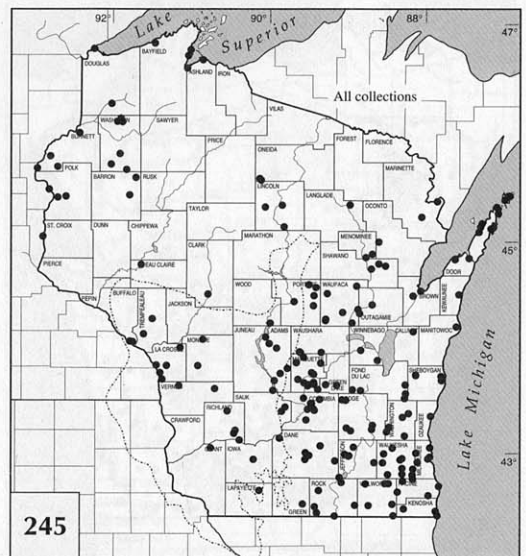
244. *Desmodium perplexum* B. G. Schub. [*D. paniculatum* (L.) DC., in part; *D. dillenii* Darl., in part; *D. glabellum* (Michx.) DC. of authors]. PANICLED TICK-TREFOIL, SMOOTH TICK-TREFOIL. A highly variable taxon throughout the deciduous forest region of the eastern and central United States; scattered in southern and eastern Wisconsin in dry to moist, usually open, upland woods (especially oak and oak-hickory), oak openings, wooded bluffs, rocky ridges and openings (including open quartzite glades, bluff tops and wooded talus slopes in the Baraboo Hills), sometimes on sandy hillsides and grassy, brushy banks with mixtures of weedy plus native species of upland thickets and prairies. Flowering in August, fruiting from mid August through September.

In recent literature the *Desmodium paniculatum* group has been treated as a single species, as one species consisting of two varieties, or as two, three or four species. Wisconsin plants all fit the textbook *D. perplexum* formula if the traditional species are maintained (see Isely 1953, 1983).



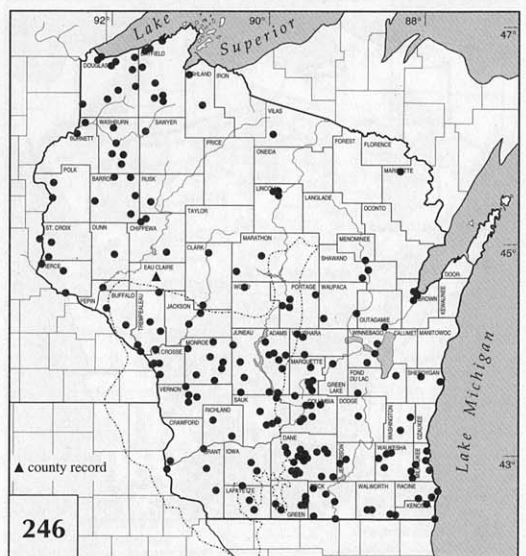
245. *Lathyrus palustris* L. MARSH PEA. Polymorphic circumboreal species, in North America south to North Carolina, Ohio, Missouri and California; occasional to locally common throughout Wisconsin (but rare in the region of Archaean rocks), in open, moist, peaty, muddy or sometimes gravelly or sandy habitats, in wet prairies, **southern sedge meadows**, fens, marshes, shrub carrs, bogs, tamarack swamps (often degraded), damp grassy edges of woods, stream and pond banks, shores and beaches, swales and ditches. (11) Flowering from (late May) June to late August, fruiting from July through September.

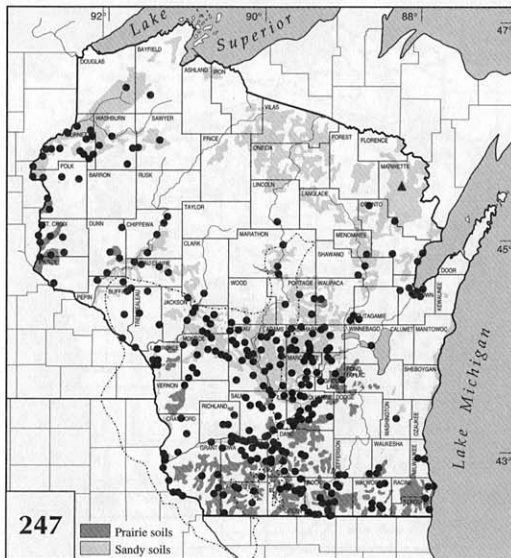
Represented in North America by several named varieties whose characters overlap and recombine so strongly as to make them of little taxonomic value. Three are conventionally recognized in our state: var. *palustris* [including var. *linearifolius*]; var. *myrtifolius* (Muhl. ex Willd.) A. Gray (the most distinctive variety); and var. *pilosus* (Cham.) Ledeb. [including var. *macranthus*].



246. *Lathyrus venosus* Muhl. ex Willd. var. *intonsus* Butters & H. St. John. VEINY PEA. A Midwest hairy phase, from Arkansas to Saskatchewan, east to southern Ontario and Indiana, overlapping or intergrading with the typical glabrous variety in the eastern mountains; frequent throughout Wisconsin (except in the northeast), in open oak-hickory, oak-pine, jack pine and aspen woods, savannas, and dry to **wet-mesic prairies**, especially when recently cut or burned, as well as in a variety of other open habitats such as sandy ridges, lightly wooded rocky slopes, talus, summit openings on wooded bluffs, roadsides and embankments, and occasionally in fields, pastures, fencerows and on shores. (13) Flowering from mid May through June, fruiting from mid July to early October.

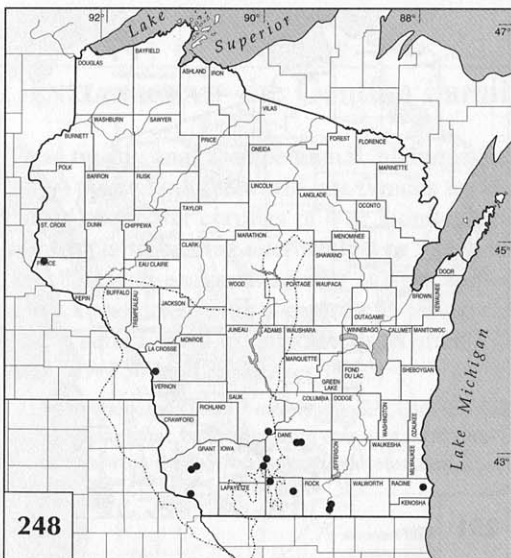
This and other plants such as *Camassia scilloides* (23), *Heliopsis helianthoides* (161), *Astragalus canadensis* (235), *Blephilia ciliata* (261) and *Ranunculus rhomboideus* (301), said by Curtis (1959) to achieve maximum presence values in prairies, likely have more affinity with savanna than prairie habitats.





247. *Lespedeza capitata* Michx. BUSH-CLOVER. A very variable, distinctive species of midwestern and eastern North America, from eastern Texas to Minnesota, western Florida and New England (southwestern Quebec); Wisconsin's most abundant native legume, common in dry to mesic prairies and on dry, sandy, gravelly or rocky ground in general, an active invader of roadsides, railroads, old fields and shores; also on limestone and/or sandstone bluffs and cliffs, granite and quartzite glades and rhyolite mounds, as well as in open woods, especially jack pine-scrub **oak barrens** and juniper glades, less often in open red oak-white oak, white pine and northern hardwoods stands. (15) Flowering from (mid) late July to early October, peaking in August, fruiting from September to late October.

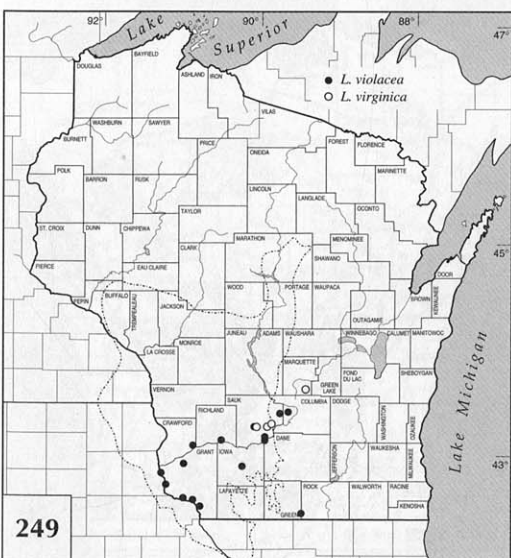
Even locally this is a most variable species in regard to pubescence, leaflet shape and crowding of heads. Current authors minimize the taxonomic importance of the varieties recognized by Fassett (1939) and Fernald (1950) or ignore them altogether.



248. *Lespedeza leptostachya* Engelm. PRAIRIE BUSH-CLOVER (U.S. Threatened, WI Endangered). One of our few Midwest endemics, restricted to the tallgrass prairies of northern Illinois, southern Wisconsin, northern Iowa and southern and central Minnesota; very rare in Wisconsin, in dry to mesic prairie remnants, sand prairies and oak openings, preferring gravelly hill prairies and thin-soil prairies over dolomitic bedrock. Flowering in August, fruiting from the end of August into October.

Listed as endangered or threatened in the states in which it occurs, due to the extensive loss of its prairie habitat to agriculture. "Plowing of remnant virgin [prairie] tracts...probably has contributed to the pending extinction of *L. leptostachya*" (Clewett 1966, p. 382).

Most of its flowers are cleistogamous, that is, fertilized and seed setting without cross-pollination. This may explain the lack of variation among individuals (Clewett 1966).

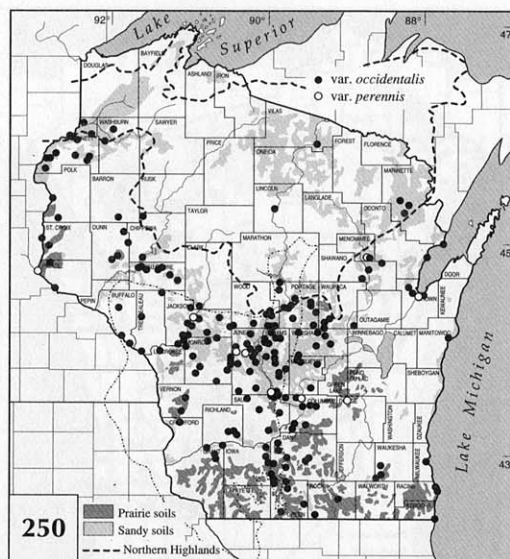


249. *Lespedeza violacea* (L.) Pers. VIOLET BUSH-CLOVER (Special Concern). Midwestern and northeastern United States from north-eastern Texas to southwestern Wisconsin, east mostly in the Prairie Peninsula, but scattered beyond to Virginia and Massachusetts; in Wisconsin at its northwestern limit, in dry, open oak woods, thickets and glades; occasional in rocky openings along the sides and tops of Mississippi River bluffs to the mouth of the Wisconsin River, scattered in brushy prairies and banks in former oak savanna country near the Wisconsin and Sugar rivers with mixtures of mesic prairie, forest and weed species, very locally frequent in the Baraboo Hills on **exposed cliffs** of quartzite and/or quartzite conglomerate with glade vegetation and stunted oaks and hickories. (1) Flowering in August, fruiting from mid August to mid October.

Lespedeza virginica (L.) Britton. VIRGINIA LESPEDEZA, SLENDER BUSH-CLOVER (Threatened). Throughout the eastern United States; in Wisconsin disjunct to four stations in the Baraboo Hills and one in Marquette County.

250. *Lupinus perennis* L. WILD LUPINE. Our only species of a large, mostly western genus, widespread from Florida to Maine (mostly the var. *perennis*) and then in the glaciated Midwest to Wisconsin and southeastern Minnesota (here mostly var. *occidentalis* S. Watson); locally common in Wisconsin, particularly on the Central Plain, lacking from dolomite formations and the Northern Highlands, in very sandy, open and sunny (sometimes partly shaded) borders or clearings in open, dry black oak-Hill's oak-jack pine woods, **oak barrens**, sandy prairies, roadsides and old fields, and infrequently on sandstone bluffs and ridges. (7) Flowering from mid May through June (sporadically to early August), fruiting in July.

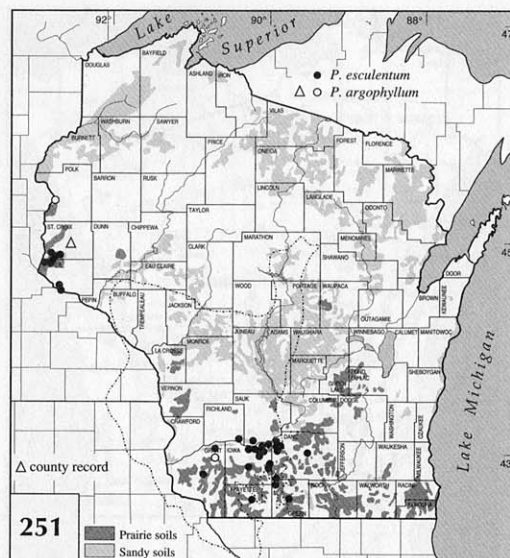
Wild Lupine, like many other species (e.g., *Amphicarpea bracteata*, 234), shows a clinal westward increase in pubescence correlated with aridity. It is of interest to preservationists as the host plant of the endangered Karner Blue Butterfly.



251. *Pedimelum argophyllum* (Pursh) J. W. Grimes [*Psoralea argophylla*]. SILVERY SCURF-PEA (Special Concern). Very common in the Great Plains to the west of us (northern Oklahoma and northern New Mexico to southern Alberta); like many Great Plains species, at its eastern range limit in westernmost Wisconsin, native only on **mesic prairies** in Polk, St. Croix and Grant counties; rarely collected. (1) Flowering in September.

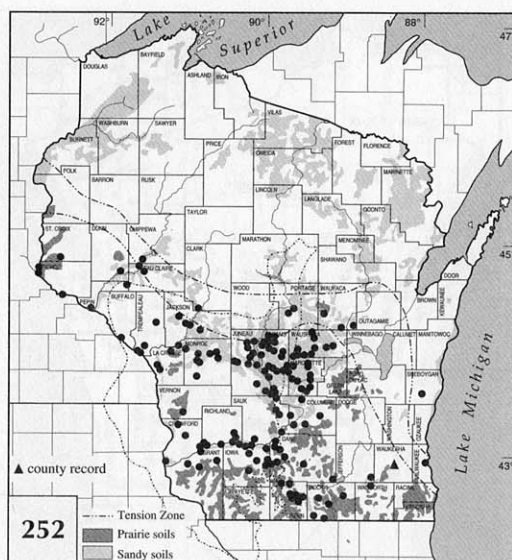
Pedimelum esculentum (Pursh) Rydb. [*Psoralea esculenta*]. PRAIRIE-TURNIP (Special Concern). Dry prairies on the Great Plains, having the same overall range as the above; in Wisconsin at its eastern limit, very rare and now restricted to relic **dry prairies** mostly within the Driftless Area and far west on south- to west-facing, gravelly to rocky knolltops, hillsides and bluffs, very rarely persisting on roadsides; seemingly tolerant of light to moderate cattle grazing. (2) Flowering in June, fruiting in late July through August.

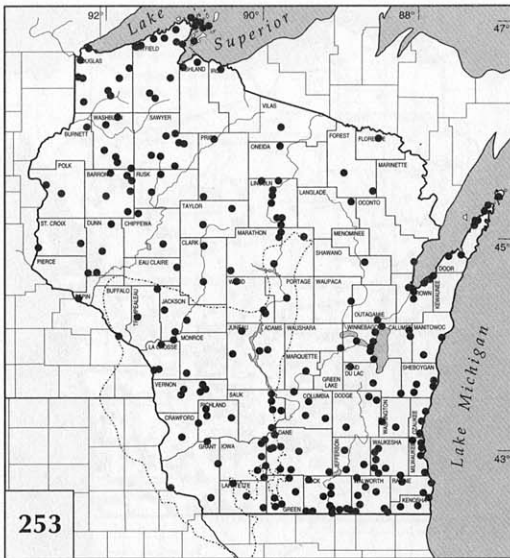
Though producing a thick edible root, this should not, because of its rarity, ever be dug.



252. *Tephrosia virginiana* (L.) Pers. [*T. v.* var. *holsericea*]. GOAT'S-RUE, RABBIT-PEA. A sand plant of the eastern and southern United States, from the Atlantic to southeastern Minnesota and the southern Great Plains of Texas; in Wisconsin locally frequent south of the Tension Zone on sandy, less so on prairie soils, most prevalent in sunny **oak barrens**, also characteristic of scrub oak-jack pine woodlands, sand prairies (sometimes with *Opuntia humifusa*), old fields, roadsides, railroad cuts, slopes, banks and sandstone outcrops, occasionally in bur oak openings or clearings in dry woods of oak-white pine or red oak-white oak; rarely on dry lakeshores. (7) Flowering from June through July (August), fruiting from August to late October.

As with other widespread, basically eastern forest species, clines related to increasing aridity lead to greater pubescence in the northern Middle West, making var. *holosericea* (Nutt.) Torr. & A. Gray our predominant form.



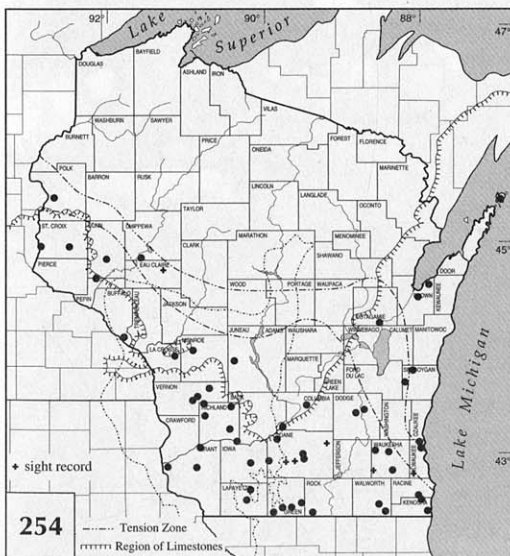
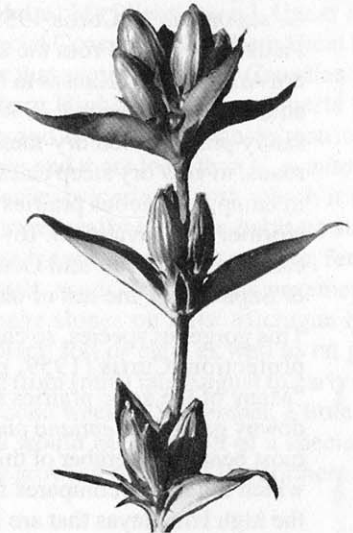


253. *Vicia americana* Muhl. AMERICAN VETCH. Transcontinental (western Quebec to southeastern Alaska, south to Georgia and eastern Texas); common throughout Wisconsin in a variety of mesic to dry, open to shaded habitats, most common in disturbed deciduous woods of beech-maple, maple-basswood, mixed or lowland hardwoods, oak-hickory, aspen communities and pine relics, especially in open spots and along borders; also in old clearings, degraded prairies (**wet-mesic prairies**), dry to moist thickets, fields, roadsides, railroads and quarries with mixtures of weeds plus woodland or prairie plants; and in grassy, brushy or disturbed places on riverbanks and shores. (11) Flowering from mid May through September, fruiting from July to mid August (probably into October). An extremely variable species, with our material belonging to the largely eastern ssp. *americana* [including var. *truncata*].

GENTIANACEAE—the Gentian Family

These mostly annual or perennial, glabrous herbs, beloved by botanists (especially) throughout the world, are famous for their often showy, saucer- to bell-shaped or tubular corollas of 4 or 5 united petals, their lobes often joined by folds or plaits, bearing alternately 4 or 5 stamens deep within the throat. Leaves opposite, with each pair arising at right angles to the pair above and the pair below, or whorled. Fruit a superior, 2-valved capsule with numerous small, delicately netted, lined or pitted seeds. (Gillett 1957; Mason & Iltis 1966; Pringle 1964, 1967; Wood & Weaver 1982)

A large cosmopolitan family, mostly in moist, cool habitats. Our gentians are all essentially prairie and fen species that, becoming rarer year by year, should never be picked nor transplanted except as a last resort in the face of impending destruction. They are difficult to grow, their roots being mycorrhizal.



254. *Gentiana alba* Muhl. ex Nutt. [*G. flavida* A. Gray]. CREAM GENTIAN (Threatened). Concentrated in the Prairie Peninsula, from the Great Plains of eastern Kansas and southeastern Minnesota to southern Ontario, scattered to Pennsylvania and North Carolina; in Wisconsin rare within the limestone region and mostly south of the Tension Zone, on dry to moist, sometimes calcareous relic prairies such as **mesic prairies** along railroads, in old unmowed cemeteries, on calcareous morainal hills, open wooded ridges or ravines, edges of dry oak woods, in oak openings and roadsides. (2) Flowering from early August to late September, with a peak in the last week of August.

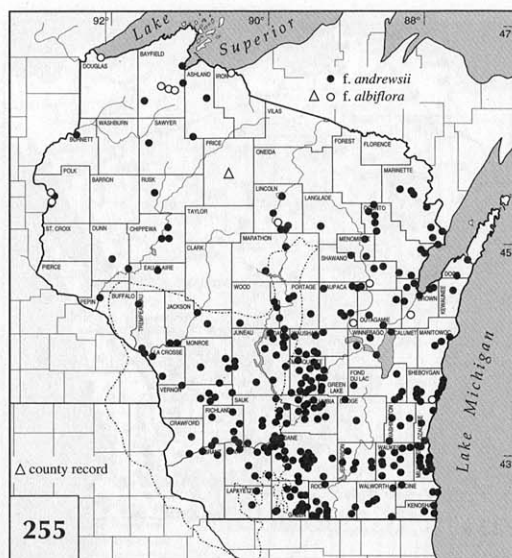
Though our prairie gentians show seasonal, ecological and floral isolation (Mason & Iltis 1966, Pringle 1964), several collections document hybridization of *Gentiana alba* with *G. andrewsii* and *G. puberulenta* (see Pringle 1964, 1965a, b).

The abundance of map locations is deceptive, because this species has been over collected. A single flower and leaf, plus a color photograph, are enough to voucher its presence.

- 255. *Gentiana andrewsii* Griseb.** CLOSED or BOTTLE GENTIAN. An Appalachian element, from Maryland and West Virginia to eastern Quebec, west to Missouri and the northern Great Plains; in Wisconsin our most common gentian, most often in damp or wet soil of sedge meadows, **wet-mesic prairies**, streamsides, grassy lakeshores, swales and damp thickets, sometimes in woods and on roadsides. (8) Flowering from (early) late August to mid October, seasonally and/or ecologically isolated from the three other species of *Gentiana*, all of which may hybridize with it (Mason 1959, Pringle 1964, 1965b).

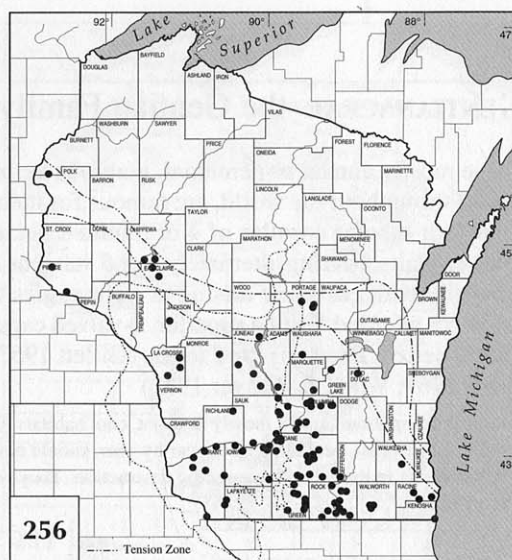
Ordinarily blue-flowered (*f. andrewsii*). The white-flowered *f. albiflora* Britton differs from *G. alba* (254) by closed flowers, absence of corolla lobes, and later flowering.

Gentiana rubricaulis Schwein., Red-stemmed Gentian, with longer stem internodes than *G. andrewsii*, occurs chiefly in northern sedge meadows but rarely extends south into central Wisconsin, in alkaline sedge meadows and moist prairies.



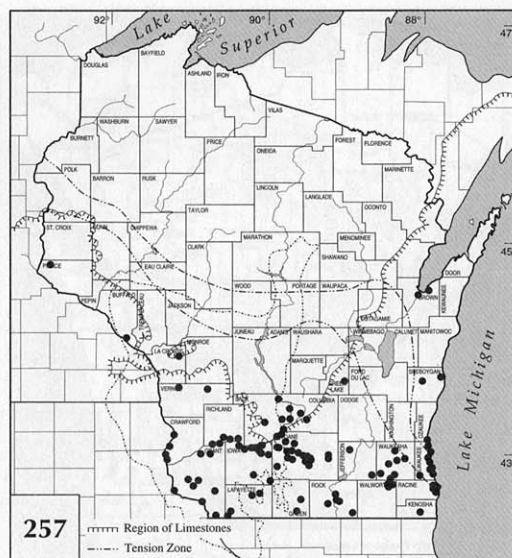
- 256. *Gentiana puberulenta* J. S. Pringle** [*G. puberula* of older floras; *G. saponaria* in Curtis 1959, both misapplied]. DOWNY or PRAIRIE GENTIAN. From the eastern Great Plains (northwestern Arkansas and Kansas to Manitoba) in the prairies to Indiana, and rarely beyond; in Wisconsin locally common in dry sandy prairies, rich dry-mesic to **mesic prairies** along railroads, in very dry steep calcareous “goat prairies,” less often in damp, calcareous prairies and rarely in dry upland woods (former oak savannas). (6) Flowering from (mid August) early September to mid October (peaking in the third week of September), the last of our perennial gentians to bloom.

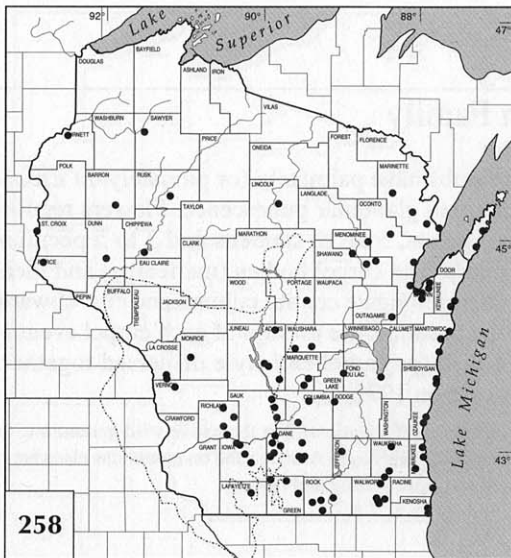
This gorgeous species, so characteristic of prairies, deserves protection. Curtis (1959, p. 271) writes admiringly that “Many of the xeric prairies support large populations of the downy gentian (*Gentiana puberula*), which is by all odds the most beautiful member of this famed genus in Wisconsin and which at its best compares favorably with the species from the high Himalayas that are so prized by rock gardeners.”



- 257. *Gentianella quinquefolia* (L.) Small ssp. *occidentalis* (A. Gray) J. M. Gillett** [*Gentiana q.* var. *o.*]. STIFF GENTIAN, AGUE-WEED, FIVE-FLOWERED [sic!] GENTIAN. The western phase of the species, from the Arkansas Ozarks and the Kentucky Cumberlands to southeast Minnesota and Ohio (allopatric to the Appalachian ssp. *quinquefolia*); in Wisconsin in the limestone region, from dry, south-facing, steep, rocky “goat prairies” and bluffs, north-facing slopes on upland **dry-mesic prairies**, well-drained ridges in deep-soil prairies (e.g., Juda Prairie, Green County), oak openings and edges of oak-hickory woods to moist calcareous prairies, marshy gravelly depressions and moist clay seepage on Lake Michigan bluffs, and rarely on damp calcareous sandstone cliffs or shaded earth banks along roads. (1) Flowering from early September to late October, one of the very last species in our flora to bloom.

This winter annual (biennial) requires calcareous soil and an “ecologically” open or slightly disturbed microhabitat without too much competition.

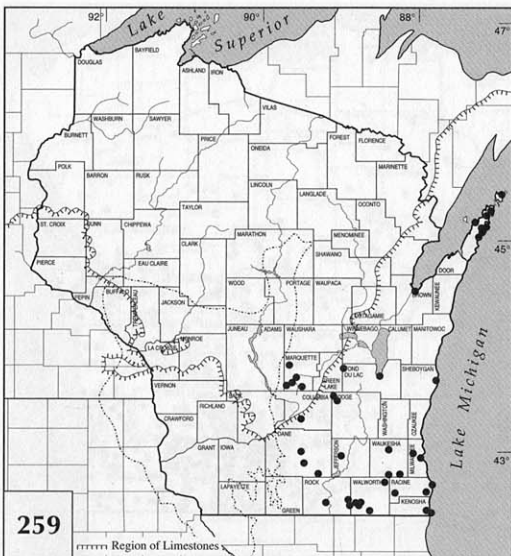




258. *Gentianopsis crinita* (Froel.) Ma [*Gentiana c.*]. FRINGED GENTIAN.

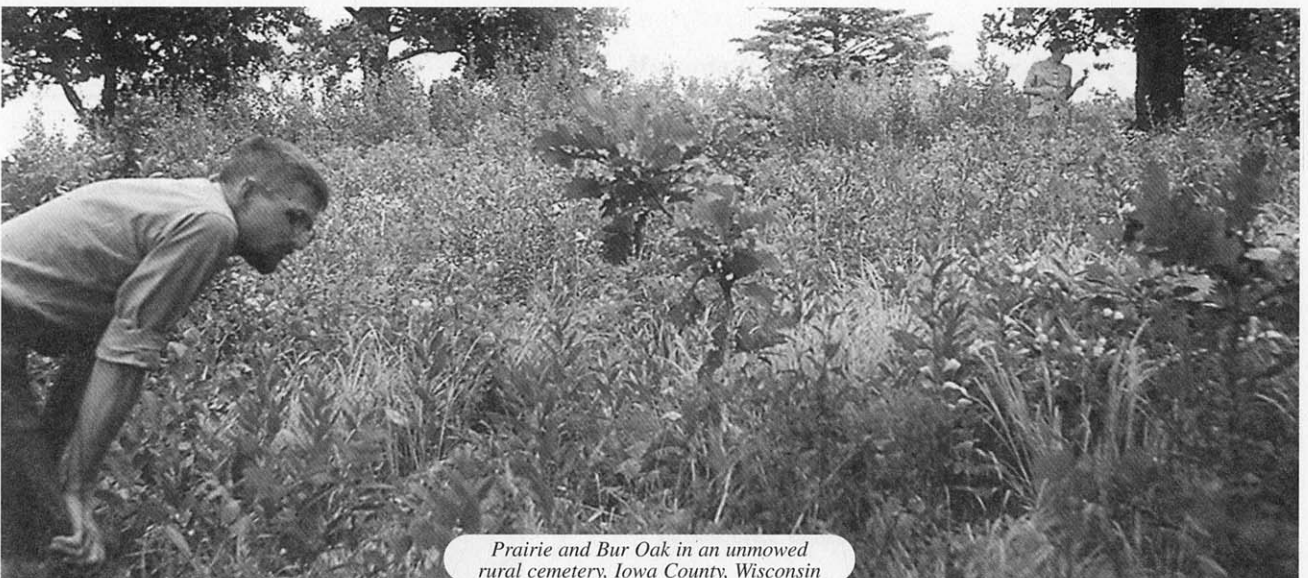
An eastern North American, Appalachian element, chiefly from (Georgia) Maryland to Maine, west near the Great Lakes to Wisconsin and into North Dakota and Manitoba; in Wisconsin widely distributed but rare to only locally common, both in the region of limestones as well as those of acidic rocks, in sunny or shady moist habitats, especially **wet-mesic prairies** that are flooded in spring, in marshes or sandy sedge meadows, along Lake Michigan in swales behind dunes and on moist dunes, seepage slopes, low, wet, sandy or gravelly flats or rock pavements, rarely in damp open woods and shaded, dolomite-capped sandstone cliffs. (2) Flowering from mid August into October, peaking in the second and third weeks of September, a little later than *G. procera*.

Apparently not requiring, but tolerating, as calcareous a habitat as *Gentianopsis procera*, with which it rarely grows on fens and calcareous low prairies along Lake Michigan, and where the two species hybridize (see Mason & Iltis 1966).



259. *Gentianopsis procera* (Holm) Ma [*Gentiana p.*]. GREAT PLAINS

FRINGED GENTIAN (Special Concern). A northern Great Plains (cordilleran?) element that avoids the acidic Canadian shield (including our Northern Highlands), from Alberta to the Gaspé, south to Ohio and Iowa; in Wisconsin restricted to the region of limestones and more local than *G. crinita* (258) [its eastern sister species (vicariad), with which it rarely grows], in full sun in generally alkaline habitats such as marly, often springy sedge meadows, low prairies, **fens** and moist calcareous gravels, sands or limestone pavements on Lake Michigan, seepage slopes on Lake Michigan bluffs, often on bare sand, black soil or clay, as well as on grassy shores. (3) Flowering from (mid) late August to early October, peaking in the second week of September, a little earlier than *G. crinita*, as would be expected of a species that evolved in the shorter growing season of the northern Great Plains.



Prairie and Bur Oak in an unmowed rural cemetery, Iowa County, Wisconsin

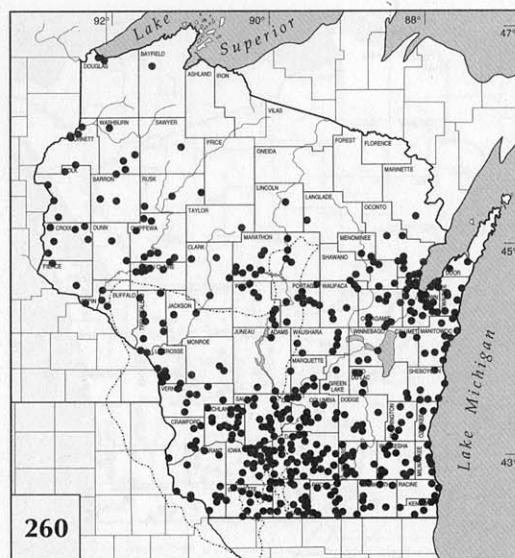


GERANIACEAE—the Geranium Family

These perennial herbs or soft-woody subshrubs have palmately (or pinnately, in *Erodium*) veined leaves from jointed nodes and often glandular pubescence. Flowers regular to somewhat irregular, usually with 5 free petals, 5 or 10 stamens and 3 to 5 peculiar carpels weakly united into a compound ovary. The carpel bodies (mericarps) and their persistent styles eventually split away from the elongate central column and curl upward and outward or become spirally twisted, the basal, fertile portion of each carpel eventually opening to forcefully eject its single seed (or carpel and style dispersed together, with the seed retained). (Fassett 1933, Robertson 1972)

Best known for the cultivated South African “geraniums” (*Pelargonium*), but the native wild geraniums, or crane’s-bills (*Geranium*), with numerous species in Europe, Asia, North America and on mountains elsewhere, are well appreciated for their usually brightly colored and insect-pollinated flowers.

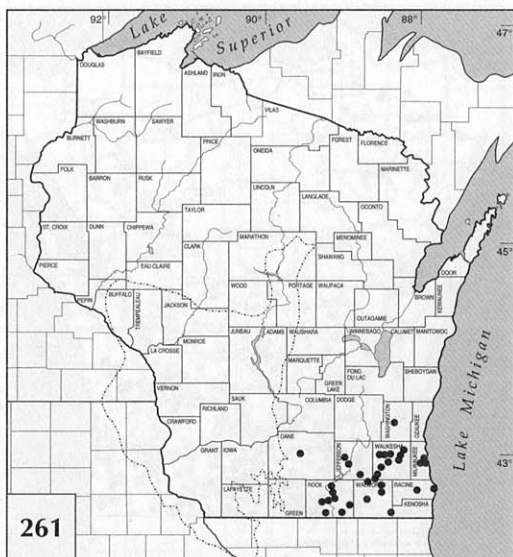
260. *Geranium maculatum* L. WILD GERANIUM, CRANE’S-BILL. Deciduous forests and savannas of eastern North America, from Maine to northern Georgia, westward to the eastern Great Plains; in Wisconsin very common except in the far north, reaching greatest abundance in **southern dry-mesic forests** and rich mesophytic sugar maple, beech and basswood communities, not uncommon in oak-hickory, aspen-birch or white pine woods, often in shady ravines and streamside thickets as well as low floodplain forests and white cedar woods, occasionally in mesic prairies and borders of sedge meadows; somewhat weedy and thriving in open or disturbed woods, on soils ranging from dry sand through loam or clay to black muck. (21) Flowering from May to mid June, fruiting from early June to July.



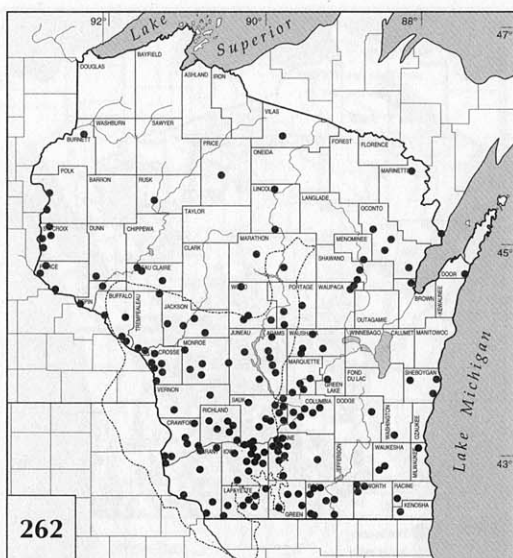
LAMIACEAE [LABIATAE]—the Mint Family

There is hardly a family more highly evolved nor easier to identify than the mints, aromatic herbs or low shrubs with square stems, opposite and decussate (alternate pairs at right angles) or whorled, simple leaves, a typically bilabiate corolla of 5 fused petals with 2 or 4 stamens inserted in the throat, and a distinctive ovary, shallowly to deeply 4-lobed, that ripens into a schizocarp (splitting into 1 to 4 nutlets) or a drupe (enclosing 1 to 5 stones). (Gill 1981, Koeppen 1958, Waterman 1960)

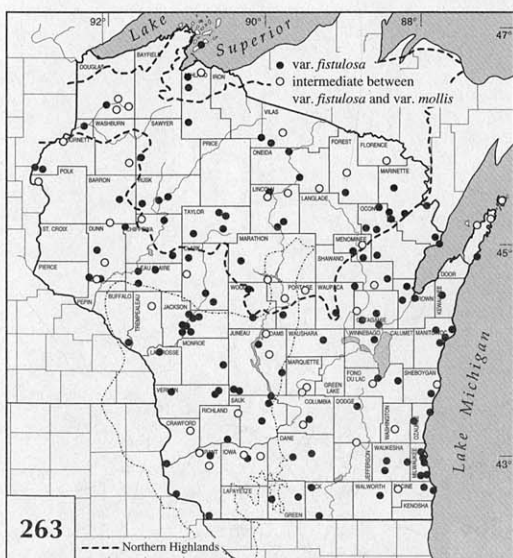
Worldwide, chiefly centered in the Mediterranean basin, economically important as a source of essential oils and culinary herbs (lavender, peppermint, spearmint, rosemary, etc.), medicines and confections (horehound), ornamental plants (Bugleweed, Glory-bower, Dead-nettle, *Coleus*, *Salvia*, numerous others) and timber (including teak). The Lamiaceae are closely related to and derived from the Verbenaceae, and the boundary between the two families has never been all that clear, what with recent studies supporting the transfer to Lamiaceae of approximately two-thirds of the genera traditionally included in the Verbenaceae.



261. *Blephilia ciliata* (L.) Benth. OHIO HORSEMINT. Widespread from Massachusetts to Georgia, west to (northeastern Texas?), northern Arkansas, eastern Kansas and Wisconsin, where confined almost entirely to the southeast, typically in mesic to **wet-mesic prairies** remnants, less often in borders of fens and thickets and low places in open woods; very shade tolerant and associated more with savanna than with prairie habitats. (4) Flowering from May to mid August.



262. *Hedeoma hispida* Pursh. ROUGH FALSE PENNYROYAL. Throughout the Great Plains, from Texas to Montana and Alberta, east to Alabama, southern Minnesota and New York (New England); in Wisconsin frequent throughout much of the state, in dry, sandy or gravelly soil of **dry prairies**, fields and pastures, "often in quite bare patches" (Voss 1996, p. 180), road shoulders, railroad ballast, gravel pits and waste places. (8) Flowering from mid May to early August.

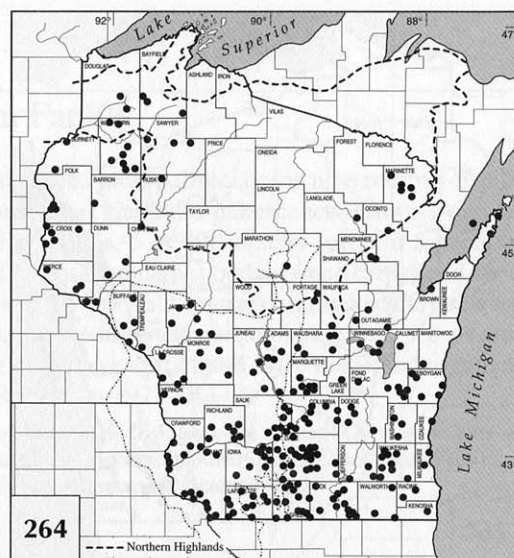


263. *Monarda fistulosa* L. var. *fistulosa*. WILD BERGAMOT. One of the best-known, most widespread mints, in the eastern mountains from Alabama to New England, west to the (eastern) Great Plains (Texas to the Canadian border); in Wisconsin common throughout, on mesic to dry, often sandy or gravelly prairies, pastures, edges of woods, **cedar glades**, oak openings and pine barrens, occasionally in damp places such as sedge meadows, and spreading along roadsides, railroad embankments and waste places. (17) Flowering from the end of June to early September.

Variable, but the varieties that have been named on the basis of relative lengths of hairs and petioles seem insignificant. Plants with some long straight hairs along the nerves on the lower surface are var. *fistulosa*. Almost as frequent as these and sometimes growing with them are plants combining the pubescence characters of both of our varieties.

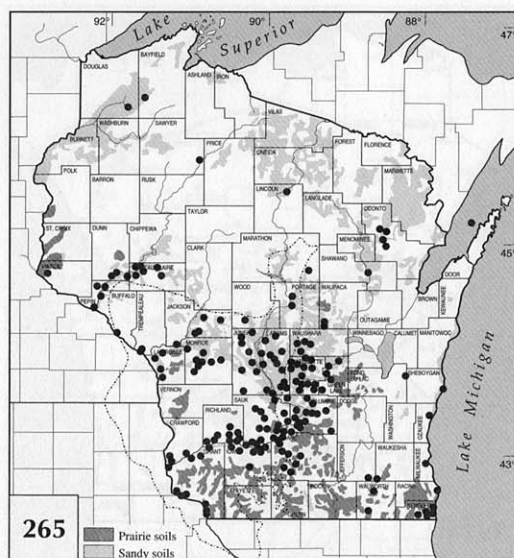
264. *Monarda fistulosa* L. var. *mollis* (L.) Benth. WILD BERGAMOT.

These are the plants with only minute curled pubescence on the lower surface of the leaves. They apparently have the same subcontinental range as the previous, and intergrade not only with it but also to the west of us with a third variety, var. *menthaefolia* (Graham) Fernald. In Wisconsin they are more common than, and occur in the same habitats as var. *fistulosa* (263), except are lacking from the Northern Highlands. (17) Flowering from the end of June to early September.



265. *Monarda punctata* L. ssp. *villicaulis* Pennell [*M. p.* var. v.].

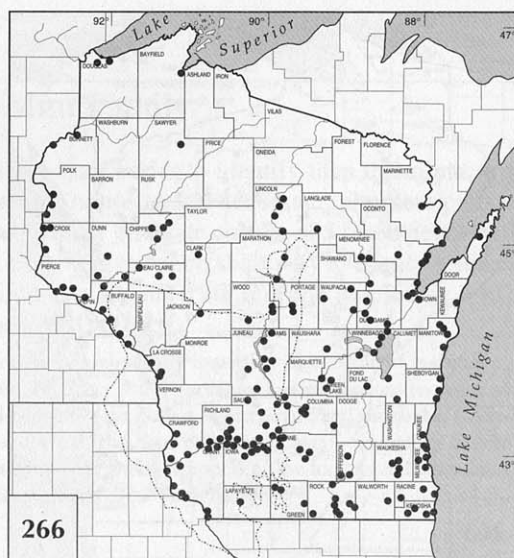
HORSEMINT, DOTTED MONARDA. A highly polymorphic sand species, with nine subspecies in the southern Great Plains and Ozarks, but with this the only northern variant, though also in eastern Oklahoma, mostly in the Prairie Peninsula, from northeastern Arkansas to eastern Minnesota, eastern Michigan, northern Indiana and rarely scattered beyond (Lake Champlain, New Jersey); in Wisconsin locally common in open dry sandy soil, especially on sand prairies, sand barrens, oak openings, jack pine plains, sandstone outcrops, sandy beaches, roadsides and abandoned fields; mostly in the old bed of Glacial Lake Wisconsin and the sands along the Mississippi tributaries. (5) Flowering from the end of June to mid September.

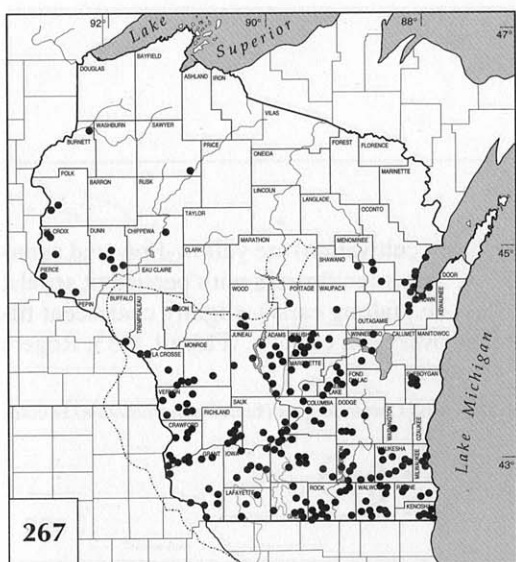


266. *Physostegia virginiana* (L.) Benth. ssp. *virginiana* [*P. formosior* Lunell; *P. speciosa* (Sweet) Sweet]. OBEDIENCE, OBEDIENT PLANT, FALSE DRAGONHEAD. Eastern margin of the Great Plains (Texas to Canada) to Quebec and Florida, our subspecies the more northern within that range; in Wisconsin locally frequent in lowlands throughout the state such as lake, river and stream banks, sedge meadows, marshes, wet prairies, swales, wet thickets and floodplain forests. Flowering from the end of July to early October.

The great majority of our plants are the segregate that has been called *Physostegia formosior* but are now, if recognized, treated as *P. virginiana* var. *speciosa* (Sweet) A. Gray, with some of them stipitate-glandular as in typical var. *virginiana*. Cantino (1982) united the two taxa.

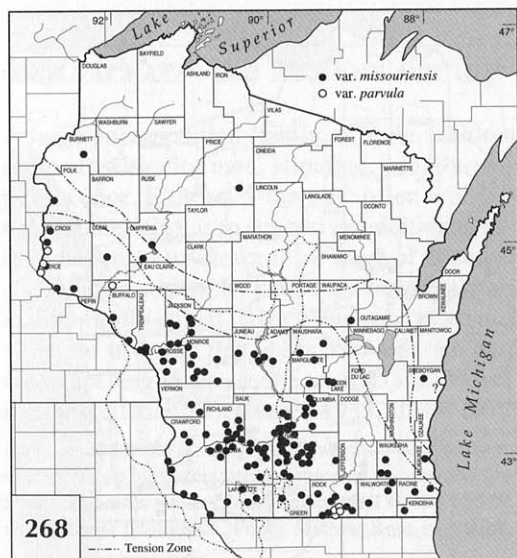
An easily grown, tall perennial with terminal spikes of showy rose-purple (rarely white) flowers. Some specimens possibly represent escapes from cultivation.





267. *Pycnanthemum virginianum* (L.) T. Durand & B. D. Jacks. ex B. L. Rob. & Fernald. MOUNTAIN MINT. Northeastern and mid-western United States, from the eastern Great Plains (Oklahoma to Minnesota) and the Ozarks to New England and Tennessee; in Wisconsin mostly in the southern half of the state, in mesic to **wet-mesic prairies**, bog and marsh borders, meadows, pastures and occasionally dry prairies or oak-pine woods. (11) Flowering from early July to mid September.

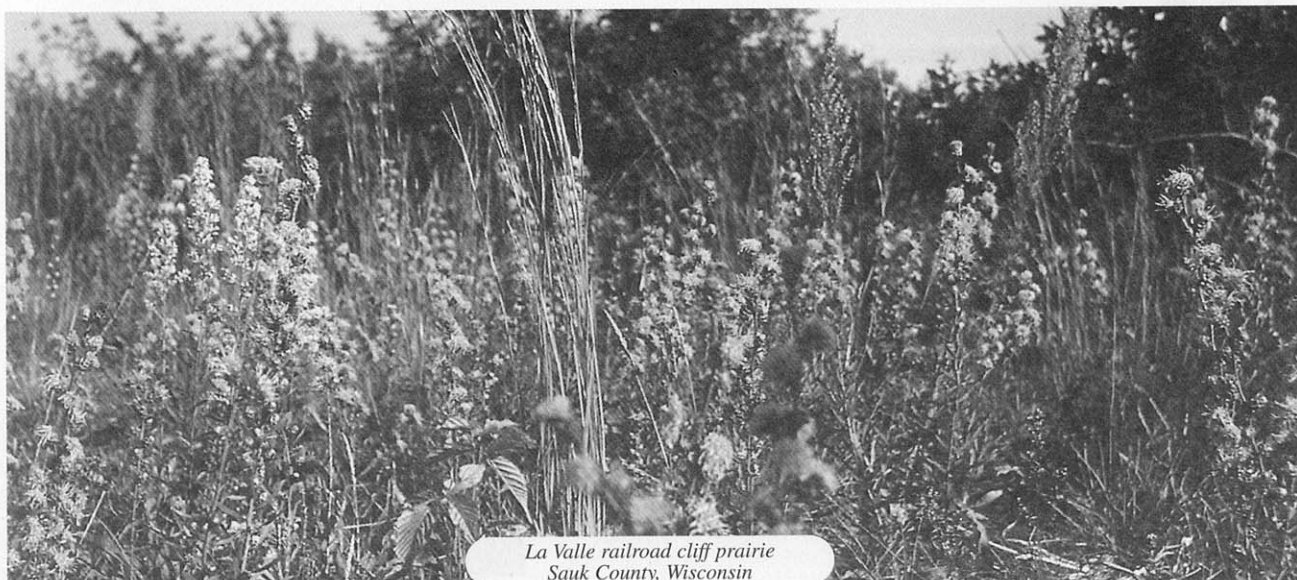
The following have not been mapped even though they are frequent to common in Wisconsin mesic to wet prairies and such related communities as sedge meadows, shrub carrs and fens: *Lycopus americanus* Muhl., Common Water-horehound, and *L. uniflorus* Michx., Northern Bugleweed or Water-horehound; *Mentha arvensis* ssp. *canadensis* (L.) H. Hara [including *M. a.* var. *villosa*], Wild Mint; *Stachys palustris* L. (*S. pilosa* Nutt. sensu stricto), Woundwort; and *Teucrium canadense* L. [including *T. occidentale* A. Gray], Germander.



268. *Scutellaria parvula* Michx. SMALL SKULLCAP. Common in the southwestern third of Wisconsin, sporadic within or just beyond the Driftless Area to Burnett, Price and Sheboygan counties, on rocky bluffs and outcrops of limestone, sandstone and granite, in steep prairies, sandy places in fields, pastures and river bottoms, **cedar glades**, oak openings and jack pine woods. (9) Flowering from the end of May to July.

Scutellaria p. var. *missouriensis* (Torr.) Goodman & C. A. Lawson [*S. p.* var. *leonardii* (Epling) Fernald] is the more widespread sister taxon to *S. p.* var. *parvula*, from the eastern half of the central Great Plains (Kansas to North Dakota), east to Ohio (Virginia) and New England.

Scutellaria p. var. *parvula* (Endangered) is mostly a Midwest, Ozark and Cumberland plateaus calciphile, from (eastern Texas) eastern Oklahoma to southern Wisconsin, east to the Appalachians and Quebec, in Wisconsin much more local than the preceding, and bicentric, the northern of the two areas quite isolated from the rest of the subspecies.



La Valle railroad cliff prairie
Sauk County, Wisconsin



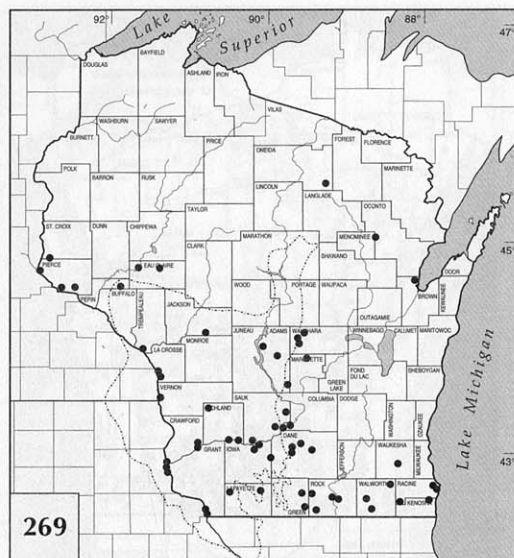
LINACEAE—the Flax Family

Our species (except two blue-flowered escapes from cultivation) are yellow-flowered annuals with small, sessile, entire leaves and regular, 5-merous flowers with persistent sepals, fugacious petals (Lat. *fugax*, from *fugere*, to flee, i.e., falling early), slightly coalescent filaments, and a partly or completely 10-chambered ovary and capsule. (Fassett 1933; Rogers 1963, 1984; Robertson 1971)

A small, worldwide family, of which the perennial, blue-flowered Common Flax (*Linum usitatissimum*) is commercially important for fiber and seed oil.

269. *Linum sulcatum* Riddell. GROOVED YELLOW FLAX. Common annual of the western half of the Great Plains (Texas and Arkansas Ozarks to Manitoba) and the Prairie Peninsula (to Indiana and Michigan) and rarely beyond; in Wisconsin locally frequent throughout the southwest on dry, rocky, calcareous prairies and bluffs, on sandy and, most commonly, **dry-mesic prairies**, on sandy open slopes, recently abandoned fields with *Oenothera clelandii* (276) and *Panicum* spp., older fields with thickets of black oak and jack pine, and on the Mississippi River sand terraces and dunes, rarely in moister places (e.g., riverbanks, swales) or on railroad ballast. (7) Flowering from late June to mid August (September), fruiting from mid July to mid October.

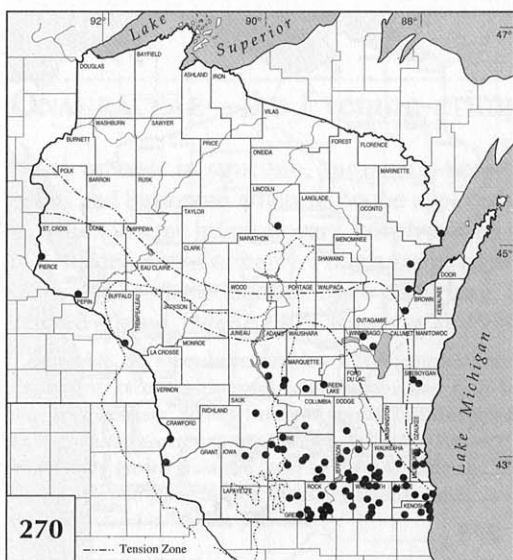
Linum usitatissimum L., Common Flax, widely cultivated for seed and fiber and as a garden flower, is now included regularly in seed mixes to provide early color in wildflower plantings, and it will probably be turning up more frequently about the state.



LYTHRACEAE—the Loosestrife Family

A small family of temperate herbs to tropical trees, with opposite or less often alternate or whorled leaves, regular or somewhat irregular flowers with 4, 6 or 8 petals usually crumpled in bud and borne on the rim of a deep calyx-like tube, deep within which are inserted as many, or twice as many, stamens, and a superior ovary that matures into a capsule. Heterostyly (species with styles of different lengths in flowers of different individuals, some surpassing, others surpassed by, the stamens, thus encouraging outcrossing) is common. (Graham 1964, 1975; Ugent 1963)

The Lythraceae are represented in Wisconsin by marsh, wet prairie and ditch plants, including the now notorious Eurasian Purple Loosestrife (*Lythrum salicaria*). This most terrible invader of our wet prairies and marshes, nonetheless a very attractive garden plant, is still sold by unscrupulous horticulturalists, sometimes as "Queen-of-the-Prairie" (not to be confused with the rare *Filipendula* of that name, *F. rubra*, doubtfully once native in southern Wisconsin near Mazomanie).

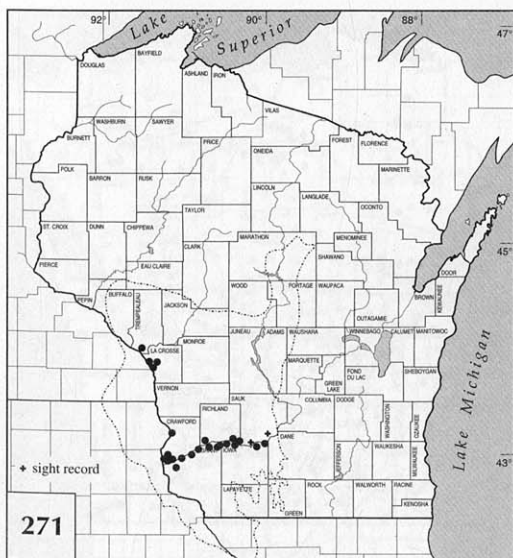


270. *Lythrum alatum* Pursh var. *alatum*. WINGED LOOSESTRIFE. Part of a transcontinental complex of three taxa: the western *L. californicum* Torr. & A. Gray (northern Mexico and California to the Great Plains), southeastern var. *lanceolatum* (Ell.) Torr. & A. Gray ex Rothrock (Texas to the Southeast), and northeastern var. *alatum* (northern Great Plains to New England); chiefly in southeastern Wisconsin and the Mississippi river bottoms, in moist to wet sedge meadows, **wet-mesic prairies**, marshes, lakeshores, riverbanks, bogs and wet ditches, on alkaline sedge meadows, fens and moist sandy prairies. (6) Flowering from late June to early October.

MALVACEAE—the Mallow Family

A large cosmopolitan family of herbs (seldom shrubs or small trees in tropical regions) with alternate, stipulate, usually palmately veined leaves and stellate pubescence. Flowers 5-merous, often with a whorl of bractlets so closely subtending the calyx as to suggest an additional outer calyx (paracalyx). Stamens usually numerous, coalescent for most of their length into a tube that surrounds the style and to which the petals are frequently attached. Carpels usually several to many, wholly united into a compound pistil that matures into a capsule or loosely coherent in a ring that splits into separate carpel segments (schizocarps), these either opening to release the seed(s) (as in Velvet-leaf) or single-seeded and remaining closed (Mallow). (Hagen 1933, Utech 1970)

An easily recognized family, widely distributed in temperate and tropical regions. Economically it is of importance for the cotton of commerce (*Gossypium* spp.), the edible fruits of okra (*Hibiscus esculentus*) and other species, many agricultural weeds, and the many native and cultivated species grown for ornament (Hollyhock, Poppy Mallow, Rose-of-Sharon, Flowering-maple, etc.).

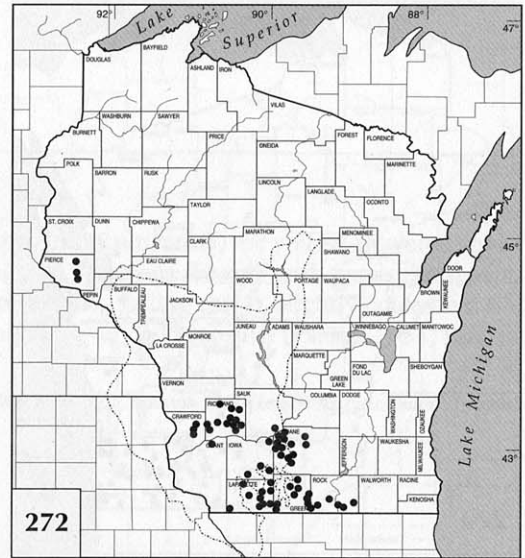


271. *Callirhoe triangulata* (Leavenw.) A. Gray. PURPLE OR CLUSTERED POPPY MALLOW (Special Concern). Rare, showy, sand prairie species of the Upper Midwest [eastern Missouri, northeastern Iowa, southern Wisconsin, to Indiana (one station), once widespread in the northern half of Illinois] and scattered beyond in the Southeast (Mississippi to Georgia); in Wisconsin rare, confined to the dry and sandy valleys of the Wisconsin and Mississippi rivers in dry or **dry-mesic prairies**, as along the railroad west of Blue River (Grant County) and east of Helena (Iowa County), where small populations still survive. (1) Flowering and fruiting from July through August.

This showy species, its deep rose-purple petals with a white basal spot, grows well in open flower beds. Purple Poppy Mallow is available from commercial prairie nurseries, and like other rare plants should never be collected from the wild.

272. *Napaea dioica* L. GLADE MALLOW (Special Concern). A regional endemic of the north-central United States (southern Ohio through Illinois to northeastern Iowa and southeastern Minnesota); in Wisconsin in sections of some southern (Dane, Green, Lafayette, Richland) and far western (Pierce) counties, rare to locally abundant in alluvial soil in sun or semi-shade along streams and rivers, mesic to wet, but most prevalent in **wet-mesic prairies**, ditches and marshy ground, most often seen in moist, rank, weedy vegetation, sometimes mixed in with shrubs, often along railroad rights-of-way in roadbed ballast and adjoining marshy ditches. (2) Flowering from late June to mid August, fruiting from July to early September.

The impressive (to 8') monotypic *Napaea*, the only genus endemic to the north-central U. S. (see Iltis 1963, Utech 1970), is peculiar in its snow-white unisexual flowers (sexes on different plants) and in its thick cylindrical roots that are hollow at the base. Often weedy in Wisconsin, it grows well in a garden if sun and sufficient space are allowed.

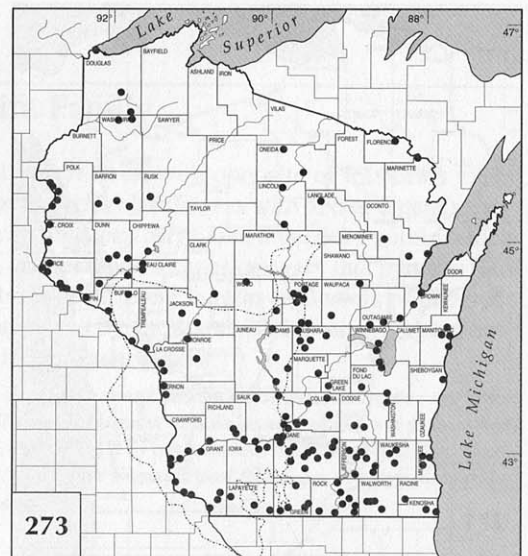


NYCTAGINACEAE—the Four-o'clock Family

Mostly tropical or subtropical and woody, but ours herbs with opposite, simple, entire leaves, jointed stems and funnelform flowers lacking petals, the white or colored calyx functioning as a corolla, its base closely investing the ovary and persisting as a nut-like shell around the indehiscent 1-seeded fruit (an achene, the collective structure called an anthocarp). In *Mirabilis* the inflorescence of 1 to several flowers is enclosed by a prominent involucre of fused bracts, and the base of the calyx tube is modified into a parachute-like wing to facilitate dispersal. (Bogle 1974)

The subtropical woody vine *Bougainvillea*, with large, colorful bracts, is cultivated in greenhouses in the North, and the annual *Mirabilis jalapa*, Four-o'clock, is sometimes grown in Wisconsin in gardens.

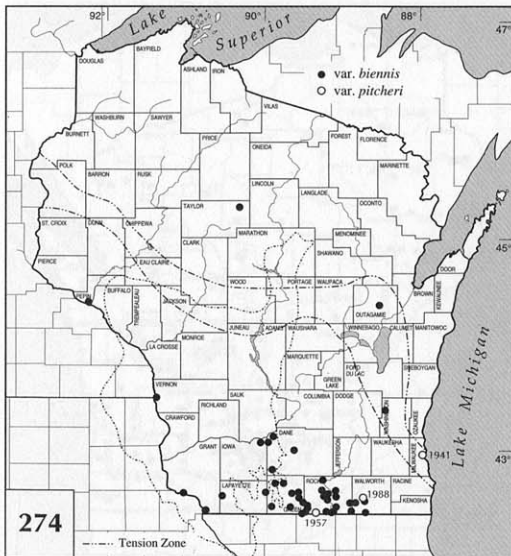
273. *Mirabilis nyctaginea* (Michx.) MacMill. [*Oxybaphus* n.]. WILD FOUR-O'CLOCK. Widespread in western North America on the Great Plains from Mexico to Saskatchewan, east to Wisconsin and Tennessee, but beyond often weedy east- and westward to both coasts; throughout southern Wisconsin, where mostly weedy in dry, disturbed sand, cinders and ballast, particularly along railroads and roadsides, pastures and waste ground, less often native in dry to **wet-mesic prairies**, oak-pine woodlands and sand barrens. (5) Flowering from late May to mid July (occasionally September), fruiting from June to September.



ONAGRACEAE—the Evening-primrose Family

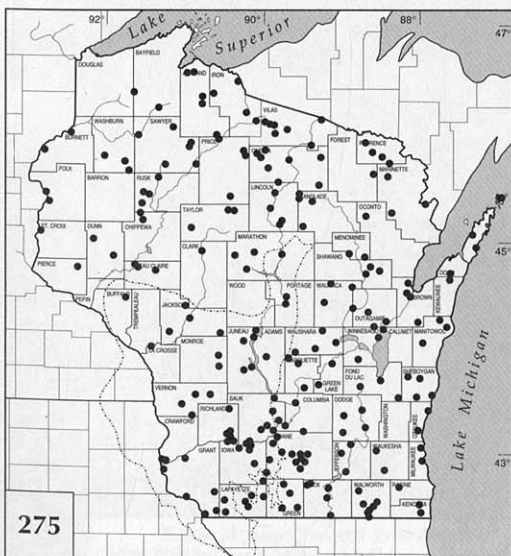
Quite variable in structure, but mostly herbs with flowers of 4 sepals, (2) 4 petals and 8 stamens all borne on the upper edge of a perianth tube, at the base of which lies the inferior ovary, which matures into a capsule or less often a 1- to 4-seeded nutlet or berry. Pollen grains relatively large, lumped together by cobweb-like viscin threads. Style often long, ending in a 4-lobed, capitate or discoid stigma. (Munz 1965, Raven et al. 1980, Ugent 1963)

World-wide, but most diverse in New World temperate and arid regions, two of the largest genera, *Oenothera*, evening-primroses and sundrops, and *Epilobium*, willow-herbs and fireweeds, common in Wisconsin. Showy-flowered species of many genera are grown in homes (the spectacular *Fuchsia*, Lady's-eardrops) and gardens (*Clarkia*, Farewell-to-spring). Evening-primroses are now extensively grown in large fields in Canada and Europe for their seed oil, which contains cis-linoleic and gamma-linolenic acids, sold in health food stores as pills to reduce arterial plaque and cholesterol in cardiac patients.



- 274. *Gaura biennis* L. BIENNIAL GAURA.** Eastern and central United States, from western North Carolina and Texas north to Massachusetts, Quebec and southeastern Minnesota; mainly in the southern quarter of Wisconsin (probably native from Grant to Walworth counties) in moist to **mesic prairies** (often disturbed) along railroads and roadsides, rarely in open woods and fields; near Monticello, Green County and Madison, Dane County, growing in rich, deep, black soil with prairie vegetation between railroad tracks and roads; in the more northern counties probably adventive, with all but two collections from railroad tracks or roadsides. (3). Flowering from mid July to September, fruiting from August to September.

Most Wisconsin specimens are of the widespread eastern var. *biennis*. The similar var. *pitcheri* Torr. & A. Gray, native to the southern Great Plains and rarely adventive in Wisconsin (dates on map indicate year of collection), is now often recognized as a "good" species, *G. longiflora* Spach, which was ancestral to var. *biennis* (see Raven & Gregory 1972).



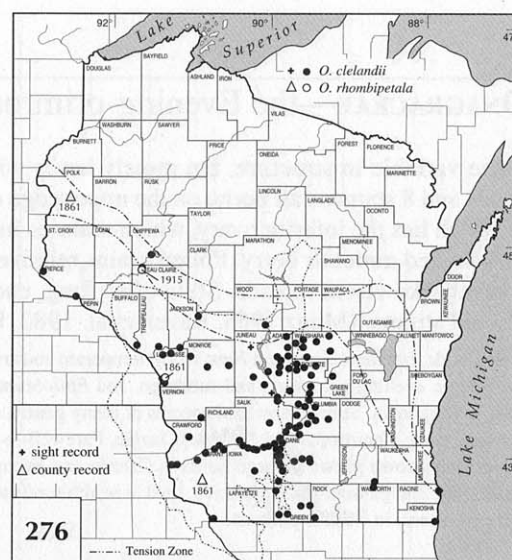
- 275. *Oenothera biennis* L. COMMON EVENING-PRIMROSE.** Throughout the eastern half of North America, common and weedy, in disturbed, sunny, "open" habitats, from the eastern edge of the Great Plains (eastern Texas to Alberta) to the Atlantic Coast (Florida to Newfoundland), naturalized worldwide; in Wisconsin in every county mainly as a weed, but naturally occurring on riverbanks, sandbars and lakeshores, **dry-mesic prairies**, moist meadows, marshes, borders of woods, roadsides, railroad embankments, abandoned or cultivated fields and waste ground in towns. (Undoubtedly including several taxa of the *O. biennis* complex, 14) Flowering from early June to early October, fruiting from late July into October.

The notoriously confusing systematics and peculiar genetics of *Oenothera* section *Oenothera* have recently been re-evaluated (Dietrich et al. 1997), and though all taxa are weedy, the geographic and systematic patterns finally make sense. Our maps and concepts are based on specimens examined by these authors.

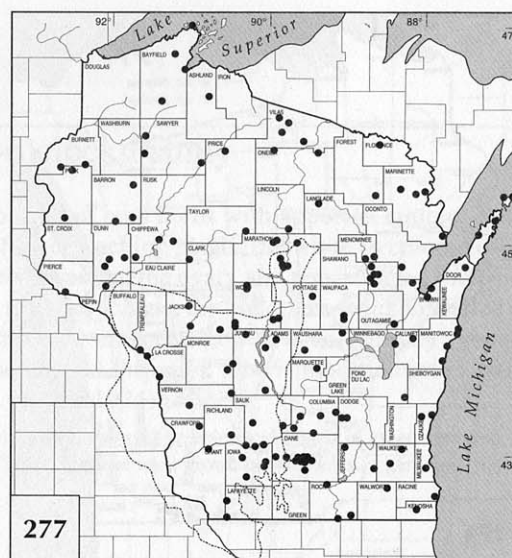
276. *Oenothera clelandii* W. Dietr., P. H. Raven & W. L. Wagner [*O. rhombipetala*, in part]. SAND EVENING-PRIMROSE. Upper Midwest from southern Illinois, Iowa and eastern Minnesota, east in the Prairie Peninsula to Indiana and southern Michigan; in Wisconsin in disturbed sandy soils south of the Tension Zone, common in the central Wisconsin, Wisconsin River and Black River sand areas, in sandy prairies and open jack pine-oak woods, frequently in abandoned sandy fields, **sand barrens**, “goat prairies,” river terraces, lakeshores, roadsides and railroad ballast. (3) Flowering from early July to early October, fruiting from late July to early October.

Virtually all Wisconsin specimens identified as *Oenothera rhombipetala* in the past belong to this relatively small-flowered, half-fertile species (see Dietrich & Wagner 1988).

Oenothera rhombipetala Nutt. ex Torr. & A. Gray. LONG-SPIKE EVENING-PRIMROSE. Great Plains, sporadic eastward as far as southern Michigan; very rare and probably adventive in western Wisconsin. Closely related to *O. clelandii*, but larger flowered and fully fertile.

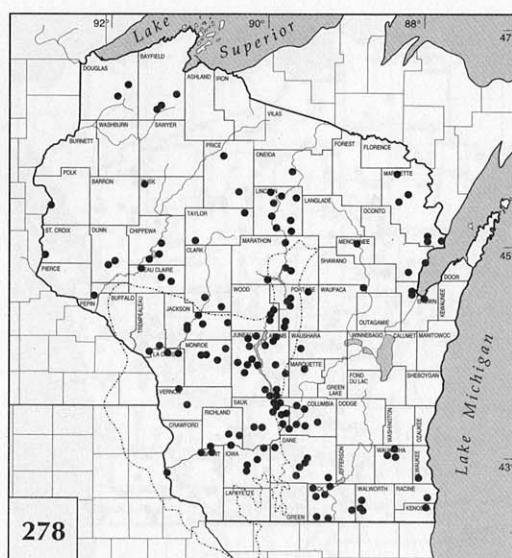


277. *Oenothera parviflora* L. [including *O. cruciata* Nutt. ex G. Don, a narrow-petalled mutant]. SMALL-FLOWERED EVENING-PRIMROSE. Widespread in northeastern North America to the Upper Midwest (basically an Appalachian element with “Northern Hardwoods” distribution), from the North Carolina mountains to the Gaspé and Newfoundland, west across Indiana to Iowa, Minnesota and Manitoba, sparingly naturalized elsewhere; in Wisconsin almost as common as, and in the same open, sunny, disturbed habitats as, *O. biennis* (275, from which it is distinguished by the free sepal tips, terminal or subterminal in bud), often along lakeshores, riverbanks, roadsides, railroad tracks and cliffs, frequently in abandoned or cultivated fields, pastures, sedge meadows, prairies and openings in woods; generally in sandy or gravelly soil. Flowering from early June to mid October, with an extended peak lasting from mid July through August, fruiting from early August to mid October.



278. *Oenothera perennis* L. SMALL SUNDROPS. Northeastern North America, from Newfoundland to southern Manitoba and northern Minnesota, south to Missouri and in the mountains to the Carolinas; widespread in Wisconsin in mesic to **wet-mesic prairies**, sedge meadows, pastures, sandy or muddy margins of marshes, shallow bogs, streams and rivers, moist cliffs, sandy roadsides, and occasionally in open oak-hickory woods and along railroad tracks. (4) Flowering from late May to mid September, fruiting mid June to September.

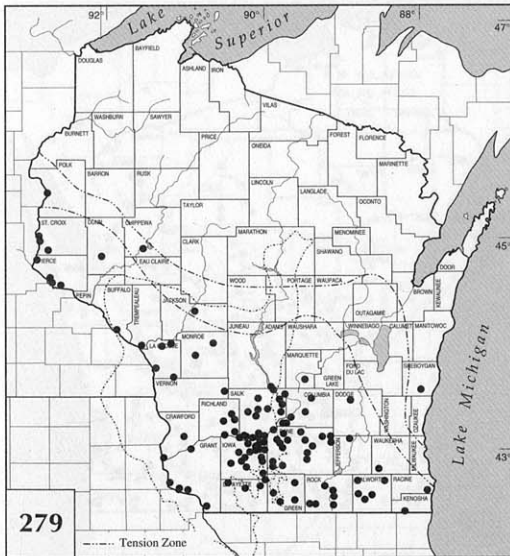
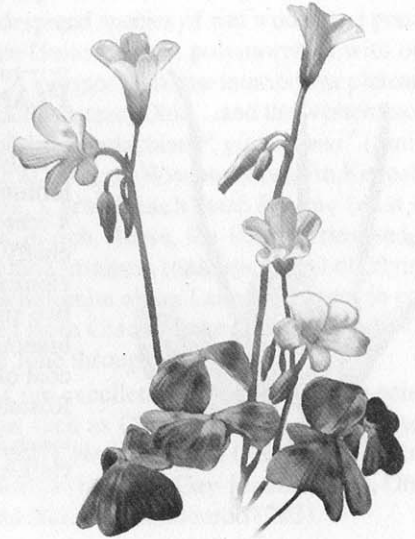
Often and easily cultivated, as are *Oenothera pilosella* Raf., Prairie Sundrops, and *O. fruticosa* L., Shrubby Sundrops. The sundrops are day-flowering perennials unlike the evening-primroses, which are generally evening flowering.



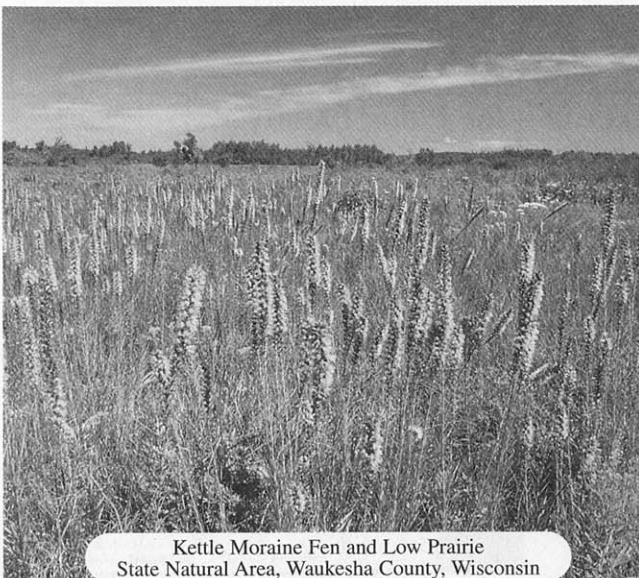
OXALIDACEAE—the Wood-sorrel Family

Anyone who weeds a garden in Wisconsin soon gets to know the common weedy, yellow-flowered wood sorrels or sour-clovers, with 3 clover-like leaflets characteristically folding at night; flowers with 5 sepals, 5 petals, 10 stamens and 5 carpels united into a compound ovary; fruits that are elongate, pentagonal, superior capsules with 2 or more seeds in each chamber; and seeds with a large basal aril, an outgrowth that functions in expelling the seed from the capsule and attracting ants for its wide dispersal. (Eiten 1963, Fassett 1933, Robertson 1975)

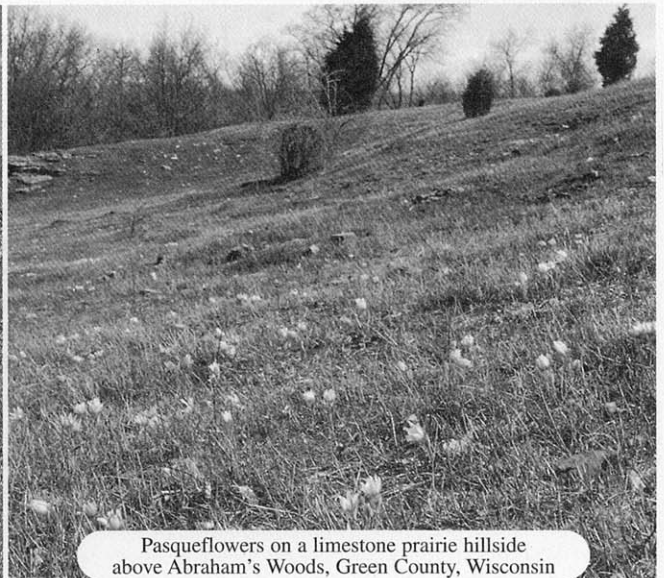
The presence of oxalic acid accounts for the sour taste of the foliage (hence Sour-clover). The petals of our prairie and woodland species (see below) are rose-violet, those of circumpolar forest species (*Oxalis acetosella*) white with pink veins. Many species, often with white or pink flowers, are horticultural.



- 279. *Oxalis violacea* L. VIOLET WOOD-SORREL.** Widespread in the eastern United States from the Atlantic to the eastern Great Plains of North Dakota, south to Florida and Texas; in Wisconsin rare to locally common south of the Tension Zone, in open or partly shaded habitats, usually in sandy, gravelly or rocky soil, most common in dry upland woods (oak with hickory, aspen or basswood, pine relics), especially grassy openings and edges, and on grassy, brushy or wooded slopes and tops of sandstone or limestone hills and bluffs, **mesic prairies**, dry calcareous or "goat prairies," bedrock glades, sometimes on cliffs, outcrops and talus, sandy borders and gravelly terraces along rivers, rarely in old fields or along railroads. (11) Flowering from late April through June (sporadically through August), fruiting from late May through June (August).



Kettle Moraine Fen and Low Prairie
State Natural Area, Waukesha County, Wisconsin



Pasqueflowers on a limestone prairie hillside
above Abraham's Woods, Green County, Wisconsin



PLANTAGINACEAE—the Plantain Family

Weedy herbs with parallel-veined, basal leaves and spikelike or headlike inflorescences terminal on a leafless stem. Flowers small, white or greenish, regular and ordinarily 4-merous. Calyx and corolla both persistent, the former herbaceous, the latter dry and chaffy. Once the simple elongate stigma withers, the corolla-lobes reflex, the filaments elongate and the large anthers release their copious pollen. Pistil usually 2-locular (in two small genera 1-locular), maturing into a dry fruit, which in *Plantago* is a membranous capsule opening at or below the middle by an encircling transverse line. Seed coat often becoming mucilaginous when moistened. (Bassett 1973, Hawthorne 1974, Rosatti 1984, Tessene 1968)

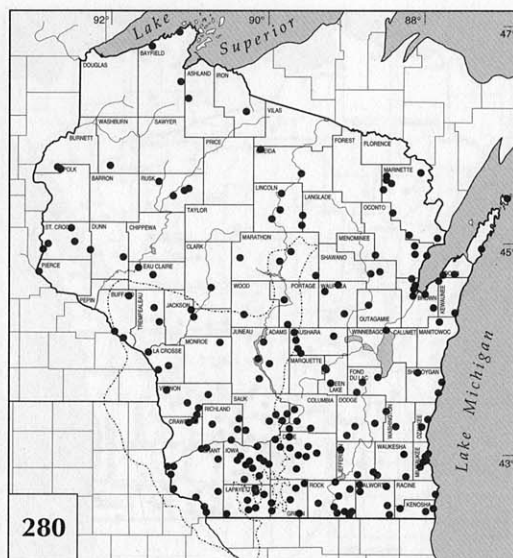
Mainly in temperate regions and the montane tropics. The only important genus is *Plantago* (200+ species), Plantain, some of them noxious lawn weeds. The numerous small flowers are generally wind-pollinated.

280. *Plantago rugelii* Decne. AMERICAN OR RED-STALKED PLANTAIN.

Eastern North America, west to Manitoba and Texas, widely introduced elsewhere; very common in Wisconsin, in **dry-mesic prairies**, but also often weedy in all sorts of rich habitats such as open bottomlands, mud flats, talus slopes, roadbeds, paths, lawns, cracks in masonry and gravel pits. (1) Flowering from early June to November (peaking in July), fruiting from July into November.

Although supposedly native in our region, this ubiquitous weed of lawns and waste ground "is rarely, if ever, part of any undisturbed native community" (Swink & Wilhelm 1994). It is morphologically and ecologically nearly identical to, and much more common than, the weedy Eurasian *Plantago major* L., Common Plantain.

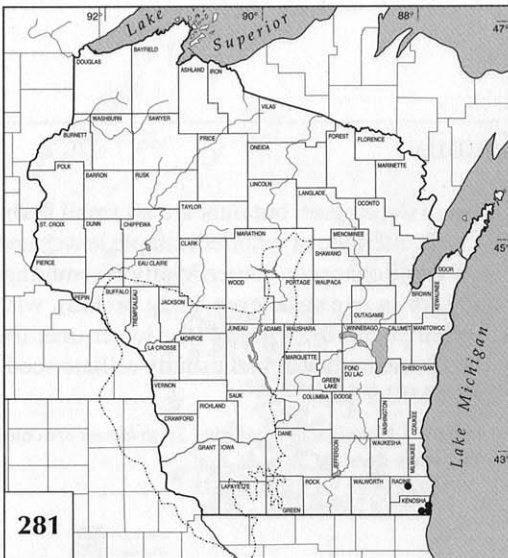
Plantago patagonica Jacq. [*P. purshii*, misapplied], Woolly Plantain, a slender annual of sand prairies and road shoulders throughout the Great Plains, is locally common in southern and western Wisconsin.



POLEMONIACEAE—the Phlox Family

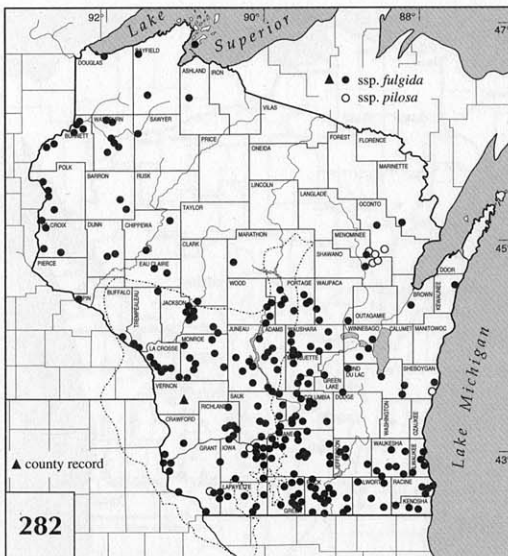
Most genera (including all ours) are annual or perennial herbs with beautifully colored, radially symmetrical, 5-merous flowers with a calyx of united sepals and a corolla of united petals (contorted in bud) that are usually salverform (with slender tube and abruptly spreading lobes, as in *Phlox*) or saucer-, funnel- or bell-shaped (as in *Polemonium*), stamens inserted on the corolla tube alternating with its lobes, a superior ovary composed of 3 (2 to 4) carpels, and a capsular fruit containing several to many seeds. (Grant & Grant 1965, Smith & Levin 1967, Wilson 1960a)

Mostly a North American and Eurasian family, best developed in the western United States, but extending into South America. Besides Phlox and Jacob's-ladder, ornamentals grown in Wisconsin include the hummingbird-pollinated Standing-cypress (*Ipomopsis rubra*) and the neotropical, bat-pollinated Cup-and-saucer Vine (*Cobaea scandens*).

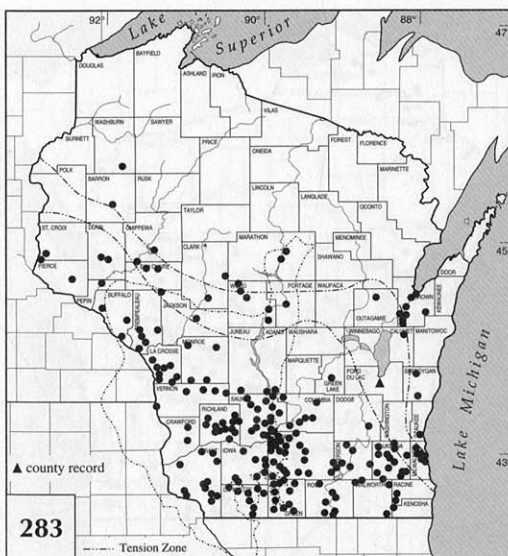


281. *Phlox glaberrima* L. ssp. *interior* Wherry. SMOOTH PHLOX (Endangered). A widespread species of wet woods and grasslands of the southern United States, polymorphic, with our plants belonging to "A subspecies of the interior low plateaus from Arkansas to [southwestern] Ohio...and the westernmost lowland derivative of the Appalachian *P. glaberrima*" (Smith & Levin 1967, pp. 250, 246); in Wisconsin only in Kenosha (Chiwaukee Prairie, Carol Beach) and Racine (east of Rochester) counties, in rich, dense, fen-like prairies, sedgy depressions and lowland savannas (**oak openings**) overlying the Silurian Niagara dolomite along Lake Michigan; in calcareous soils derived from Glacial Lake Chicago sands. (3) Flowering from late June through July.

This beautiful phlox (an excellent garden plant) is associated with other rarities such as Chestnut Sedge (*Fimbristylis puberula* (Michx.) Vahl), Nodding Wild Onion (**21**), Prairie White Fringed Orchid (**31**), Marsh Gay-feather (**175**), Ohio Goldenrod (**201**) and Riddell's Goldenrod (**203**).



282. *Phlox pilosa* L. DOWNY or PRAIRIE PHLOX. An enormously complex species (nine subspecies are currently recognized) widespread throughout the eastern United States; in Wisconsin represented by two subspecies: ssp. *pilosa* (glandular pubescence), the most widespread subspecies, reaching northwestward to southern and eastern Wisconsin, where it is rare and sporadic in dry woodlands (especially oak barrens), sand prairies, disturbed areas, etc., intergrading to some extent with ssp. *fulgida* (Wherry) Wherry (lustrous, non-glandular pubescence), restricted to the Prairie Peninsula from eastern Kansas and central Illinois to Manitoba and Wisconsin, where it is common south of the Tension Zone (except in some sand areas) in a wide variety of sunny habitats, from dry to **wet-mesic prairies**, prairie relics along railroads, limy "goat prairies," oak savannas and woodlands, and burned-over jack pine stands. (18) Flowering from mid May to late July, fruiting from late June to late July.



283. *Polemonium reptans* L. var. *reptans*. JACOB'S-LADDER. Widespread in the eastern United States deciduous forest (mostly west of the Appalachians and lacking from the Coastal Plain); common in Wisconsin south of the floristic Tension Zone in **southern dry-mesic forests**, rich, often moist hardwoods of sugar maple, basswood, elm and oak, northward in white pine-red maple forests, mesic oak savannas, frequently in low meadows, marshes and even sphagnum bogs, on wooded bluffs of sandstone (rarely limestone), uncommonly in deep-soil, wet-mesic and wet prairies (where according to Bray 1957, derived from survivors of fire-devastated climax maple forests, e.g., Juda Prairie, Green County), now sometimes along roadsides and railroad rights-of-way. (10) Flowering from early May to mid June, fruiting from late May to August.

Var. *villosum* E. Braun is local in southern Ohio and Kentucky.



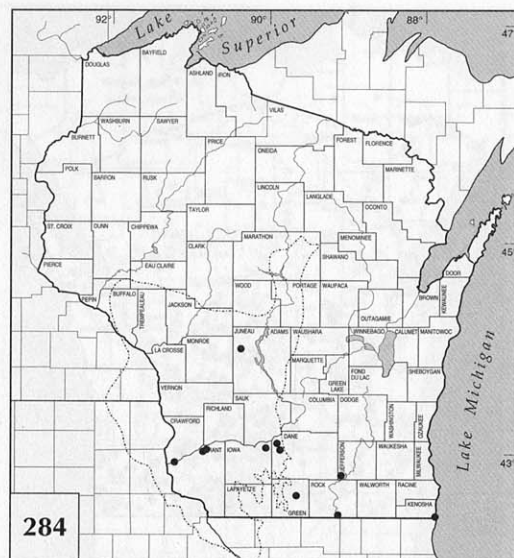
POLYGALACEAE—the Milkwort Family

A cosmopolitan family of shrubs, vines and trees in the tropics, but ours are all small herbs belonging to *Polygala* (500 species worldwide), with alternate or whorled, simple leaves and open to dense racemes. The flowers appear as if papilionaceous, superficially resembling, by convergent evolution, those of the Pea Family (or in one case, even a bog orchid), with 5 unequal sepals (the inner pair, the “wings,” often petaloid), 3 petals (the lower one, the “keel,” boat-shaped), 6 or 8 stamens with all the filaments fused, and usually arillate seeds that are ant dispersed. (Fassett 1933, Gillett 1968, Miller 1971)

Economically the family is of little importance. Representatives of *Monnina*, *Polygala* and *Securidacea* are cultivated for ornament; a few species of *Polygala* yield dyes, and one a fiber.

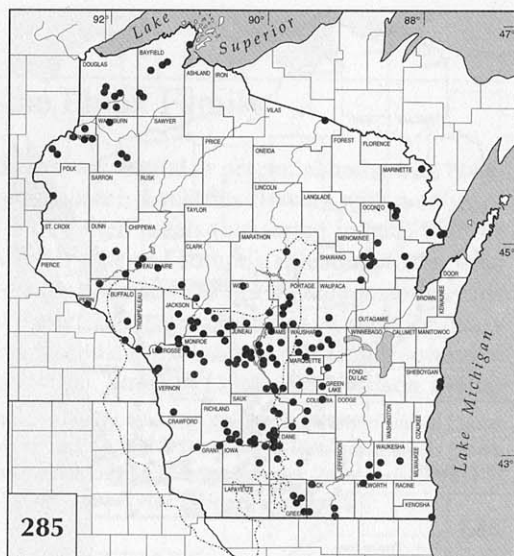
284. *Polygala incarnata* L. PINK MILKWORT (Endangered). Prairies, savannas and woodlands of eastern North America, from Florida and Texas, north to New York, southern Ontario, southern Wisconsin and Iowa; now exceedingly rare in prairie habitats in Wisconsin, locally distributed in the southern two tiers of counties and near extirpation, still surviving in three high-quality dry-mesic prairies: Chiwaukee Prairie State Natural Area, Kenosha County; Watterstown Railroad Prairie between Boscobel and Blue River, Grant County; and Vale Prairie between Monticello and Albany, Green County (2 plants in 1992, on shallow silt loam overlying dolomite). Flowering from early July to mid September.

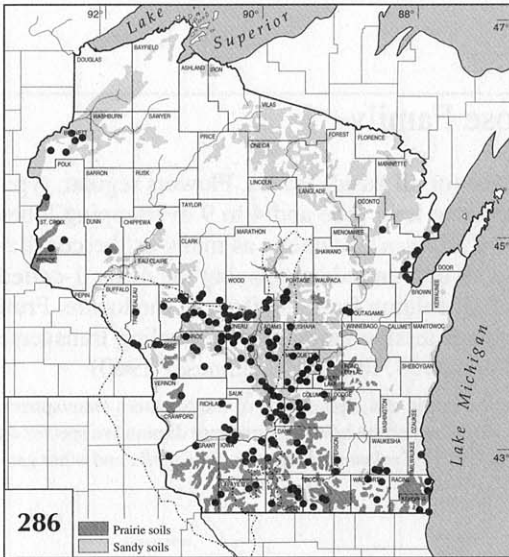
This is a very peculiar, unbranched or little-branched, glaucous annual with hardly any root system, suggesting that it might be a hemiparasite.



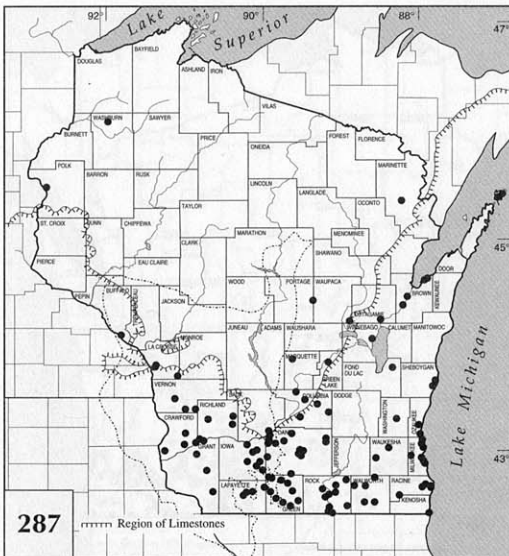
285. *Polygala polygama* Walter. PURPLE MILKWORT. Eastern and central North America, from Nova Scotia across New England to eastern Minnesota, south to the Virginia mountains, Kentucky and Iowa, and along the Coastal Plain from Virginia to Texas; in Wisconsin frequent in dry, sandy, gravelly or rocky prairies, sand barrens and sand blows, in open woods (oaks, jack or white pine, red cedar), pastured slopes, fields and roadsides; sometimes in moist sands near lakes and ponds, rarely on sandstone ledges or granite outcrops (i.e., Redrock Bluffs, Marinette County). (8) Flowering (petaliferous above-ground flowers) from early June to early August, fruiting from late August to early October.

This plant produces an abundance of white or pale green cleistogamous (self-fertilized) flowers and small plump capsules in prostrate racemes at the base of the stem, these usually buried, but occasionally just above the soil surface. Our plants are generally considered to belong to the northern var. *obtusata* Chodat, lumped by some authors with the typical variety.



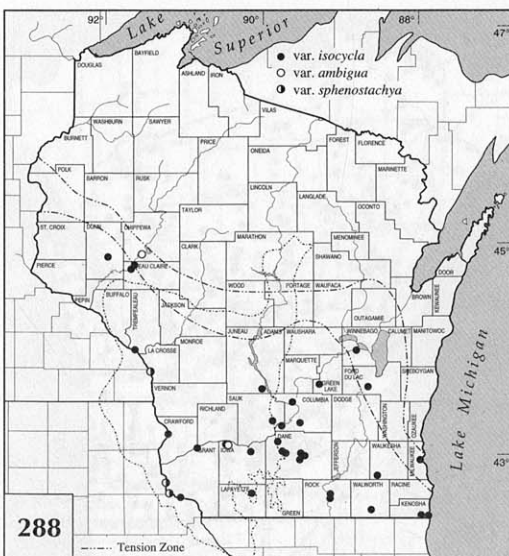


- 286. *Polygala sanguinea* L. FIELD MILKWORT.** Open habitats on dry to moist, acidic soils, from Nova Scotia to Minnesota (rare in the Black Hills) and the southeastern Great Plains, south to South Carolina and Texas; equally frequent in Wisconsin in wet, mesic or dry, sandy or rocky prairies, **cedar glades**, open woods of oak, pine or aspen, outcrops (sandstone cliffs) and ledges, granite mounds, quartzite glades, basalt bluffs) and sandy roadsides; less often in abandoned fields and various disturbed (ditches, trails, fire lanes, excavations in cranberry bogs) or relatively undisturbed (sedge meadow edges, shores, clearings) places. (6) Flowering from early July to early October, blooming continuously over a long season and producing hairy, arillate seeds almost the whole time (late July into October).



- 287. *Polygala senega* L. SENECA SNAKEROOT.** Eastern Canada to Alberta, south to Georgia and the Ozarks of Arkansas and Oklahoma; locally frequent throughout the southern half of Wisconsin in a diversity of dry to moist woods, thickets and prairies or prairie-like habitats, in **fens**, dry open woods (oak-hickory, red cedar, occasionally jack pine), mesic forest clearings and borders (oak-maple, maple-basswood, in the north balsam fir), damp brushy banks, dunes (Door County) and shores, prairies (dry mesic bluff openings, mesic railroad and cemetery remnants, rich mesic to moist flats along Lake Michigan) and other open ground. (8) Flowering from early May through June, fruiting from early June to late July.

Polygala senega is the source of a medicinal extract used by Native Americans to cure snake bites.



- 288. *Polygala verticillata* L. WHORLED MILKWORT.** Distinctive but inconspicuous species of the Great Plains, prairies, savannas and fields, the aggregate species from Florida, Texas and Utah, north to Massachusetts and southern Manitoba; in Wisconsin usually on dry or moist prairies (e.g., Avoca Prairie and Savanna, Iowa County, and Pleasant Prairie, Kenosha County), especially dry and calcareous "goat prairies," hill prairies, sand prairies and open grassy ground; sometimes in **cedar glades** such as at Gibraltar Rock, Columbia County or woods. (3) Flowering from early July to late September, fruiting from late August to late September.

A polymorphic species, three of the five defined entities occurring in Wisconsin. Two of these are rarely encountered: var. *ambigua* (Nutt.) A. W. Wood, which some authors treat as a separate species, and var. *sphenostachya* Pennell, which is often either ignored altogether or included under var. *isocycla* Fernald.



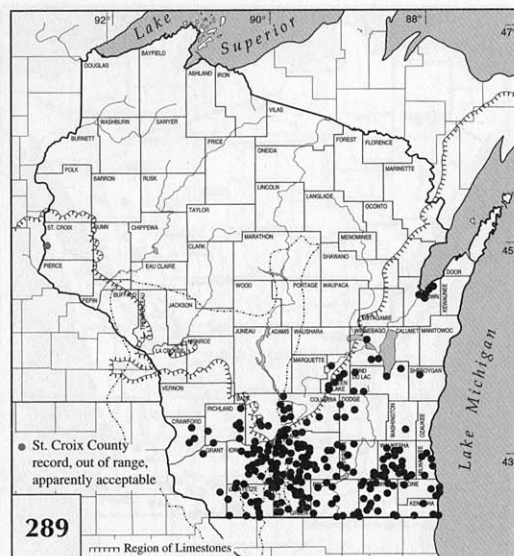
PRIMULACEAE—the Primrose Family

Herbs with mostly opposite or whorled (or all basal) leaves. Flowers regular, typically 5-merous, the corolla with a short to long tube and 4 to 9 overlapping lobes (lobes reflexed in *Dodecatheon* and *Cyclamen*). Stamens as many as the corolla lobes and opposite them. Pistil probably of 5 united carpels, but the ovary 1-celled with the ovules borne on a free-standing column from the floor of the locule. Fruit a capsule that opens by teeth or valves or less commonly, an encircling transverse line (circumscissile). (Channell & Wood 1959, Iltis & Shaughnessy 1960)

Widely distributed, but commonest in temperate, arctic and alpine parts of the Northern Hemisphere. One-fifth of the 1,000 species belong to *Primula*, of which we have only one rare diminutive species on cliffs and gravelly shores. Besides *Primula*, species of *Cyclamen*, *Anagallis*, *Soldanella* and other genera are cultivated for ornament.

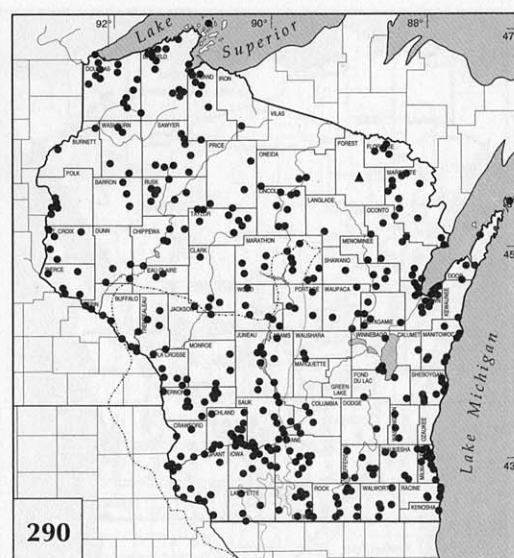
- 289. *Dodecatheon meadia* L. EASTERN SHOOTING-STAR.** A small North American montane genus with only this species widespread in the East, from Texas, the Ozarks and northern Georgia to Pennsylvania, southern Michigan and southern Minnesota (one station); in the southeastern third of Wisconsin widespread and once common from dry high lime to **wet-mesic prairies**, as well as in fens, open sunny deciduous woods and oak openings and moist to dry bluffs or sandstone cliffs; once frequently collected from prairie relics along railroads, but now disappearing locally due to changing community composition (competition and shading), cessation of maintenance practices (periodic fire or mowing) and spraying. (14) Flowering from early May through June, fruiting from late June through August.

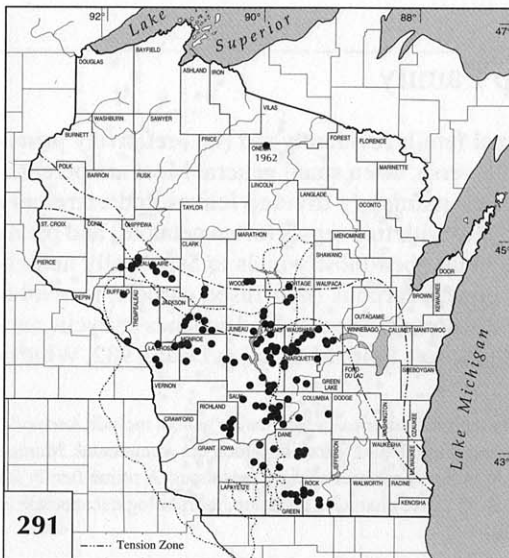
This captivating spring wildflower is enormously variable in its corolla colors, with deep magenta- to pure white-flowered plants intermixed within the same population, as one can see in late May at Chiwaukee Prairie, Kenosha County. It can spread abundantly, if seeded into a moderately dry, sunny, well-drained lawn, rock garden or wildflower meadow.



- 290. *Lysimachia ciliata* L. [*Steironema c.*]. FRINGED LOOSESTRIFE.** Nearly continent-wide in temperate North America, from the southern Appalachians (northern Alabama) and the Ozarks to New England and James Bay, also in the Rocky Mountains and Pacific Northwest; in Wisconsin very common throughout, in a great variety of moist or wet, open or shady habitats of both upland and lowland forests, especially in floodplain forests, along streams, rivers and lakes, in aspen-birch lowlands, tamarack bogs, marshes, damp meadows and low prairies. Flowering from late June to early August, fruiting from the end of July to October.

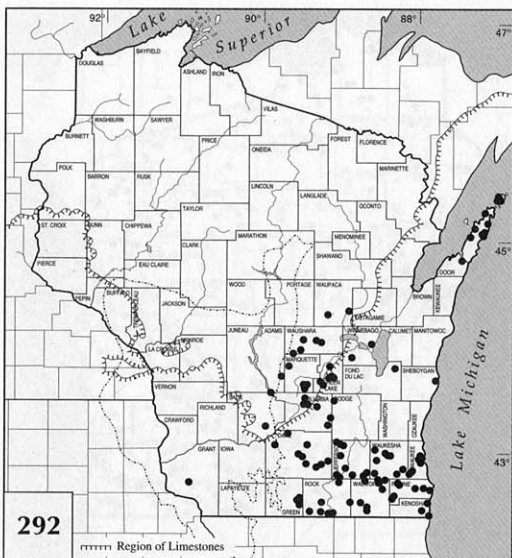
Lysimachia hybrida Michx. [*Steironema h.*], Lowland Yellow Loosestrife, a morphologically intermediate, putative stabilized hybrid between *L. ciliata* (290) and *L. lanceolata* (291) and roughly of the same wide geographical distribution as the former, is not uncommon in bottomlands of the Wisconsin and Mississippi River valleys. It is rarely found in low prairies (as at Thomas Wet Prairie, Grant County) and fens.



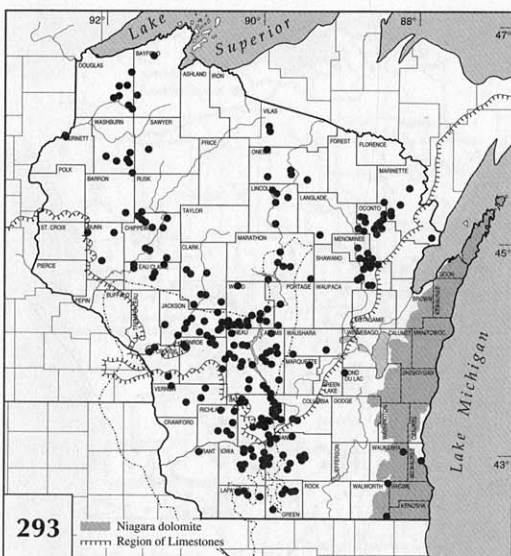


291. *Lysimachia lanceolata* Walter [*Steironema l.*]. LANCE-LEAVED LOOSESTRIFE. Widespread in sunny places, from northern Florida and northeast Texas, north to southern Pennsylvania, southern Michigan and Iowa; frequent in central and southwestern Wisconsin in dry, mesic or moist, more or less sandy prairies or prairie openings, in very sandy prairies on the edges of pine-oak scrub, on sandstone cliffs in white pine relics, sand terraces, open dunes, in open, generally sandy and mesic to moist woods, and along sandy roadsides. Flowering from the end of June to mid August, fruiting from the end of July to September.

A collection from "Wisconsin Gardens," Oneida County, is well beyond the otherwise well-known range and may represent an introduced population.



292. *Lysimachia quadriflora* Sims. NARROW-LEAVED or SMOOTH LOOSESTRIFE. An Ozarkian element, from Arkansas to Minnesota, Saskatchewan and southern Ontario, and rarely scattered south- and eastward to the Appalachians; widespread throughout the southeastern third of Wisconsin, reappearing in Door County (apparently lacking in the well-drained Driftless Area), in wet, sunny, grassy, non-acid habitats such as sedge bogs, marshes and low prairies, characteristic of marly sedge-grass meadows (fens and swales), occasionally around calcareous springs. Flowering from early July to the end of August, fruiting from late July to October.



293. *Lysimachia quadrifolia* L. WHORLED LOOSESTRIFE. Eastern deciduous forest region, from the Carolinas in the southernmost Appalachians (northern Alabama) to New England, southern Michigan and Illinois; throughout most of Wisconsin but nearly completely lacking on the limestones of the eastern third and southwestern corner, usually in wooded or semi-wooded, acidulous, mesic to moist, frequently sandy or rocky habitats (quartzite, granite, sandstone); in dry woods, open oak and pine woodlands and savannas (**pine barrens**), less frequently in sandy or moist prairies, on edges of bogs or beaver dams, in open, poorly drained, river-bottom forests and along sandy roadsides. (8) Flowering from early June to the end of July, fruiting from mid July to mid September.

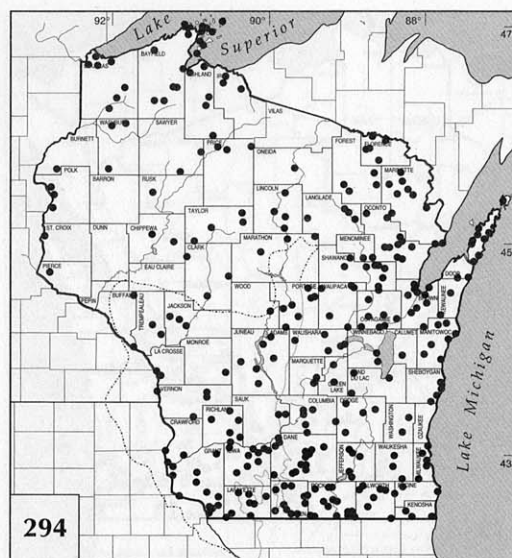


RANUNCULACEAE—the Buttercup Family

This is a moderately large, temperate to boreal family, evidently old (i.e., relatively primitive), and hence with many morphologically diverse, often small genera. Most are perennial herbs, a few are shrubs or vines, with often palmately divided leaves and extremely diverse, regular to bilaterally symmetrical flowers with free sepals (often petaloid) and petals (often modified, sometimes absent) variable in number, mostly in 3s to 5s; usually numerous, spirally arranged stamens; and 1 to many apocarpous (non-fused) carpels, an evolutionarily ancient condition) fruits, either spirally arranged one-seeded achenes or cyclic several-seeded follicles or berries. (Almon 1930, Fassett 1946, Mitchell & Dean 1982, Whittemore et al. 1997)

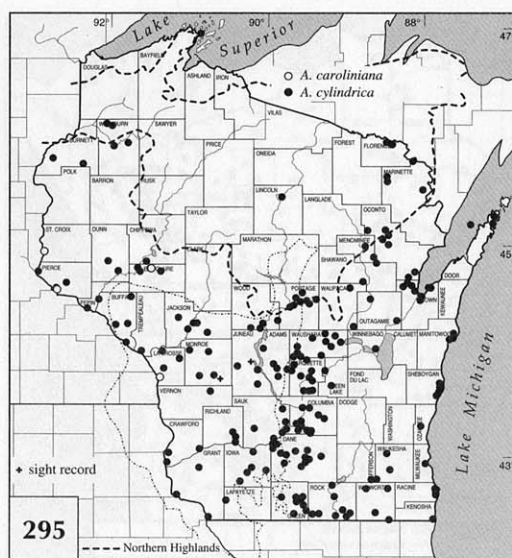
The family is especially diverse in eastern Asia and eastern North America (where native genera include *Anemone*, *Aquilegia*, *Caltha*, *Clematis*, *Delphinium*, *Ranunculus* and *Thalictrum*), many of which are ornamental. Monkshood (*Aconitum*), Larkspur (*Delphinium*) and Baneberry (*Actaea*) are exceedingly poisonous. A prime family for teaching the role of evolution in classification because of primitive character retention, morphological specialization and pollination ecology (insect/flower co-evolution).

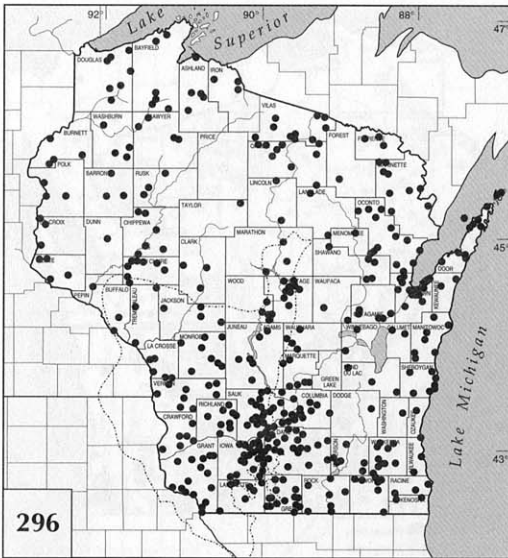
294. *Anemone canadensis* L. CANADA ANEMONE. Subarctic to cool-temperate North America, from Newfoundland to Hudson Bay and British Columbia, south to Maryland, Missouri, Kansas and in the Rockies to New Mexico; locally common throughout Wisconsin in open or partly shaded, usually mesic to moist ground, most frequently in **southern sedge meadows**, along borders and clearings in oak, sugar maple, basswood and silver maple woods, sometimes in mixed conifer-hardwood forests, locally on roadsides, railroads, grassy or brushy stream banks and stony shores, and in mesic to moist prairies, marshes, swales and shrub carrs; often thriving where native associates have been destroyed (e.g., floodplain pastures, drained swamps, ditches, banks, levees). (15) Flowering from late May through July (sporadically to early September), fruiting from late June through September.



295. *Anemone caroliniana* Walter. CAROLINA ANEMONE (Endangered). A distinctive species of the southern states and Great Plains, from Texas to Wisconsin, east to Indiana (extirpated); very rare in five western Wisconsin counties on dry prairies and barrens. Development, grazing and natural succession have caused its near extinction in Wisconsin (Tans & Read 1975).

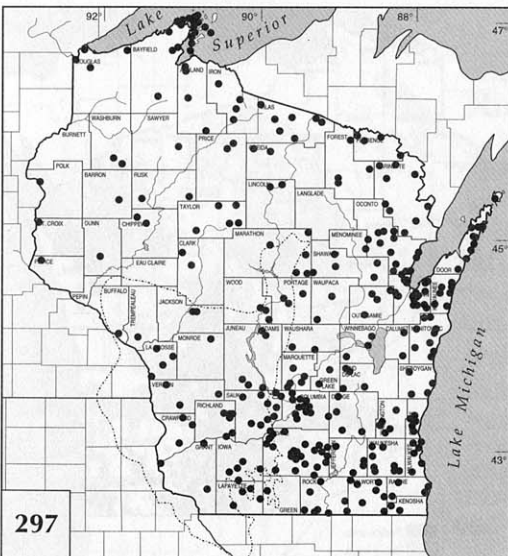
Anemone cylindrica A. Gray. THIMBLEWEED. A western element from the Rockies (British Columbia to New Mexico) and the Great Plains (Alberta to northeast Kansas) east to northern Indiana and southern Ontario, rarely beyond; in Wisconsin in dry to mesic prairies, **cedar glades**, sandy barrens with scrub oaks and/or jack pine, oak openings, and dry or occasionally mesic woods, especially along borders and clearings, also in abandoned fields, on sand plains, limestone flats, bluffs, outcrops, banks, dunes, fields, roadsides and railroads; lacking from the Northern Highlands. (16) Flowering from late May through July, fruiting from early July to early November.



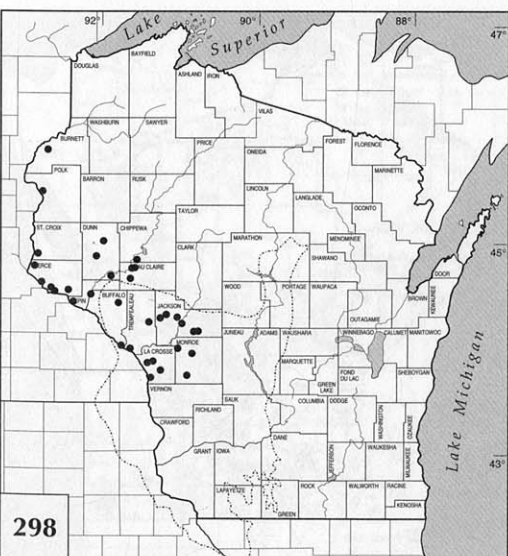


296. *Aquilegia canadensis* L. WILD COLUMBINE. Throughout much of the eastern North American deciduous forest, from southern Quebec and southeastern Saskatchewan to northern Florida and western Oklahoma (Texas); throughout Wisconsin in dry to mesic or even low woods, especially along borders or clearings of oak-hickory, oak-maple and maple-basswood forests, black oak savannas, **cedar glades**, pine woods and mixed conifer hardwood forests, also on a variety of more or less wooded to often open rocky hillsides, bluffs, calcareous cliffs, outcrops, ledges and talus, and frequently on banks, beach ridges, gravelly shores, roadsides and quarries. (19) Flowering from May through July, fruiting from mid May to early September.

This familiar flower is one of our few native plants pollinated by hummingbirds. It has the same showy, curiously shaped flowers as all columbines: downward-facing, with all petals prolonged backward into a tubular spur.



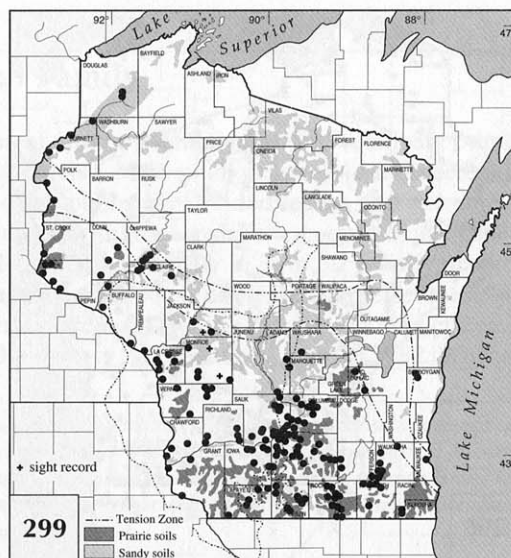
297. *Caltha palustris* L. MARSH-MARIGOLD, COWSLIP. A circumboreal, holarctic element, in Eurasia, and from Alaska to Newfoundland, south to Missouri, Virginia and, very rarely, the southern Appalachians; common throughout Wisconsin in open or partly shaded, wet, often cold habitats such as marshy spots in low prairies, sedge meadows and **fens**, or more often borders of sloughs and streams, springy places, including seepage slopes, swampy woods and thickets (deciduous and/or coniferous, including tamarack bogs), pools and wet depressions in woods of all kinds, and drainage ditches. (13) Flowering from April to mid June, fruiting from late May to early August.



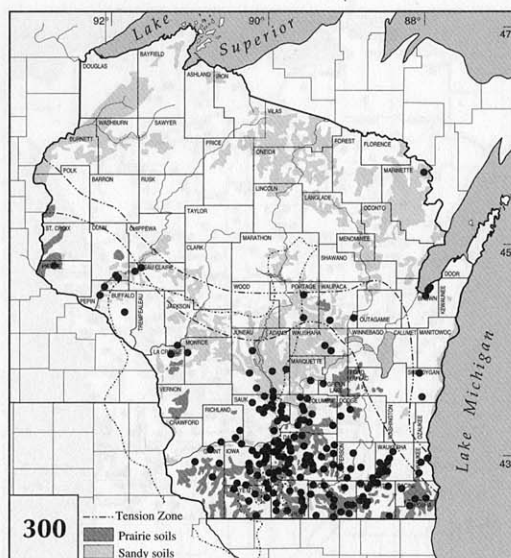
298. *Delphinium carolinianum* Walter ssp. *virescens* (Nutt.) R. E. Brooks [*D. virescens*, *D. carolinianum* ssp. *penardii*]. PLAINS LARKSPUR. North American prairies and plains, from southern Texas and eastern Colorado to southern Manitoba, eastward to Missouri and western Wisconsin; here rare to locally common in ecologically open, **dry-mesic prairies** and prairie-like habitats on limestone (dolomite) bluffs, dry sand prairies, cedar glades and black oak-jack pine barrens, infrequently spreading to lakeshores, along sandy or gravelly roadsides and rarely to abandoned sandy fields. (1) Flowering from June to mid July, fruiting from late June through July.

299. *Pulsatilla patens* (L.) Mill. ssp. *multifida* (Pritz.) Zämelis [*Anemone patens* L. var. *multifida* Pritz.; *A. p.* var. *wolfgangiana*]. PASQUE-FLOWER. A member of the widespread Holarctic subgenus (or genus) *Pulsatilla*, with many species in Siberia, in America from Alaska and the Yukon to New Mexico, and from Nebraska to northern Illinois; in Wisconsin locally abundant on sandy, gravelly or rocky hillsides, sandy or gravelly glacial outwash, shallow-soil prairies on steep bluffs or undulating agricultural land with limestone outcrops, **dry prairies**, including xeric, very sandy *Bouteloua-Schizachyrium* prairies, cliffs and outcrops (sandstone and limestone, sometimes becoming shaded out by red cedar and/or white birch), open scrub oak-jack pine barrens, rarely in mesic prairies with *Gentiana*, *Liatris* and *Valeriana*. (10) Flowering from late March through May, fruiting from mid May to early June.

A familiar plant to many people as the earliest harbinger of spring, carpeting the prairies and barrens with lovely, soft-purple flowers. In fruit, similar to Prairie-smoke (308).

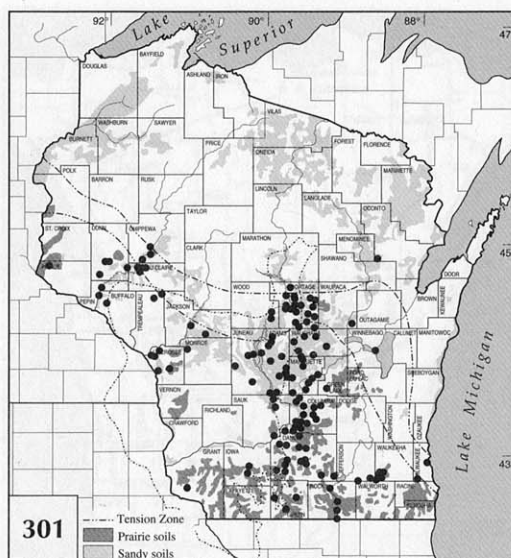


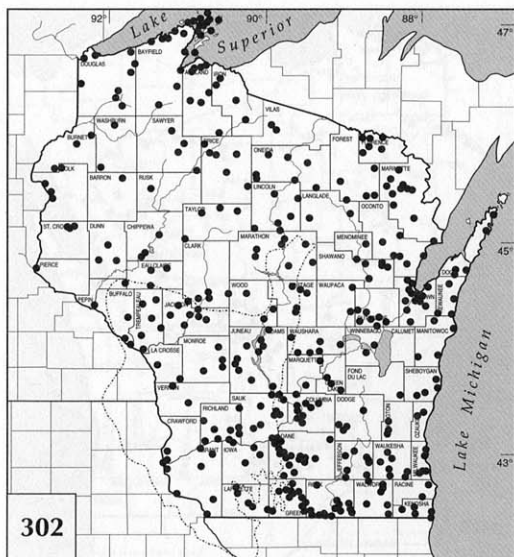
300. *Ranunculus fascicularis* Muhl. ex J. M. Bigelow. EARLY BUTTERCUP. Prairies, ledges and dry open woods of eastern North America from Massachusetts to Minnesota, south to Georgia, Mississippi and Texas; in Wisconsin relatively common south of or within the Tension Zone in open oak, oak-hickory or pine woods, **oak openings**, cedar glades and pine relics; rare to abundant on dry to mesic, sandy or gravelly prairies, and on ledges, cliffs and bluffs of sandstone, limestone, quartzite or granite, sometimes on roadsides and other dry grassy sites. (8) Flowering from (mid March) April through May, fruiting from mid May to early June.



301. *Ranunculus rhomboideus* Goldie. PRAIRIE BUTTERCUP, PRAIRIE CROWFOOT. A northern Great Plains element in mesic to dry grasslands, open woods and rock outcrops, from Nebraska, northern Illinois and southern Ontario (in Quebec, New York, etc., extirpated) northwest through Manitoba to Alberta and southern Mackenzie; in central and southern Wisconsin frequent in dry open oak or pine woods, sandy, gravelly or rocky prairies (as on Muralt Bluff, a limestone-capped sandstone ridge in Green County, or Pardeeville Railroad Prairie in Columbia County), **exposed cliffs**, oak openings, cedar glades, and dry, open, grassy fields, hillsides and roadsides. (4) Flowering from late March to early (late) June, fruiting from May to early July.

Formerly common or locally abundant, although only half as frequent as *Ranunculus fascicularis* (300), with which it sometimes grows. Prairie Buttercup has an affinity for north-facing slopes when in open prairie habitats, and may have been more characteristic of savannas than prairies.





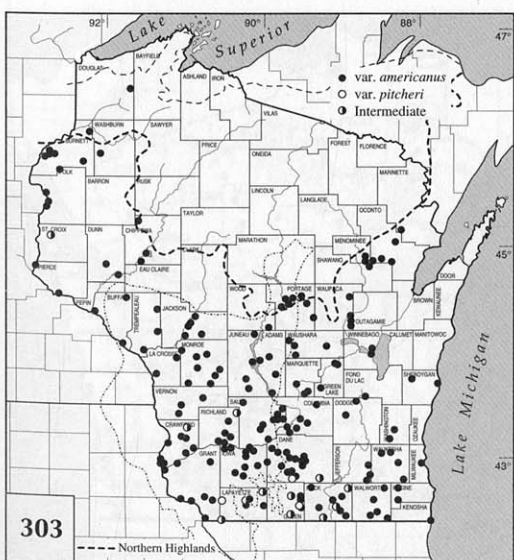
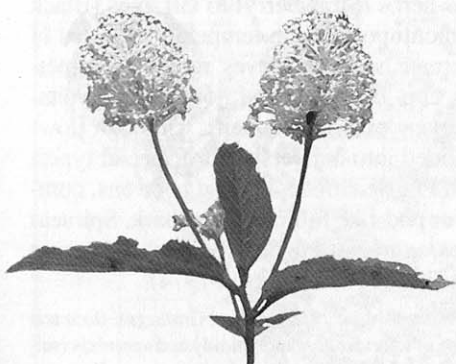
302. *Thalictrum dasycarpum* Fisch. & Avé-Lall. [*T. d.* var. *hypoglau-cum*]. PURPLE or TALL MEADOW-RUE. A widespread, western element of the Rocky Mountains and central North America, from Arizona to Alberta and Louisiana to James Bay, east to Ohio; in Wisconsin very common in moist to wet marshes (*Typha-Carex-Iris-Sparganium*), sedge meadows, wet to mesic prairies, **fens**, thickets and openings on shores and along streams, swales, sloughs and ditches, mesic forest edges, low deciduous or coniferous woods and tamarack bogs. (19) Flowering from early June to mid July, fruiting from July to mid September.

Thalictrum revolutum DC., Wax-leaf Meadow-rue (Special Concern), a southeastern North American element, from the Gulf States to New England and northeastern Minnesota (Rocky Mountains), similar to the above, except for fetid glandular leaves, is rare in deciduous forests and mesic prairies in eastern and northern Wisconsin.

RHAMNACEAE—the Buckthorn Family

Mostly shrubs, trees or woody vines, sometimes spiny, with simple, unlobed leaves. Flowers small, often fragrant, 4- or 5-merous and conspicuously perigynous, that is, having the perianth and stamens fused into or borne upon a floral cup (hypanthium), which in this case may be either free from or attached to the base of the ovary. Stamens opposite to and often enfolded by the hooded to concave petals. Fruit a few-seeded drupe or sometimes a capsule or samara (indehiscent and winged as in maple and ash). (Brizicky 1964b, Pohl 1941)

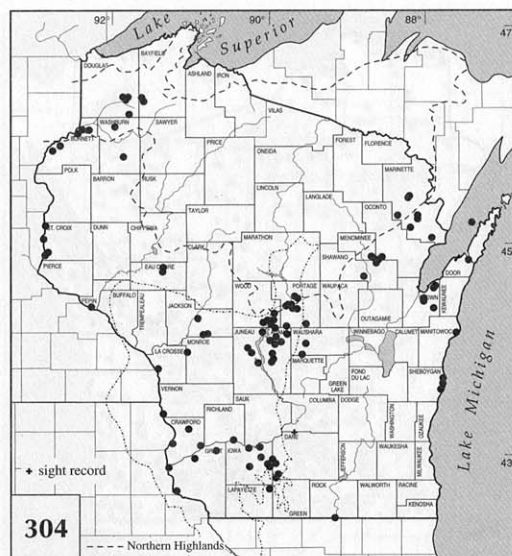
Almost cosmopolitan, commoner in warm regions. *Rhamnus*, the largest genus (100 species), is represented in Wisconsin by both native and introduced species, two of which are notorious invaders of native ecosystems. The alternate-leaved European Alder Buckthorn, *R. frangula*, is rampant in fens and like the more thoroughly naturalized, mostly opposite-leaved, Common Buckthorn, *R. cathartica*, it poses a long-term serious threat to the native plants in natural habitats.



303. *Ceanothus americanus* L. NEW JERSEY TEA. A polymorphic species of eastern North America, from Florida to Texas, north to Maine and southern Quebec, west to Kansas, Iowa and southern Manitoba; in Wisconsin frequent (but lacking from the Northern Highlands), in dry to **mesic prairies**, dry woodlands (oak, oak-pine and oak-aspen woods, oak openings and barrens, borders of rich deciduous woods), brushy pastures, sandy, gravelly or rocky slopes and banks, sandstone or limestone bluffs and outcrops, sometimes along railroads and roadsides, rarely on sandy lake shores; often in prairie-like openings on slopes and crests and transition zones between prairies and woodlands. (12) Flowering from late June through August, fruiting from late July to mid October.

Divisible into three weak varieties, two of which occur in Wisconsin: the typical variety is frequent over much of the state; var. *pitcheri* Torr. & A. Gray is local in a few southern counties. During colonial times the dried leaves were used as a tea substitute.

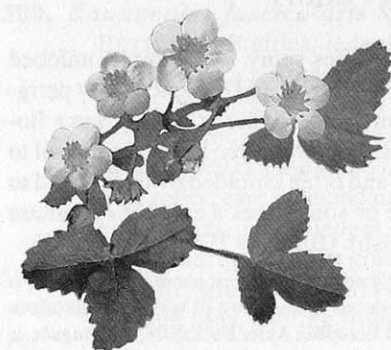
304. *Ceanothus herbaceus* Raf. [*C. ovatus*; *C. pubescens*] INLAND NEW JERSEY TEA, PRAIRIE RED-ROOT. A southern and central Great Plains element of sandy or rocky prairies, plains and open woods from northern Texas and Arkansas to Manitoba, and locally eastward in glaciated sands to northern Indiana, northern Michigan and scattered beyond to Vermont; in Wisconsin less common than *C. americanus* (303), but like it shunning the acidic Northern Highlands, scattered or locally frequent in dry upland woods and **pine barrens** (mostly with jack pine or Hill's oak or both, seldom in more mesic woods), in sandy or high lime prairies, commonly on sandy glacial outwash plains, dry, sandy hillsides, limestone or sandstone bluffs and outcrops, banks, fields and roadsides, also dunes along Lake Michigan; generally in sun or semishade with such barrens, prairie and glade species as June Grass, Prairie Phlox, Wild Lupine, Hoary Puccoon, Tall Cinquefoil and Bearberry. (6) Flowering from the end of May to early July, fruiting throughout July (late September).



ROSACEAE—the Rose Family

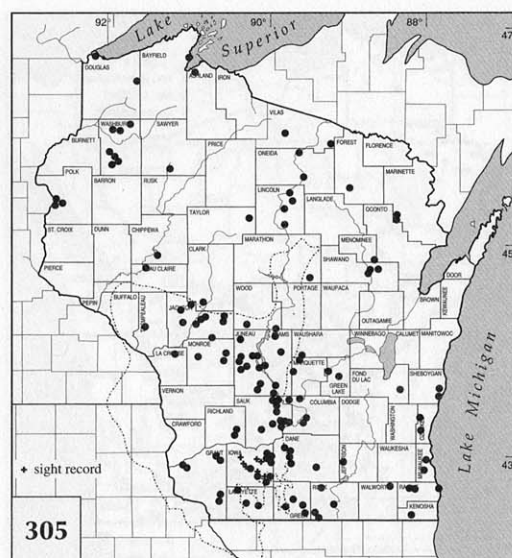
This large, heterogeneous family, from low herbs (Strawberry) to tall trees (Black Cherry), is of great ecological and economic importance in temperate climates of the world. Common characters include alternate, stipulate leaves, radially symmetrical flowers with 5 distinct petals, saucer-, cup- or urn-shaped floral cups (hypanthia) either free or fused to the ovary, and many exserted stamens. Although flowers are fairly uniform, fruit evolution exploded into a diversity of dispersal types, from 1-seeded achenes (strongly plumed in Prairie-smoke, hooked in Avens, completely enclosed by the floral cup in roses) or pod-like follicles (Ninebark, Spiraea) to fleshy drupes (peaches, plums and cherries, aggregated in blackberries) and pomes (apples, pears, mountain-ashes). (Mason & Iltis 1959, Robertson 1974)

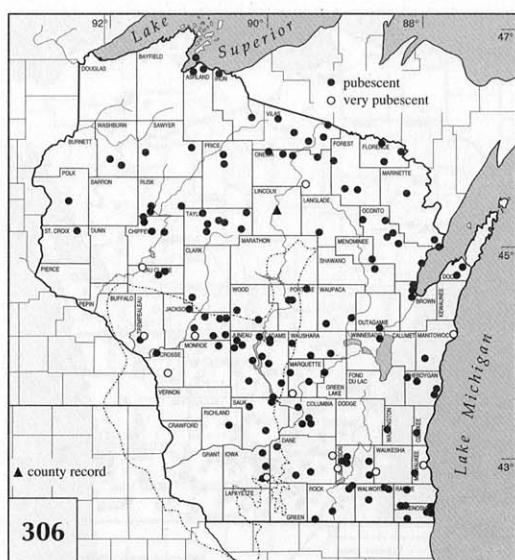
Certain species clusters in several genera common in Wisconsin, i.e., *Amelanchier*, *Crataegus*, *Rosa* and *Rubus*, are notoriously difficult taxonomically because of hybridization, polyploidy and apomixis (setting seed without fertilization).



305. *Aronia melanocarpa* (Michx.) Elliott [*Pyrus m.*] BLACK CHOKEBERRY, smooth form. A widespread shrub of eastern North America, from the Appalachians of northern Alabama and northern Georgia to Newfoundland and Labrador, westward to northeast Iowa and eastern Minnesota (and southeastern Missouri—one station); throughout Wisconsin, often forming dense thickets in acid, usually damp soils of tamarack bogs, marshes, swampy thickets, boggy swales and shores of lakes, occasionally scattered in oak-pine woods, **dry prairies**, or on granite outcrops, limestone and sandstone ridges, bluffs and cliffs. (12) Flowering from May to June, fruiting into September.

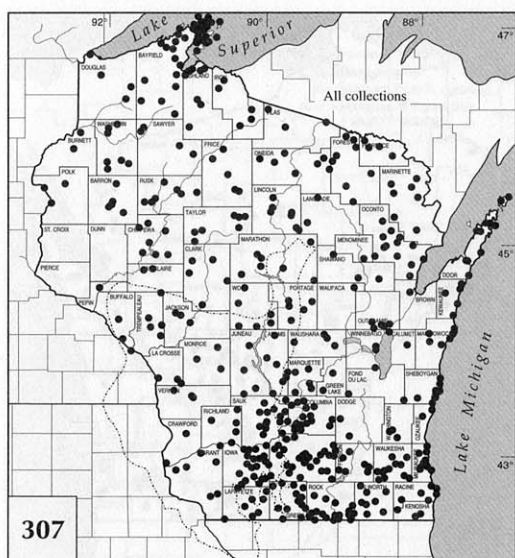
See comments under 306.





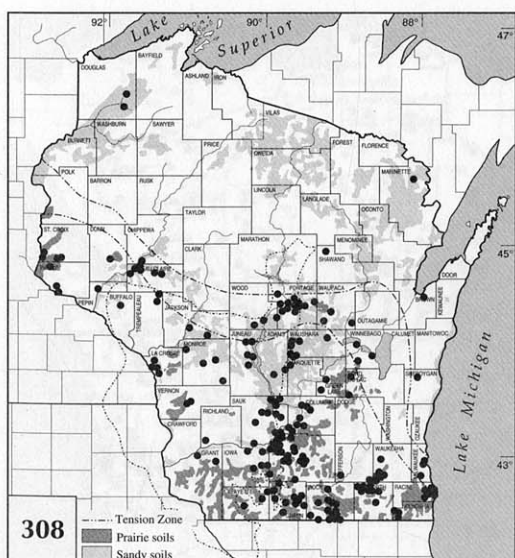
- 306. *Aronia* × *prunifolia*** (Marshall) Rehder [*A. arbutifolia* (L.) Elliott × *A. melanocarpa*; *A. a. var. atropurpurea* (Britton) F. Seym.]. FLORIDA or PURPLE CHOKEBERRY, hairy forms. Throughout Wisconsin in acid, usually damp soils of tamarack bogs, marshes, woods, granite outcrops, limestone and sandstone ridges, **dry prairies**, bluffs, cliffs and shores of lakes. (Included in *A. melanocarpa*, 12) Flowering from May to June.

Our purple chokeberries are pubescent forms of *Aronia melanocarpa*, agamospermous (apomictic) and with much the same geography and ecology, probably derived from ancient (and, where sympatric, recent) hybridizations with the copiously pubescent *A. arbutifolia*, Red Chokeberry, of the southern and Atlantic states to Newfoundland (see Hardin 1973, Uttal 1984).



- 307. *Fragaria virginiana*** Duchesne [including ssp. *glauca* and ssp. *grayana* (var. *illinoensis*)]. WILD or VIRGINIA STRAWBERRY. Newfoundland to Alberta, south to Georgia, Tennessee and Texas, and from Alaska to Colorado and California; nearly ubiquitous in Wisconsin in a great number of disturbed or undisturbed habitats, from dry sandy woodlands to moist forests and swamps (deciduous, coniferous or mixed), abundant in **northern dry forests**, along wooded riverbanks and borders and clearings of woods, marshes and bogs, common in old fields, roadsides and railroads, also in rocky openings and on shores; preferring open grassy places with little or no shade. (25) Flowering from late April to mid June with a second minor period in September, fruiting from late May through July.

One of our most common native species, quite variable, with no agreement as to how many variants to recognize or what to call them. We are following most recent authors in not granting any of them recognition.

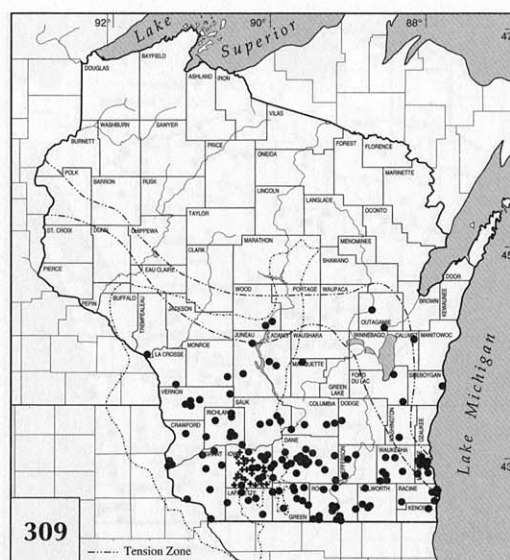


- 308. *Geum triflorum*** Pursh [*Sieversia t.*]. PRAIRIE-SMOKE. Dry, calcareous or sandy prairies and open woodlands of the northern Great Plains, ours (var. *triflorum*—other varieties in the western mountains) from Alberta to Nebraska, eastward to Minnesota, northern Illinois and Michigan (a New York station extirpated); common over southern Wisconsin on **dry prairies**, hillsides, jack pine barrens, sandy prairie relicts, open sandy ridges and bluffs of exposed sandstone, on poor dry soil of open fields, hillsides, pastures and roadsides; occasionally in moist meadows and marshes; tolerant of light to moderate cattle grazing. (8) Flowering from April to June.

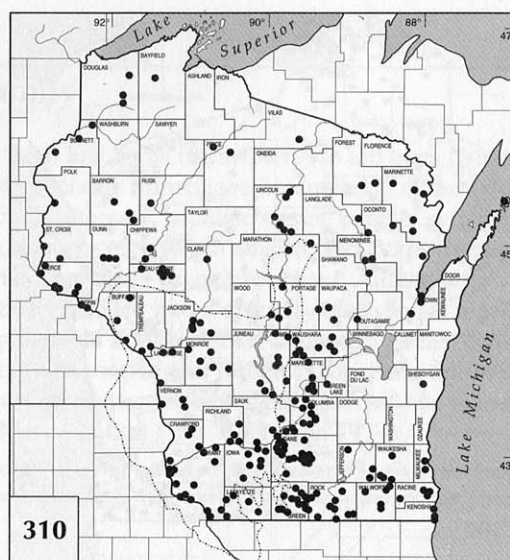
A member of the arctic-alpine-boreal subgenus *Sieversia*. The fruiting "heads," with their elongate, feathery styles, resemble (by convergent evolution) those of the Pasqueflower (299), a common associate with a similar distributional range and history. *Geum aleppicum* Jacq., Yellow Avena, and *G. laciniatum* Murray, Rough Avena, are not uncommon in moist prairies, sedge meadows and fens in much of Wisconsin.

- 309. *Malus ioensis* (A. W. Wood) Britton [*Pyrus i.*]. IOWA CRAB.** A prairie-forest transition element mostly of the Prairie Peninsula, from the eastern Great Plains (northern Texas to South Dakota) through Missouri and Illinois to northern Indiana; in Wisconsin within or south of the Tension Zone in open woods, thickets, fencerows, pastures, oak openings, hillsides and bluffs, prairies, and dryish borders of marshes and swamps. Flowering from mid May to early June, fruiting into September.

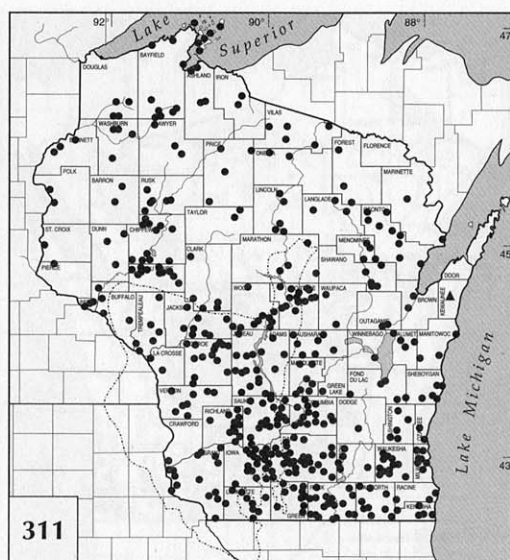
This species, together with the southern *Malus angustifolia* (Aiton) Michx., Southern Crab, and the eastern *M. coronaria* (L.) Mill., Sweet Crab, is a member of an essentially allopatric, eastern deciduous forest phylad. Strikingly beautiful with their white to light pink flowers, these small trees deserve horticultural attention.

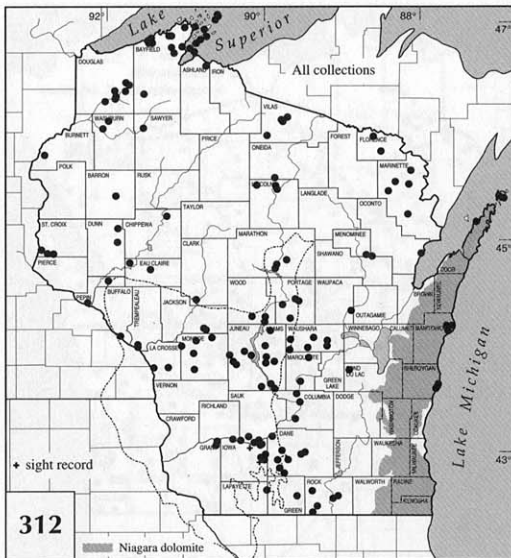


- 310. *Potentilla arguta* Pursh. TALL POTENTILLA, PRAIRIE CINQUEFOIL.** Part of a western mountain complex, from Alaska to Arizona, east in the Great Plains through the Prairie Peninsula to New York and Quebec's Gaspé; in Wisconsin common on dry, open ground, in low, mesic and sand prairies, especially common on high lime "goat prairies," **cedar glades** and pastures, often on bluffs of granite or limestone, open woods, and along roadsides and railroad rights-of-way, but rarely truly weedy. (14) Flowering from June to August, fruiting into October.



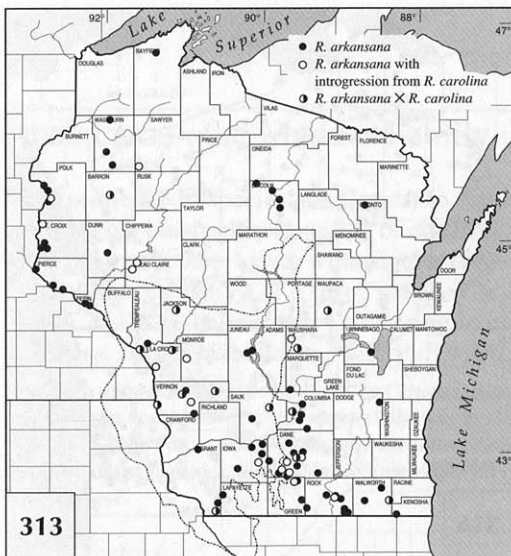
- 311. *Potentilla simplex* Michx. OLD-FIELD CINQUEFOIL.** Widespread from the eastern Great Plains (Manitoba to Texas) to the Atlantic Ocean; in Wisconsin very common throughout, especially in the southern half, in dry to moist prairies, oak openings, **southern dry forests** (pine, oak), also in moist woods (maple) and thickets, and often weedy in abandoned sandy fields, roadsides and railroad rights-of-way. (16) Flowering from mid May to mid July, fruiting from mid June to early August.





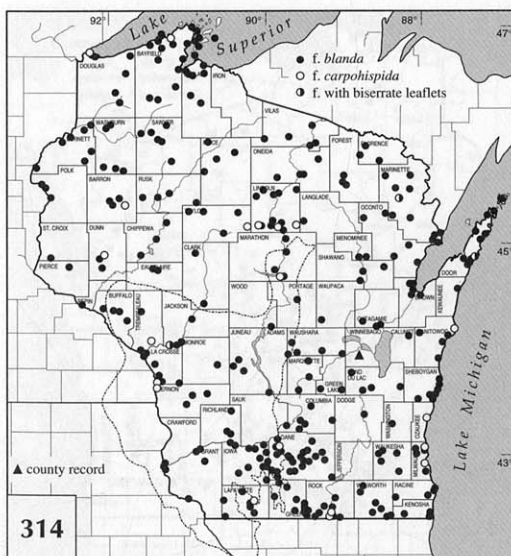
312. *Prunus pumila* L. SAND CHERRY. A complex species of East-West ecotypes centered on two unglaciated "survivia:" from Kansas to Saskatchewan, and sweeping eastward to the Great Lakes and beyond; and the Pennsylvanian Appalachians, ranging north to the St. Lawrence Basin and west to the Great Lakes; in Wisconsin locally common throughout (except in the east and southeast, where, save for Lake Michigan dunes, it shuns the Niagara Upland), in sandy, well-drained, open habitats: hillsides, open woods (jack pine, bur oak-Hill's oak), bluffs, sandstone cliffs and outcrops, sand prairies, dunes, beaches, rocky shores, outwash plains, sand blows and barrens. Flowering from mid May to early July, fruiting from late June to early September.

Wisconsin specimens exhibit thoroughly intergrading morphological variation from the short-leaved western *Prunus p.* var. *besseyi* (L. H. Bailey) Gleason to the long-leaved eastern vars. *pumila* and *cuneata* (Raf.) L. H. Bailey [var. *susquehanae* (hort. ex Willd.) H. Jaeger] (see Mason & Iltis 1959).



313. *Rosa arkansana* Porter [*R. suffulta*, *R. a.* var. *suffulta*]. PRAIRIE or SUNSHINE ROSE. Widespread on the Great Plains, from Alberta south to New Mexico, eastward to Illinois and beyond; in Wisconsin frequent, especially in the southern half and northwest quarter, on prairies, sandy fields, grassy banks and gravelly or rocky hillsides, rarely on borders of oak woods, spreading along roadsides and railroads; once forming large colonies in dry open ground on the Central Plain and sand terraces along the major rivers, still locally common in our few remaining wet-mesic to **mesic prairie** remnants, but most conspicuous along rights-of-way, where perhaps adventive as often as native. (26, as *Rosa* spp.) Flowering from mid June to mid September, fruiting from early July into winter.

Nearly all of our plants are var. *suffulta* (Greene) Cockerell (sometimes treated as a distinct species, *Rosa suffulta*). Hybridization and introgression between *R. arkansana* and *R. carolina*, both tetraploids, occur over a very broad area of the Middle West, including southwestern Wisconsin.

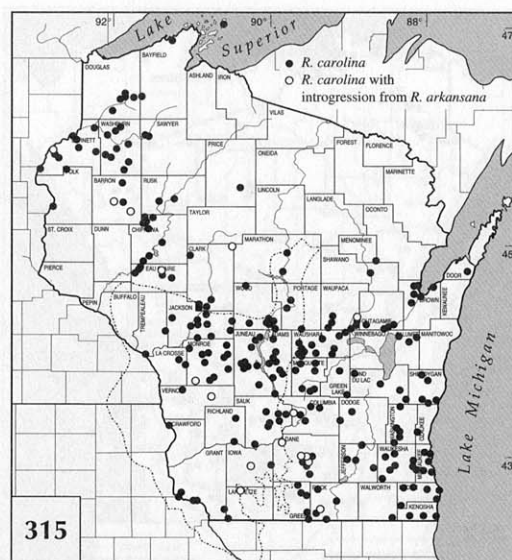


314. *Rosa blanda* Aiton [including *R. blanda* var. *glandulosa*, *R. blanda* var. *hispida*]. WILD ROSE. Highly polymorphic and widely distributed, from Manitoba to Kansas, east to Indiana, Pennsylvania and Quebec; in Wisconsin common throughout in a variety of open or disturbed habitats, most common on dry to moist, but especially **mesic prairies** and borders of woods and thickets (from southern mesic to moist, deciduous types to northern dry forests of jack pine-trembling aspen-Hill's oak or white pine-red oak-white birch), frequent in ecotones between shorelines, marshes or regenerating pastures and woods, also sandy lakeshores (including those of the Great Lakes), streambanks and dunes, as well as along fencerows, roadsides and railroads. (26, as *Rosa* spp.) Flowering from late May to August, fruiting from late June into winter (hips persisting on the plants until early the following summer).

Our native roses are notoriously difficult to separate into distinct species owing to polyploidy, rampant hybridization and the extraordinary variability of each species (see Lewis 1962).

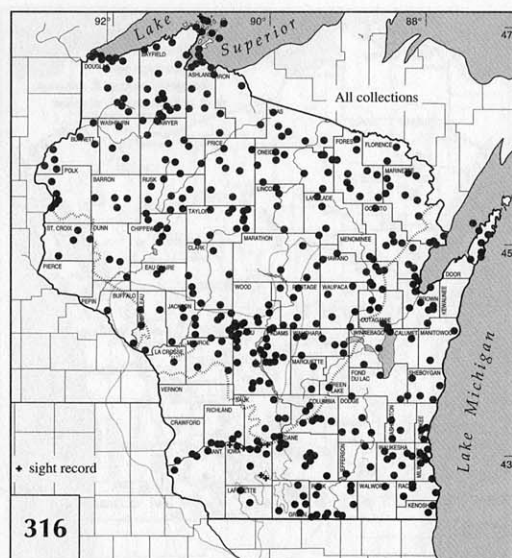
315. *Rosa carolina* L. PASTURE ROSE. Throughout the eastern deciduous forest region, from Florida to eastern Texas, north to Nova Scotia and Minnesota; throughout Wisconsin except the South Superior Uplands, common on dry, as well as rich, moist to **mesic prairies**, locally abundant on embankments and hill-sides, dry upland oak woods, oak openings, pine forests and barrens, rare in mesic woods; usually on sandy, gravelly or clayey soil, on granite, quartzite and sandstone, occasionally on lakeshores and streambanks, tending only slightly to spread into disturbed sandy areas such as old fields, roadsides, railroads and fencerows. (26, as *Rosa* spp.) Flowering from late May to late September, fruiting from late July through October (hips persist on the plant into the next summer).

This variable species freely hybridizes with *Rosa arkansana*, producing fertile hybrid swarms. Plants more closely related to *R. carolina* than to *R. arkansana* are mapped here as introgressants; those most nearly intermediate have been mapped above (313) as hybrids (= *R. × rudiuscula* Greene).

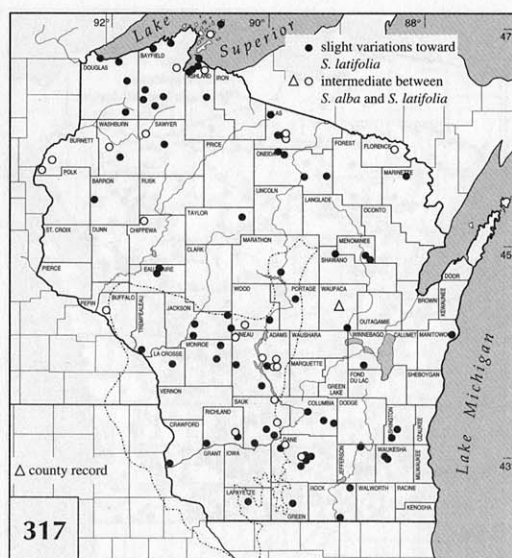


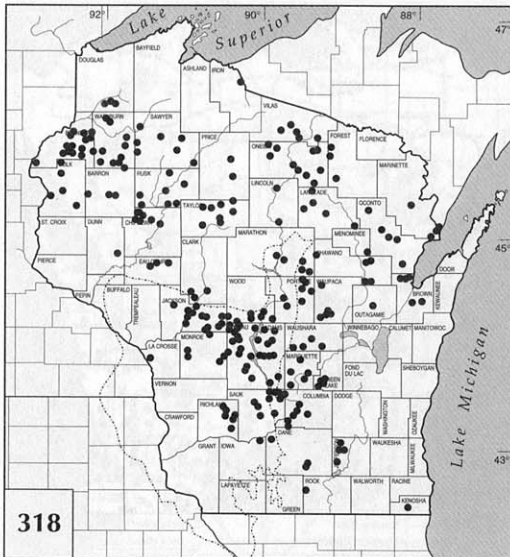
316. *Spiraea alba* Du Roi var. *alba*. MEADOWSWEET. Widespread, the mainly midwestern var. *alba* from southern Alberta to Missouri, east to Quebec, Indiana and in the mountains to North Carolina (the eastern var. *latifolia* (Aiton) Dippel occurs from Newfoundland to Michigan, south in the mountains to North Carolina); common throughout Wisconsin in wet to mesic, rarely dry habitats such as sandy and boggy shores, streambanks, sedge meadows, wet prairies, bogs, **alder thickets**, swamps and moist woods, as well as prairies, swales, ditches, sand barrens and along railroads. (16) Flowering from mid June through September.

Most recent authors treat the eastern *Spiraea latifolia* (Aiton) Borkh. as a variety of *S. alba*, although until the 1960s the former was generally considered to be a separate species. The extremes are distinctive, but the two overlap geographically and intergrade morphologically (317), "presumably the result of long hybridization between eastern and western (or southern) populations which are more distinct—or the whole complex can be looked upon as a cline" (Voss 1985, p. 376).



317. *Spiraea alba*-*S. latifolia* complex. Although pure var. *latifolia* (Aiton) Dippel does not occur in Wisconsin, typical var. *alba* (316) is widespread throughout, as well as many plants showing evidence of introgression with var. *latifolia*; namely, they have leaves that are broader and more obovate, and with deeper, more irregular serrations than typical *S. alba*; and/or have a less densely pubescent inflorescence; and/or have reddish- to purplish-brown twigs. The map shows those plants of the *S. alba*-*S. latifolia* complex varying only slightly toward *S. alba*, as well as those that are intermediate in several characters.





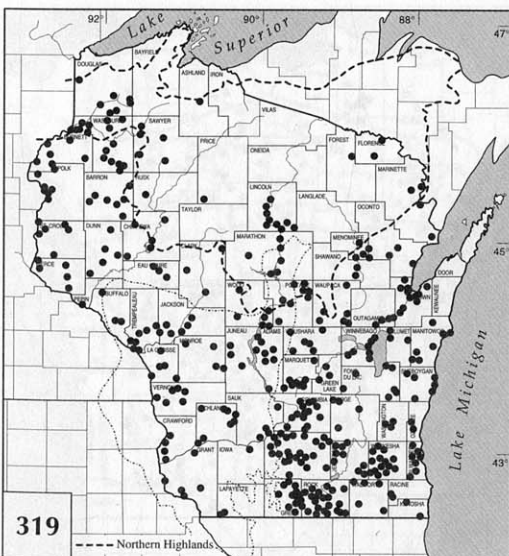
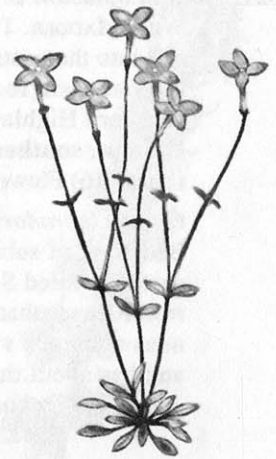
- 318. *Spiraea tomentosa* L. HARDHACK.** Widespread from Arkansas to the Carolinas, northward to Nova Scotia and east-central Minnesota; in Wisconsin frequent near lakes and ponds on sandy, gravelly and peaty shores, in sphagnum bogs, tamarack swamps, boggy meadows (especially sphagnum and **northern sedge meadows**), quaking sedge mats, edges of and/or weedy in cranberry marshes and coniferous swamps (tamarack, spruce, fir), dry to moist abandoned fields, dried lake beds and drainage ditches, also on weathered, water-seeping sandstone cliffs in Juneau and Richland counties; generally on moist, slightly acid substrates, often growing with *S. alba* (316, 317); not really a prairie species, but in central Wisconsin in moist habitats grading into prairies. (8) Flowering from early July to early September, fruiting from early September through October and beyond (follicles persisting into the following year).

This handsome flowering shrub is variable in flower color and fruit pubescence. Our plants have been assigned to var. *rosea* (Raf.) Fernald, a form poorly differentiated from the mostly Appalachian var. *tomentosa* and hardly worthy of recognition.

RUBIACEAE—the Madder Family

Most of the 6,500 species are tropical to subtropical trees or shrubs, the 18 natives of Wisconsin being but a paltry sampling of one of the largest flowering plant families. All are characterized by opposite leaves with stipules (or leaves apparently whorled), regular flowers with usually 4 or 5 sepals, 4 or 5 fused petals, 4 or 5 stamens on the corolla tube, and an inferior, mostly 2 (–5)-carpellate ovary producing in our genera a capsule or 1 or 2 nutlets, drupelets or berries. (Iltis 1957; Moore 1988; Puff 1976, 1977; Urban & Iltis 1958)

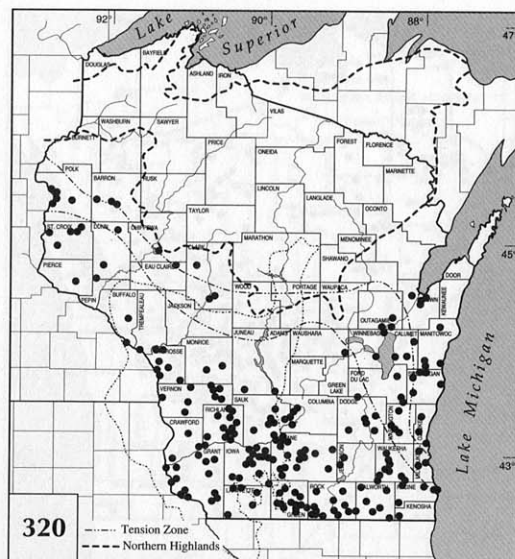
Besides such familiar herbs as Bedstraw or Cleavers, Bluets and Partridge-berry, we have the shrubby Buttonbush, *Cephalanthus occidentalis*, which ranges all the way to Mexico and the West Indies. Among several important products of this family are coffee (*Coffea*) and the anti-malarial drug quinine (*Cinchona*); species from such genera as *Gardenia* (Cape Jasmine), *Rubia* (Madder) and *Asperula* (Woodruff) are popular as ornamentals.



- 319. *Galium boreale* L. NORTHERN BEDSTRAW.** All across temperate Eurasia and North America, from West Virginia to Iowa and the northern Great Plains, the Rocky Mountains, Pacific Slope and Alaska; in Wisconsin ubiquitous (except in the Northern Highlands) in moist to mesic prairies, **fens**, open hardwood forests, both southern and northern, oak openings and a variety of other habitats, showing its best growth in those that are sunny. (20) Flowering from early June to mid July (peaking in late June), the characteristic twin fruits forming quickly, ripe from early July to late September.

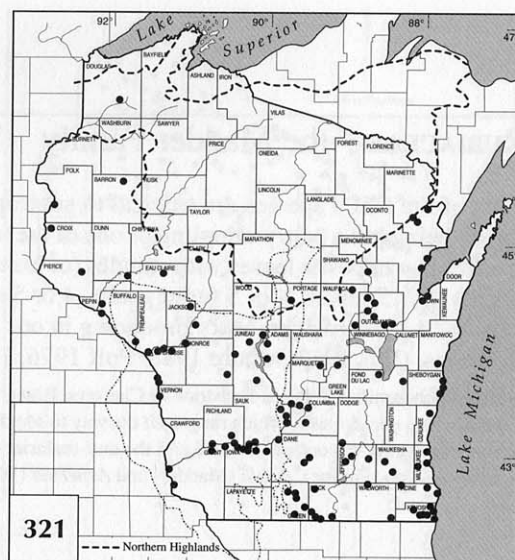
One of the most widespread species of this widespread genus, circumboreal and highly polymorphic, with the American plants sometimes segregated as ssp. *septentrionale* (Roem. & Schult.) Hara from the Eurasian ssp. *boreale* (Löve & Löve 1954, Urban & Iltis 1958).

320. *Galium concinnum* Torr. & A. Gray. SHINING BEDSTRAW. An Ozarkian element, mostly from eastern Kansas and Arkansas to southeastern Minnesota, east to Kentucky and Pennsylvania; in Wisconsin very common in, and characteristic of, dry oak and oak-hickory woods (**southern dry-mesic forests**) and thickets throughout most of the southern and western counties within and south of the Tension Zone; on soils derived from glacial drift and limestones (dolomites) and absent from the Northern Highlands and sands of the Central Plain. (12) Flowering from June to early August.

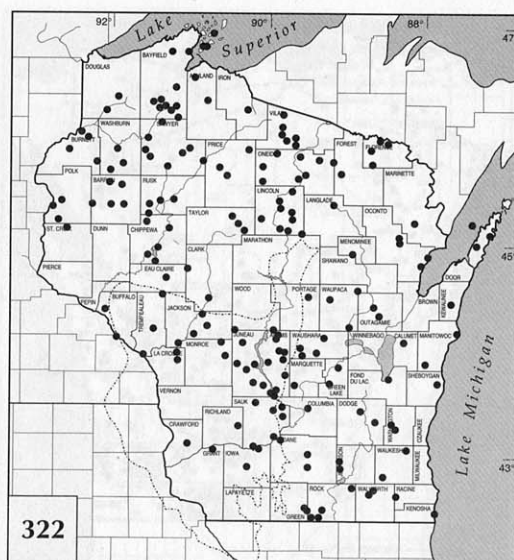


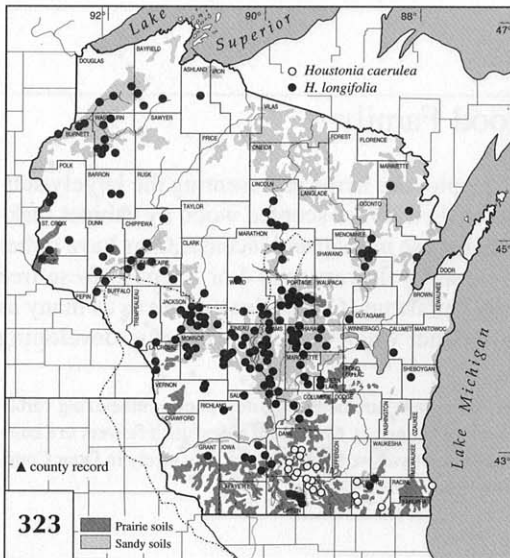
321. *Galium obtusum* Bigelow ssp. *obtusum* [*G. o.* var. *ramosum*]. WILD MADDER. Throughout the northeastern United States and into the central Great Plains from Texas to Minnesota; in Wisconsin locally frequent throughout (except in the Northern Highlands) in moist ground such as low woods, swamps, **southern sedge meadows**, low prairies and wet shores. (6) Flowering from late May to July.

Galium labradoricum (Wiegand) Wiegand, Labrador Marsh Bedstraw, of subarctic to boreal eastern Canada and northeastern United States, is a close relative with shorter, narrower leaves that are strongly deflexed. It occurs in sphagnum tamarack swamps and calcareous marshes and fens, and has about the same geographical distribution in Wisconsin as *G. obtusum* (Urban & Iltis 1958).



322. *Galium tinctorium* L. ssp. *tinctorium*. STIFF or SOUTHERN THREE-LOBED BEDSTRAW. From the mountains of Georgia and South Carolina to Newfoundland, west to Minnesota and Iowa (another subspecies, ssp. *floridanum* (Wiegand) Puff, occurs on the coastal plain of the southeastern states); in Wisconsin quite common throughout in marshes, swamps, sedge meadows, **wet prairies** and other damp places; preferring circumneutral or somewhat alkaline soils. (8) Flowering throughout June to early September.





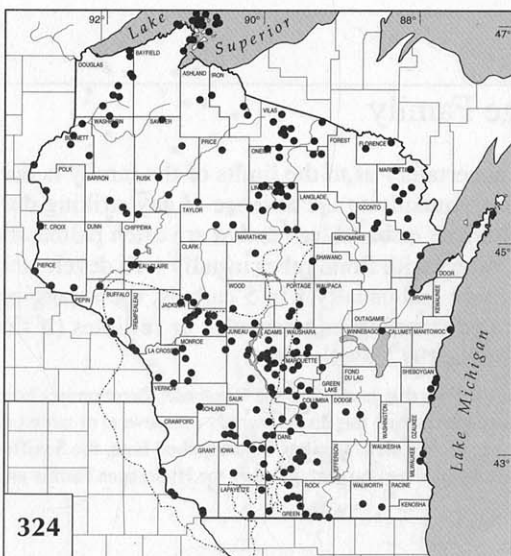
- 323. *Houstonia caerulea* L. [*Hedyotis* c.].** BLUETS, INNOCENCE, QUAKER LADIES (Special Concern). One of the widest-ranging and best-loved species of *Houstonia*, from the Gulf and Atlantic coastal states to Arkansas, Iowa, and northeast to the Maritimes (for map see Terrell 1996); in Wisconsin locally frequent in moist meadows, **wet prairies**, fields and open woods in five southeastern counties, northward to Dane County, here at its northern range limit. (1) Flowering from late April to early June.

***Houstonia longifolia* Gaertn. [*Hedyotis* l.].** LONG-LEAVED BLUETS. A member of the *H. purpurea* complex (Terrell 1959, 1996), this species is much more widespread in Wisconsin (and in eastern and central North America) than the preceding. It occurs in a variety of acid habitats, from dry thin woods, **sand barrens** and rocky, gravelly or sandy places to prairies, sedge meadows, fields and lakeshores. (6) Flowering from early June through August (October).

SALICACEAE—the Willow Family

North temperate to arctic, prostrate shrublets to large trees, all having simple, alternate, stipulate leaves and minute flowers in dense, dry, scaly spikes (catkins or aments). Male and female flowers (all lacking petals or sepals) produced on different plants, the poplars, aspens and cottonwoods (*Populus*) wind-pollinated and the willows (*Salix*) insect-pollinated. Fruit a small 1-celled capsule, its seeds covered with long, soft hairs and adapted for wind dispersal. (Argus 1965, Costello 1935, Dorn 1976)

Important ecologically, mostly in moist places, the willows and poplars have had a fossil record going back some 50 million years. Many species of these rapidly growing, soft-wooded plants are grown as ornamentals, e.g., Weeping Willow (*Salix babylonica*), White or Silver Poplar (*Populus alba*) and Lombardy Poplar (*P. nigra* cv. 'Italica'). Medicinal bark (containing salicylic acid) is obtained from *Salix*.



- 324. *Salix humilis* Marshall.** UPLAND or PRAIRIE WILLOW. A very wide-ranging North American species, from Labrador south to Florida and west to the northern Great Plains; in Wisconsin common in dry to **wet prairies**, willow thickets grading into sedge meadows, swinging marsh mats and bogs, also in sandy uplands in pine or oak barrens and at the base of sandstone bluffs and ledges. (10) Flowering from mid April to mid May, fruiting from mid May to mid June.

Salix humilis var. *tristis* (Aiton) Griggs [*S. occidentalis*; *S. h.* var. *microphylla*], occasional in the southernmost counties, is a clone-forming shrub that occupies much of the same geographical area and the same range of habitats as var. *humilis* (see Argus 1986). Several other species of willow (e.g., *S. eriocephala* Michx., *S. exigua* Nutt., *S. petiolaris* Sm.) are common or locally frequent in marshy or swampy ground and may be expected in wet prairies (or even mesic prairies, especially *S. discolor* Muhl., Pussy Willow) and fens. Prairie Willow is the only one that regularly occurs in dry upland sites.



SANTALACEAE—the Sandalwood Family

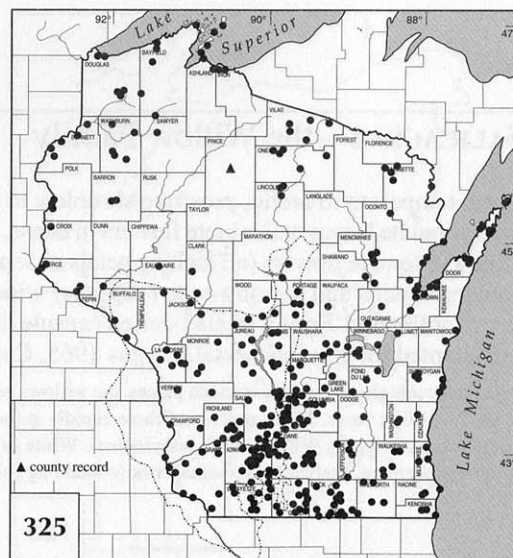
Here in Wisconsin we have only two inconspicuous herbs representing the largely subtropical to tropical sandalwoods, prized for their sweet-scented wood by cabinet makers and for their aromatic oil by perfumers for use in soap and incense. Ours have rather small, alternate or scattered, entire leaves; small flowers with 4 or 5 tepals, these free (*Geocaulon*) or basally fused into a fleshy floral cup (*Comandra*); stamens as many as the tepals; and a solitary pistil, the ovary either wholly or partly inferior, developing into a dry or juicy drupe. (Piehl 1965.)

Like the related mistletoes, some Santalaceae (including ours) are hemiparasites, photosynthesizing carbohydrates, but relying on the roots of the host for water and minerals. *Comandra* has whitish flowers in a compact terminal inflorescence; the scarlet-fruited *Geocaulon lividum*, which occurs very rarely in Door County, has bronze, purplish or green flowers in few-flowered axillary clusters.

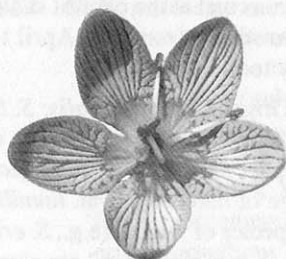
325. *Comandra umbellata* (L.) Nutt. ssp. *umbellata* [*C. richardiana*]. BASTARD TOAD-FLAX. Widely distributed, the aggregate species from Newfoundland to the Yukon, south to Georgia, Texas and Arizona; in Wisconsin very common in prairies, from dry, steep, limy and sandy prairies through mesic deep-soil to dense peaty wet-mesic prairies, in **oak barrens** and open upland oak-hickory, aspen and/or pine woods, on slopes, bluffs and outcrops, sandy or gravelly shores, rock flats and dunes of the Great Lakes, and banks along roadsides and railroads. (21) Flowering from early May to mid June, fruiting from late June to late July.

Extremely variable, split into 3 intergrading subspecies, only one of which, *Comandra umbellata* ssp. *umbellata* of eastern North America, enters Wisconsin.

Bastard Toad-flax, a hemiparasite on the roots of many plants, spreads by long horizontal stoloniferous rootstocks, and survives considerable disturbance.

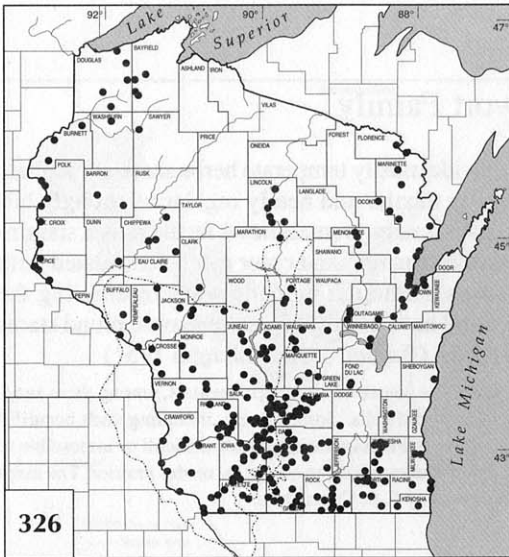


SAXIFRAGACEAE—the Saxifrage Family

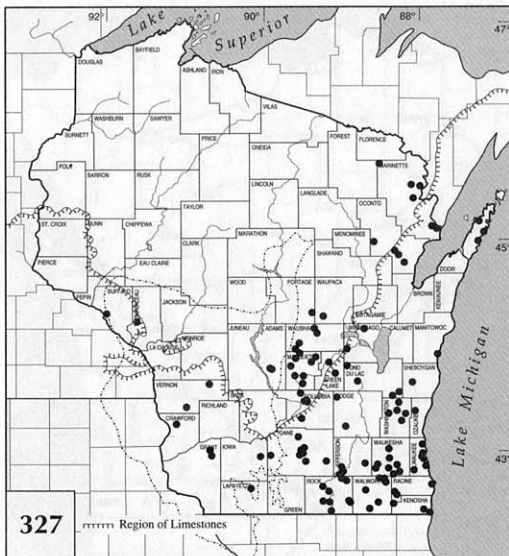


To quote Heywood (1978, p. 147), "The uncertainty as to the limits of the family is due partly to its unspecialized nature...and consequently to the absence of any striking distinctive characters." Herbs with mostly alternate or basal leaves that are often palmately veined and usually without stipules, and flowers with floral tubes usually well developed, mostly 4 or 5 free petals, 10 or more stamens and usually 2 to 5 carpels, these ranging from completely fused to quite separate and ripening into capsules or follicles (if the carpels are distinct). (Fassett 1932b, Sponberg 1972, Wells 1984.)

A cosmopolitan, mostly temperate, arctic and alpine family that is close to the Rosaceae. Taxonomists have long grappled with the problem of its circumscription, subdividing this diverse family into several or more (up to 17) subfamilies, some of which are often treated as independent families. As described here, the Saxifragaceae includes *Penthorum* and *Parnassia* but not woody plants often segregated as the Hydrangea Family and Gooseberry Family.

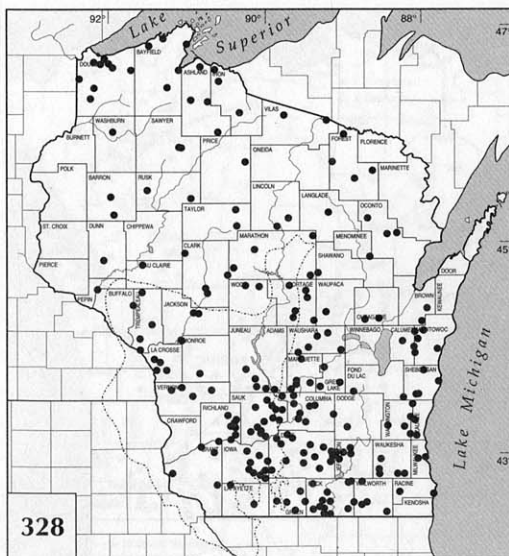


326. *Heuchera richardsonii* R. Br. ALUM-ROOT. A northern Great Plains element, from eastern Colorado and northern Nebraska to Alberta, and from eastern Kansas east to southern Michigan; in Wisconsin frequent in the southern and western parts, occasional in the north (especially along major rivers), in open to lightly wooded rocky ground (ledges, outcrops, cliffs, bluffs), oak, oak-hickory, pine-oak and other deciduous woods, including oak openings, jack pine barrens and **cedar glades**, on sandstone, dolomite and other rock types, loam, sand or gravel, as well as commonly on low, mesic or dry prairies, banks and roadsides. (18) Flowering from (mid) late May to late July, fruiting from mid June to mid September.



327. *Parnassia glauca* Raf. [*P. americana*]. GRASS-OF-PARNASSUS. Subarctic and temperate eastern North America (apparently only in glaciated areas), from New Jersey to northern Ohio and the eastern Dakotas, north to Newfoundland and Manitoba; scattered or only locally common throughout limy parts of Wisconsin, in **fens** (consistently with *Gentianopsis procera*, *Lobelia kalmii*, *Pentaphylloides floribunda* and *Solidago rigdellii*) and fen-like habitats: rich mesic to moist prairies, wet marly and/or peaty banks, seepage slopes, edges of springs and spring-fed streams, openings in white cedar thickets and damp sandy or peaty soil along Lake Michigan in Door County, very rarely on seeping, shaded, calcareous sandstone cliffs in the Driftless Area. (4) Flowering from early August to early October, fruiting from mid-August to late October.

Parnassia is a circumpolar, subarctic to temperate genus. Two other species occur in Wisconsin, *P. parviflora* (Endangered), known only from Door County, and *P. palustris* (Threatened), known only from Ashland and Douglas counties.



328. *Saxifraga pensylvanica* L. [*S. forbesii* Vasey; *S. p.* var. *f.*]. SWAMP SAXIFRAGE. Northeastern United States, from the southern Appalachians to Maine, west, mostly in unglaciated terrain, to Missouri and Minnesota; in Wisconsin throughout although somewhat local, in sun or shade, often in calcareous, mesic to **wet prairies**, sedge meadows, borders of marshes, low wet woods (e.g., tamarack bogs, black ash-white cedar swamps, floodplain forests, hollows, ravines, streamsides and springy slopes in rich deciduous woods) and alder thickets, sometimes in wet ditches; in the Driftless Area almost exclusively on dry to dripping wet, wooded sandstone cliffs and slopes. (13) Flowering from early May to late June, fruiting from early June to early August.

Populations on unglaciated sandstone bluffs were once treated as a distinct taxon (*S. forbesii*; *S. p.* var. *forbesii*). However, there are no definite morphological or cytological correlations to justify its segregation (Phillips 1977, Phillips & Kowal 1983).



SCROPHULARIACEAE—the Figwort Family

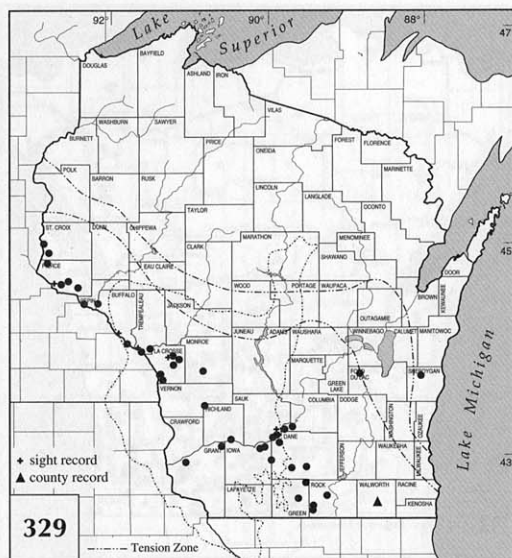
With flowers quite diverse, these 4,000 worldwide mostly temperate herbs share attractively colored corollas of 4 or 5 united petals (mostly tubular and nearly regular to strongly bilabiate, with 3 lobes below, 2 above) and 2 or 4 stamens (sometimes 4 fertile plus a staminode, rarely all 5 fertile). The variation in corolla structure and color can be correlated with particular insect and hummingbird pollinators. Although in many ways resembling the Lamiaceae, the “scrophs” lack the mint odor and have usually alternate leaves, round stems and diverse capsules with numerous small seeds. (Pennell 1935, Salamun 1951)

Besides the drug plant *Digitalis*, the Scrophulariaceae are the source of many ornamentals, among them snapdragons, beard-tongues, toad-flaxes, slipper-flowers and speedwells. Some genera, including such beautiful Wisconsin natives as *Castilleja*, *Dasistoma* and *Pedicularis*, are hemiparasitic, hence difficult or impossible to transplant (so please don’t!). *Verbascum thapsus*, Common Mullein, is often adventive on dry prairies. The maps are largely based on an as-yet unpublished family treatment by F. S. Crosswhite.

329. *Agalinis aspera* (Douglas ex Benth.) Britton [*Gerardia a.*].

ROUGH AGALINIS, ROUGH FALSE FOXGLOVE. A Great Plains prairie species, ranging from Oklahoma north to Manitoba and Wisconsin; locally frequent south of the Tension Zone on basic soils, (**wet prairies** [?], fide Curtis 1959), dry rocky or sandy prairies on limestone or limestone-capped bluffs, steep sandy hillsides and sandy-gravelly moraines. (3) Flowering from mid July to mid September, fruiting from early September to mid October.

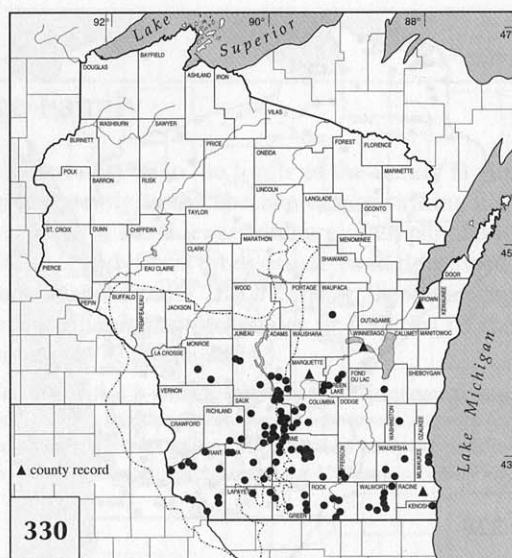
Our six *Agalinis* species are all hemiparasitic annual herbs, three of moist habitats (lakeshores, swales, sandy depressions, wetlands) and three of dry prairies. Of the latter, *A. aspera* is easily distinguished, but the rare Ozarkian *A. skinneriana* (A. Wood) Britton (Endangered) and southeastern *A. gattereri* (Small) Small (Threatened) are not only similar to each other but also to *A. tenuifolia* (Vahl) Raf., a widespread common species of moist places. All these can be identified only after careful consideration of minute, mostly corolla characters.

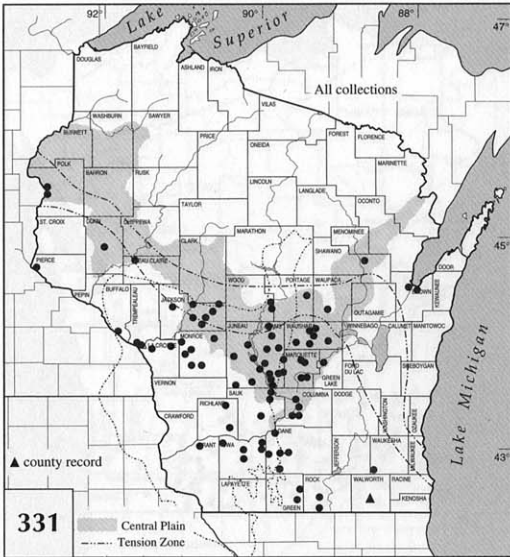


330. *Aureolaria grandiflora* (Benth.) Pennell var. *pulchra* Pennell

[*Gerardia g.*]. YELLOW FALSE FOXGLOVE. A complex species, from Texas to the lake states, with var. *pulchra* (allopatric northern taxon to the ancestral Texan-Ozarkian variety) ranging from southeastern Missouri to northwestern Indiana, southeasternmost Minnesota (only one station) and Wisconsin, here in sandy or rocky open oak woods, **cedar glades**, scrub oak barrens, bur oak openings and Driftless Area pine relics, frequent in prairie openings, occasional on edges of mixed hardwood stands or maple woods; locally abundant on eroded sandstone bluffs, ridges and sand flats in southern Wisconsin but nearly absent from the uplands north of the Wisconsin River. (9) Flowering from late July to mid October, fruiting from late August into December.

This variety represents a rare instance of recent evolution (Pennell 1935; see 332). It is usually a perennial (R. Henderson pers. comm.), and like all *Aureolaria* species, *A. grandiflora* is hemiparasitic on oaks, primarily the white oaks of *Quercus* section *Quercus* in this case (Musselman 1969, Pennell 1935).

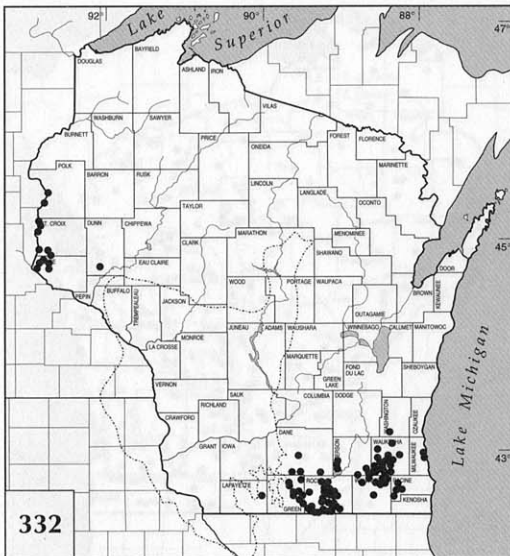




- 331. *Aureolaria pedicularia* (L.) Raf. [*Gerardia p.*]. CLAMMY FALSE FOXGLOVE.** An Appalachian floristic element, variable and polymorphic below the glacial floristic maximum, from the Georgia mountains to Maine, west to northern Indiana and (barely) Minnesota; in Wisconsin locally frequent south of the Tension Zone in dry, sandy or rocky, open woods (black oak-white oak woodland, oak scrub margins, oak barrens), transition zones between savanna and marsh, **shaded cliffs** and occasionally on Precambrian granite monadnocks; in partial shade in sterile acid soils. (1) Flowering from late July to early October, fruiting from late August into December or later.

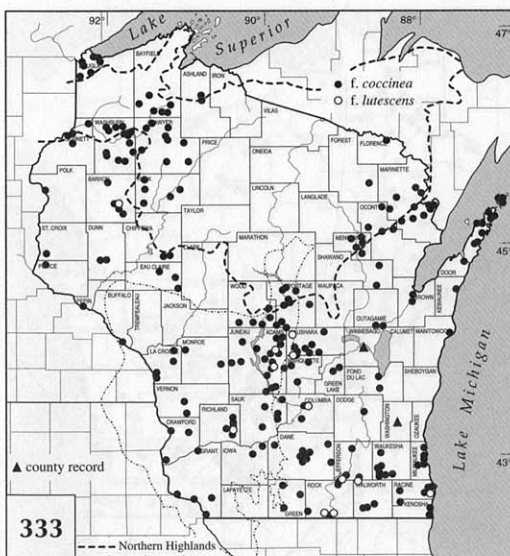
According to Pennell (1935), var. *pedicularia* and var. *intercedens* Pennell are rare and sporadic in Wisconsin, and var. *ambigens* (Fernald) Farw. locally frequent on the Central Sand Plain.

Long known to parasitize the roots of black oaks (*Quercus* section *Lobatae*) (Pennell 1928), this annual or winter annual has been found more recently to be hemiparasitic on the roots of Ericaceae in the Southeast (Werth & Riopel 1979).



- 332. *Besseyia bullii* (Eaton) Rydb. [*Wulfenia b.*]. KITTEN'S-TAIL (Threatened).** A Midwest endemic, rare and in scattered populations, but locally common, from southern Michigan and Ohio (extirpated) to Iowa and Minnesota; in two disjunct areas of southeastern and northwestern Wisconsin, absent from the Driftless Area, in **oak openings** and dry to dry-mesic prairies, on gravelly hillsides, dry river-bluff prairies, sandstone ridges and sandy outwash, sometimes along railroads. (4) Flowering from (late April) May to early June, fruiting from early May to early July (sporadically to mid August).

A very special, presumably post-glacially evolved, endemic on or near the moraines and outwashes of the Wisconsin ice advances. The eight other *Besseyia* species grow in the alpine or montane zones of the Rocky Mountains and other isolated peaks of the West.

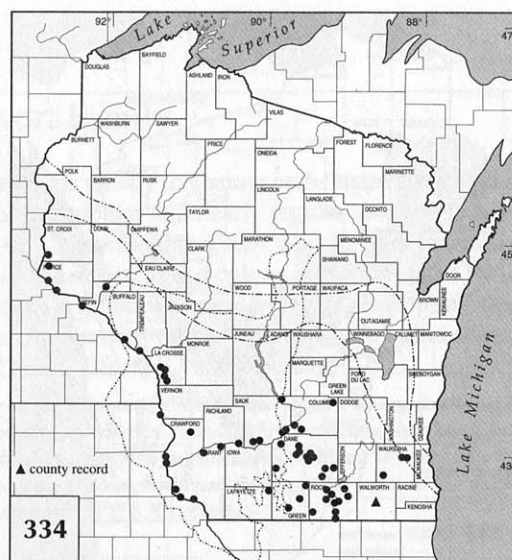


- 333. *Castilleja coccinea* (L.) Spreng. INDIAN PAINTBRUSH, SCARLET PAINTED-CUP.** Widespread in eastern North America, from the Gulf states and the Ozarks to the southern Appalachians, north to New England and southern Manitoba; infrequent to locally common throughout much of Wisconsin, in low open ground in full sun, especially in damp sandy prairies and sandy-marly flats and swales, also sandy lakeshores, meadows, **fens**, old marshes and moist glades; absent from the Precambrian granitic shield underlying the Northern Highlands. (5) Flowering from May to early September, fruiting from late May to early August (or later).

A hummingbird-pollinated hemiparasite, the roots of which must attach to nearby roots of other species (it is not host specific) in order for the plant to mature beyond the seedling stage (Malcolm 1966).

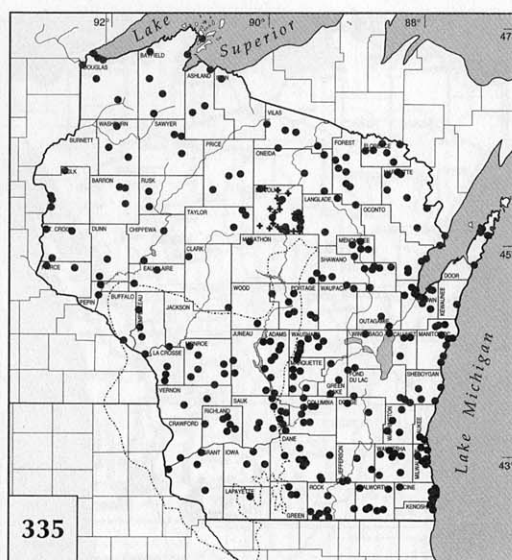
334. *Castilleja sessiliflora* Pursh. DOWNY PAINTBRUSH, DOWNY PAINTED-CUP. A floristic element of the dry Great Plains, from northern Mexico, southeastern Arizona and western Texas north to Saskatchewan, east to Iowa, northeastern Illinois and Wisconsin; here rather rare and restricted to south of the Tension Zone, on south- and west-facing, calcareous, sandy, gravelly or rocky **dry prairies** such as on hills or knolls of glacial drift, and especially steep dolomite ridges such as on the Mississippi, Wisconsin and St. Croix river bluffs, where sometimes growing with other rare or restricted dry-prairie species. (5) Flowering from May to late July, fruiting from late June to early August.

Except for the steep river-bluff "goat prairies," this species is essentially lacking from the Driftless Area, a fact noted by Pennell (1935, p. 525), who attributes this to its inability to invade the already plant-occupied, unglaciated (at least during the Wisconsin) "driftless" region after the ice recession. Pollinated by bumblebees (Crosswhite & Crosswhite 1970).



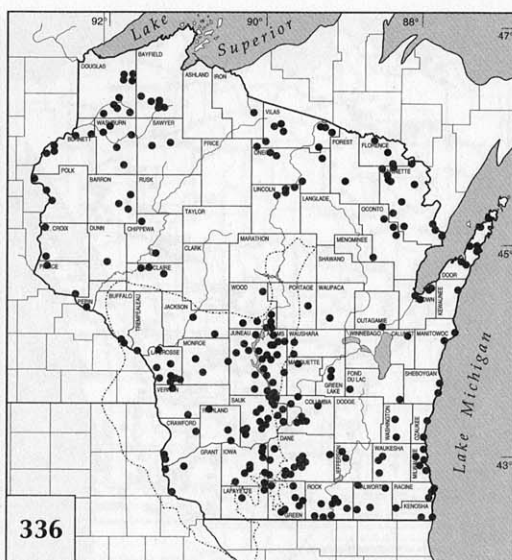
335. *Chelone glabra* L. [including var. *linifolia*]. WHITE TURTLEHEAD. An eastern forest element, from the Alabama Appalachian uplands to Newfoundland, west through the Great Lakes states to Minnesota and southern Manitoba; common throughout Wisconsin in low wet habitats with black soil, peat or muck such as marshes, sedge meadows, wet prairies, fens, swales, edges of tamarack bogs and cedar swamps, willow or **alder thickets**, floodplain forests, wet shores and stream banks. (9) Flowering from early July to early October, fruiting from mid August to early October.

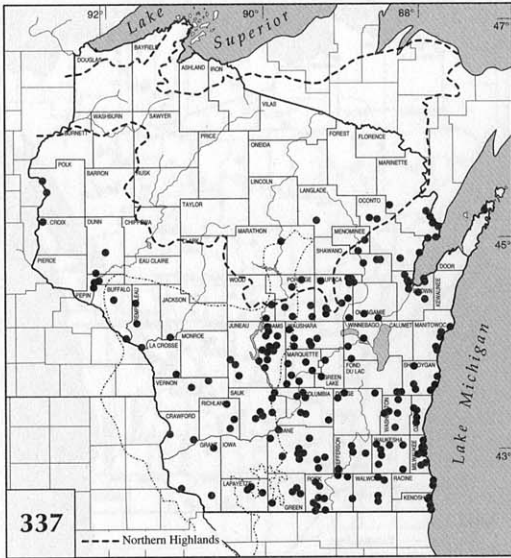
Leaf shape and pubescence and corolla color vary a great deal in this species; however, the variation is continuous, and few authors (Crosswhite 1965a) consider this taxonomically significant. The generic name (Gk. *chelone*, a tortoise) and common name refer to the corolla, resembling a turtle's head with its mouth open. A plant with horticultural promise, White Turtlehead's large white- or cream-colored, bumblebee-pollinated flowers make a show from midsummer until the first hard frost.



336. *Pedicularis canadensis* L. WOOD-BETONY, LOUSEWORT. On uplands throughout the eastern United States from the Gulf Coast to the Great Lakes, west to the Great Plains, also Colorado to northern Mexico; occasional to locally common throughout Wisconsin on sandy or light loamy soils (absent from the north-central yellow silt-loams), in dry to mesic prairies, open oak or pine woods, black oak savannas, **cedar glades**, bracken grasslands or openings in maple-basswood forests; frequently on steep prairie hillsides with sandstone or limestone outcrops, less often on clay bluffs along Lake Michigan; often forming large clonal colonies. (17) Flowering from May to June, fruiting from mid May to mid August.

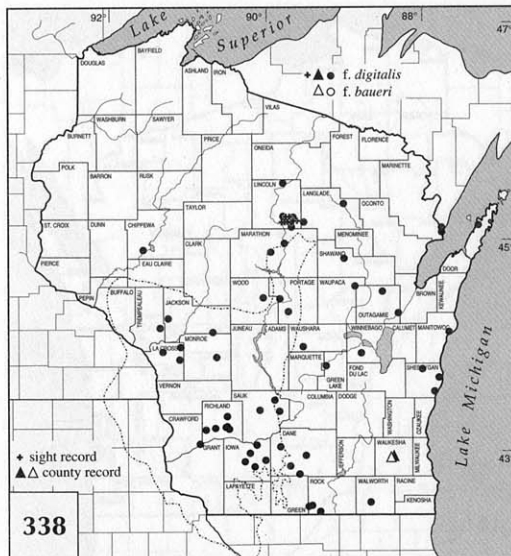
Linaria canadensis (L.) Dum. Cours., Blue Toadflax, is one of an assemblage of annuals (see 218) that in Wisconsin achieves maximum presence in sand barrens. Blue Toadflax is locally common within and slightly outside of the Driftless Area in open, sandy or rocky places, including oak and jack pine woodlands, sandy prairies, abandoned fields and pastures.





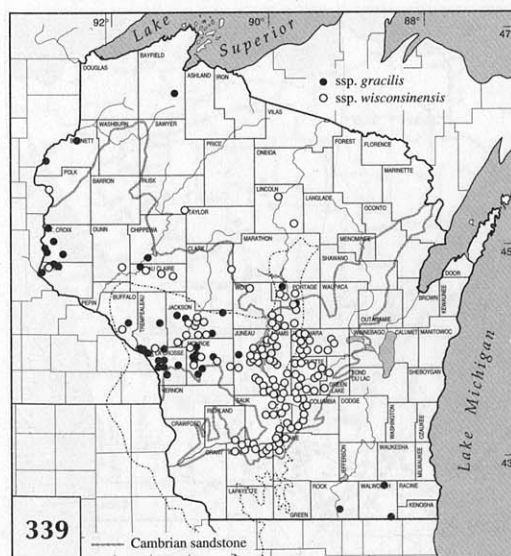
- 337. *Pedicularis lanceolata* Michx.** FEN- or SWAMP-BETONY. A calciphilic Appalachian element, from North Carolina's mountains to Massachusetts, west in glaciated areas to Illinois and on the northern Great Plains to Manitoba (and Missouri's calcareous springs); frequent in the southern two-thirds of Wisconsin, but essentially lacking from the acidic granitic Northern Highlands except at its southeastern edge (where Cambrian sandstones may be calcareous), in low wet calcareous habitats such as wet prairies, fens, swales, sedge meadows, marshes, shrub carrs, alder thickets, wooded wetlands and black muck pastures. (11) Flowering from early August to October, fruiting from mid August to early October.

A handsome member of an enormous genus, the 500 species of which are mostly Himalayan or Siberian.



- 338. *Penstemon digitalis* Nutt. ex Sims.** TALL or FOXGLOVE BEARD-TONGUE. Originally from the Ozark and Ouachita provinces, but aggressively spreading in disturbed areas in the later nineteenth century (Pennell 1935), to eastern Minnesota, Tennessee, Virginia and New England; occasional but sometimes locally abundant throughout central and southern Wisconsin, on roadsides, low pastures and formerly disturbed areas such as old fields, weedy, dry to **mesic prairies** and shrubby clearings in mesic woods; usually in full sun on sandy loam. (1) Flowering from mid June to mid July, fruiting from mid July to early September.

This species spread widely in historic times and probably did not escape from Wisconsin gardens before the 1890s. The earliest collections are from 1892 (Waukesha Co.), 1913 (Fish Creek, Door Co.), 1916 (Taylor, Jackson cos.) and 1919 (Blue Mounds, Iowa Co.). *Penstemon digitalis* is now locally abundant in formerly pastured fields or other disturbed areas, and it will become an important part of the floristic landscape.

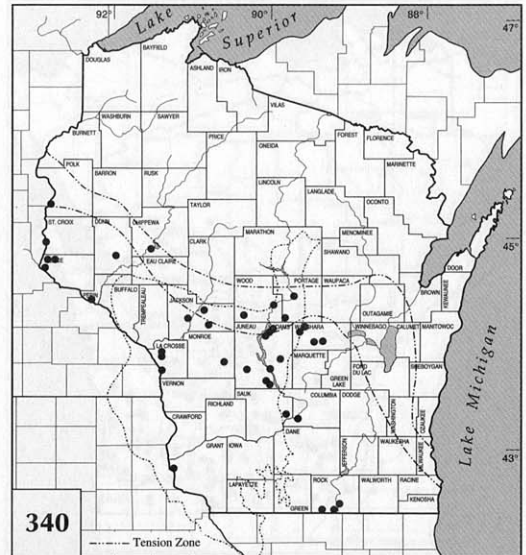


- 339. *Penstemon gracilis* Nutt.** SLENDER BEARD-TONGUE. A Rocky Mountain (New Mexico to Alberta) and northern Great Plains element, eastward to western Wisconsin, where locally frequent in sand prairies, dry open woods (scattered pine, juniper, oak), pine or **oak barrens**, abandoned sandy fields, pine plantations and sandy roadsides, occasionally on cliffs and ledges. (3) Flowering from late May through July, fruiting from late June to the beginning of September.

Penstemon gracilis ssp. *gracilis* is frequent on sand, sandy loam and sandstone outcrops in far western, west-central and (rarely) southernmost Wisconsin; ssp. *wisconsinensis* (Pennell) Pennell is common on the sandy acid soils of the Central Plain, especially on the old bed of Glacial Lake Wisconsin. One of our few microendemics, it evidently originated by introgressive hybridization of the Ozarkian *P. pallidus* (342) into *P. gracilis* ssp. *gracilis*, forming a large stabilized population in central Wisconsin (Crosswhite 1965b).

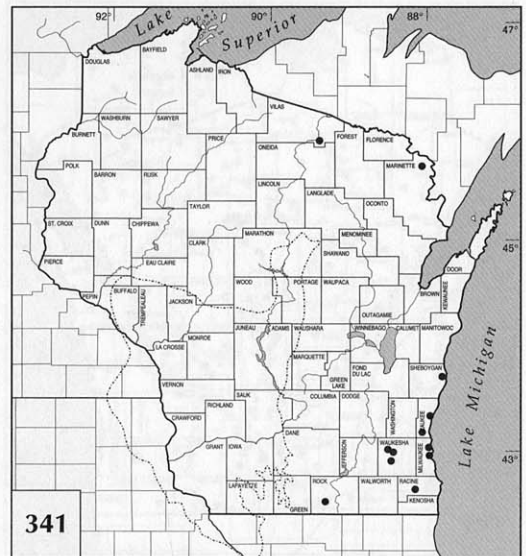
- 340. *Penstemon grandiflorus* Nutt. [*P. bradburii* Pursh].** LARGE-FLOWERED BEARD-TONGUE. A northern Great Plains element, ranging from Texas to Nebraska and Saskatchewan, and east to Minnesota and adjoining Wisconsin, where infrequent south of the Tension Zone in dry sandy or gravelly prairies and **oak barrens**, and surviving in old cemeteries, but now mostly adventive along roadsides and in gravel pits. (1) Flowering from early June to early July, fruiting from mid June to mid August.

Unlike all of our other penstemons, this species, glorious in color and rather rare, is related to the few hundred species of the western mountains.



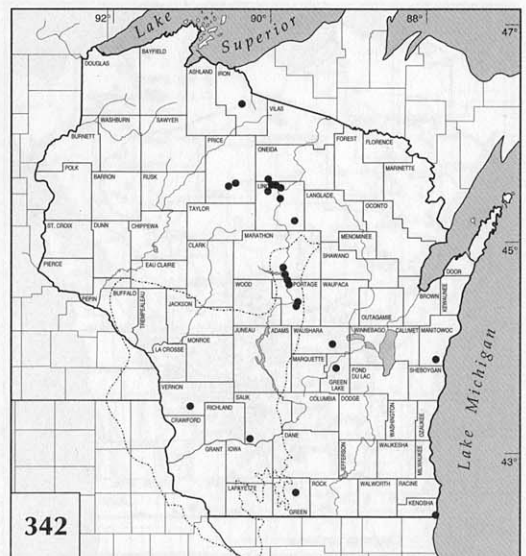
- 341. *Penstemon hirsutus* (L.) Willd.** HAIRY BEARD-TONGUE (Special Concern). Mostly an eastern species, from northern Virginia and Tennessee to Vermont and southern Ontario, west to the Great Lakes states (northern Michigan, northern Illinois and Wisconsin); in Wisconsin local in the southeast, there now rare, in prairies and open woods on **exposed cliffs**, ravines and hillsides, usually on shallow alkaline soil underlain by glacial gravel or dolomite bedrock; in northern Wisconsin (Marinette and Vilas counties) known from waste places, and most often in ruderal sites (e.g., cement mills) even around Milwaukee, where collected by I. A. Lapham early on (1860s?), and judging from the overall geographical distribution, native there. (2) Flowering throughout June and July, fruiting from late June through July (probably late August).

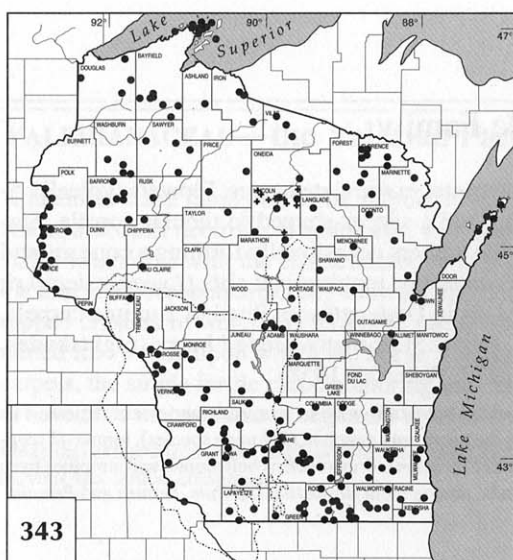
Most eastern penstemons tend to favor calcareous, somewhat disturbed sites, and *Penstemon hirsutus* is no exception.



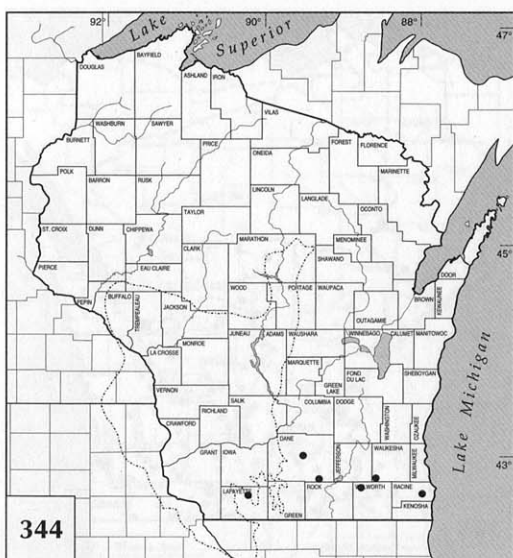
- 342. *Penstemon pallidus* Small.** PALE BEARD-TONGUE (Special Concern). An Ozarkian element, abundant from northern Arkansas and Missouri to southeastern Iowa and southern Illinois, scattered northward to Wisconsin, rarely adventive in the Southeast and rarely naturalized in the Northeast, to Michigan, New Jersey and Maine; in Wisconsin quite sporadic and rare, usually in full sun in dry sandy prairies, old fields and along roadsides and railroads, less often in jack pine stands and ledges in dry woods. Flowering from late May to early July, fruiting from (mid June?) early July and probably through August.

Penstemon pallidus is another beard-tongue that in Wisconsin has spread extensively in historic time (1890s) owing perhaps to its weedy propensities. As the other putative parent of *P. gracilis* ssp. *wisconsinensis* (339), it must have invaded the sand plains of Glacial Lake Wisconsin shortly after it drained, only to be swamped out genetically through local hybridization with the more abundant *P. g.* ssp. *gracilis*.

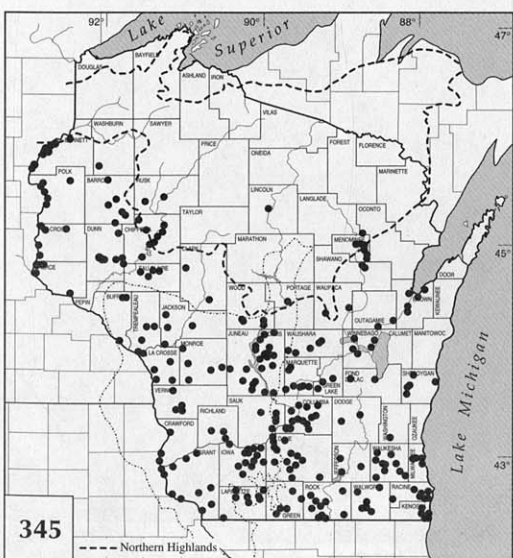




343. *Scrophularia lanceolata* Pursh. EARLY FIGWORT. Transcontinental western element, from the non-glaciated Pacific Northwest and the Rocky Mountains across the glaciated Great Lakes states to Quebec and Nova Scotia, south only in the Virginia mountains (a temperature-controlled range, fide Pennell 1935); frequent throughout Wisconsin in woods, especially in openings, at borders and along old roads, **cedar glades** [sic], clearings, edges of thickets, wooded rights-of-way, fencerows, cut-over areas, ravines, bases of cliffs and rocky banks; in loam, clay or sandy soils, often thriving where the understory has been disturbed. (6) Flowering from mid May to early August, fruiting from late June through September.



344. *Tomanthera auriculata* (Michx.) Raf. [*Gerardia a.*, *Agalinis a.*]. EARED FALSE FOXGLOVE, EAR-LEAVED GERARDIA (Special Concern). A peculiar annual hemiparasite, centering on northern Texas, eastern Kansas and Missouri, scattered and very rare beyond, from Mississippi and Alabama to southern Minnesota, southern Michigan (extirpated), and Washington, D.C. and New Jersey in the East (said to be introduced there, but old collections exist); extremely rare in Wisconsin, where known historically from four stations in Dane, Lafayette and Racine counties (none with data on exact location or habitat), and presently from two newly discovered populations on wet-mesic prairies in Walworth and Waukesha counties. Older records for this species, long thought to be extirpated in Wisconsin, presumably were from "wet meadows" as in Minnesota (Coffin & Pfannmuller 1988) or "moist prairies" as in the Chicago region (Swink & Wilhelm 1994), just about all of which have long since been plowed and turned into fields. Flowering from late August to early September.



345. *Veronicastrum virginicum* (L.) Farw. CULVER'S-ROOT. A strikingly handsome widespread herb of the eastern deciduous forest, from the Ozarks and the southern Appalachians to Minnesota, the southern Great Lakes and New England; common throughout southern and western Wisconsin, conspicuously absent from the granitic Northern Highlands, from **wet-mesic prairies** to mesic prairies, fens, oak openings, edges of moist to dry woods, occasionally on lakeshores and ditches; preferring deep loamy soil (black, clayey or sandy), often growing in partial shade. (18) Flowering from late June to August, fruiting from mid August to early October.

The only other species in this genus is *Veronicastrum sibiricum* (L.) Hara of eastern Russia, reflecting a typical ancient Arcto-Tertiary disjunction such as shown by *Trillium*, *Hydrastis* (Goldenseal) or *Podophyllum* (May-apple) and many other species.

Once called Culver's-physic in reference to its use in folk medicine.

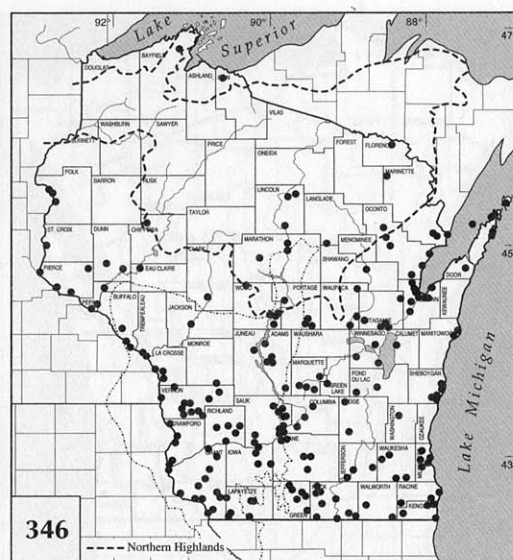


SOLANACEAE—the Nightshade Family

Plants chiefly herbaceous with mostly alternate, exstipulate leaves. Flowers typically 5-merous, generally with a persistent calyx and a saucer-shaped to tubular corolla. Stamens inserted on the tube of the corolla, the anthers occasionally forming a cone around the style, opening by terminal pores (*Solanum*) or longitudinal slits (*Lycopersicon*) or both, their pollen is “buzzed” out by bees, as in *Dodecatheon*. Pistil of 2 united carpels, maturing into a capsule (Jimson-weed, tobacco) or many-seeded berry (nightshades, tomato). (Fassett 1944b, Hawkes et al. 1979, Waterfall 1958)

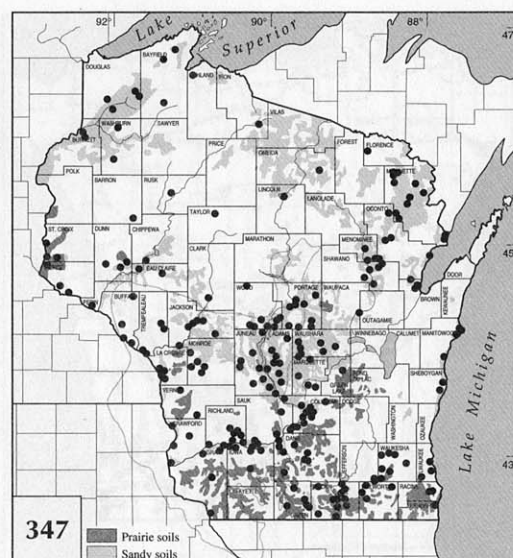
A large family (2,800 species), chiefly Latin American but world-wide in temperate and warm regions. The Solanaceae are of a leading source of foods such as the potato and eggplant (*Solanum* species), tomato (*Lycopersicon*), ground-cherries (*Physalis*) and red peppers (*Capsicum*); drugs such as belladonna and atropine (from *Atropa*), nicotine (*Nicotiana*); and many ornamentals, among them *Browallia*, *Cestrum*, *Datura* and *Petunia*.

- 346. *Physalis heterophylla* Nees [*P. h.* var. *ambigua*]. CLAMMY GROUND-CHERRY.** Throughout much of the eastern United States and “Prairies and Plains” region, extending from Texas into southern Canada, the Rocky Mountains and the Great Basin; infrequent to locally common in Wisconsin except in the Northern Highlands (but there along U.S. Hwy. 51), mainly in mesic to **dry prairies**, adjoining open woods of jack pine or white and black oak, and cultivated and fallow fields, less common on cleared or pastured hillsides, embankments, fencerows, roadsides, railroads and other disturbed habitats. (9) Flowering from early June to the end of August, fruiting from early September to early October.



- 347. *Physalis virginiana* Mill. VIRGINIA GROUND-CHERRY.** Widely distributed in North America, most common in the eastern and central United States, especially on the eastern Great Plains, ranging into Canada and the central Rocky Mountains; in Wisconsin occasional to locally abundant (our most common *Physalis*), especially in dry sandy prairies and other ecologically open habitats such as high lime prairies, gravel hill prairies, jack pine-black oak **barrens**, steep hillsides, open ridge tops and sandstone outcrops, also mesic prairies and inner beaches and dunes on Lake Michigan; often weedy in abandoned sandy fields and along sandy or gravelly roadsides and railroads. (14) Flowering from late May to early September, fruiting from early July to mid November.

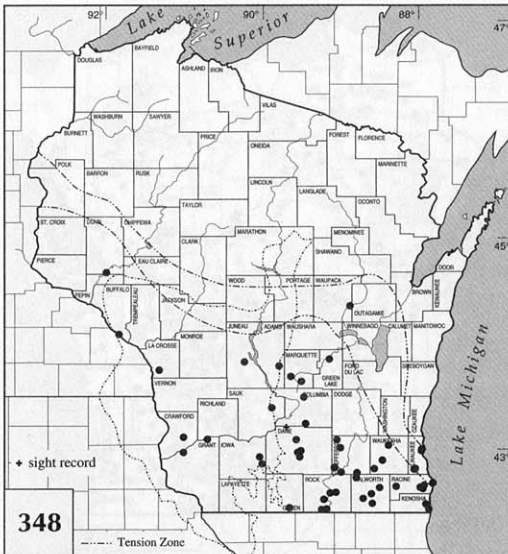
A widespread but mostly western taxon, *Physalis longifolia* Nutt. var. *subglabrata* (Mack. & Bush) Cronquist [*P. virginiana* var. *subglabrata*], Smooth Long-leaf Ground-cherry, is found in Wisconsin in prairies but more often in pastures, fields and cultivated and waste ground.



VALERIANACEAE—the Valerian Family

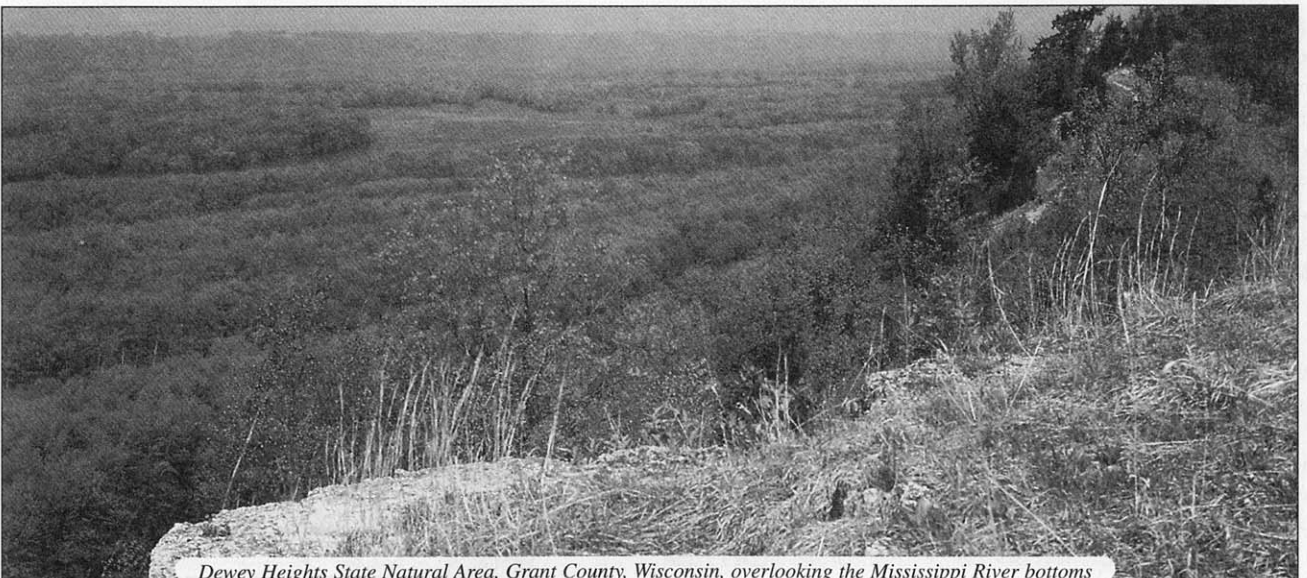
A medium-sized family of herbs, largely of north temperate regions but well-represented in the Andes and other neotropical mountains, with opposite, often pinnately divided leaves, these (especially when dry) with the characteristic rank odor of valerianic acid (this also in *Penstemon*, of the unrelated Scrophulariaceae). Flowers many, usually crowded into cymose inflorescences (flat-topped clusters in which the terminal, rather than the lower, flowers bloom first), with 5 petals united into a tube upon which are borne 3 stamens, and an inferior ovary composed of 3 united carpels, the single fertile carpel maturing into an achene often dispersed by a parachute-like ring of several to many plumose segments derived from the calyx. (Ferguson 1965, Meyer 1951)

Medicinal extracts from roots and leaves of *Valeriana* (its 200 species constitute two-thirds of the family) are used for nervous and cardiac complaints.



- 348. *Valeriana edulis* Nutt. ex Torr. & A. Gray. VALERIAN.** A montane to subalpine cordilleran element throughout the western mountains (British Columbia to northern Mexico), the Black Hills, and, disjunct, from the southeastern corner of Minnesota to southern Ontario and Ohio; in Wisconsin rare to locally common south of the Tension Zone, confined to calcareous prairies, wet or dry, and **fens** (as in the low grass-sedge meadows of Endeavor Marsh and Ennis Lake, Marquette County, and Briggs Wetland, Rock County), dense, rich, mesic to moist prairies (as at Kessler Road, Rock County, and Carol Beach, Kenosha County), dry-mesic to dry limy prairies on north- or northeast-facing slopes of knolls, bluffs and gravelly hills. (4) Flowering from mid June to mid August, fruiting from mid August to early October.

Our eastern population is usually as segregated as ssp. *ciliata* (Torr. & A. Gray) F. G. Mey. [*V. e.* var. *c.*], but the morphological basis and ecological grounds that supposedly distinguish it from ssp. *edulis* in the West are unsubstantial.



Dewey Heights State Natural Area, Grant County, Wisconsin, overlooking the Mississippi River bottoms



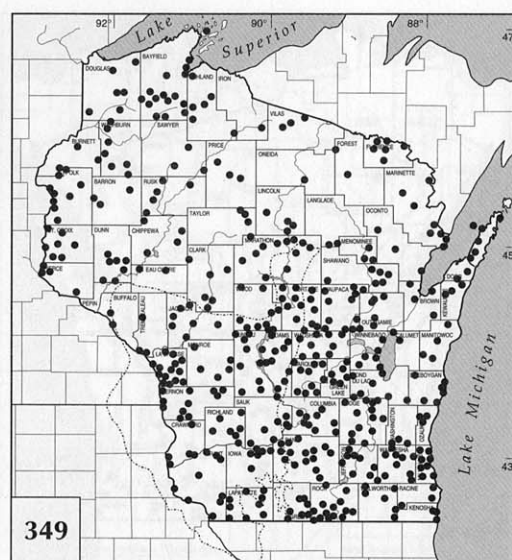
VERBENACEAE—the Vervain Family

Trees, shrubs or (ours) herbs, usually not aromatic, with opposite or whorled leaves and mostly 4-angled stems. Flowers typically small and somewhat irregular, with colorful tubular corollas, usually attracting bees and flies. Ovary basically 2-celled but typically appearing 4-celled due to the intrusion of false partitions (1-celled and ripening into an achene in *Phryma*, sometimes included within the Verbenaceae); style strictly terminal. Fruit fleshy with 2 or 4 stones or splitting at maturity into 2 or 4 nutlets. (Tans & Iltis 1980)

Mostly tropical and subtropical, with only a limited number of temperate representatives. *Verbena*, Vervain and *Lantana* contain ornamental herbs, shrubs and climbers. Modern taxonomists have transferred two-thirds (three former subfamilies) of the conventional Verbenaceae to the Lamiaceae sensu lato, leaving a very narrowly defined Verbenaceae. Major differences between the Verbenaceae and the newly enlarged Lamiaceae include inflorescence structure and details of ovule attachment, pollen-wall anatomy and hair type.

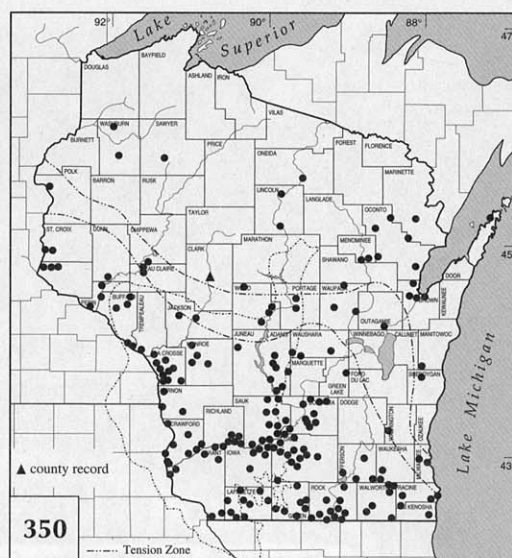
349. *Verbena hastata* L. BLUE VERVAIN. Ubiquitous throughout the Great Plains (Texas to Canada), but also sporadic in the West and rare in the Southeast; in Wisconsin very common in moist sunny habitats such as marshes, **northern sedge meadows**, stream edges, lakeshores, shrub-carrs, low prairies, sedge meadows and rarely in moist forests, tolerating much habitat disturbance, hence common in heavily grazed pastures, roadsides and railroad rights-of-way and occasionally abandoned sandy fields. (7) Flowering from late June to September, fruiting from early July to mid October.

Our native *Verbena* species are all wide ranging, sympatric diploids interfertile with one another. *Verbena hastata* hybridizes frequently with *V. urticifolia* L. to form *V. × engelmännii* Moldenke, Engelmann's Vervain.



350. *Verbena stricta* Vent. HOARY VERVAIN. A native of the Great Plains' prairies and steppes, from northern Mexico and Texas to the Dakotas, southern Minnesota, Ohio and Ontario; in Wisconsin mostly south of the Tension Zone in various sunny habitats such as xeric and sandy **dry prairies**, limy or "goat prairies," abundant in heavily grazed, sandy or gravelly pastures and abandoned fields, less frequently in open oak or oak-jack pine woods, roadsides and railroad rights-of-way; northern stations probably adventive. (6) Flowering from late June to early October, fruiting from early July to October.

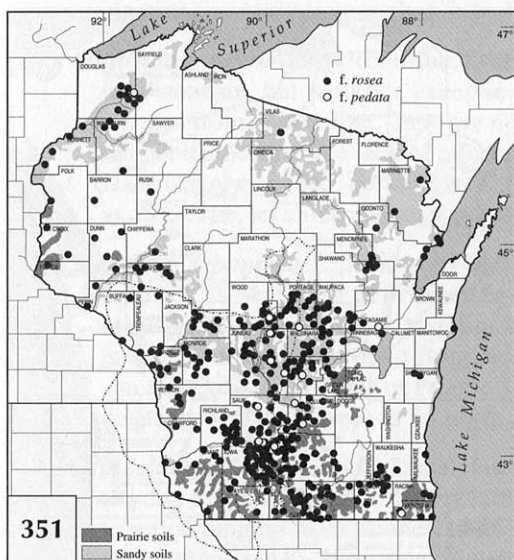
Hybridizes frequently with *Verbena hastata* (349) to form *V. × rydbergii* Moldenke, Rydberg's Vervain.



VIOLACEAE—the Violet Family

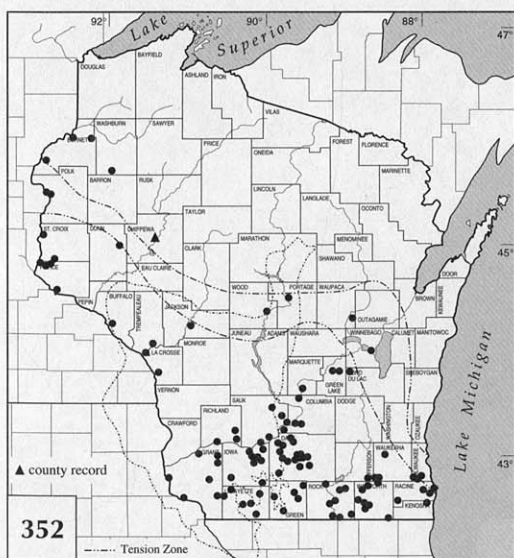
Herbs (temperate species) to shrubs or small trees, with usually alternate or basal leaves with minute or leafy basal appendages (stipules). Flowers solitary and strongly bilaterally symmetrical in our genera, with 5 sepals and 5 petals, the lowest petal often spurred and larger than the others. Stamens 5, standing together or sometimes grown together into a ring closely surrounding the single pistil, the filaments very short or lacking but with broad zones of tissue connecting the pollen-sacs. Ovary 1-celled; style flexuous, the stigma variously shaped. Fruit an explosively dehiscent, 3-valved capsule (ours) or a berry, the seeds often with an appendage (caruncle) associated with dispersal by ants. (Ballard 1994; McKinney 1992; Russell 1960, 1965)

A cosmopolitan family, with about half the species belonging to *Viola* (400 species plus numerous hybrids), Violet and Pansy, whose characteristic flowers are highly specialized for insect pollination (or the showy flowers may be sterile). Many species of *Viola* and *Hybanthus*, Green Violet, also bear inconspicuous or even subterranean bud-like "closed" (cleistogamous) flowers that, self-pollinating, are more fruitful than the normal flowers.



- 351. *Viola pedata* L. BIRD'S-FOOT VIOLET.** Widespread in the eastern United States, from Florida and Texas north to Vermont, the Canadian border and southeastern Minnesota; common in southern and central Wisconsin but lacking from the Northern Highlands and the Niagara Uplands, in dry, sandy, gravelly or rocky prairies, on sandstone cliffs and ridges, limestone bluffs and quartzite or granite outcrops; also in well-drained open oak and/or pine woodlands, black oak savannas, jack pine barrens, **cedar glades**, open oak-hickory woods and pine plantations, often thriving in open sandy areas such as abandoned fields, hillsides, roadsides, banks and sand blows. (14) Flowering mostly from late April to mid June (irregularly into October), fruiting from mid May to September.

Nearly all our specimens are *f. rosea* Sanders, with concolorous corollas (all five petals light violet or lilac-purple). The strikingly beautiful, almost bizarrely bicolored *f. pedata* (the lower three petals light blue-violet, the upper pair very dark velvety purple) is rare and local in Wisconsin.

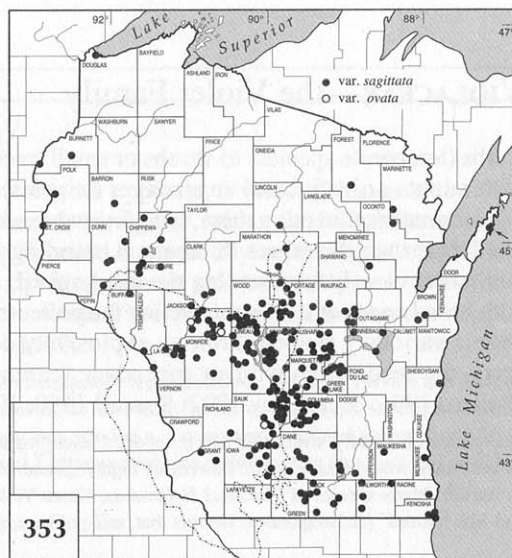


- 352. *Viola pedatifida* G. Don [*V. palmata* var. *p.*]. PRAIRIE VIOLET.** A mesic prairie species, widespread on the Great Plains from Oklahoma to Manitoba, east in the Prairie Peninsula to Minnesota and northern Ohio; in Wisconsin locally frequent south of the Tension Zone, from steep rocky dry prairies with sandstone or limestone cliffs, through xeric sand, high lime and gravel-hill prairies to rich deep black-soil **mesic prairies**, often in oak savannas, open sandy hillsides, fields, banks and borders of woods, sometimes in grazed oak woods and red cedar stands. (9) Flowering from late April to early June, fruiting from mid June to mid October.

Less common than *Viola pedata*, with which it may grow and be confused because of its divided leaves. *Viola pedatifida* is considered by some to be conspecific with *V. × subsinuata* (*V. palmata* of authors; see **354**) based on apparent intergradation between the two in the Great Lakes region. However, *V. pedatifida* is distinct and is maintained as a separate species by Russell (1965), McKinney (1992) and Ballard (1994).

353. *Viola sagittata* Aiton. ARROW-LEAVED VIOLET. Throughout the eastern United States, from Georgia to Texas and southeast Kansas, north to eastern Minnesota and Maine; widespread in southern Wisconsin in the boggy to dry, sandy Central Plain, locally frequent to abundant in **oak barrens** and similar dry woods and savannas (i.e., oak, oak with jack pine, hickory or white birch, red cedar), as well as on edges of low woods; also in dry to wet-mesic prairies, old fields, pastures, sandstone cliffs, granite outcrops, low sandy to peaty meadows, swales, shores and ditches, rarely weedy on road shoulders. (9) Flowering from late April to mid July, fruiting from late May to October.

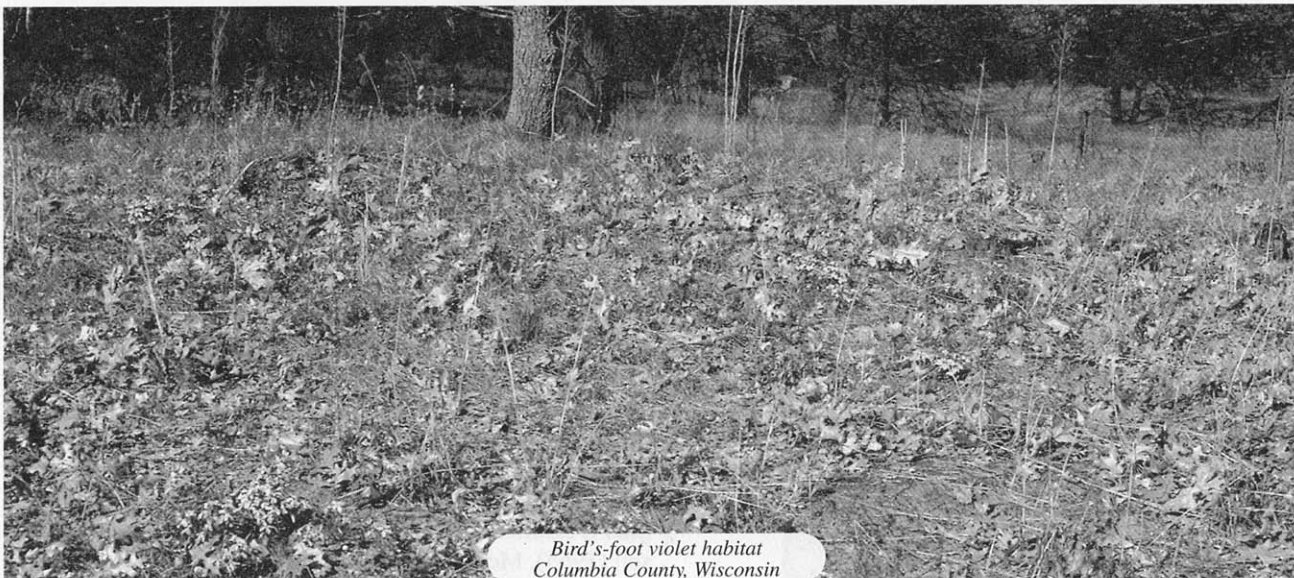
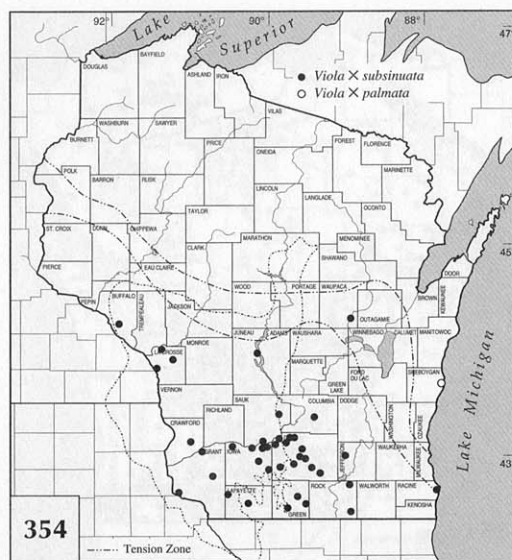
Viola sagittata is here treated as a single variable species (McKinney 1992, Ballard 1994), with nearly all of our specimens placed in a broadly defined, widely distributed var. *sagittata*. The more narrowly delimited, mostly Appalachian var. *ovata* (Nutt.) Torr. & A. Gray [*V. fimbriatula*] (Endangered), is represented in Wisconsin by only three collections.



354. *Viola* × *subsinnuata* (Greene) Greene [*V. pedatifida* × *V. sororia*; *V. palmata* of authors, not L.]. EARLY BLUE VIOLET, LOBED VIOLET. Eastern United States; occasional in Wisconsin south of the Tension Zone in dry to low prairies, savannas and prairie-forest ecotones such as dry sandy or limy prairies, dry-mesic high prairies, open or wooded sandy hillsides and limestone bluff tops with mixtures of prairie and forest species, oak openings, and deciduous woods and thickets. Flowering in May.

This taxon is accepted either as the distinct species *V. subsinnuata* (McKinney 1992) or as a hybrid of *V. pedatifida* with *V. sororia* (Ballard 1994). It is usually found with *Viola pedatifida* (352) and near *V. sororia* Willd., the Woolly Blue Violet, and is most prevalent in open oak woods adjacent to prairies and in brushy growth that has sprung up on the open prairies. True *Viola* × *palmata* L. [*V. sagittata* × *V. sororia*], Three-lobed Violet, has been collected once in Wisconsin at Sheboygan.

Other violets that may occur in moist prairies include *Viola affinis*, *V. cucullata*, *V. nephrophylla* and *V. sororia*.



Bird's-foot violet habitat
Columbia County, Wisconsin