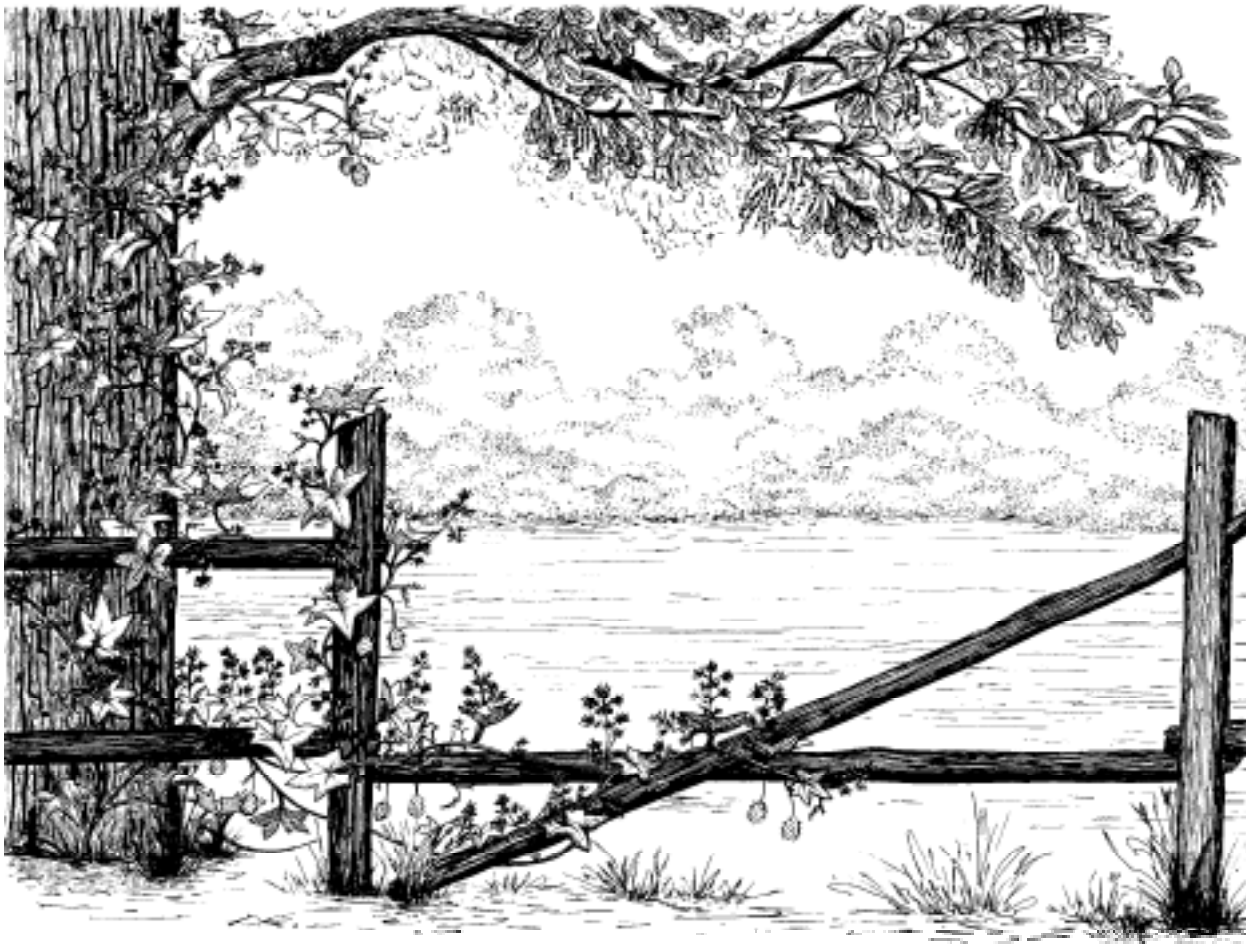


COMPOSITAE

PART FOUR

Symphyotrichum to *Xanthium*
Revised 1 April 2015



SUNFLOWER FAMILY 4 COMPOSITAE

Symphyotrichum
Tetaneuris
Verbesina

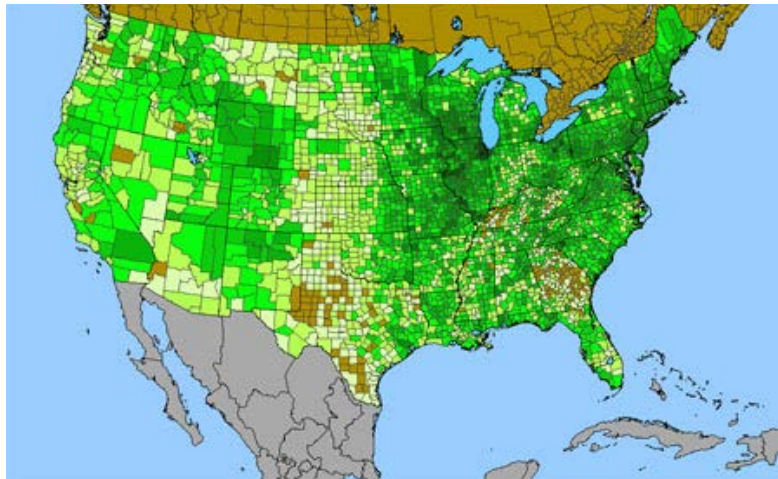
Vernonia
Xanthium

Notes

SYMPHYOTRICHUM Nees 1833 **AMERICAN ASTER** *Symphyotrichum* New Latin, from Greek *symphysis*, junction, & *trichos*, hair, referring to a perceived basal connation of bristles in the European cultivar used by Nees as the type, or from Greek *symphyton*, neuter of *symphytos*, grown together. A genus of approximately

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80 spp of the Americas & eastern Asia, with the greatest diversity in the southeastern USA (according to one source). Cook Co, Illinois has 24 spp, the highest spp concentration in the country. See also *Aster*, *Eurybia*, *Doellingeria*, *Oclemena*, & *Ionactis*. x = 8, 7, 5, 13, 18, & 21.



Density gradient of native spp for *Symphyotrichum* within the US (data 2011). Darkest green (24 spp. Cook Co, IL) indicates the highest spp concentration. ©BONAP

***Symphyotrichum X amethystinum* (Nuttall) Nesom AMETHYST ASTER,**

Habitat: Mesic prairie. Usually found close to the parents. distribution - range:

Culture:

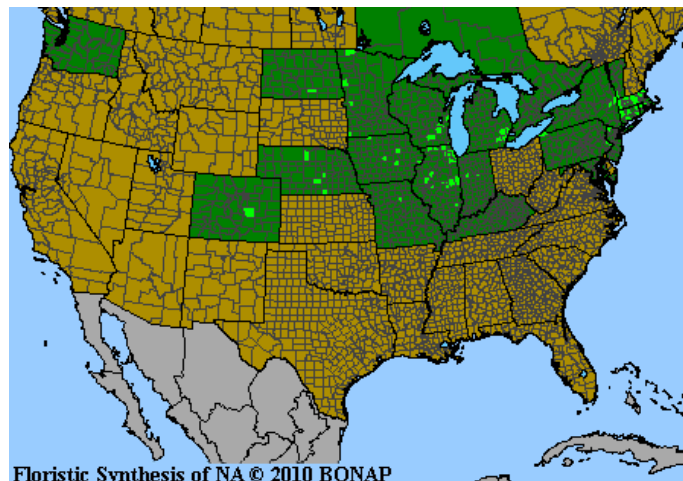
Description:

Comments: status: phenology: Blooms 9-10.

“This is an attractive aster with many heads of blue or purple rays; rarer white and pink-rayed forms also occur. ... Disk flowers are perfect and fertile; ray flowers are pistillate and fertile.” (ILPIN)

VHFS: Formerly *Aster X amethystinus* Nutt. Hybrid between *S novae-angliae* & *S ericoides*.

This is a possible hybrid of *Aster novae-angliae* and *Aster ericoides*, or of *A. novae-angliae* and *A. praealtus*” (Ilpin)



Symphyotrichum X amethystinum

Symphyotrichum anomalum* (Engelmann) GL Nesom BLUE ASTER, aka LIMESTONE HEART-LEAF ASTER, MANY RAY ASTER, MANYRAY ASTER, MANY-RAYED ASTER, subgenus *Symphyotrichum* Section *Cordifolii

Habitat: Dry woods. Dry to dry mesic upland forests, thickets, sandstone & limestone glades (Ilpin). “Species is distributed in rocky open woods, chert, sandstone, or granite substrata” (Ilpin, cause there is so much granite substrata in Illinois). Dry or rocky woodlands and thickets (mbg). “Dry, sandy, loamy, or clayey soils over limestone, or acid soils over chert, sandstone, or granite, rocky, open deciduous woods, thickets, dry ridges, cliffs, bluffs, occasional along streams; 50–500 m” (Brouillet et al in fna). distribution/range: Southwest Illinois north to Peoria & Woodford cos, which is the north (northeast) limit of its range.

Culture: ☉Moist cold stratify. Available Bluestem Prairie Nursery.

cultivation: Full sun, dry to medium soils. Tolerates some shade, drought & dry soils. Zone 5-7.

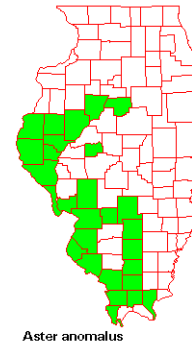
Description: 2.5-3.0' tall, 2.0-2.5' spread. N 2n = 16.

Comments: status: phenology: Blooms July to November (MO); September-October.

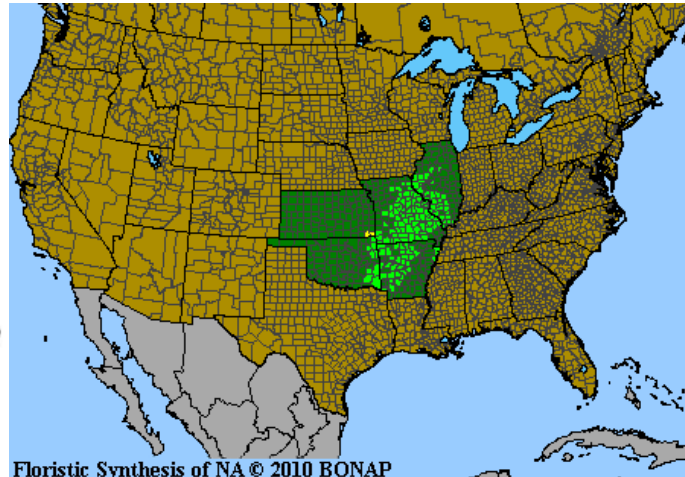
“Species has short stout rhizome or branched caudex. Disk florets are perfect and fertile; ray florets are pistillate and fertile” (Ilpin). Used in native plant gardens, open woodland gardens, cottage gardens, & butterfly gardens.

Associates: Attracts butterflies. “Basal leaves provide winter food source for white-tailed deer” (Ilpin). Aster wilt may be a problem if plants are grown in poorly-drained clay soils.

VHFS: Formerly *Aster anomalus* Engelm. (basonym).



Aster anomalus



Floristic Synthesis of NA © 2010 BONAP
Symphyotrichum anomalum

Line drawings courtesy of Kentucky Native Plant Society. Map courtesy of BONAP.

Symphyotrichum boreale (Torrey & A Gray) Á Löve & D Löve NORTHERN BOG ASTER, aka RUSHLIKE ASTER, subgenus *Symphyotrichum* Section *Salicifolii*

Habitat: “Species is distributed in cold bogs, calcareous bogs, and calcareous fens” (Ilpin). “Fens, bogs, open conifer swamps (cedar, tamarack, spruce), wet, often sedgy, sand flats, shores, meadows, & swales” (rvw11). In the se USA, “calcareous wetlands; rare” (w12). distribution/range: Species distribution in Illinois is indicative of the location of competent botanists and nothing phyto-geographical.

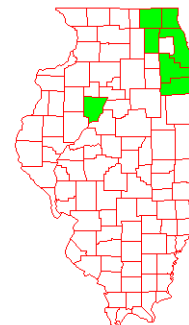
Culture:

Description: Rays white, sometimes pink or bluish;

Comments: status: phenology: Blooms 8-9.

“Disk florets are perfect, ray florets are pistillate, both are fertile” (Ilpin).

VHFS: Formerly known as *Aster borealis* (T&G) Prov. “Occasional intermediate plants suggest hybridization with *S lanceolatum* & *S puniceum*” (rvw11)



Aster borealis



Symphyotrichum boreale

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum ciliatum (Ledebour) GL NESOM RAYLESS ASTER, aka RAYLESS ALKALI ASTER (formerly *brachyactis* -is -e short-rayed, the sometimes used genus name) [facu]

Habitat: Saline roadsides. distribution/range: Native west of our area.

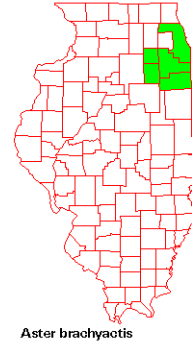
⓪No treatment. 4,536,000 seeds per pound.

The synonym was formerly listed in saline roadside seed mixes but it is no longer in the trade. Seed was readily harvested by bagging mowers on saline roadsides, but people die in DOT work zones. Do not specify this in salt mixes!

Description: White flowers, 0.5-1.5 28.5

Comments: status: phenology: Blooms 8,9,10. Aggressive, annual, non-native, adventive our area.

VHFS: Formerly *Aster brachyactis* SF Blake.



Aster brachyactis





Symphyotrichum ciliolatum née *Aster brachyactis*

Line drawings courtesy of Kentucky Native Plant Society.

Symphyotrichum ciliolatum (Lindley) Á Löve & D Löve LINDLEY'S ASTER, aka *ASTER CILIOLE*, CILIATED ASTER, FRINGED ASTER, FRINGED BLUE ASTER, NORTHERN HEART-LEAVED ASTER, subgenus

Symphyotrichum Section *Cordifolii*

Habitat: "Rich, open, often ± calcareous, boreal deciduous forests (aspen or aspen-birch-fir-spruce), edges of woods, clearings, aspen or bur oak thickets, sometimes open pine forests, streambanks, trails, roadsides; 0–2000+ m;" (Brouillet et al in fna). "Dry to moist deciduous mix and conifer woods, especially in clearings and along borders, including adjacent roads, trails, fields, disturbed ground, dune ridges and rocky gravel" (Schulz et al 2001). distribution/range: Northeast Illinois & northwest Indiana are the south central limit of sp range. In Michigan, the UP & northern Lower Peninsula.

Culture: "Mix the seeds with an equal amount of moist perlite or vermiculite in a sealable plastic bag or Rubbermaid-style container. Seal and put in a refrigerator or garage (35 to 42 degrees F) for 1-2 months. Cold store until planted (up to 3 years)." (Schulz et al 2001).

Description: $N 2n = 48$. key features: "Long blue to purple rays and large heads will easily separate this spp. from *A. sagittifolius*" (Schulz et al 2001). Stems mostly hairy, often in lines near the top, lower leaves stalked, with heart-shaped bases, sharply toothed, lower side hairy, upper tapering to a winged stalk (fh).

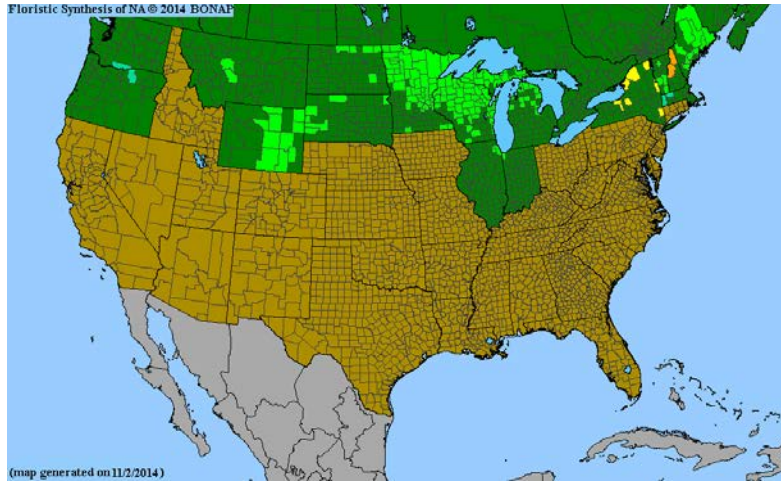
Comments: status: phenology: Blooms July to October.

Associates: Larval host of *Phyciodes tharos* Pearl Crescent. Species is of special value to native bees.

ethnobotany:

VHFS: Formerly known as *Aster ciliolatus* Lindl. [*Aster ciliolatus* Lindl var *ciliolatus*, *A lindleyanus* T&G, *A saundersii* ES Burgess, *Symphyotrichum ciliolatum* (Lindl) Á&D Löve]

J Schultz, P Beyer, J Williams. 2001. Propagation protocol for production of container *Aster ciliolatus* Lindley plants; USDA FS - Hiawatha National Forest, Marquette, Michigan. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 2 March 2015). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery



Symphyotrichum ciliolatum aka *Aster ciliolatus*

Line drawings courtesy of Kentucky Native Plant Society.

Symphyotrichum cordifolium (Linnaeus) GL Nesom BLUE WOOD ASTER, aka ARROW-LEAVED ASTER?, BLUE HEART-LEAVED ASTER, BLUEWOOD ASTER, COMMON BLUE WOOD ASTER, HEART-LEAVED ASTER, subgenus *Symphyotrichum* Section *Cordifolii*

Habitat: Woodland clearings, rocky woods, meadows, shaded roadsides. Forests & woodlands. In Michigan. "Beech-maple, oak-hickory, & swamps (as on floodplains), especially at borders & clearings; thickets, sometimes weedy in habit in urban areas" (rvw11). In the se USA, "rich forests, shaded roadbanks" (w12).

distribution/range:

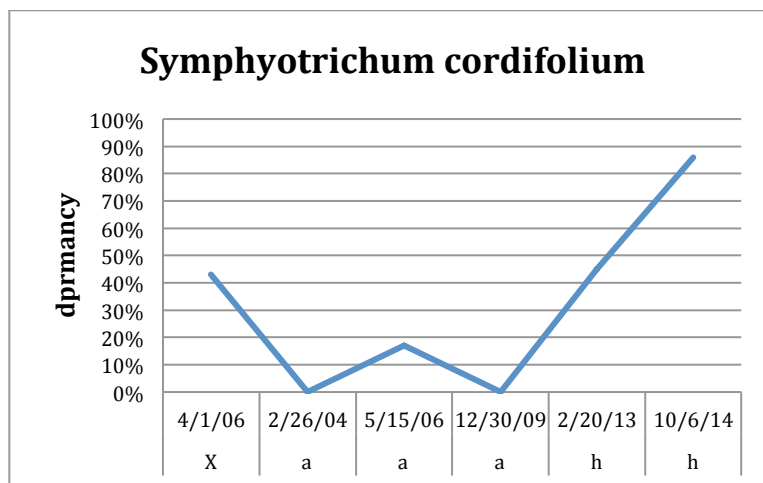
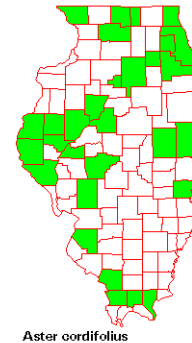
Culture: propagation: ①60 days cold moist stratification (pm09). ②Sow at 20°C (68°F), germination slow (tchn). Growth rate moderate. Seedling vigor low. Vegetative spread rate moderate.

seed counts & rates: 1,633,094 (gnia09), 2,000,000 (usda, ecs, aes12), 2,026,786 (gnhm14), 2,100,000 (jfn04), 2,214,634 (gnam06), 2,240,000 (pm02) seeds per pound.

cultivation: Clay soil tolerant. Anaerobic tolerance none. CaCO₃ tolerance medium. Drought tolerance medium. Fertility requirement medium. Salinity tolerance none. Shade intolerant. pH 5.7-7.5.

bottom line: Spring planting works 50% of years, the seed non-dormant or with a low percent dormancy, but some years strongly benefit from dormant seeding. Flipflop species. Germ 52.2, 53, na, sd23.5, r11-83 (72)%. Dorm 31.8, 30, 0.0, sd 30.2, r0.0-86 (86)%. Test 29, 29, na, r22-38 days.**

greenhouse & garden: Occasional seed lots may benefit from cold moist stratification.



Description: Culms to 2.0' (60 cm), minimum root depth 10"; leaves grey-green; flowers blue/violet, key features: ①Involucre closely imbricate, the scales with short green tips. ②“The rays are usually as short as in *S urophyllum*, but are almost always blue or purple & the inflorescence is more open, the phyllaries merely acute (with rather clear diamond-shaped green tips on the midvein), & the leaves with more deeply toothed & cordate blades on petioles wingless or nearly so” (rvw11).

Comments: status: phenology: Blooms August – September, 8-10. Landscaping, forest, woodland, & savanna gardens, shaded borders, naturalizing, & erosion control. Seed source Kane Co.

“This woodland aster is common. It has serrate leaves which are thin; the inflorescence is widely spreading & it blooms profusely. On dry gravel prairie hills it is common in a depauperate form.” (ewf55)

“Disk florets are perfect and fertile; ray florets are pistillate and fertile. Species has a branched caudex or short rhizome, occasionally with long creeping rhizomes also.” (Ilpin)

Associates: Pollinator friendly. Butterfly host & nectar plant. Walnut tolerant.

ethnobotany: Root included in hunting medicine smoked to attract deer by Ojibwa (sm32)

VHFS: Forever known as *Aster cordifolius* L. [*Aster cordifolius* L, *A cordifolius* L ssp *sagittifolius* (Wedem ex Willd) AG Jones, *A cordifolius* L var *furibishiae* Fern, *A cordifolius* L var *incisus* Britton, *A cordifolius* L var *lanceolatus* Porter, *A cordifolius* L var *moratus* (Shinners) Shinners, *A cordifolius* L var *polycephalus* Porter, *A cordifolius* L var *racemiflorus* Fern, *A cordifolius* L var *sagittifolius* (Wedem ex Willd) AG Jones, *A finkii* Rydb. var *moratus* Shinners, *A lowrieanus* Porter var *incisus* (Britt) Porter, *A lowrieanus* Porter var *lanceolatus* Porter, *A plumarius* Burgess, *A sagittifolius* Wedem ex Willd, *Symphyotrichum cordifolium* (L) GL Nesom var *furibishiae* (Fern) GL Nesom, *S cordifolium* (L) GL Nesom var *lanceolatum* (Porter) GL Nesom, *S cordifolium* (L) GL Nesom var *moratum* (Shinners) GL Nesom, *S cordifolium* (L) GL Nesom var *polycephalum* (Porter) GL Nesom, *S cordifolium* (L) GL Nesom var *racemiflorum* (Fern) GL Nesom, *S sagittifolium* (Wedem ex Willd) GL Nesom]



Symphyotrichum cordifolium

Line drawings courtesy of Kentucky Native Plant Society.

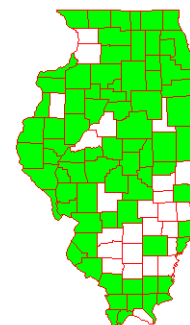
Symphyotrichum drummondii (Lindley) GL Nesom var ***drummondii*** *OH DRUMMOND’S ASTER, aka HAIRY HEART-LEAVED ASTER, (*drummondii* named for the Scottish plant-collecting brothers James Drummond, 1786-1863, & Thomas Drummond, 1793 (1790)-1835, Thomas like his countryman David Douglas made an ill-fated collecting trip to North America.) [facu] subgenus *Symphyotrichum* Section *Cordifolii*

Habitat: Mesic savannas, dry open woods, open disturbed woodland, abandoned fields, & pastures. “A plant of sandy oak savannas, open areas in oak forests, & also along sandy roadsides & powerlines” (rvw11). In the se USA, “mesic to dry forests; rare” (w11). distribution/range: Most records of this sp in Michigan are old.

Culture: propagation: ①No pre-treatment necessary other than cold, dry stratification (pm09). ②Sow at 20°C (68°F), germination slow (tchn).

seed counts & rates: 1,021,376 (agr04163-B), 1,280,000 (pm02), 1,533,784 (gna06), 2,144,208 (gnh02) seeds per pound.

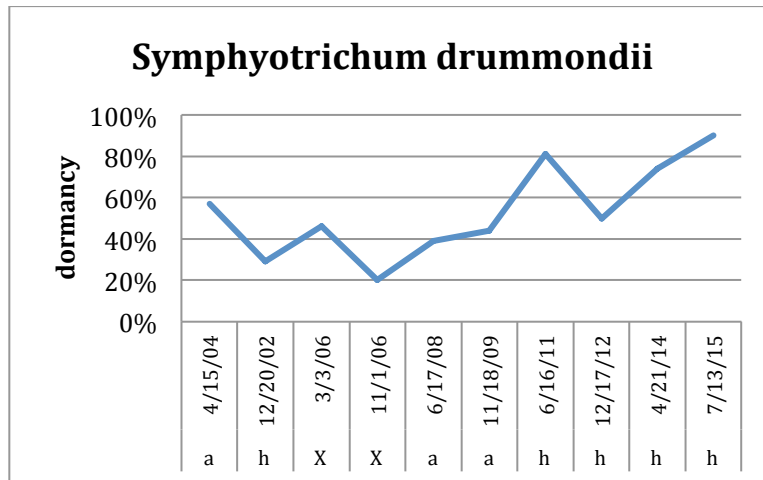
bottom line: Genesis seed test data indicate this sp has a strong to absolute requirement for dormant seeding. Germ 20.1, 20, 2.0, sd 12.2, r2.0-43 (41)%. Dorm



Aster drummondii

53, 48, na, sd 21.5, r20-90 (70)%. Test 27, 28, na, r18-38 days. (#12)**

greenhouse & garden: Easy from seed, moist cold stratify 30 days or dormant seed in an unheated coldframe for insurance, have prop stock germ tested before planting untreated seed in greenhouse. Self sows in full sun, average soils, somewhat mobile.



Description: Erect, herbaceous; perennial, native forb; 1.5-3.0', stems evenly & densely pubescent; flowers blue.
key features: “Versus typical variety, this one has stem evenly and usually densely short-pubescent throughout.” (Ilpin). “This sp resembles large individuals of *S urophyllum*, with similar ascending panicle branches forming a pyramidal inflorescence, but with longer bright blue rays of the same color as in *S oolentangiense*. Plants are often somewhat more pubescent on the upper stem than *S urophyllum*, which is glabrate.” (rvw11)
Comments: status: Threatened in Ohio. phenology: Blooms August to October. Cut flowers, landscaping. Early successional, stands may be short-lived, but mobile, freely self-sowing, finding their onsite niche. Seed source nursery production, genetic source Will Co.

“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphyotrichum drummondii* (Lindl) GL Nesom (*A. drummondii* Lindl. ex Hook) as *Aster undulatus sensu* Short, Lapham, &c., non L” (Short 1845).

“*A drummondii* Lindl. Not uncommon. Usually in woods as Memorial Forest Preserve & Kishwaukee River bank on River road south of Cherry Valley. (*A sagittifolius* var *drummondii* (Lindl) Shinnery).” (ewf55)

“Disk florets perfect and fertile, ray florets pistillate and fertile. A branched caudex or short rhizome. An abundant fall wildflower.” (Ilpin).

VHFS: Long known as *Aster drummondii* Lindl or *A sagittifolius* Wedem ex Willd var *drummondii* (Lindl) Shinnery. It was always very tempting to call this *A drummondii* Lindl just to reduce tree kill & paper usage. Taxonomists should be first & foremost conservationists, including ink, paper, & printer cartridges. Big Brother is watching your font choice. *S drummondii* var *texanum* (Burgess) Nesom is native south & southwest of Illinois.

[*Aster drummondii* Lindl, *Aster undulatus sensu* Short, Lapham, &c., not L. *Symphyotrichum drummondii* (Lindl) Nesom var *drummondii*] “May be the same as *Aster texanus* Burgess” (Ilpin).



Symphyotrichum drummondii

Line drawings courtesy of Kentucky Native Plant Society.

Symphyotrichum dumosum (Linnaeus) GL Nesom *IA, OH, WI RICE BUTTON ASTER, aka BUSHY ASTER, LONG-STALKED ASTER, (*dumosus -a -um* bushy, of shrubby aspect, full of thorn bushes, from Latin *dumosus, -a -um*, overgrown with thorn, briar or the like.) fac subgenus *Symphyotrichum* Section *Dumosi*

Habitat: Moist or dry, usually sandy soils, moist sandy soil. "Open or wooded, moist or wet soils, bogs, fens, sedge meadows, marshes, swamps, flood plains, sandy or calcareous flats, loamy prairies, old fields, sandhills, flatwoods, hammocks, pine-hickory woods, oak or pine thickets, secondary woods, sandy to mucky or marly shores of lakes & ponds, interdunal hollows" (Brouillet et al in fna). distribution/range:

Culture: ①30 days cold moist stratification (pm09). ②No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) 912,000 (ew11) seeds per pound.

availability: This was once regularly available in the Midwest native seed trade from several vendors, but it is virtually impossible to find seed or plants.

cultivation: Space plants 18-24".

Description: Erect perennial, 12-40", flowers pale purple to white. N 2n = 16, 32.

Comments: status: Endangered in Iowa. Threatened in Ohio. Special Concern in Wisconsin. phenology: Blooms August-September.

Associates: Attracts butterflies, bees, & birds.

VHFS: Long known as *Aster dumosus* L. [*A dumosus* L, Sp Pl 2: 873. 1753; *A coridifolius* Michx] A diverse sp with 4 named varieties; Illinois has the sp & variety *strictior* (T&G) GL Nesom. Hybrids are known with *S racemosum* & *S lanceolatum* var *interior*.



Symphyotrichum dumosum

Line drawings courtesy of Kentucky Native Plant Society.

Symphyotrichum ericoides (Linnaeus) GL Nesom var **ericoides** *TN HEATH ASTER, aka *ASTER ÉRICOÏDE*, MANY FLOWERED ASTER, SQUARROSE WHITE ASTER, WHITE HEATH ASTER, WHITE PRAIRIE ASTER, (*ericoides* (er-i-KO-i-dees, or e-ri-KOI-deez) *Erica*-like, heath-like, in reference to the slender branches & bracteal leaves resembling those of *Erica*, heath or heather.) facu- subgenus *Virgulus* Section *Ericoidei*

Habitat: Sand, dry & mesic prairies & savannas, degraded prairies, dry roadsides, a colonizing sp.

distribution/range:

Culture: ① “No pretreatment needed. My experience suggests moist cold may be counter indicated. Ok to cold dry store. May fall sow. Light cover. Germination fair.” (mfd93) ② No pre-treatment necessary other than cold, dry stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate. (pm09) ③ No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99).

④ No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ⑤ Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). ⑥ Us97 recommends storing dry seed at 1-2°C for 2.5-4 months, but this is not necessary with Illinois seeds.

seed counts & rates: 1,312,000 (sh94), 2,240,000 (jfn04), 2,880,000 (aes12), 3,200,000* (pm02 & ew11), 4,108,597 (gnhm03), 4,536,000 to 4,829,787 (gna06), 5,072,626 (gna04), 5,101,124 (gn07) seeds per pound.

availability: Seed is in perpetual poor supply. Sp is one of the last plants to bloom, and seeds mature in very late fall. Sp is rhizomatous, and production beds fill in and seed production declines.

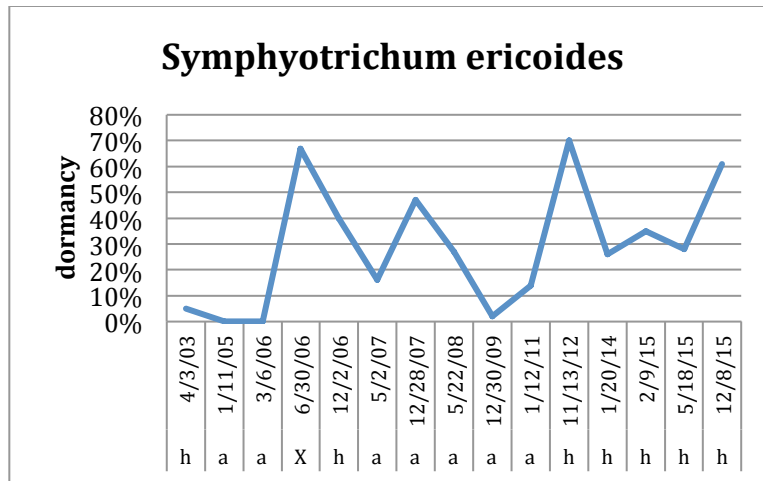
“*Aster ericoides* General prairie. Blooms late September; WHITE. Harvest late October. 2', seed seems to germinate poorly, but when established plant is rather weedy, forming vegetative colonies. I've got poor germination by SEEDLING TRANSPLANT; but plants are aggressive, forming large vegetative colonies.” (rs ma)

asexual propagation: Division of older plants also works in a garden situation.

cultivation: Space plants 12-18". Tolerates clay soils. Full sun to part shade. AES notes some salt tolerance.

bottom line: GNI seed tests indicate dormant seeding is strong necessity over 40% of the time. The percent dormancy varies from year to year, with some lots primarily non-dormant, with other years primarily dormant; for best results field sow dormant. Flipflop species. Small Seed Effect. Germ 52.9, 49, 48, sd 23.7, r12-90 (78)%. Dorm 29.2, 27, 0.0, sd 23.1, r0.0-70 (70)%. Test 30, 30, na, r21-54 days. (#17).**

greenhouse & garden: Easy from seed, moist cold stratify 30 days or dormant seed in an unheated coldframe for insurance, have prop stock germ tested before planting untreated seed in greenhouse.



Description: Erect perennial, 1.0-3.0', flowers white, occasionally purplish-white or pale pink, & approx. 0.5" across. Variety *ericoides*, $N 2n = 10, 20$. ⓐ A key feature for this sp is the bracts beneath the flower heads. They have fairly blunt points that spread out from the base. Other similar sp have bracts that are either sharply pointed, or pressed against the inflorescence, or both.

Comments: status: Threatened in Tennessee. Some authorities feel this is weedy or invasive in a part of its range, or under certain conditions or applications. () phenology: Blooms late 9,10. In northern Illinois, collect seeds mid-October to late November. Collect seeds in se Wisconsin in October (he99). Contrary to plants.usda.gov, the seeds are not ripe in September. Attractive cut flowers. Useful in landscaping, aggressive, pioneer sp, good in naturalizing & erosion control. HEATH ASTER flowers very late, one of the last flowers of the year, sometimes producing little seed due to a killing freeze before seed maturity. Seed source nursery plantings, genetic source Hannaman Twp, eastern Whiteside Co.

"There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphyotrichum ericoides* (Linnaeus) GL Nesom (*Aster ericoides* L.) as *Aster multiflorus* Aiton" (Short 1845)

Associates: Pollinated by beetles. Attracts butterflies, songbirds & small mammals. This aster is not eaten by livestock.

VHFS: Long known as *Aster ericoides* L. The sp is the most widespread & is in Illinois. ⓐ Var *pansum* (Blake) Nesom MANYFLOWERED ASTER is native to the NW & New Mexico. ⓑ Var *stricticaule* (T&G) Nesom, WHITE HEATH ASTER, is native to the Great Plains. **Add m14 varieties.**

[*Aster ericoides* L, *A e* L var *prostratus* (Kuntze) Blake, *A exiguus* Rydb, *A multiflorus* Ait, *A multiflorus* Ait var *exiguus* Fern, *A multiflorus* Ait var *prostratus* Kuntze, *A polycephalus* Rydb, *Lasallea ericoides* (L) Semple & L Brouillet, *Symphyotrichum ericoides* (L) Nesom var *prostratum* (Kuntze) Nesom, *Virgulus ericoides* (L) Reveal & Keener]

Several ornamental selections of this sp have been produced, including 'Blue Star', 'Ester', 'Monte Cassino', 'Pink Cloud', 'Pink Star', & 'Snowflurry'.



Symphyotrichum ericoides ericoides

Line drawings courtesy of Kentucky Native Plant Society.

Symphyotrichum falcatum (Lindley) GL Nesom var **commutatum** (Torrey & A Gray) GL Nesom CLUSTER ASTER, aka WHITE PRAIRIE ASTER, (*falcatus* -a -um falcate, sickle-shaped, curved like a sickle; *commutatus* -a -um changed or changing, altered, alteration; close to another sp.) subgenus *Virgulus* Section *Ericoides*

Habitat: “Dry soils, plains, hills, prairies, roadsides, along railroad rights-of-way, stream banks; 200–2500+” (Brouillet et al, in fna). distribution/range: FNA considers this introduced in Ontario, Illinois, Missouri, & Wisconsin, & possibly other eastern states.

Culture: ① Sow in spring, light cover, (pots)

Description: Very similar to *S ericoides*, but with smaller & fewer but larger flower heads.

Comments: status: phenology: Blooms August to October.

VHFS: Formerly *Aster falcatus* var *commutatus* (T&G) AG Jones. The sp grows west of our area.



Symphotrichum falcatum commutatum

Line drawing courtesy of Kentucky Native Plant Society.

Symphotrichum firmum (Nees) GL Nesom *NJ, NY, PA SHINING ASTER, aka CORNELL-LEAVED ASTER, SHINY-LEAVED ASTER, SMOOTH SWAMP ASTER, (*firmus -a -um* Latin firm, hard, strong, stout; lasting, valid; morally strong.) Obl [*Symphotrichum* subsection *Symphotrichum*, *Punicei* Species]

Habitat: Found in habitats similar to those of *A puniceus*, though more frequent & more likely to grow in wet prairies (sw94) distribution/range:

Culture: ①60 days cold moist stratification (pm09). 1,760,000 (jfn04), 1,830,645 (gnhs13) seeds per pound. availability: Very few native vendors separate this from *S puniceum*. Seed & plants are marginally available.

bottom line: Dormant seeding is strongly required for field sowing. Moist cold stratify or fall plant is mandatory for profitable greenhouse germination. Germ 24-51%. Dorm 40-70%. Test 25-34 days. (#3:0)**

Description:

Comments: Endangered in New Jersey & New York. Threatened in Pennsylvania. This variety is scarcely distinct from the typical variety, according to Shinnars (1941b). He states: "It is not always very easy to distinguish the two. Characteristics of the internodes, leaves, pubescence, panicles, heads, & style branches are sufficiently inconsistent to make it possible to rely upon any of them."

"*A lucidulus* (A Gray) Wieg. Uncommon. Stem less pubescent, leaves wider & less serrate than the above (*A puniceus*). Flowers large, often white & the inflorescence is on **the average {finish}**

VHSF: Formerly known as *Aster puniceus* L var *firmus* (Nees) T&G. Some authorities place this in synonymy with *Symphotrichum puniceum puniceum*, including the USDA This is maintained as a valid taxon by Reznicek et al (2011)

[*Aster firmus* Nees, *A lucidulus* (Gray) Wieg, *A lucidulus* (Gray) Wieg f *albiflorus* (R Hoffm) Benke, *A l* (Gray) Wieg f *firmus* (Nees) Deam, *A puniceus* L ssp *firmus* (Nees) AG Jones, *A p* L var *firmus* (Nees) T&G, *A p* L var *firmus* (Nees) T&G f *lucidulus* (Gray) Fern, *A p* L var *lucidulus* Gray, *Symphotrichum firmum* (Nees) GL Nesom]

Symphotrichum laeve (Linnaeus) Á Löve & D Löve SMOOTH BLUE ASTER, aka SMOOTH ASTER, (*laevis -is -e* (LIE-vis) smooth (as in not rough), or beardless & delicate, soft.) [upland] subgenus *Symphotrichum* Section *Concinni*

Habitat: Mesic to dry prairies & open woods. In stable prairies. distribution/range:

Culture: ① "No pretreatment needed. May moist cold treat or fall sow. May fall sow. Light cover. Excellent germination." (mfd93) ② No pre-treatment necessary other than cold, dry stratification (pm09). ③ No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99). ④ No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ⑤ Sow at 20°C (68°F), germination slow (tchn). ⑥ 30 days moist stratification improves germination, but not necessary for good greenhouse crop. Field sow fall, early spring. (pnnd). Growth rate moderate. Seedling vigor low. Vegetative spread rate moderate.

seed counts & rates: 579,451 (gna06), 680,150 (gna03), 758,016 (wns01), 768,000 (pn02, jfn04, sh94, aes12), 824,000 (ew11), 838,411 (gnh02), 880,000 (pm02), 1,014,000 (usda, ecs), 1,057,043 (gna05), 1,073,290 (gnih02), 1,120,988 (gna04), 1,512,000 to 1,624,329 (gnh01) seeds per pound. In mixes, sow 0.02-0.125 lb pls per acre (us97).

"*Aster laevis* Moist to mesic prairie. Blooms early September to early October; MEDIUM VIOLET-BLUE. Harvest late October. 3' or more unless given close competition; easy by methods #1 & #2. Easy by SEEDLING TRANSPLANT & SPRING BROADCAST. Transplanted seedlings bloom late 1st year. Freely self sows." (rs ma)

asexual propagation: Root cuttings.

cultivation: Space plants 18-24". Can tolerate wet mesic conditions or short durations of seasonal inundation. Prefers mesic to dry upland areas. Grows in fertile loams or clay loams. Clay soil tolerant. Nutrient load tolerance low. Siltation tolerance low to moderate. Anaerobic tolerance none. CaCO₃ tolerance medium. Drought tolerance medium. Fertility requirement low. Salinity tolerance low or none, AES notes some salt tolerance. Shade intolerant, partial to full sun. pH 5.8-7.8 (usda) or 5.0-6.5. Self sows very strongly in open areas that are burned & mowed.

bottom line: Easy from seed, our test results indicate dormant seeding (or cold moist stratification for greenhouse crops) is almost always necessary, with dormancy ranging from 24% - 88% in 77% of lots.

Nondormant lots are known. Flipflop species. Germ 39.6, 26, 58, sd 27.6, r3.0-92 (89)%. Dorm 42.8, 39, 0.0m sd 30.2, r0.0-88 (88)%. Test 32, 31, na, r22-43 days.**

greenhouse & garden: Easy from seed, moist cold stratify 30 days or dormant seed in an unheated coldframe for insurance, have prop stock germ tested before planting untreated seed in greenhouse. Seed can be dry stored. Field sown seed may be temperature sensitive in soil temperatures approaching 70°F.

Description: Perennial herb, 2.0-4.0 (5.0)'; minimum root depth 10"; branched stems; leaves clasping, waxy, blue-green; flowers lavender, violet, or blue.

Comments: status: Var *concinnum* (Willd) Nesom, known from Illinois, [*Aster concinnum* Willd, STEEL'S ASTER] is endangered & extirpated in Maryland & endangered in New York. phenology: Blooms 8,9,10. In northern Illinois, collect seeds October. Collect seeds in se Wisconsin in October - November (he99). Attractive cut flowers, landscaping, used to slow storm water runoff & provide upland buffer stabilization. Aggressively self-sows on sites with open soils. Seed source nursery production genetic sources railroad remnants, Wyanet, Bureau Co & Waterman, DeKalb Co.

"There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphyotrichum laeve* (Linnaeus) Á Löve & D Löve as *Aster laevis* L.," (Short 1845).

Associates: Pollinator friendly. Pollinated by long-tongued bees, short-tongued bees, other *Hymenoptera*, *Diptera*, *Lepidoptera*, *Coleoptera*, & *Hemiptera*. Butterfly host & nectar plant. Attracts orange sulfur, crescents, & checkerspot butterflies. Larval host *Phyciodes tharos* PEARL CRESCENT BUTTERFLY. Attracts hummingbirds, songbirds & small mammals. Walnut tolerant.

VHFS: Long known as *Aster laevis* L. Illinois has the sp & *concinnum* (Willd) GL Nesom. Variety *geyeri* (Gray) Nesom, GEYER'S ASTER, is native to most the US west of the Mississippi, except Arkansas, Iowa, Louisiana, & Oklahoma. Variety *purpuratum* (Nees) Nesom is native from Texas to Georgia.



Symphyotrichum laeve laeve

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum lanceolatum (Willdenow) Nesom PANICLED ASTER, aka *ASTER LANCÉOLÉ*, EASTERN LINED ASTER, LANCE-LEAVED ASTER, MARSH ASTER, SMOOTH ASTER, WHITE PANICLE ASTER, (specific epithet originally *simplex* unbranched, simple; *lanceolatus* (lan-kee-o-LAH-tus) lanceolate, spear-shaped, lancelet-like in form, New Latin from *lancea*, lance or spear, *-ola-*, *-olus-*, diminutive, & *-atus*, possessive of or likeness of, for the lanceolate leaves.) subgenus *Symphyotrichum*, Section *Salicifolii*

Habitat: Moist fields, roadsides, floodplains, wet meadows, & mesic prairies. distribution/range: Native to most of North America east of the Rockies, or Cis-Rocky Mountain USA & Canada.

Culture: ①No pre-treatment necessary other than cold, dry stratification (pm09). ②Seeds germinate after about 60 days of cold moist stratification (he99). ③Sow at 20°C (68°F), germination slow (tchn). Growth rate slow. Seedling vigor low. Vegetative spread rate moderate (*that's a good one from the fine folks that brought you Rosa multiflora!*).

seed counts & rates: 700,000 (usda), 1,711,698 (gnh13), 2,268,000 (jfn04), 2,272,000 (aes12), 3,120,275 (gna06), 3,736,625 (gna06), 4,053,571 (gnam05), 4,447,058 (gnhg12) seeds per pound. Us97 recommends 0.06 lb pls per acre seeding rate.

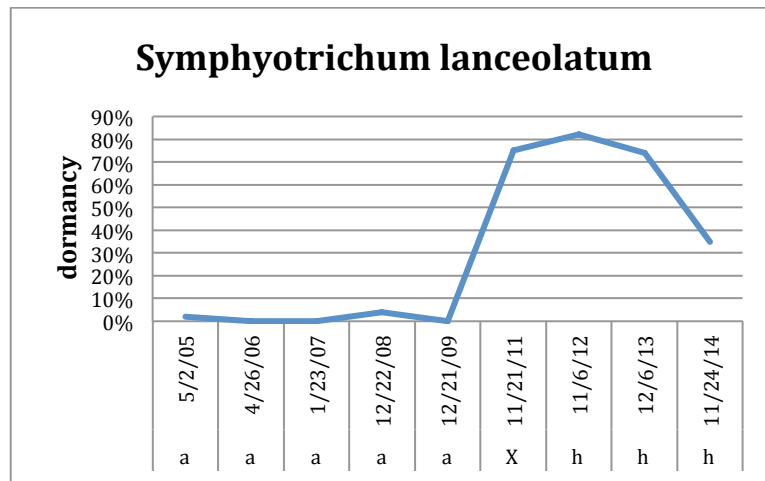
availability: Seeds, bare root, & plugs readily available commercially, but sp is not a mainstay item & may periodically be unavailable. Production fields are short lived.

asexual propagation: Mature plants can be divided in late fall or early spring.

cultivation: Prefers moist to saturated soils. Tolerates clay soils. Partial to full sun; shade tolerance intermediate. Anaerobic tolerance low. CaCO3 tolerance low. Nutrient load tolerance moderate. Siltation tolerance high. Drought tolerance low. Fertility requirement low. Salinity tolerance none to moderate, also noted by AES. pH 6.0-8.2.

Mature plants tolerate short periods of shallow flooding. More flood tolerant than *Aster novae-angliae*. Germinating seedlings are killed by 2 days of inundation.

bottom line: Sow dormant or spring. Moist cold stratifying may benefit some seed lots, but good crops are possible without stratification. Non-dormant lots are known. Flipflop species. Small Seed Effect. Germ 57, 74, 85, sd 31.2, r11-85 (74)%. Dorm 30.2, 4.0, 0.0, sd 34.7, r0.0-82 (82)%. Test 26, 26, 26, r17-36 days**



Description: Erect, herbaceous, perennial, native forb; 2.0-5.0(-6.0) tall; rhizomatous, 8” minimum root depth; flowers white. N 2n = 32, 40, 48, 56, or 64.

Comments: status: Ssp *lanceolatum* var *interior* (Wieg) Nesom is endangered in New York. phenology: Blooms August (September) to October. In northern Illinois, collect seeds in late October - early November. Collect seeds in se Wisconsin in October (he99). Provides waterfowl cover. Wetland restoration, useful in upper slope stabilization, rain gardens, & vegetated swales; can be very weedy & aggressively rhizomatous; not suited for small plantings. Seed source nursery production & remnant wetlands, Lee & Whiteside cos.

Associates: Attracts butterflies.

VHFS: Long known as *Aster lanceolatus* Willd. A complex, diverse, & widespread sp with 5 varieties, or 2 ssp, one with 4 varieties (all 4 in Illinois). ① Ssp *hesperium* (Gray) Nesom var *hesperium*, 2n = 64, WHITE PANICLE ASTER, is native north & west of Illinois. ② Ssp *lanceolatum* var *hirsuticaule* (Semple & Chmielewski) Nesom, 2n = 32, is native to Illinois, the upper Midwest, & Connecticut. ③ Ssp *lanceolatum* var *interior* (Wieg) Nesom, 2n = 48, 64, (in Illinois) & ssp *lanceolatum* var *lanceolatum* 2n = 32, 40, 48, 56, 64, (in Illinois), & ssp *lanceolatum* var *latifolium* (Semple & Chmielewski) Nesom, 2n = 64, (in Illinois) are native to most of the eastern US. **Add descriptions.**

Hybrids of *S lanceolatum* & *S urophyllum* have been found.



Symphyotrichum lanceolatum

Line drawing courtesy of Kentucky Native Plant Society. Second & third line drawings Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image.

Symphyotrichum lateriflorum (Linnaeus) Á. Löve & D Löve SIDE-FLOWERING ASTER, aka CALICO ASTER, GOBLET ASTER, STARVED ASTER, (*lateriflorus* with flowers on the side, with flowers at the side, lateral-flowered.) facw- subgenus *Symphyotrichum* Section *Dumosi*

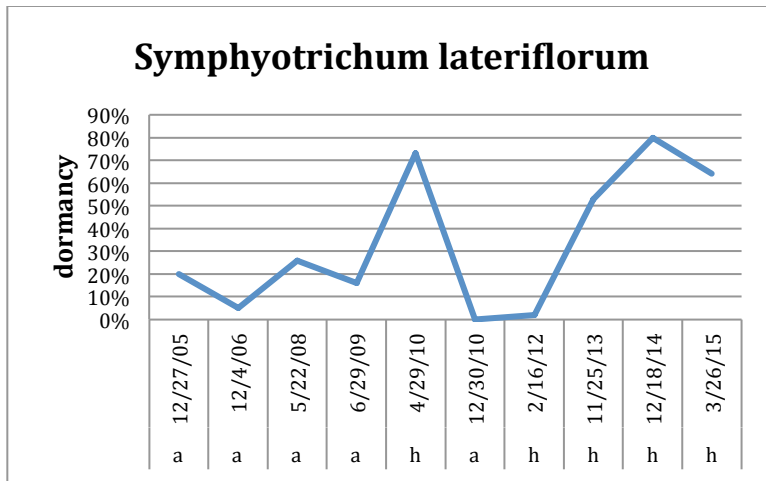
Habitat: Wet-mesic, mesic & dry savannas; common in woods, floodplain woods, & calcareous fens.

distribution/range:

Culture: ①No pre-treatment necessary other than cold, dry stratification (pm09). ②No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99). ③Sow at 20°C (68°F), germination slow (tchn).

seed counts & rates: 1,600,000 (aes12), 3,064,864 (gnhm11), 3,200,000 (jfn04), 3,478,927 (gnam05), 3,617,530 (gna06), 4,000,000* (pm02) seeds per pound. ♀♂

bottom line: Test data indicate 50% of lots are significantly to strongly dormant and should be dormant seeded. Modest to 0% dormant lots are known. Flipflop species. Small Seed Effect. Germ 48.2, 42, 42, sd 30.1, r15-95 (80)%. Dorm 33.9, 23, na, sd 29.2, r0.0-80 (80)%. Test 28, 28, 28, r17-38 days.**



greenhouse & garden: Germination is enhanced by cold moist stratification.

Description: Native, erect, herbaceous, perennial forb; clump forming; 2.0-3.0'; flowers white;

Comments: status: phenology: Blooms 8,9,10. In northern Illinois, collect seeds November. Collect seeds in se Wisconsin in November (he99). Seed source nursery production, genetic source NW Illinois undifferentiated, & DeKalb Co.

VHFS: Formerly *Aster lateriflorus* (L) Britt.



Symphyotrichum lateriflorum

First line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image. 2nd - 4th line drawings courtesy of Kentucky Native Plant Society. (*A. hirsuticaulis*, *A. lateriflorus*, & *A. vimineus*)

Symphotrichum novae-angliae (Linnaeus) Nesom NEW ENGLAND ASTER, aka ASTER, *ASTER DE NOUVELLE-ANGLETERRE*, FIRST FLOWER, HARDY ASTER, MICHAELMAS DAISY, STARWORT, *Wini'sikens*, dirty, little, (Ojibwa), (*novae-angliae* (NO-vie ANG-glee-ie) Latin of or from New England, the northeastern USA. Epithet was formerly capitalized.) Facultative wet subgenus *Virgulus* Section *Oblongifolii*

Habitat: Wet meadows, wet to mesic prairies, degraded prairies, mesic & dry savannas.. Wet thickets, alluvial woods, streams, meadows, & swamps. distribution/range: Native to much of central & eastern USA.

Culture: ①“No pretreatment needed, or fall sow. Experience suggests moist cold treatment may benefit germination. Excellent germination. Light cover. Self sows abundantly in most sites.” (mfd93). ②60 days cold moist stratification (pm09). ③“Fresh seed or dry stored seed can give very high germination rates in 3-8 days. Moist stratification improves germination. Fall plant with light cover outdoors or in cold frame works well” (us97). ④No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11, sp & pink selection) ⑤Sow at 20°C (68°F), germination slow (tchn). ⑥30 days moist stratification improves germination, but is usually but not always necessary for good greenhouse crop. Field sow fall, early spring. (pnnd) ⑦Moist cold stratification at 34-40° F for 30-40 days gives optimum germination (usda).

seed counts & rates: 1,040,000 (var pink pm02&ew11), 1,056,000* (pm02), 1,100,000 (usda, ecs), 1,120,000 (pn02), 1,184,064 (wns01), 1,216,000 (gran, jfn04, & sh94), 1,280,000 (aes12), 1,300,000 (stocks), 1,333,000* (gn), 1,136,000 (ew11), 1,388,379 (gna03), 1,417,500 (gnh11), 1,624,329 (gnh01), 1,653,916 (gna04), 1,678,373 (gnam06,06c), 1,759,690 (gna06), 1,834,336 (agr02243), 2,058,956* (gnh01) seeds per pound. Plant 0.8 oz per 1,000 ft sq (stocks). Pure stand plant 2 lb per acre (gran). In mixes plant 0.03(0.04)-0.2 lb pls per acre (us97).

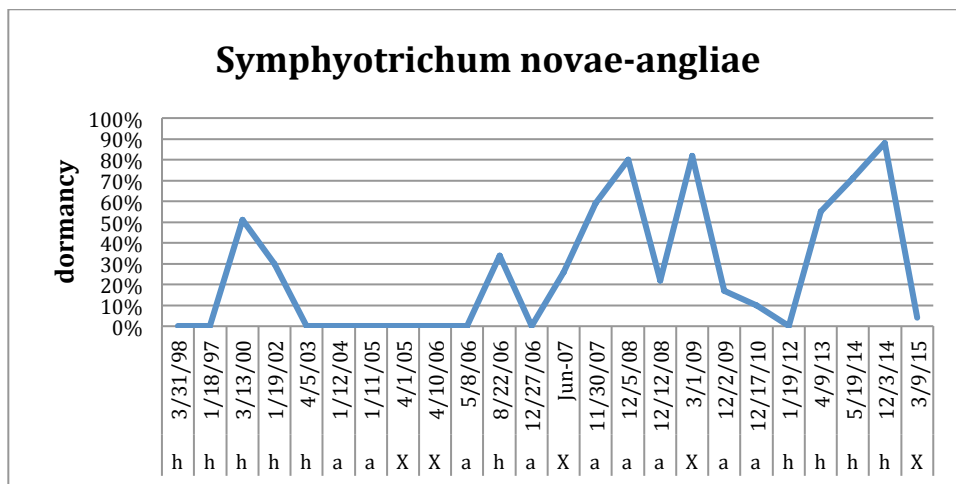
availability: Seeds, plugs, & bare-root plants readily available commercially.

asexual propagation: Mature plants can be divided in late fall or early spring, or in the spring every three years (Heuser 1997) Stem cuttings in spring & early summer can be rooted in sand, gel mix, or rockwool.

cultivation: Space plants 18-24". Moist sites with full sun to partial shade. Moderate to high water requirement. Moderately coarse to fine soils. Tolerates clay soils. Neutral to acidic soils. Moist soil to wet-mesic conditions. Limited inundation tolerance. Mature plants tolerate short periods of shallow flooding in natural areas, but not in constructed wetlands. Nutrient load tolerance moderate. Salt tolerance low. Siltation tolerance moderate. Partial to full sun. pH 5.5-7. Germinating seedlings are killed by 2 days of inundation. Greenhouse plants or production plots may be subject to various forms of stem-rot. Specimen plants can be pinched back before July to encourage branching & a more compact plant. Greenhouse grown plants may bloom first year from seed. *S novae-angliae* should not be burned after it has broken winter dormancy.

bottom line: Many crop years show zero dormancy, but almost 40% of lots have a strong requirement for dormant seeding or cold moist stratification (26-88% dorm). Dormant seeding is best. Flipflop species. Germ 53.3, 50.5, 33, sd 25.9, r8.0-97.5 (89.5)%. Dorm 26, 13.5, 0.0, sd 30.5, r0.0-88 (88)%. Test 30, 29, 26 r24-46 days. (#26:2)**

greenhouse & garden: No treatment works most years, easy from seed, but 40% lots >30% dormant. Seeds need light, plant 0.13" deep, temperature sensitive, subject to induced secondary dormancy*. Sp self sows in open ground.



Description: One of the larger & showiest wildflowers. Erect, perennial, herbaceous, native forb; 2.0-6.5' tall; ray flowers lavender to purple-blue with yellow disks. Our first large planting of 28,000 plugs from wild harvested seed had about 15 white individuals. White individuals may be short-lived, as they vanished in about 3 years. Some other nursery strains exhibit high incidence (much higher than in the wild) of light blue, pink & white individuals. This is caused by using field grown seeds to produce multiple generations of new fields.

The flower stalks & bracts at the base of each flower head are covered with glandular-tipped hairs. $N = 10$.

Comments: status: phenology: Blooms 8,9,10, until frost, but there are always a few precocious plants flowering in July. In northern Illinois, collect seeds in October - early November. Collect seeds in se Wisconsin in October - November (he99). Excellent cut flowers in fall. Useful in landscaping, roadside seedings, wetland seedings, & prairie seedings on moderate side slopes, used in upper shoreline zones & for upper slope stabilization. Pioneer sp, can be aggressive, sometimes forming monocultures. Seed sources nursery production from genetic source Clinton Twp, DeKalb Co & Providence, Bureau Co.

“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphyotrichum novae-angliae* (Linnaeus) Nesom as *Aster novae-angliae* L.,” (Short 1845).

“A very common & showy aster that is found mostly in prairie situations. Occasionally the flowers are rose colored. Its marked tendency to spread lessens its value as a garden plant.” (ewf55)

Associates: Pollinated by bees, butterflies, flies, beetles, & moths. Nectar source. The larval host of *Phycoides tharos* PEARL CRESCENT BUTTERFLY. Attracts butterflies (including MONARCHS), bees, honeybees, songbirds, hummingbirds, & small mammals. Provides food & cover for waterfowl & gamebirds. Appears to be somewhat rabbit-resistant. A large field of this plant is a favored hangout for pheasants on our farm.

ethnobotany: Powdered root smoked in earliest times by Ojibwa (den28).

VHFS: Formerly known as *Aster novae-angliae* L. “*Symphyotrichum novae-angliae* hybridizes with *S ericoides*, forming the F 1 intersectional hybrid *S × amethystinum*” (fna). Numerous ornamental selections are available.



Symphyotrichum novae-angliae

Line drawings courtesy of Kentucky Native Plant Society. Second line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image.

Symphyotrichum novi-belgii (Linnaeus) Nesom MICHAELMAS DAISY, aka NEW YORK ASTER, (*novi-belgii* (NO-vee-BEL-gee-ee) of or from New York, at one time called New Belgium.) [*Symphyotrichum* subsection *Symphyotrichum*, *Symphyotrichum* Species]

Habitat: Swamps & moist meadows. distribution/range:

Culture: propagation: ①60 days cold moist stratification (pm09). ②No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ③Sow at 20°C (68°F), germination slow (tchn). Growth rate moderate. Seedling vigor low. Vegetative spread rate moderate.

seed counts & rates: 700,000 (usda, ecs), 856,000 (pm02), 960,000 (ew11) seeds per pound.

cultivation: Space plants 18-24". Anaerobic tolerance medium. CaCO₃ tolerance low. Drought tolerance low. Fertility requirement low. Salinity tolerance none. Shade intolerant. pH 5.5-7.0

Description:

Comments: status: Threatened in Pennsylvania. phenology: Blooms

Associates: Attracts hummingbirds, bees, & butterflies.

VHFS: Formerly known as *Aster novi-belgii* L. ①Var *novi-belgii* & var *villicaule* (Gray) J Labrecque & L Brouillet are native to the Mid-Atlantic States & New England. ②Var *elodes* (T&G) Nesom is native from Maine to South Carolina. [*Aster eminens* Willd, *A junceus* Ait, *A longifolius* Lam, *A novi-belgii* L, *A salicifolius* sensu Willd, non Lam nec Ait, *Symphyotrichum longifolium* (Lam) Nesom, as to type]



Symphyotrichum novi-belgii

Line drawings courtesy of Kentucky Native Plant Society. (*A junceus*, *A longifolius*, *A novi-belgii*, *A salicifolius*) Last line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image.

Symphyotrichum oblongifolium (Nuttall) GL Nesom *IN, OH AROMATIC ASTER, aka FALL ASTER, SHALE BARREN ASTER, WILD BLUE ASTER, (*oblongifolius -a -um* New Latin, with oblong leaves, from Latin

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adjective *oblongus -a -um*, longer than wide, oblong, *-i-*, & *folium, foli(i)*, n., noun, a leaf.) The common name is from the balsam-like fragrance of the crushed leaves. upl subgenus *Virgulus* Section *Oblongifolii*

Habitat: Sand, dolomitic gravel, & dolomitic limestone prairies. Dry open sand savannas. Calcareous hillsides & cliffs. Full sun, dry prairies & cliffs. In the se USA, “rock outcrops & dry woodlands over limestone, calcareous shale, common” (w11). distribution/range:

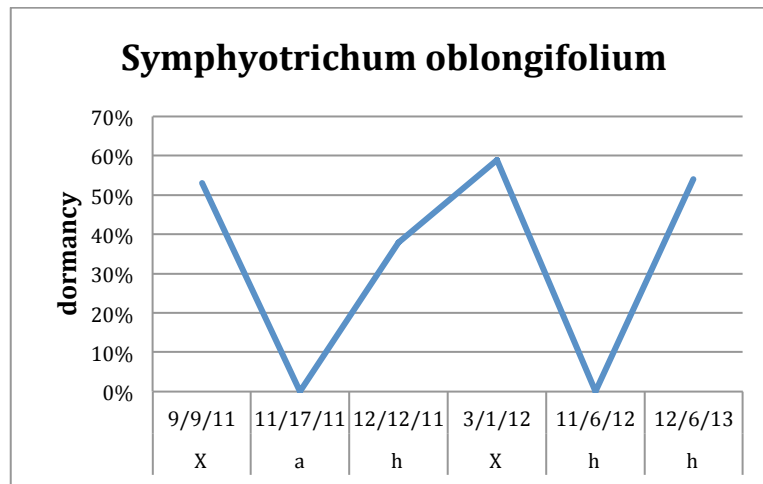
Culture: propagation: ① “No pretreatment needed, or fall sow. May be moist cold stratified. Light cover. Good germination” (mfd93). ② No pre-treatment necessary other than cold, dry stratification (pm09). ③ No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99). ④ No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ⑤ Sow at 20°C (68°F), germination slow (tchn).

seed counts & rates: 816,000 (pm02,ecs,&ew11), 1,457,464 (gnam11), 1,517,056 (gnhm11), 1,718,175 (gnhe12), 2,268,000 seeds per pound. In seed mixes use 0.015-.031 lb pls per acre (gni). Monocultures not advised, needs companions.

availability: Very limited availability as seeds or plants.

cultivation: Space plants 24-36”. Tolerates well-drained, sandy or calcareous soils. Drought tolerant once established.

bottom line: 2/3 of lots are strongly dormant, 38-59%. 1/3 of lots are nondormant. Germ 46.2, 40.5, na. sd 20.9, r25-87 (62)%. Dorm 34, 45.5, 0.0, sd 24.9, r0.0-59 (59)%.**



Description: Weakly erect perennial, forming open colonies, 1.0-2.0', slightly branched stems, flowers rich purple to violet, leaves small, stiff.

Comments: status: Rare sp in Indiana. Threatened in Ohio. phenology: Blooms 9,10. In northern Illinois, collect seeds in mid to late October. Collect seeds in se Wisconsin in October (he99). Cut flowers, landscaping. Loosely colonial, in patches, can be pleasantly rhizomatous in good soil, but slow to spread in sterile, sandy soils. Our local material forms loose, open, soddy clones. Calcareous soils. This sp does well in older, stable, dry, sandy road cuts in Bureau & Whiteside cos. Genetic source New Bedford, Bureau Co and Tampico, Whiteside Co.

“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphyotrichum oblongifolium* (Nuttall) GL Nesom as *Aster oblongifolius* Nuttall,” (Short 1845)

“A high prairie plant that is found most often in such situations on roads & railroads. Not very common. Also found in Boone & DeKalb cos.” (ewf55)

Associates: Attracts butterflies & birds (hummingbirds).

VHFS: Formerly *Aster oblongifolius* Nutt. [*Aster kumleinii* Fries ex Gray, *A oblongifolius* Nutt, *A o* Nutt var *angustatus* Shinn, *A o* Nutt var *orientis* Shinn, *A o* Nutt var *rigidulus* Gray, *Lasallea oblongifolia* (Nutt) Semple & L Brouillet, *Virgulus oblongifolius* (Nutt) Reveal & Keener.]



Symphyotrichum oblongifolium

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum ontarionis (Wiegand) GL Nesom OH* ONTARIO ASTER, aka BOTTOMLAND ASTER, *ASTER DU LAC ONTARIO*, LAKE ONTARIO ASTER, (*ontarionis -is -e* of Ontario, Canada.) subgenus *Symphyotrichum* Section *Dumosi*

Habitat: Moist meadows, marshes, shores. “Often shaded, usually moist, alluvial soils, alluvial stream or lake shores, floodplain deciduous forests or thickets, bogs, marshes, edges of fields, roadsides” (fna). Open woodlands, woodland openings, woodland borders, partially shaded cliffs, along woodland paths, powerline easements in wooded areas, savannas, moist meadows, & abandoned fields (Hilty). “Typically found on moist calcareous soils” (Eckel 1996). In the se USA, “bottomlands, swamps, bogs, rare.” (w11). At Genesis, it grows naturally in a mesic OSAGE ORANGE hedge row (a county record). distribution/range: Floodplain woods, river terraces, common throughout Illinois (m14).

Culture: propagation: ①Genesis 2009 seed is non-dormant. Plant spring or fall, seeds are small, light cover.

seed counts & rates: 4,495,049 (gnia09) seeds per pound.

availability: Sp is unknown in the trade. We have a small native colony for in-house use.

bottom line: Limited test data indicates plant either dormant or spring. Germ 88%. Dorm 0.0. Test 22 days.

Description: Erect, herbaceous, perennial, native forb, 1-4' tall stems evenly covered with fine curly hairs, mostly towards the top; leaves lower surface evenly hairy, lance-like, basal leaves stalked, upper leaves mostly stalkless; inflorescence of many heads along spreading branches; flowers white, 0.33-0.50" wide, 9-14 rays; $N 2n = 32$. key features: ①Similar to *A lateriflorus*, but with long, creeping rhizomes, shorter disc corolla lobes, & hairy lower leaf surfaces evenly hairy.



Comments: status: Endangered in Ohio. phenology: Blooms August to October. A colonial aster. Production & genetic source Whiteside Co.

VHFS: The new name is *Symphyotrichum ontarionis* (Wiegand) GL Nesom as listed in FNA & plants.usda.gov. *Symphyotrichum* is grammatically neuter gender, requiring the epithet *ontarione*, which is the correct term, but it is dumbed down to an orthographic variant. The inverse is true. *Ontarionis* is either

masculine or feminine, while *ontarione* is neuter. *Symphotrichum laeve* & all other spp with regularly declined Third Declension adjectives as specific epithets are in proper agreement. All the other non-genitive *Symphotrichum* epithets are neuter, ending in *-um*. Most *Symphotrichum* genitive epithets refer to people, except *novae-angliae* & *novi-belgii*. Other geographic epithets in the genus include *bahamense*, *chilense*, *x columnianum*, *georgianum*, *laurentianum*, & *yukonense*. Some argue that *ontarionis* is 3rd Declension genitive, indicating the aster of or belonging to Ontario. But, *ontarionis -is -e* is a 2nd Declension New Latin adjective meaning of or pertaining to Ontario, plain & simple. Get over it, *ontarionis* is wrong. “They do not know very good Latin, these botanists.” Albert Hofmann.

This is why *Sputnik* won the space race. We are a nation, no, indeed, a species, of self-righteous ignoramuses. The Cold War took away our edge. Too much Social Studies.

Formerly known as *Aster ontarionis* Wieg. [*Aster diffusus* Aiton var *thyrsoides* Gray, *A lateriflorus* (L) Britton var *thyrsoides* (Gray) E Sheld, *A missouriensis* Britt, non Kuntze, *A m* Britt var *thyrsoides* (Gray) Wiegand, *A pantotrichus* SF Blake, *A p* SF Blake var *thyrsoides* (Gray) SF Blake, *A tradescantii* L var *thyrsoides* (Gray) B Boivin, *Symphotrichum ontarione* (Wieg) GL Nesom]

Variety *glabratum* (Semple) Brouillet & Bouchard, with abaxial leaf faces either moderately to densely hairy or glabrous to glabrate, is known from Michigan, Ontario, & Quebec.



Symphotrichum ontarionis

Line drawing courtesy of Kentucky Native Plant Society.

Symphotrichum oolentangiense (Riddell) GL Nesom SKY-BLUE ASTER, aka AZURE ASTER, PRAIRIE HEART-LEAVED ASTER, (*oolentangiensis -is -e* of or pertaining to, & by extension, growing near the Oolentangy (Oolentangy, Oleutangy) River in Ohio. In 1833, the Ohio legislature voted to restore original Native American names to some Ohio rivers, hence the specific epithets *oolentangiensis* & *muskingumensis*; formerly *azureus -a -um* (a-ZYEW-ee-us) azure, true blue, the color of deep blue, deep sky blue, from *azure*, which is derived from Old French *lazaward*, *lapis lazuli* with initial 'l' dropped as if it were French: adapted from Arabic (*al-*) *lazaward* from Persian *ljward*, *lzhward*, *lapis lazuli*, blue color, & *-eus*, made from, color, -like. (OED) Medieval Greek *λαζούριον*, *lazourion*, & medieval Latin *lazurius*, *lazur*, *lazulus*, *lapis lazuli*. The Italic languages dropped the Arabic article *al-* as though it were the article *l'*.) upl subgenus *Symphotrichum* Section *Concinni*

Habitat: Hill prairies, sand prairies, mesic to dry prairies, dry savannas, & dry open woods. **distribution/range:**

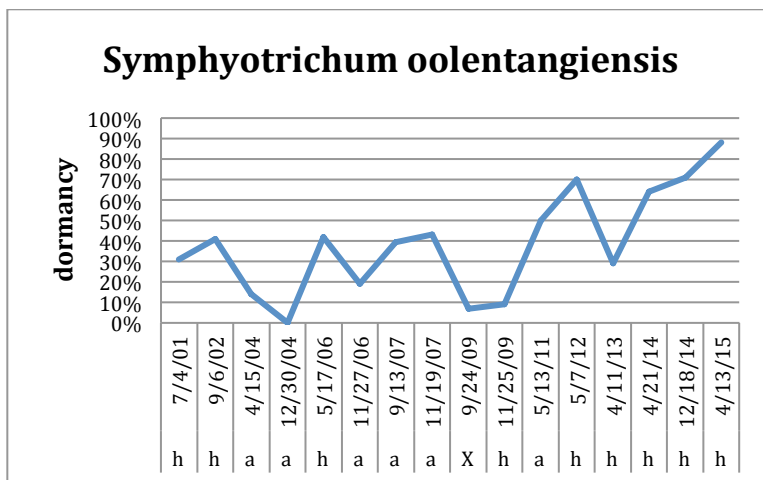
Culture: ① “No pretreatment needed. My experience suggests moist cold may be counter indicated. Ok to cold dry store. May fall sow. Light cover. Good germination. (mfd93)”. ② No pre-treatment necessary other than cold, dry stratification. Seeds germinate most successfully in cool soil. (pm09) ③ No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99). ④ No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ⑤ Sow at 20°C (68°F), germination slow (tchn). ⑥ 30 days moist stratification improves germination, but not necessary for good greenhouse crop. Field sow fall, early spring (pnnd).

seed counts & rates: 1,262,912 (wns02), 1,277,075 (gnam04), 1,280,000* (pm02 & ew11), 1,308,800 (aes12), 1,312,000 (jfn04, sh94), 1,432,176 (gnh02), 1,512,000, 1,532,988 (gnav02), 1,687,732 (gnam06), 1,790,927 (gna06) seeds per pound.

“*Aster azureus* Mesic to dry or sand prairie. Blooms early September to mid October, PALE VIOLET-BLUE. Harvest late October. Over 3' & coarse unless given competition, methods #1 & #3. Flowers late 1st year by SEEDLING TRANSPLANT. Also successful by FALL BROADCAST.” (rs ma)

cultivation: Space plants 1.5-2.0'. Mesic to dry soils, full sun to part shade. Clay soil tolerant. Fields & open areas. Drought tolerant. Reported to have some salt tolerance.

bottom line: Most lots benefit strongly from dormant seeding, but it can be established from spring planting. With a high seed count & debarbed seed, the modest germination of spring seeding gives the illusion of good results. (Small Seed Effect) Germ 36.6, 32, 32, sd 20.9, r3.0-83, (79)%. Dorm 36.4, 39.5, na, sd 24, r0.0-88 (88)%. Test 31, 30, 27, r23-42 days. (#16:5)**



greenhouse & garden: Most crop years benefit from cold moist stratification.

Description: Erect perennial, 1.5-3.0', flowers blue (blue/violet), lower leaves typically heart-shaped.

Comments: status: phenology: Blooms 8,9,10. In northern Illinois, collect seeds October. Collect seeds in se Wisconsin in October (he99). Attractive cut flowers, landscaping, outstanding color, specimen plantings, herbaceous borders, pollinator gardens, wildlife plots, & dry rain gardens. Seed source nursery production originally from black-soil prairie cemetery remnants, Clarion Twp, Bureau Co, Temperance Hill, China Twp, Lee Co, loess hill cemetery prairie, Morrison, Mount Pleasant Twp, Whiteside Co, & DuPage, Kane, & Will cos. ecotype (Horlock).

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob's seeds were collected in DuPage, Kane, & Will cos. We traded seeds back & forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.

“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others,, *Aster azureus*.” *Symphyotrichum oolentangiensis* (Riddell) GL Nesom as *Aster azureus* Lindl. (Short 1845).

“A common woodland aster. It has thick rough leaves, deep blue flowers & the branches of the inflorescence are stiff. It is also found on prairies, roadsides, & railroads.” (ewf55)

Associates: Pollinator friendly. Butterfly nectar plant. Pollinated by long-tongued bees, short-tongued bees, other *Hymenoptera*, *Diptera*, & *Lepidoptera*. Attracts hummingbirds. Walnut tolerant.

VHFS: Recently called *Aster oolentangiensis* Riddell and now called *Symphyotrichum oolentangiense* (Riddell) GL Nesom.

[*Aster azureus* Lindley, *A a* Lindl f *incarnatus* Farw, *A oolentangiensis* Riddell var *oolentangiensis*, *Symphyotrichum oolentagiense* (Riddell) GL Nesom, *S o* (Riddell) GL Nesom var *oolentangiense*]



Symphyotrichum oolentangiense née *Aster azureus*

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum parviceps (Burgess) GL Nesom *NC SMALLHEAD ASTER, aka GLADE ASTER, (*parviceps* small-headed.) subgenus *Symphyotrichum* Section *Porteriani*

Habitat: distribution/range: West Central Illinois, & Cook, DuPage, Kankakee, & Winnebago cos.

Culture:

Description:

Comments: status: Endangered in North Carolina. phenology: Blooms

VHFS: For some time known as *A parviceps* (Burgess) Mack & Bush. [*Aster depauperatus* Fern var *parviceps* (Burgess) Fern, *A ericoides sensu* Ait var *parviceps* Burgess, *A parviceps* (Burgess) Mack & Bush, *A pilosus* Willd ssp *parviceps* (Burgess) AG Jones]



Symphyotrichum parviceps

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum patens (Aiton) GL Nesom var **patens** *ME, NH LATE PURPLE ASTER, aka COMMON CLASPING ASTER, SKYDROP ASTER, (*patens* spreading, opening out.) subgenus *Virgulus* Section *Patentes*
Habitat: In the se USA, “dry woodlands, roadsides, woodland edges, clearings, roadbanks, common” (w12).
distribution/range: Southern 1/3 of Illinois.

Culture:

Description:

Comments: status: Possibly Extirpated in Maine. Threatened in New Hampshire. phenology: Blooms
“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... “
Symphyotrichum patens (Aiton) GL Nesom (*A. patens* Aiton) as *Aster phlogifolius* Muhl. ex Willd. ” (*Short 1845*).

VHFS: [*Aster phlogifolius*, *A patens* Aiton, *Lasallea patens* (Aiton) Semple & L Brouillet, *Virgulus patens* (Aiton) Reveal & Keener]



Symphyotrichum patens patens

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum pilosum (Willdenow) Nesom *NY (in part) FROST ASTER, aka AWL ASTER, HAIRY ASTER, HAIRY WHITE OLDFIELD ASTER, WHITE HEATH ASTER, (*pilosus -a -um* shaggy, soft hairy, with soft hairs, with long soft hairs, from Latin *pilosus, pilos*, hairy, shaggy, pilose.) facu+ subgenus *Symphyotrichum* Section *Porteriani*

Habitat: Degraded hill & sand prairies, dry to mesic prairies, & open woodlands. Degraded prairies & disturbed areas, a weedy member of most native communities except excessively wet soils. Invasive & persistent. distribution/range:

Culture: As a weed in most restorations, why propagate this? ①60 days cold moist stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate (pm09). ②Seeds germinate after about 60 days of cold, moist stratification, or no pre-treatment needed, sowing outdoors in the spring is the easiest method. (he99) ③Sow at 20°C (68°F), germination slow (tchn). ④30 days stratification required for green house crop. Field sow fall. (pnnd). Growth rate moderate. Seedling vigor low. Vegetative spread rate rapid.

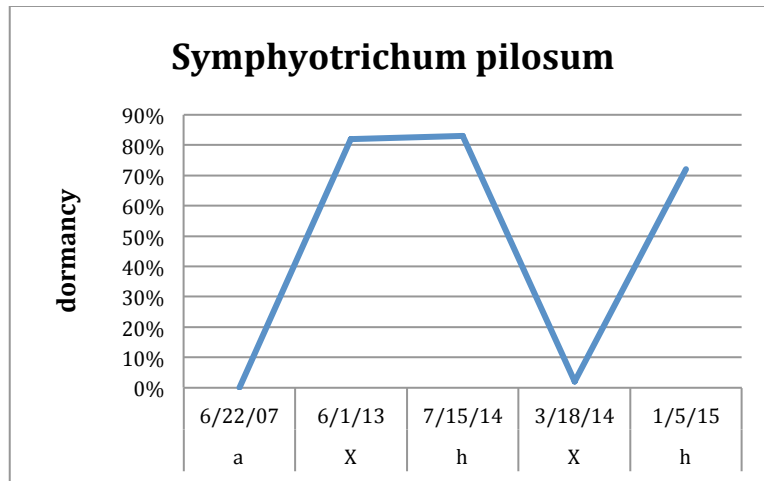
seed counts & rates: 2,240,000 (pm02, aes12), 3,040,000 (pn02), 3,982,456 (gnhe14) seeds per pound.

availability: This common pioneering species is available from only a few vendors.

cultivation: Anaerobic tolerance medium. CaCO3 tolerance low. Drought tolerance medium. Fertility requirement low. Salinity tolerance none. Shade tolerant. pH 5.4-7.0.

bottom line: 60% of lots are strongly dormant, but zero to 2% dormancy is known. Flipflop species.

Germ 38.2, 21, na, sd 32.7, r7.0-93 (86)%. Dorm 47.8, 72, na, sd 38.4, r0.0-83 (83)%. Test 31, 30, 27, r29-34 days. (#5:1)**



Description: WEED!, erect, herbaceous, perennial, native weed, 10” minimum root depth, culms 1.5-4.5’ tall, ray flowers white, with yellow disk flowers aging to red.

Comments: status: WEED! Considered invasive in parts of its range. However, var *pringlei* (Gray) Nesom, PRINGLE’S ASTER, is threatened in New York. phenology: Blooms 8,9,10. In northern Illinois, collect seeds in October. Collect seeds in se Wisconsin in October - November (he99). Cut flowers, aggressively self sows. Anyone with more than a few brain cells to rub together & an ecologic conscious does not use this except in bio-remediation or the most severe reclamation sites. This was a horrible, early-successional weed in non row cropped areas on our farm, but it fades away in 5-10 years where good natives are establishing. Except in the most radically fragmented landscapes, this sp will blow in on its own. However, it is a good nectar plant, & as its strong roots decay, they open the ground for water percolation & add deep organic matter. Sp is also good for quick native cover on crap soils. Potentially, sp should be used more often for early native cover & pollinators.

Associates: Butterfly plant. Pollinated by long-tongued bees, short-tongued bees, *Diptera*, & *Lepidoptera*. Attracts songbirds & small mammals. Seems to be a good nectar plant.

VHFS: Long known as *Aster pilosus* Willd. Illinois has var *pilosum* & var *pringlei* (Gray) Nesom. **Expand.**



Symphyotrichum pilosum (1), & variety *pringlei* (2&3)

Line drawing courtesy USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Image not copyrighted. 2nd & 3rd line drawings courtesy of Kentucky Native Plant Society (*A faxoni*, *A pringlei*)

Symphyotrichum praealtum (Poiret) GL Nesom WILLOW ASTER, aka VEINY LINED ASTER, WILLOW-LEAVED ASTER, (*praealtus* -a, -um very tall or very deep.) subgenus *Symphyotrichum* Section *Salicifolii*

Habitat: Mesic prairie, moist ground, common. **distribution/range:** Introduced in Central Europe.

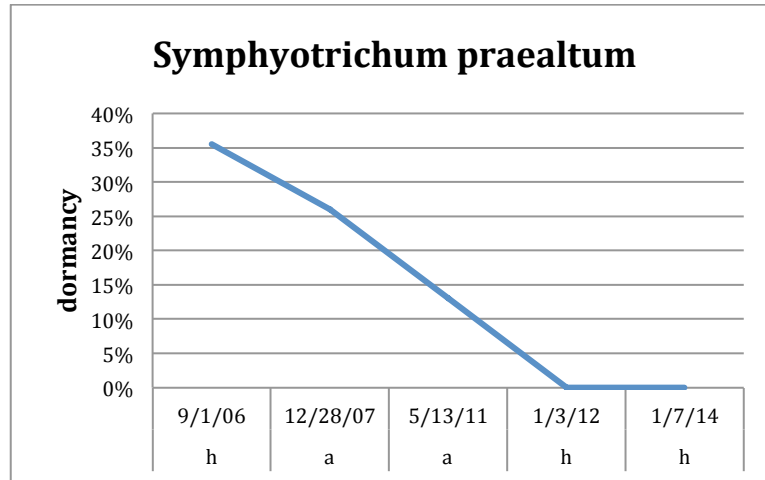
Culture: ③30 days cold moist stratification (pm09).

seed counts & rates: 1,576,389 (gnhm13), 1,664,000 (jfn04), 2,080,000*(pm02), 2,480,874 (gnhm11), 3,109,589 (gnhm06) seeds per pound.

availability: Seed availability is severely limited, 2 vendors. Sp is strongly rhizomatous, & production beds fill in quickly & seed production declines.

cultivation: Not suited for medium to small plantings. Do not place plants near desirable spp.

bottom line: Clone, most cost efficient from plugs. Dormant seeding for field establishment or moist cold stratification for greenhouse crops benefits 40% of lots, dormancy ranging from 25% to 35%. Nondormant lots are known. Germ 69.7, 71, na, sd 23.9, r40.5-97 (56.5)%. Dorm 14.9, 13, na, r0.0-35.5 (35.5)%. Test 38, 38, na r23-41 days.**



Description: Erect, herbaceous, perennial, native forb, from long, fleshy rhizomes, culms 4.0-6.0' tall, N 2n = 32, 48, 64.

Comments: Special concern in Michigan. Endangered in New Jersey & Tennessee. phenology: Does not play well with other plants. **AGGRESSIVELY RHIZOMATOUS TO THE POINT OF BEING UNDESIREABLE IN SMALL RESTORATIONS, PLANT ONLY IN THE BACK FORTY.** The aggressive rhizomatous nature of this plant results in seed production plantings that quickly fill in & do not flower. Good for naturalizing, borders, & erosion control, all in the back forty. Seed source nursery production from genetic sources Kane, DuPage & Will cos.

“There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, *Aster carneus*.” *Symphyotrichum praealtum* as *Aster carneus sensu* Engelmann, &c., non Nees. (Short 1845). J&F place *A. carneus sensu* Engelmann in *S. praealtum*, while *A. carneus* Torr & Gray is a synonym for *S. puniceum* (the plant list.org).

Associates: Attracts songbirds & small mammals.

VHFS: Long known as *Aster praealtus* Poir. Species plus 3(+) varieties. **Expand.** [*Aster praealtus* Poir. *A. salicifolius* Ait 1789, not Lama 1784] Reported to hybridize with *S. lanceolatum* & *S. firmum*.

Symphyotrichum prenanthoides (Muhlenberg ex Willdenow) Neesom *CT, MA [new nomenclature this will be] CROOKED-STEMMED ASTER, aka CROOKED ASTER, CROOKED STEM ASTER, ZIGZAG ASTER, (*preanthoides* New Latin, from Greek *prenes* drooping, face downward, prone (akin to *pro* before, forward) & New Latin *-anthes*, *-anthos*, flower, for the drooping flower heads, & *-odes*, resembling, like, of the nature of.) FAC subgenus *Symphyotrichum* Section *Salicifolii* [*Symphyotrichum* subsection *Symphyotrichum*, *Punicei* Species]

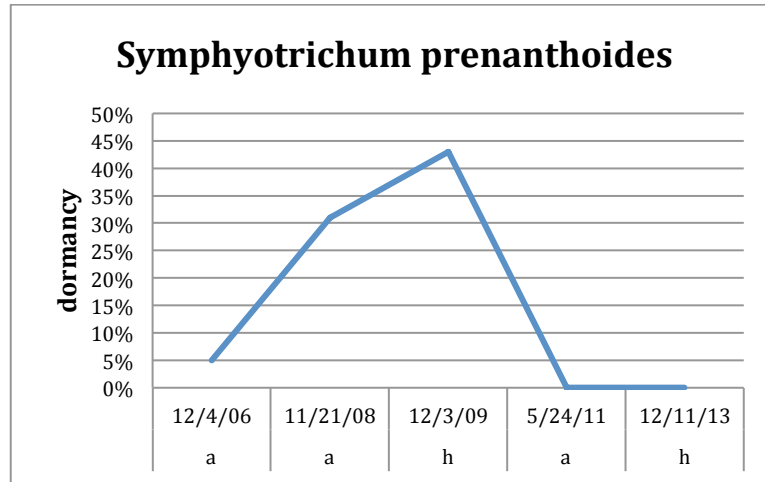
Habitat: Damp thickets, rich woods, shores, & bottoms. Wet to wet-mesic prairies. North-facing slopes in rich woods. Moist to moderate moisture, meadows, woods, & streambanks (fh). Moist or swampy ground, woods, thickets, meadows, seeps, streambanks, roadsides. distribution/range:

Culture: ①Cold moist stratify 60 days (Wade). ②Surface sow, seeds are very small or need light to naturally break dormancy & germinate (pm09). ③Seeds germinate after about 60 days of cold, moist stratification (he99). Growth rate moderate. Seedling vigor low. Vegetative spread rate moderate. In wet mesic soils, it shows a very strong tendency to spread from seed.

seed counts & rates: 700,000 (usda, ecs), 1,920,000 (pm02), 1,995,604 (gnam11), 2,203,883 (gnam06), 2,247,525 (gnhm13) seeds per pound.

cultivation: Anaerobic tolerance medium. CaCO₃ tolerance low. Drought tolerance medium. Fertility requirement low. Salinity tolerance none. Shade intolerant. pH 5.5-7.2.

bottom line: Test data indicate > 50% of lots require dormant seeding, dormant is safest. Germ 67.2, 57, na, sd 19.9, r45-94 (49)%. Dorm 15.8, 5.0, 0.0, sd 17.8, r0.0-43 (43)%. Test 35, 32, na, r26-42 days**
Cold moist stratification benefits many lots.



Description: Native, erect perennial forb, 2-3(-4)', rhizomatous, 10" minimum root depth, upper stem zigzags, Flowers blue-violet (lavender), rarely white in *forma milwaukeensis*. Resembles some forms of *A. laevis*. N 2n = 32.

Comments: status: Special concern in Connecticut. Threatened in Massachusetts. Conservation concern in Canada. phenology: Blooms early / late August to mid October. In northern Illinois, collect seeds in October. Collect seeds in se Wisconsin in November (he99). Seed source nursery production, genetic source Kane Co. VHFS: Long known as *Aster prenanthoides* Muhl ex Willd.



Symphotrichum prenanthoides

Line drawing courtesy of Kentucky Native Plant Society.

Symphotrichum puniceum (Linnaeus) Á Löve & D Löve var **puniceum** SWAMP ASTER, aka BRISTLY ASTER, PURPLESTEM ASTER, RED-STEMMED ASTER, *Wini'sikens*, dirty, little, (Ojibwa), (*puniceus -a -um* pew-NI-kee-us, reddish purple, purplish crimson, scarlet, carmine, from Latin *puniceus*, *punice-*, reddish, purple, for the stem, classical Latin *pūniceus*, bright red, scarlet, crimson, from *Pūnicus*, Punic, (Carthaginian) & *-eus*.) obl subgenus *Symphotrichum* Section *Salicifolii* [*Symphotrichum* subsection *Symphotrichum*, *Punicei* Species]

Habitat: Calcareous fens, wet meadows, riverbanks, wet to wet-mesic prairies. distribution - range:

Culture: ① "Moist cold treatment, or fall sow. Light cover. Very good to excellent germination." (mfd93) ② 60 days cold moist stratification (pm09). ③ No pretreatment needed. Sow seeds on the soil surface at 70°F & water.

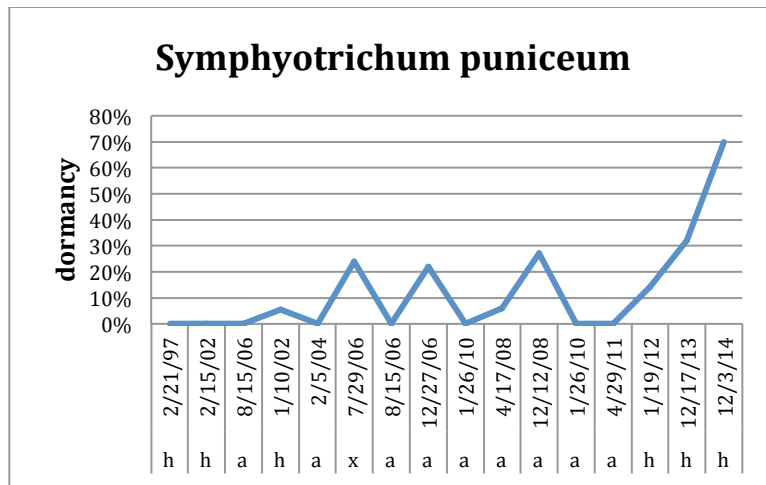
Slow to germinate. (ew11) ④Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). Growth rate slow. Seedling vigor medium. Vegetative spread rate slow.

seed counts & rates: 700,000 (usda, ecs), 931,282 (gna04), 1,056,000, 1,093,976 (gna05), 1,216,000 (jfn04, aes12), 1,248,000 (ew11), 1,280,000 (pm02), 1,471,636 (gnh01), 1,500,826 (gnh02), 1,697,196 (gna06), 2,414,894 (gnam06) seeds per pound.

cultivation: Space plants 24-36". Anaerobic tolerance high. Tolerates clay soils. CaCO3 tolerance low (usda), but noted as being found in calcareous soils. Drought tolerance low. Fertility requirement medium. Salinity tolerance none. Shade intolerant, full sun to part shade. pH 4.5-7.5.

bottom line: Prior to 2013 crop, seed had less than 27% dorm, often 0%. Since that year, 32-70% dorm. Dormant seeding or cold moist stratification (for green house work) is required to insure a crop. Crossover species. Germ 73.5, 78.8, 89, sd 17.8, r24-92 968)%. Dorm 12.5, 2.8, 0.0, sd 18.5, r0.0-70 (70)%. Test 32, 31, 48, r13-50 days. (#16:3)**

greenhouse & garden: Moist cold stratify or fall plant will slightly to greatly improve germination of most lots. Several lots formerly had zero dormancy.



Description: Erect perennial, 3.0-6.0', flowers purple (white to blue), stems red or red striped. 10" minimum root depth. Often growing in patches.

Comments: status: phenology: Blooms 8,9,10. In northern Illinois, collect seeds September - November. Collect seeds in se Wisconsin in November (he99). Wetland restoration, moist rain gardens. Seed source nursery production original stock from Kane Co (Horlock) & Spring Slough, Rock Falls, Montmorency Twp, Whiteside Co.

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob's seeds were collected in DuPage, Kane, & Will cos. We traded seeds back & forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.

"A rather tall late flowering aster that is frequently found in wet places. Typically it is a robust plant with a pubescent stem, auricled, serrate, lanceolate leaves & large pale flowers. It is subject to great variation particularly when growing in dense clumps or in tall grasses or sedges. Kent Creek bottom near Winnebago, the Searle tract, North Springfield avenue road at Porter road, & in boggy places in Coon Creek bottom. Also in Boone, Ogle, De Kalb & Stephenson cos." (ewf55)

Associates: Attracts bees. Provides nectar for butterflies & browse for deer. Attracts hummingbirds & songbirds.

ethnobotany: Used as a charm by Ojibwa (den28).

VHFS: Long known as *Aster puniceus* L var *puniceus*. Var *scabricaulis* (Shinn) Nesom [*Aster scabricaulis* Shinn] is native from Texas to Mississippi. [*Symphyotrichum puniceum* (L) A&D Löve]



Symphyotrichum puniceum puniceum

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum racemosum (Elliott) GL Nesom SMOOTH WHITE OLDFIELD ASTER, aka SMALL WHITE OLDFIELD ASTER, FRAGILE-STEMMED ASTER, (*fragilis -is -e* fragile, brittle.) subgenus *Symphyotrichum* Section *Dumosi*

Habitat: “Moist to wet, often alluvial soils, often brackish, marshes, savannas, bogs, wet meadows, prairie swales, swamps, borders of swamps, open bottomwoods” (Brouillet et al in fna). distribution/range: Introduced in Canada.

Culture:

Description: N 2n = 16.

Comments: status: As *Aster fragilis* Willd var *subdumosus* (Wieg), Special Concern in Wisconsin. phenology: Blooms

VHFS: Formerly *Aster fragilis* Willd, or *Aster fragilis* Willd var *subdumosus* (Wieg) AG Jones. [*Aster vimineus* Lam var *subdumosus* Wiegand, *Symphyotrichum racemosum* (Elliott) GL Nesom var *subdumosus* (Wieg) GL Nesom] Hybrids are known with *S dumosum*, *S lateriflorum*, *S lanceolatum* var *interior*, & *S ontarionis*.

The sp is cultivated commercially as *Aster ericoides* cv ‘Spray’. relate this to *S vimineus*.

Symphyotrichum sericeum (Ventenat) GL Nesom *IN, MI SILKY ASTER, aka SILVER ASTER, WESTERN SILVER ASTER, WESTERN SILVERY ASTER, (*sericeus -a -um* silky, bearing silk, covered with silky pubescens.) upl subgenus *Virgulus* Section *Concolores*

Habitat: Sand & limestone prairies, dry hill prairies, & sand barrens. “Open, dry, deep, sandy or loamy soils, broken limestone outcrops, open-wooded bluffs, open woods, open calcareous hammocks, prairies, fields, sand barrens, dunes, dry banks, rarely acidic shield rock” (Brouillet et al in fna). distribution/range: “All reports of this sp east of the Mississippi River & south of the Ohio River are based on misidentifications (or a taxonomically broader application of) *S pratense*” (w12).

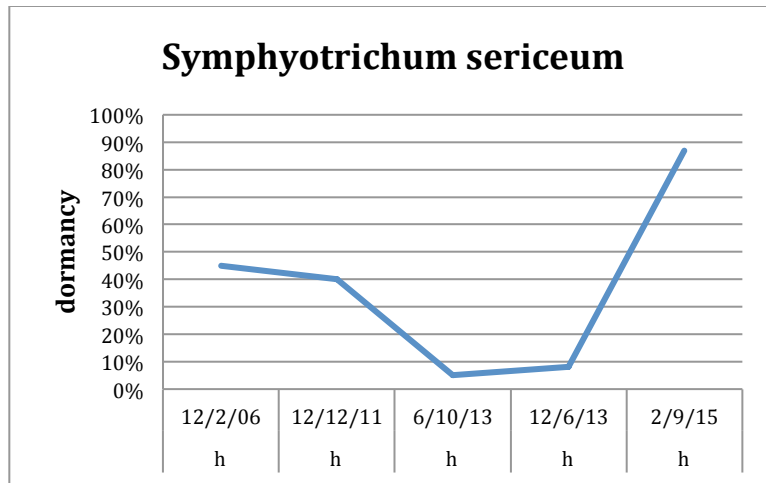
Culture: ① “Moist cold treat, or fall sow. Germination best on cool soils, sow early spring or late fall. Light cover. Good to fair germination.” (mfd93) ② 60 days cold moist stratification (pm09). Cool soils. Seeds germinate after about 60 days of cold moist stratification (he99). No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) Sow at 20°C (68°F), germination slow (tchn).

seed counts & rates: 432,000 (aes12), 563,275 (gnh06), 664,000 (ew11), 816,000 (agre11), 896,000 (pm02), 910,784 (agre05468), 912,000 (jfn04), 921,951 (gnha11), 383,108 (gnhn13*) seeds per pound.

“*Aster sericeus* Mesic to dry hill prairie. Blooms mid September to early October, BRIGHT VIOLET. Harvest mid October. 1 1/2, very easy by method #1. Very easy by SEEDLING TRANSPLANT, with flowers late 1st year. Foliage highly ornamental.” (rs ma)

cultivation: Space plants 12-15”. Full sun to part shade.

bottom line: Dormant seeding is strongly required for field sowing. Moist cold stratify or fall plant is mandatory for profitable greenhouse germination. Germ 55, 52, na, sd 32, r4.0-92 (88)%. Dorm 37, 40, na, sd 29.8, r5.0-87 (82)%. Test 27, 30, na, r11-39 days. (#5:4)**



Description: Erect, herbaceous, perennial, native forb, 1.0-2.0', short woody, cormoid caudices or short rhizomes, attractive silvery-hairy leaves, flowers 15-25 rays purple (violet to purple), $N 2n = 10, 20$. **key features:** ① Violet to purple rays, leaves pale greenish, very silky (fh). ② "Silvery-silky leaves & phyllaries, open arrays, & cormoid rootstocks" (fna)

Comments Rare in Indiana. Threatened in Michigan. Blooms 8,9,10. In northern Illinois, collect seeds in late October - early November. Collect seeds in se Wisconsin in October (he99). Attractive cut flowers (you must really be hard up for cut flowers), landscaping, xeriscaping, & rock gardens.

Short (1845) used both *Aster concolor* and *A. sericeum* as species. "There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Aster concolor*." *Symphyotrichum sericeum* (Vent) GL Nesom (*A. sericeus* Vent.) as *A. concolor sensu* Short (1845) & Lapham (1857), non L. (Short 1845).

"Those two beautiful plants, for our knowledge of both of which, I believe, we are indebted to Mr. Nuttall, the *Aster sericeus* and *Amorpha canescens*, are very generally diffused, but not in the same abundance with many others. Indeed, they constitute an exception to the habit of congregation among so many of their associates. *Symphyotrichum sericeum* (Ventenat) GL Nesom as *Aster sericeus* Vent.," (Short 1845).

Associates: Attracts butterflies & hummingbirds.

VHFS: Formerly known as *Aster sericeus* Vent. [*Lasallea sericea* (Vent) Greene, *Symphyotrichum sericeum* (Vent) Nesom, *Virgulus sericeus* (Vent) Reveal & Keener] The white forma *albiligulatus* Fassett is known.

RL Jones, CT Witsell, & GL Nesom. 2008. Distribution and taxonomy of *Symphyotrichum sericeum* and *S. pratense* (*Asteraceae: Astereae*). J Bot. Res. Inst. Texas 2: 731-739.



Aster sericeus



Line drawing courtesy of Kentucky Native Plant Society.

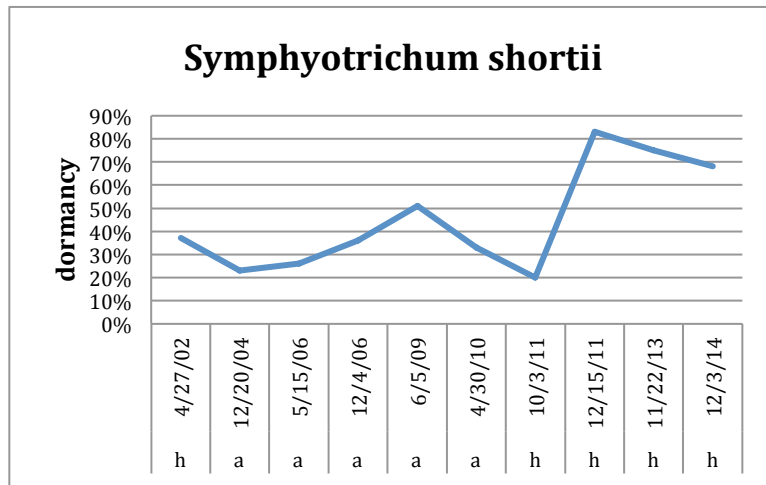
Symphotrichum shortii (Lindley) GL Nesom *MN SHORT'S ASTER, aka ASTER, MIDWESTERN BLUE HEART-LEAVED ASTER, STARWORT, FROSTFLOWER, (*shortii* for Charles Wilkins *Short*, 1794-1863, physician & botanist.)
 upl subgenus *Symphotrichum* Section *Cordifolii*

Habitat: Calcareous woodlands, sloping rocky woodlands, mesic savanna, open woods, thickets, rocky slopes, mesic woods, limestone bluffs. "Open, often thin, rocky, well-drained soils, oak-hickory woods, edges of woods, thickets, calcareous hammocks, wooded stream banks or cliffs, roadsides, 100–500 m" (Brouillet et al fna). In the se USA, "dry, rocky slopes, calcareous hammocks (in FL), uncommon" (w11). distribution - range:

Culture: ① "Moist cold treatment, or fall sow. Light cover. Good germination, but not reliable." (mfd93) ② 30 days cold moist stratification (pm09).

seed counts & rates: 960,000* (pm01, jfn04, aes12), 1,021,372, (gnhm02), 1,069,493 (gnh03), 1,188,482 (gnam06), 1,295,292 (gna06), 1,401,235 (gna04) seeds per pound.

bottom line: Genesis seed test results indicate dormant seeding is required for field establishment. Cold moist stratify for greenhouse crops. Germ 35.8, 36, 36, sd 18, r11-66 (55)%. Dorm 45.2, 36.5, na, sd 21.6, r20-83 (63)%. Test 32, 31, 31, r22-39 days.**



Description: Erect perennial, 1.0-2.0', ray flowers blue, 10-20, disc flowers light yellow becoming reddish purple, N 2n = 16, 32. key features: ① "Cluster of heads with many leaf-like bracts" (fh).

Comments: status: Threatened in Minnesota. phenology: Blooms 8,9,10. Seed source nursery production from genetic sources Kane Co (Horlock) & Lawton's Timber, Buda, Bureau Co. "Not uncommon in woods in Shirland Township, the "dells" of Hall Creek, & the woods west of Ingersol park in West Rockford." (ewf55)

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob's seeds were collected in DuPage, Kane, & Will cos. We traded seeds back & forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.

"The lower stem leaves are indeed reminiscent of the leaves of *Asplenium rhizophyllum* (formerly known as *Camptosorus*), explaining one of Small's names for this sp" (w11).

Associates: Attracts butterflies.

ethnobotany: Flowers used as medicinal beverage by Pottawatomie (sm33).

VHFS: Long known as *Aster shortii* Lindl in Hook. [*Aster camptosorus* Small, *A shortii* Lindl]



Aster shortii

Line drawing courtesy of Kentucky Native Plant Society.

Symphotrichum sp *Name 'g Osibug*, sturgeon leaf, was used as food by Ojibwa (den28)

Symphotrichum turbinellum (Lindley) Nesom *IA PRAIRIE ASTER, aka ASTER, SMOOTH VIOLET PRAIRIE ASTER, TURBINATE ASTER, (somewhat top-shaped, from Latin *turbinatus*, cone-shaped (like a tornado or spinning top), & *-ellus -ella -ellum*, diminutive suffix.) subgenus *Symphotrichum* Section *Turbinelli*

Habitat: Dry prairies, dry savanna, prairies, & dry open woods. distribution/range: Southern 3/5 of Illinois, Hancock, McDonough, Schuyler, & Mason, se to Clark Co. Mostly an Ozarkian sp.

Culture: ①30 days cold moist stratification (pm09). ②No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11) ③Sow at 20°C (68°F) in light, if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn).

seed counts & rates: 348,912, 560,000* (pm02, ew11) seeds per pound.

asexual propagation: Division of mature plants.

cultivation: Space plants 15-18". Full sun to part shade.

Description: Erect, herbaceous, perennial, native forb, from a thick, branched woody caudex, culms 1.5-3.0', flowers lavender to violet-blue with yellow to red centers, N 2n = 96.

Comments: status: phenology: Blooms late, 9,10. Native south of our area, seeds often aborted by frost. Landscaping.

Often misused/mis-specified in Northern Illinois as an "annual" or quick color sp because of the common name confusion. The common name PRAIRIE ASTER is used for *Aster (Machaeranthera) tanacetifolius* & *Symphotrichum turbinellum*. The former is a commercial "annual" wildflower widely available. The latter is a conservative native wildflower native to the southern 3/5 of Illinois. The common name confusion has led to the misuse of a native perennial in annual wildflower mixes. *S turbinellum* is not in commercial production & is not available in the quantity specified. This confusion has been ongoing for 20+ years

October 20, 2011, *S turbinellum* is in full bloom in sun & shade. Leaf fall has started, & in the dappled shade of autumn, the blue of this aster is jaw-dropping gorgeous, a vibrant, indefinable blue, like a gemstone dropped on the woodland floor. Our material is grown from seeds from Ken Schaal, & seldom matures seed on the northern Illinois tundra, but in the late fall, the flowers are in a natural florist's cooler, & are long lasting, almost frozen in time. Good late season bee food. Excellent late color in a shade garden. Very low maintenance, long-lived.

Short (1845) recognized both *A turbinellus* and *A gracilis*, with the same comment for both: "There are, indeed, comparatively speaking, but few plants, except the grasses, (which are gregarious every where and are intermixed in greater or less degree and variety among all the other plants of the prairie,) which may be considered as indigenes of the prairie region generally. ---Among these we may mention, as occurring most constantly, and under greater diversity of soil and situation than any others, ... *Symphotrichum turbinellum* as *Aster gracilis sensu* Short (1845) & Lapham (1857), not Nutt, and as *A turbinellus* Lindl" (Short 1845). *A gracilis sensu* Short (1845) & Lapham (1857), not Nutt.

Associates: Attracts bees, including bumblebees, butterflies, & hummingbirds, foliage & seed attracts turkeys, rabbits, & deer.

VHFS: Long known as *Aster turbinellus* Lindl in Hook. *Aster gracilis sensu* Short (1845) & Lapham (1857), not Nutt.



Symphyotrichum turbinellum

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum undulatum (Linnaeus) GL Nesom WAVYLEAF ASTER, (*undulatus -a -um* undula'tus (un-dew-LAY-tus) undulated, wavy, by usage with a wavy margin) subgenus *Symphyotrichum* Section *Cordifolii*

Habitat: “Dry or well-drained, loamy or rocky soils, open deciduous woods, borders, clearings, dry hammocks, sandhills, open-wooded bluffs underlain by sandstone or limestone, 200–1500 m” (Brouillet et al in fna).

distribution/range: Extreme southern Illinois, Alexander, Gallatin, Jackson, Johnson, Pope, Saline, & Williamson cos.

Culture: ☉Seed from Shenandoah National Park Skyline Drive stored at 40°F, 35% relative humidity, germinated in light with no further treatment (Davis & Kujawski 2001).

Description: Flowers rays 12-16(-25), blue to purple, occasionally lilac (white, pink), rays cream or light yellow, becoming purple, N 2n = 16, 32.

Comments: status: “*Symphyotrichum undulatum* is of conservation concern in Illinois & Nova Scotia” (Brouillet et al, in fna). phenology: Blooms August to October (November).

“Very uncommon we having found it only on a thinly wooded hillside in Memorial Forest Preserve.” (ewf55)

Associates: The larval host of the *Phyciodes batesii*, TAWNY CRESCENT BUTTERFLY.

VHFS: Formerly known as *Aster undulatus* L. [*Aster asperifolius* Burgess, *A claviger* Burgess, *A corrigiatus* Burgess, *A diversifolius* Michx, *A gracilescens* Burgess, *A linguiformis* Burgess, *A loriformis* (Burgess) Burgess, *A mohrii* Burgess, *A proteus* Burgess, *A sylvestris* Burgess, *A triangularis* (Burgess) Burgess, *A truelli* Burgess, *A undulatus* L, *A u L* var *asperulus* Alph Wood, *A u L* var *diversifolius* (Michx) Gray, *A u L* var *loriformis* Burgess, *A u L* var *triangularis* Burgess]

KM Davis & JL Kujawski, 2001. Propagation protocol for production of container *Aster undulatus* plants (1+0 containers), USDA NRCS - Norman A Berg National Plant Materials Center, Beltsville, Maryland. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 2 August 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.



Symphyotrichum undulatum

Line drawing courtesy of Kentucky Native Plant Society.

Symphyotrichum urophyllum (Lindley) GL Nesom ARROW-LEAVED ASTER, aka ARROW ASTER, BROAD-LEAVED ASTER, SAGITTATE ASTER, WHITE ARROW-LEAVED ASTER, WHITE ARROWLEAF ASTER, WHITE WOOD ASTER, (specific epithet formerly *sagittifolius -a -um* arrow-leaved, from Latin *sagitta*, an arrow, *-i-*, & *folium, foli(i)*, n, noun, a leaf.) subgenus *Symphyotrichum* Section *Cordifolii*

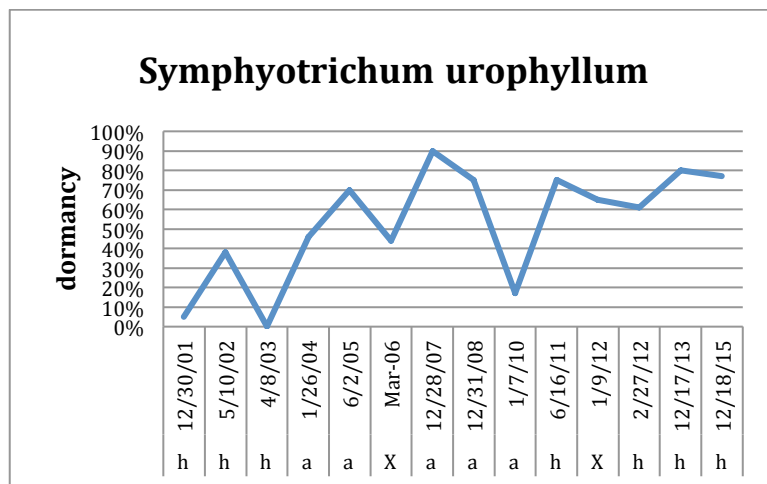
Habitat: Mesic & dry savannas, woodlands, prairies, & oak openings. distribution - range:

Culture: propagation: ①60 days cold moist stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate. (pm09) ②Seeds germinate after about 60 days of cold, moist stratification, or no pre-treatment needed, sowing outdoors in the spring is the easiest method. (he99) ③No pretreatment needed. Sow seeds on the soil surface at 70°F & water. Slow to germinate. (ew11)

seed counts & rates: 1,174,644 (gnh02), 1,185,379 (gna03), 1,760,000 (jfn04), 1,271,709 (gna05), 1,464,516 (gnh01), 1,609,929 (gnh03), 2,000,000 (aes12), 2,020,000 (ew11), 2,268,000 seeds per pound.

cultivation: Space plants 18-24". Mesic soils, full sun to woodlands.

bottom line: Dormancy rates vary from year to year, but dormant seeding is required most years for field establishment. Moist cold stratify or dormant seed is required for a good greenhouse crop. Germ 30.7, 22.5, 24, sd 21.4, r6.0-75 (69)%. Dorm 53.1, 63, 75, sd 27.9, r0.0-90 (90)%. Test 33, 32, 32, r23-55 days. (#13:5).**



Description: Erect perennial, 4.0-6.0', flowers blue-white (lavender). N 2n = 16.

Comments: status: phenology: Blooms 8,9,10,11. In northern Illinois, collect seeds in October. Collect seeds in se Wisconsin in October - November (he99). Attractive cut flowers, landscaping, shade gardens, aggressive. Seed source nursery plantings from genetic source wooded roadside The Burg, Lee Co.

“A tall erect woodland aster which has a compact inflorescence with an abundance of small, blue, pink, or white flowers. The petioles of the arrow shaped leaves are, for the most part, winged.” (ewf55)

Associates: Attracts butterflies & hummingbirds.

VHFS: Long known as *Aster urophyllus* Lindl in DC. Gleason & Cronquist retain this as *Aster sagittifolius*, while Jones (1980) calls this *A urophyllus*. [*Aster hirtellus* Lindl, *A sagittifolius* auct non Wedem ex Willd [misapplied], *A sagittifolius* Wedem ex Willd var *urophyllus* (Lindl) Burgess, *A urophyllus* Lindl]

“The name *Aster sagittifolius* Wedemeyer ex Willdenow has been misapplied to this taxon, our interpretation of the type of this entity concords with that of A G Jones (1980), ie, that it is conspecific with the type of *Symphyotrichum cordifolium* or a garden hybrid involving the latter. *Aster sagittifolius* forma *hirtellus* (Lindley) Shinnery is not recognized here.” (Brouillet et al in fna).

Aster vimineus Lamarck SMALL WHITE ASTER (*vimineus -a -um* with long thin shoots, of or like osiers, shrubs whose pliable twigs are used for furniture & basketry, such as the European willow *Salix viminalis*, referring to a wicker, or long, pliable branches.)

Habitat: distribution/range: ?

Culture:

cultivation: Partial shade, moist, well drained soils. Zones 5-9.

Description: 2.0-5.0’,

Comments: status: phenology: Blooms August to October.

VHFS: Generally considered a synonym of *Symphyotrichum lateriflorum* (L) Á&D Löve var *lateriflorum*.

Relate taxon to *Symphyotrichum racemosum* (Elliott) GL Nesom var *subdumosum* (Wiegand) GL Nesom.



Aster vimineus

Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database. - Not copyrighted image

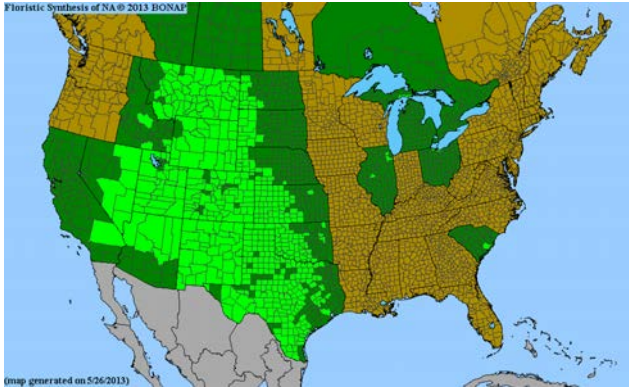
TARAXACUM GH Weber ex Wiggers 1780 **DANDELION**

Taraxacum officinale GH Weber ex Wiggers, **COMMON DANDELION.**

The noble dandelion is highly desirable in the lawn. When it is in bloom, it is the only time your lawn has any visual interest or aesthetic value. Dandelions are self-renewing, self-maintaining, & free as long as someone in the neighborhood mows like a fool. Dandelions provide valuable early season nectar & pollen for bees, & they are larval hosts for moths. The mature seeds provide valuable songbird food. The thick, fleshy, contractile root opens up compacted soils, brings deep nutrients to the surface where shallow-rooted plants may use them, adds deep soil organic matter as it decays, & when decayed, provides literal funnels for rain to penetrate deeply into the subsoil. The leaves are edible in salads or cooked & are high in vitamins & minerals, the flowers are the source of dandelion wine, & the ground, roasted root makes an *ersatz* coffee. The root formerly was an ingredient of root beer. If you add a legume to the yard you have the grass, composite, legume

triad of the prairie. &, the more you mow, the more you dandelions you have. Mowing promotes forbs. Dandelions are lawn forbs. Dandelions are proof positive mowing encourages forbs. Blow up your mower. or not.

TETRANEURIS E L Greene 1898 **BITTERWEED, FOUR-NERVED DAISY** *Tetaneuris* Tetaneur'is (tet-ra-NYUR-is) from Greek τετρα-, *tetra*-, four, & νεῦρον, *neuron*, nerve, vein, in reference to venation of ray floret corollas. A genus of about 9 spp of herbs of North America, our species the only native east of the Great Plains. x = 15.



Tetaneuris herbacea Greene *FE, IL, MI, OH LAKESIDE DAISY, aka EASTERN FOUR-NERVED DAISY, FOURNERVED STARFLOWER, MANITOU LIN GOLD, STEMLESS RUBBERWEED,

Habitat: “Alvars (limestone flats), openings in woods” (Bierner & Turner, fna).
distribution/range: Dry gravelly banks & fields, very rare, Mason & Will cos (m14). BONAP (2013) maps DuPage, Mason, & Will cos. Sometimes listed as Tazewell Co instead of Mason. Ontario, Michigan, Ohio, & Illinois.

Culture: propagation:

asexual propagation:

cultivation: Transplants easily.

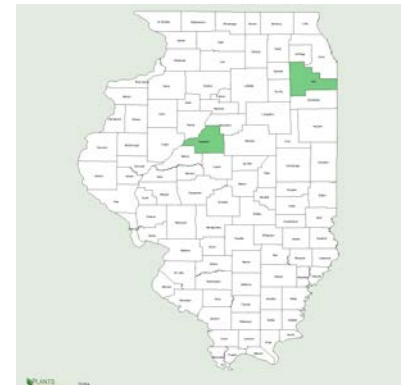
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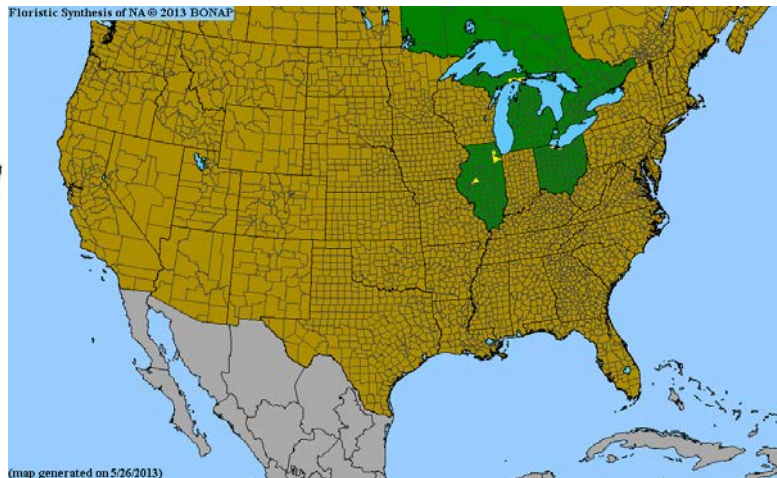
Description: plant N 2n = 28. key features:

Comments: status: Federally Threatened. Endangered in Illinois, Michigan, & Ohio. phenology: Blooms (Apr-) May–Jun(–Oct), Manito Gravel prairie is in Tazewell County. The town of Manito is in Mason Co.

Associates: ethnobotany:

VHFS: [*Actinea acaulis*, *A herbacea* (Greene) BL Robinson, *Hymenoxys acaulis*, *H acaulis* (Pursh) KF Parker var *glabra* (Gray) KF Parker, *H herbacea* (EL Greene) Cusick, *H herbacea* (Greene) Cronq, *Tetaneuris acaulis*]





Tetraneuris herbacea, Manito Gravel Prairie

Line drawing courtesy of Kentucky Native Plant Society.

VERBESINA Linnaeus 1753 **CROWNBEARD, WINGSTEM, STICKWEED, FROSTWEED** *Verbesina* New Latin, modification (influenced by *Verbena*) of Italian dialect *forbesina*, *Verbesina*. No etymology in protologue, perhaps from genus name *Verbena* & Latin *-ina*, resemblance. In the broad sense, a genus of about 200-300 spp of trees, shrubs, & herbs, of tropical subtropical, & warm temperate America. Leaves often decurrent, fruits achenes, compressed, flat, obovate, mostly winged, 2-awned. *Actinomeris alternifolia* is often placed here.

Mohlenbrock (2014) place the following species in *Actinomeris*, and limits *Verbesina* in Illinois to the downstate *V occidentalis* & *V virginicus*.

Verbesina alternifolia (Linnaeus) Britton ex Kearney *NY WINGSTEM, aka COMMON WINGSTEM, YELLOW IRONWEED, (*alternifolius -a -um* (al-tir-ni-FO-lee-us) with leaves alternating on opposite sides, alternating leaves, *alternus*, adjective, by turns, alternate, *-i-* connective vowel used by botanical Latin, & *folium, foli(i)*, n, noun, a leaf.) facw

Habitat: Wet savanna, mesic woodlands, shaded floodplains, moist wooded slopes. In the se USA, “alluvial forests, marshes, floodplain pastures” (w11). distribution/range:

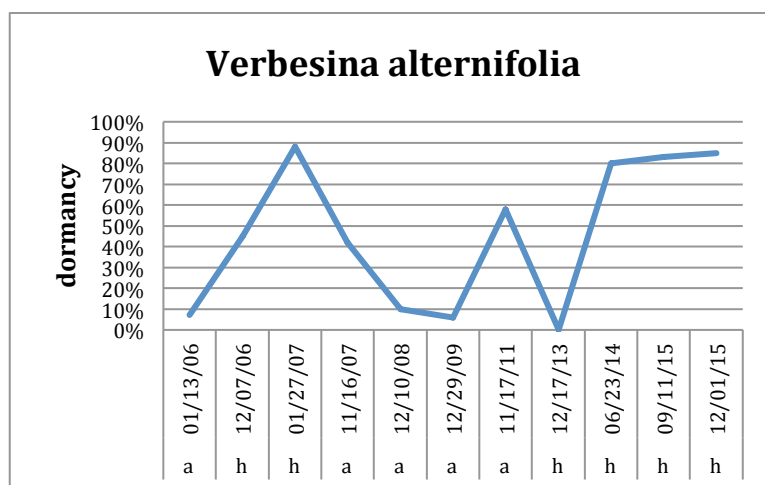
Culture: propagation: ①Moist cold stratify or dormant seed. 30 days cold moist stratification. (pm09).

②“Fall plant or cold stratify at 40F for 1 month for best results. Sow seeds just below the soil surface at 70°F & water.” (ew12) ③Sow at 20°C (68°F), if no germ in 4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn).

seed counts & rates: 97,237 (gna11), 112,592, 125,901 (gn06), 135,766 (gnh06), 143,453 (gnh13), 144,000 (pm02, ew12, aes10), 145,008 (jfn04), 181,491 (gna05) seeds per pound.

cultivation: Space plants on 1.5-2.5' centers. Moist to mesic soils, partial sun to woodland.

bottom line: Genesis seed tests indicate most lots benefit substantially from cold moist stratification or dormant seeding. Flipflop species. Germ 34.7, 32, 37, sd 26.9, r4.0-84 (80)%. Dorm 50.4, 51.5, na, sd 31.9, r6.0-88 (82)%. Test 36, 29, 24, r24-88 days. (#12).**

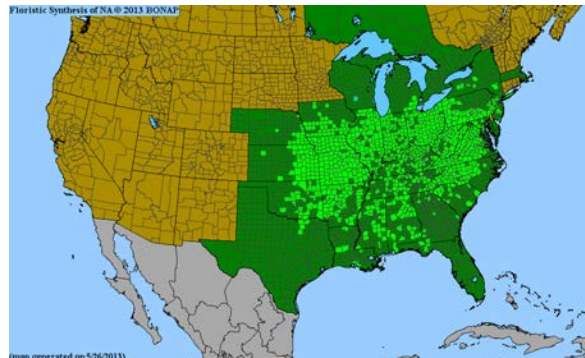


Description: Native, erect perennial, 3.0-6.0' tall or more, leaves alternate with decurrent bases, flowers yellow. Distinguishing characteristics are the tall growth habit, alternately arranged lanceolate leaves, yellow flowers, & distinctive 'wings' that run the length of the stems.

Comments: status: Threatened in New York. phenology: Blooms 8,9,10. Landscaping. Seed source Bureau Creek bottoms near Lamoille, Wyandot, & Tiskilwa, all in Bureau Co, plus Boone Co.

Associates: Larval host of *Chlosyne nycteis* SILVERY CHECKERSPOT BUTTERFLY. Dick Young wrote “this durable standby is part of the relict pantry that keeps juncos & finches happy when snow blankets our countryside.” His book on Kane Co plants is refreshing compared to a most floras. This sp has low food value for deer, or reported as deer resistant.

VHFS: In Britton & Brown (1913) this is *Ridan alternifolia*. [*Actinomeris alternifolia* (L) DC, *Actinomeris squarrosa* Nutt, *Verbesina alternifolia* (L) Britt ex Kearney, *Ridan alternifolia* (L) Britt, *Coreopsis alternifolia* L] Also known as *Actinomeris alternifolia* (L) Benth (m14)



Verbesina alternifolia

Line drawing courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. Second line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

Verbesina helianthoides Michaux YELLOW CROWNB Beard, aka GRAVEL WEED, OZARK CROWNB Beard, YELLOW IRONWEED, (*helianthoides* (hay-lee-anth-OI-deez) like or resembling *Helianthus*, Sunflower, from Greek ἥλιος, *helios*, the sun, & -άνθος, -*anthos*, flower, & οειδής, *oeides*, having the form or likeness of, from the flower heads.) Section *Pterophyton*.

Habitat: Open woods & prairies, railroads. In se USA, “dry woodlands over mafic rocks, rare” (w11).

distribution/range: Common in the s 3/5 of Illinois, absent elsewhere in the state.

Culture: ①Moist cold stratify 60 days (Ken Schaal) ②60 days cold moist stratification (pm09). 121,325 (gnhh14) seeds per pound.

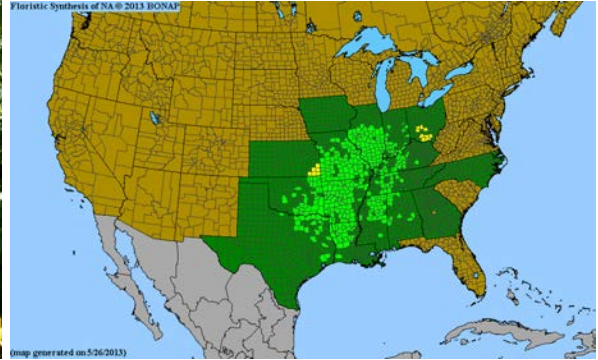
bottom line: Germ 12%. Dorm 83%. Test 14 days.**

Description: key features:

Comments: status: phenology: Blooms July-August. A rough plant with many aspects of a *Helianthus*. The seeds look intermediate between *V alternifolia* & a *Helianthus*.

Hardy in Whiteside Co. We have had this species established since 1999 in rich soil with afternoon shade, annual burning, & benign neglect. Sp will self sow.

VHFS: Formerly included in *Actinomeris*. In Britton & Brown (1913), this sp is called *Phaethusa helianthoides*. [*Pterophyton helianthoides* (Michx) Alexander, *Actinomeris helianthoides* Nutt] Also known as *Actinomeris helianthoides* (Michx) Nutt (m14).



Verbesina helianthoides

Line drawing courtesy of Kentucky Native Plant Society.

VERNONIA Schreber 1791 **IRONWEED** *Vernonia* (ver-NON-ee-a) New Latin, from William *Vernon*, died 1711, English botanist who collected in Maryland, & travelled in America seeking a good microbrew & a buxom barmaid, & New Latin *-ia*. The common name has been attributed to certain “iron-like” qualities, such as the tough, persistent stems, the rusty colored fading flowers, & the rusty colored seeds or pappus of some spp. 20± spp of perennial herbs, mainly in central & eastern North America, 2-3 spp in Mexico, & a few in South America. The genus is native to most of northern North America east of the Rocky Mountains. In the past, *Vernonia* has been a broadly defined genus of about 500 spp of trees, shrubs, & herbs of tropical, subtropical, & warm temperate areas, especially America & Africa. Flowers are purplish, violet, or pink, rarely white. Fruits are achenes with tufts of hair. Pappus double, the exterior chaffy, the interior capillary. Roots of upland spp are eaten by small mammals in winter. Provides nectar for *Danaus plexippus*, the Monarch Butterfly. As Jerry Wilhelm once said, “No one really understands *Vernonia* in Illinois” (personal communication). $x = 17$ *Vernoniaceae* tribe. Type sp *Serratula noveboracensis* L. Several spp were once included in *Cacalia*.

The genus is notoriously promiscuous. Almost all of the 17 spp known from northern North America hybridize with one or more other spp. (Strother in *fna*) Hybrids can be expected anywhere 2 spp grow together.

The seeds ripen in the fall when the pappus dries & fluffs out. Seeds require moist cold stratification. Germination is easy, growth rapid, plants often blooming 1st season. 5-7 node softwood cuttings root well, but may not overwinter well. (Cullina 2000)



Taxonomist's nightmare in local upland *Vernonia* spp

Vernonia arkansana de Candolle ARKANSAS IRONWEED, aka GREAT IRONWEED, OZARK IRONWEED,

Habitat: Low open woods & prairies (rh02). "Leas, roadsides, stream banks, in sand or on limestone, 200–300 m" (Strother fna). Low woods & streambanks (Gleason 1952). distribution/range: Ozarkian Midwest. Introduced eastward. Very rare in Illinois, Knox & Champaign cos. (bonap2011)

Culture: propagation:

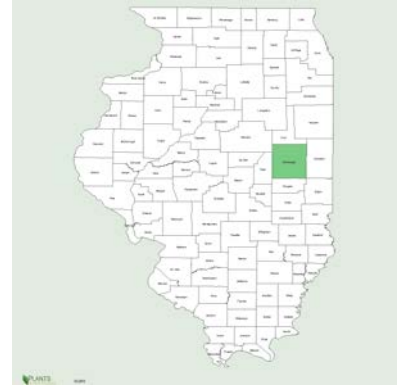
Description: flowers violet or white, achenes (cypselsae) glabrous or nearly so, pappi fuscous to purplish, $N 2n = 34$. key features:

Comments: status: Extirpated in Illinois. phenology: Blooms August to October. The original Champaign Co site has been destroyed.

Associates:

ethnobotany:

VHFS: In Britton & Brown (1913) & Gleason (1952), this is *Vernonia crinita*. [*Vernonia crinita* Raf]



Vernonia arkansana

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Vernonia baldwinii Torrey BALDWIN'S IRONWEED, aka WESTERN IRONWEED,

Habitat: Prairies & open ground. "Disturbed places, grasslands, flood plains, forest margins, prairies" (John L Strother fna). "Species is distributed in wooded or rocky slopes, meadows, wastes, & railroads" (Ilpin)

distribution/range: Occasional in the southern ½ of Illinois, also in Lake Co.

Culture: propagation: ① Sow at 4°C (40°F) for 12 wks, move gradually to 20°C (75°F) for germination (tchn).

Description: pappi fuscous to purplish, $N 2n = 34$. key features:

Comments: status: phenology: Blooms

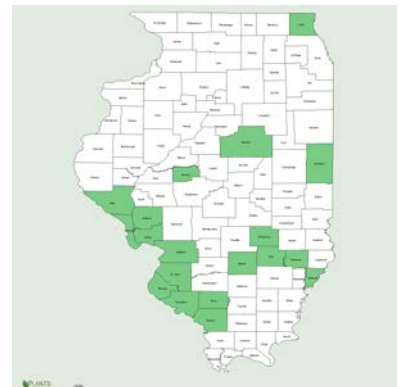
Associates:

ethnobotany:

VHFS: "*V baldwinii* var *interior* is in ILPIN. Much hybridization takes place in genus. Specific epithet also is spelled "*baldwinnii*," including var *interior* (Small) Schub." (Ilpin)

Authorities differ as to whether this sp is split into varieties or ssp. Illinois has 2 varieties. Variety *baldwinii*, with phyllaries recurving at the tip & pubescent on the inner face, grows dry prairies & open woods, & open ground, flowers July-September, occasional in the southern ½ of Illinois, also in Kane & Lake cos in northeast Illinois, Western Illinois to Nebraska, south to Arkansas & Oklahoma.

Variety *interior* (Small) Schreber, with phyllaries more or less appressed, grows in dry prairies, plains, upland woods, & open ground, flowers in July to September, scattered in the southern ½ of Illinois, Iowa & eastern Nebraska, south to Arkansas & Texas. This taxon has been a sp, a ssp, & a variety.

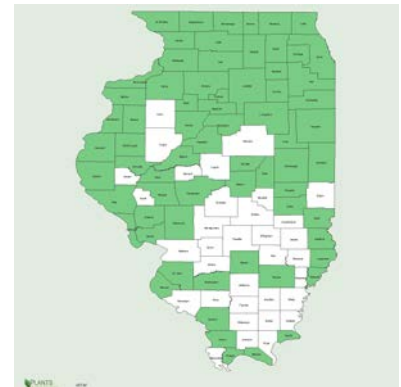




Vernonia baldwinii

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Vernonia fasciculata Michaux COMMON IRONWEED, aka IRONPLANT, PRAIRIE IRONWEED, SMOOTH IRONWEED, WESTERN IRONWEED, (*fasciculatus -a -um* from Latin *fasciculatus*, fascicled, clustered, in close clusters or bundles, banded, in bundles, from *fasciculus*, bundle, packet, & *-atus*, possessive of or likeness of something.) Ironweed may be a reference to the tough stems. Facultative Wet
Habitat: Moist to mesic prairies & open floodplains, low open woods & river bottom prairies. Wet prairies, sedge meadows, & shallow marshes. Wet river bottom prairies & meadows, valleys, & upland fields. distribution/range: Common in northern half of Illinois, occasional in southern half of Illinois.



Culture: ①Moist cold stratify 60 days (pm09). ②Seeds germinate after about 60 days of cold, moist stratification, or no pre-treatment needed, sowing outdoors in the spring is the easiest method (he99). ③“Fall plant or sow seeds just below moist soil surface at 40°F for 2 to 3 months. Then gradually raise temps to 75°F.” (ew12)

seed counts & rates: 320,000 (pn02, sh94), 350,000 (jfn04), 416,000 (aes10), 473,904 (gna03), 480,000 (wns01), 484,784 (gna04), 506,979 (gna06), 521,689 (gnh02), 591,146 (gna07), 852,582 (gna06) seeds per pound. In the past, there have been complaints that some seed lots had low viability. Most seed is now debarbed, with concomitant higher percentages of viable seed. In mixes, plant 0.06 to 0.188 lb pls per acre (us97).

availability: Seed availability may vary from year to year due to insect pests & field cycles.

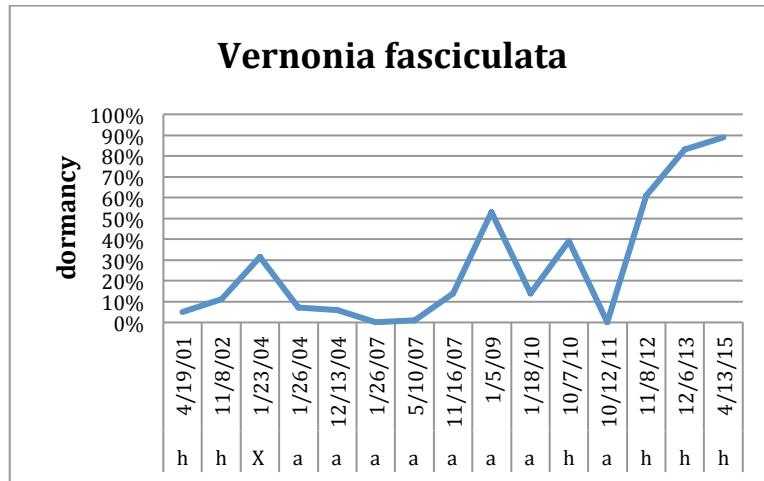
“*Vernonia fasciculata* Moist prairie. Blooms late July to late August, DEEP PURPLE. Harvest October. 3 1/2', easy by methods #1 & #2, SEEDLING TRANSPLANT, SPRING BROADCAST. Too coarse for garden use, best used sparingly in mixture with tall grasses. When collecting seeds, be sure not to confuse this with *V missurica*, etc.” (rs ma)

asexual propagation: 4-6" stem cuttings in June or July, rooted in 50/50 mix of peat moss & sand (or gel mix). Cuttings should be rooted in 4-5 weeks & repotted if necessary. Move rooted cuttings to permanent location, or overwinter in cold frame (us97).

cultivation: Space plants 1.25-2.0, centers. Mesic soils, full sun to partial shade. Tolerates clay soils. Nutrient load tolerance low to moderate, salt (saline) tolerance not available, siltation tolerance moderate. Full sun. pH 5.6-7. Greenhouse grown plants may bloom first year from seed.

bottom line: Spring planting works most years. 20% of lots will benefit significantly to strongly from dormant seeding. Flipflop species. Germ 43.2, 41.3, 65, sd 21.5, r8.0-90 (82)%. Dorm 31.9, 24.5, na, sd 29.6, r0.0-81 (81)%. Test 29, 29, na, r19-48 days. (#18)**

greenhouse & garden: Bump seedlings when they are large enough to handle. Easily grown from cold-stratified seed, easily established. Some say that germination is enhanced by sowing cold moist stratified seed in green house in June when soil temperatures are high, giving rapid germination & rapid seedling growth (us97), but greenhouses in June are too hot, so reconsider. Greenhouse grown plants may bloom 1st year from seed.



Description: Perennial herb, 3.0-6.0', stems glabrous (glabrescent), red to purplish, lower leaf surfaces hairless & pitted, with purple flowers, occasionally white, achenes (cypselae) puberulent, pappus fuscous to purplish, $N 2n = 34$.

Comments: **status:** **phenology:** Blooms 7,8,9. C3. In northern Illinois, collect seeds in mid-September - early November. Collect seeds in se Wisconsin in October (He99). Attractive cut & dried flowers. Useful in landscaping, specimen plantings, herbaceous borders, & rain gardens. Supposedly, moderately stoloniferous (??), making sp allegedly useful in upper shoreline erosion control, but we see this as a wet meadow sp, never a shoreline sp. Seed source nursery production plots from genetic sources railroad remnants, Squaw Grove Twp, DeKalb Co & railroad remnants, Hannaman Twp, eastern Whiteside Co.

Short recognized both *Vernonia corymbosa sensu* Short (1845) *non* Schw. (1824) and *Vernonia fasciculata* Michx. as species (Short 1845). The former is a synonym of *V. fasciculata* according to fna, but pug14 considers it a ssp native west & northwest of our area. "Of frequent occurrence." *Vernonia fasciculata* Michx. (Short 1845). In describing the developed Terre Haute, Indiana prairie, "almost the only relicts of these to be seen, were occasionally (page 188) on the road-side, or in fence-corners, a few plants of *Verbena stricta* and *Vernonia corymbosa*." "Of frequent occurrence" *V. corymbosa* (Short 1845).

"This is our only sp & it is common only occasionally & then in low meadows or bottomland pastures. There is but little variation in the bracts, shape of the inflorescence, shape & serration of the leaves, but there is some difference in the amount of pitting, &, in Sugar River sand area the lower surface of the leaves is somewhat pubescent." (ewf55)

Associates: Pollinated by long-tongued bees, short-tongued bees, *Diptera*, & *Lepidoptera*. Attracts butterflies, good nectar source. Visually aggressive in pastures, unpalatable to & avoided by livestock, increases under grazing pressure.

VHFS: Many hybrids. The sp is native in Illinois, & ssp *corymbosa* (Schwein ex Keating) SB Jones is native west & northwest of our area.

The white *forma alba* Brenkle is known.



Vernonia fasciculata, first year production plot from 200 cell plugs from seed

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

Vernonia gigantea (Walter) Branner & Coville, or **V gigantea** (Walter) Trelease ssp **gigantea** NY* TALL IRONWEED, aka GIANT IRONWEED, (*giganteus -a -um* gigan'tea (ji-GAN-tee-a, but possibly with a hard initial g) very large, giant, gigantic, unusually high, higher than the type, from Latin *giganteus -a -um*, adjective, of or belonging to giants, gigantic, from *-ēus*, a Greek adjectival suffix indicating a state of possession or 'belonging to', or 'noted for', epithet formerly *altissimus -a -um* (al-TIS-i-mus) highest, very high, very tall, tallest, superlative of Latin *altus*, adjective, high, deep or profound, shrill, lofty, noble, deep rooted, far-fetched, grown great, & *-issimus*, suffix denoting most so, to the greatest degree, -est.) fac or [fac]

Habitat: Low woods & open ground. Valleys, meadows, open grounds, & borders of swamps (Ilpin). In the se USA, “pastures, bottomlands, streamsides, common” (w12). “Low, open woods, alluvial areas, prairies; marsh & swamp borders” (lbj). distribution/range: Common throughout Illinois, including the var *taeniotricha* Blake.

Description: Tall, 3-6.0 (-8.0) feet; disk flowers reddish purple, violet, or white (blue/violet), pappus usually purplish, sometimes stramineous; N 2n = 34.

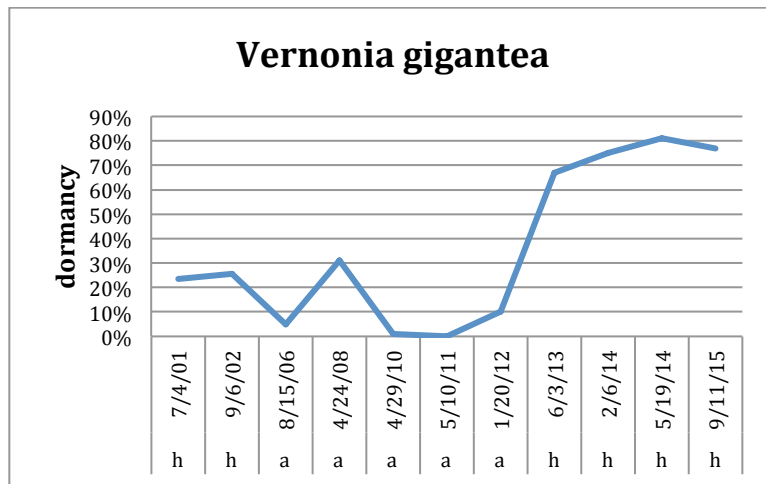
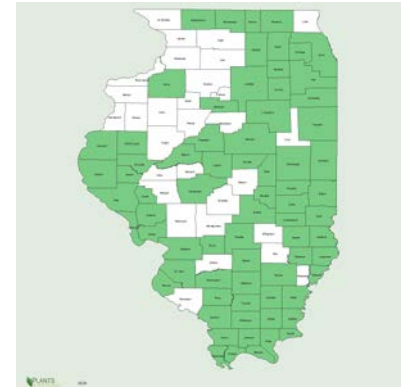
Culture: propagation: ①Cold moist stratify 60 days (pm09). ②Sow at 4°C (40°F) for 12 wks, move gradually to 20°C (75°F) for germination (tchn).

seed counts & rates: 384,000 (pn02, jfn04), 434,242 (gnh02), 475,471 (gnh13), 580,563 (gna11), 620,219 (gnhs14), 670,276 (gnaind06) seeds per pound.

cultivation: Clay soil tolerant. Drought tolerant. Plants may be pinched back in small gardens to force compactness. Greenhouse plants may bloom 1st year.

bottom line: Dormant seeding is best, but essentially nondormant lots are known. Flipflop species. Germ 48.6, 43.8, na, sd 31.1, r7.0-88 (81)%. Dorm 31.9, 24.5, na, sd 29.6, r0.0-81 (81)%. Test 33, 32, 34, r22-43 days.**

greenhouse & garden: Easy from seed, moist cold stratify 60 days or dormant seed in an unheated coldframe for insurance, have prop stock germ tested before planting untreated seed in greenhouse.



Comments: status: Endangered in New York. This sp is considered invasive in some parts of its range by some authorities (Haragan 1991.) It may be a weed of economic consequence in some areas, applications, or situations. phenology: Blooms July-September. In northern Illinois, collect seeds in late September - October. Used in landscaping, dry to moist sunny gardens, moist beds & borders, rain gardens & swales, & pond edges. Genetic source Kane Co.

“We have not found this ironweed in Winnebago Co though it seems common in De Kalb Co a few miles southeast of us near Kirkland. The inflorescence is spreading & the lower leaf surface pubescent & not pitted.” (ewf55)

Associates: Pollinator friendly. Butterfly nectar plant. Plant is of special value to native bees.

ethnobotany:

VHFS: Formerly known as *Vernonia altissima* Nutt. Strother (fna) lumps all the varieties & the ssp with the sp. [*Chrysocoma gigantea* Walter, Fl Carol, 196. 1788, *Vernonia altissima* Nutt, *V altissima* var *taeniotricha* SF Blake; *V gigantea* (Walt) Britt, *V gigantea* ssp *ovalifolia* (T&G) Urb, *V ovalifolia* T&G] Ssp *ovalifolia* (T&G) Urb grows in Georgia & Florida.

Illinois had the sp & one variety. The sp has lower leaf surfaces glabrous or with appressed hairs; grows in low woods & open ground; flowers July to October; occasional throughout Illinois.

Variety *taeniotricha* SF Blake has lower leaf surfaces with spreading or erect hairs; grows in low woods, moist soil, flowers July to October; common in the southern ¾ of Illinois, uncommon in the north ¼. The white *forma alba* is known (*V altissima* Nutt f *alba* Mold, Boissiera 7: 5. 1943).



Vernonia gigantea

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image.

Vernonia x illinoensis Gleason [*gigantea* × *missurica*] is known from Illinois. stem finely velutinous, achenes (cypselae) glabrous;

“*Vernonia illinoensis*, Gleason Native. Perennial. Propagates by seeds. Time of bloom: July to September. Seed-time: September to November.

Ω: Ontario to Minnesota, southward to Ohio, Illinois, & Iowa.

Habitat: Dry prairies; meadows & pastures, roadsides, & waste places.

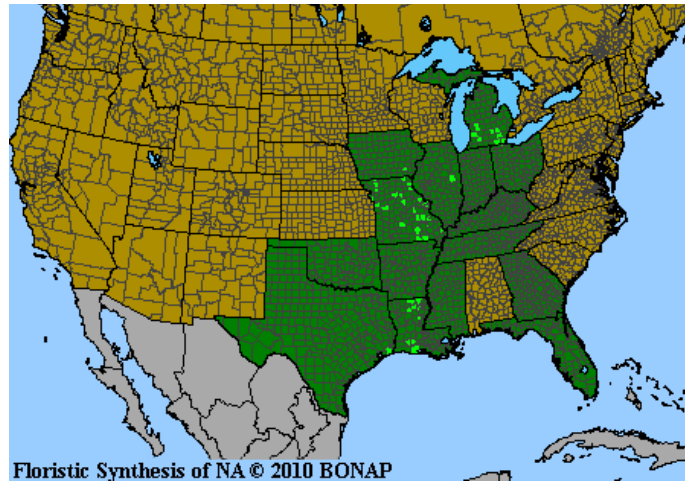
Stem three to six or more feet tall, rather stout, somewhat rough. Leaves large, oblong lance-shaped, finely woolly-hairy above & rough to the touch beneath, sharply toothed. Heads in a densely crowded cymose cluster, many of them sessile or on very short pedicels, rather large, each containing about forty reddish purple florets; involucre bell-shaped, its bracts purple-tinged, obtuse, closely appressed. Achenes slightly rough-ribbed, the pappus purplish brown. Both pollen & nectar are plentifully supplied by all the Ironweeds, & bumblebees & many spp of butterflies are attracted by the flowers, thus assuring their thorough cross-fertilization.

Means of control the same as for TALL IRON WEED.” (“A Manual Of Weeds”, by Ada E Georgia)

Reznicek et al (2011) call this taxon a hybrid between *V gigantea* & *V missurica*, the only spp in the state. “The line between our two spp is not clear. Intermediate plants [called *V x illinoensis* Gleason by many authors] are relatively frequent (known from Allegan, Ingham, Kalamazoo, Kent, Lenawee, Livingston, Monroe, & Washtenaw Cos.) These mostly have either the small, few-flowered heads of *V gigantea* with the leaf pubescence of *V missurica*, or the larger heads of *V missurica* but the very slightly pubescent or glabrate leaves of *V gigantea*. Reports of *V baldwinii* from Michigan are based on specimens of *V missurica*” (ibid.)

“The most important hybrid population, known as *V illinoensis* (Gl [Gray, Rydb] is abundant in the Middle West. It is a hybrid complex of great variability, derived chiefly from *V missurica* & *V altissima*, but also from *V Baldwinii* & *V fasciculata*. Plants of upland pastures & roadsides, the original habitat of *V missurica*, usually approach that sp & will be traced to it through the key below. Those of moist woods & alluvial soils are commonly close to *V altissima*, while those of wet prairies & swales are often much like *V fasciculata*. (Gleason 1952)

This taxon is often included in *V missurica*. Ironically, *V illinoense* is more common from Missouri than Illinois, while *V missurica* is more widespread in Illinois than in Missouri.



Vernonia x illinoensis

Vernonia missurica Rafinesque *OH MISSOURI IRONWEED, (*missuricus -a -um* (mi-sur-ree-KUS) of or from Missouri or the Missouri River.) The epithet is rarely seen as *missourica*, as in Rydberg. fac+

Habitat: Dry prairies, dry savanna, occasionally in open terrace woods & floodplains. (Prairies, loamy to sandy soils; 30–200 m” (Strother fna). “Wooded swamps, low meadows, waste places, overgrazed pastures & degraded prairies” (Ilpin) Prairies & plains. **distribution/range:** Not native to Wisconsin.

Culture: propagation: ①Fall plant or moist cold stratify 60 days (pm09). ②No pre-treatment needed, sowing outdoors in the spring is the easiest method, or seeds germinate after about 60 days of cold, moist stratification. (he99) ③Sow at 4°C (40°F) for 12 wks, move gradually to 20°C (75°F) for germination (tchn). Growth rate moderate. Seedling vigor low. Vegetative spread rate none. Spreads slowly from seed.

seed counts & rates: 334,400 (jfn04), 406,082 (gna05), 416,000; 445,754 (gna03), 481,953* (gnh03), 522,440 (gnh13), 660,364 (gna06), 685,801 (gna04) seeds per pound.

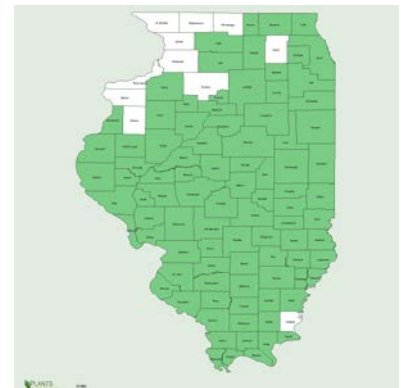
availability: Available from a limited number of vendors.

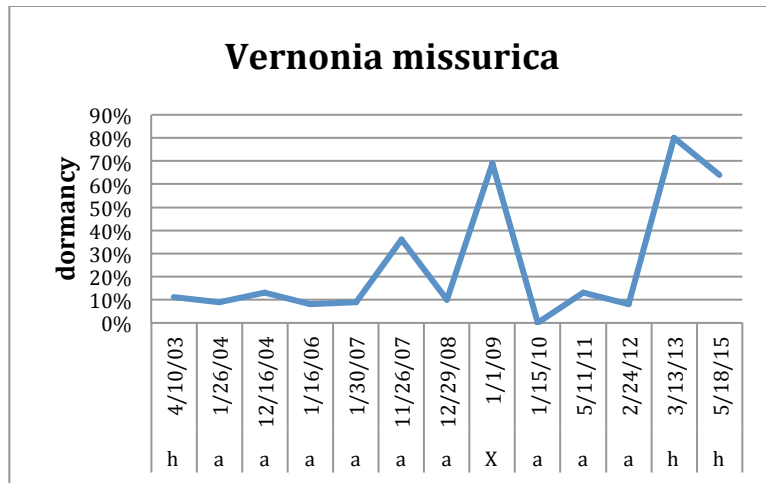
asexual propagation: Cuttings.

cultivation: Tolerant of coarse, medium, & fine textured soils. Anaerobic tolerance medium. CaCO₃ tolerance medium. Drought tolerance low. Fertility requirement medium. Salinity tolerance none. Shade intolerant. pH 5.0-7.0

bottom line: Spring seeding works most years, but 30% of lots are strongly dormant. Flipflop species. Germ 44.3, 43, 21, sd 25.3, r11-81 (70)%. Dorm 25.4, 11, 9.0, sd 26.3, r0.0-80 (80)%. Test 33, 32, 34, r22-43 days. (#15)**

greenhouse & garden: Easy from seed, moist cold stratify 30 days or dormant seed in an unheated coldframe for insurance, have prop stock germ tested before planting untreated seed in greenhouse.





Description: Erect perennial, 3.0-4.0'; stems grayish velutinous; minimum root depth 8"; flowers purple, occasionally rose or white, achenes (cypsela) puberulent, pappus stramineous to whitish (or purplish to tawny, or typically tawny), $N 2n = 34$.

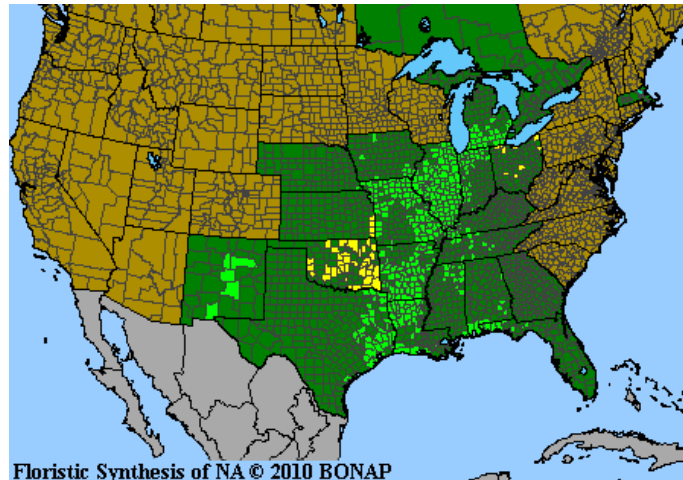
Comments: **status:** Endangered sp in Ohio. **phenology:** Blooms 7,8,9. In northern Illinois, collect seeds in late September - early November. Collect seeds in se Wisconsin in October (he99). Cut flowers. Seed source nursery production originally from oak openings, Illinois River bluffs, Whitefield Twp, Marshall Co & railroad remnants, Clinton Twp, DeKalb Co.

Associates: Attracts butterflies.

VHFS: Many hybrids. Includes the rare rose & white forms *carnea* Standl & *swinkii* Steyerl. [*Vernonia aborigina* Gleason]

“West of our range & rarely within it, the typical plants tend to have acute involucre bracts imbricate in numerous series & tawny pappus; the heads are comparatively large. Within our range almost the whole population shows an admixture of *V altissimus*, as evidenced by the smaller, few-flowered heads, & the more thinly tomentose foliage. [*V illinoensis* Gray] Plants intermediate between *V missurica* & *V Baldwinii* or *V fasciculata* also occur (Gleason 1925).





Vernonia missurica

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Second line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image.

Vernonia noveboracensis (Linnaeus) Michaux (or as (L) Willd) *KY, OH NEW YORK IRONWEED, (*noveboracensis* -is -e (no-vee-bo-ra-KEN-sis) of or from the region of New York, USA.)

Habitat: “Abandoned fields, marshes, & roadsides” (Strother in fna). distribution/range: Native east of our area. New Hampshire & New York west to Ohio, south to Florida & Alabama.

Culture: propagation: ①Cold moist stratify 60 days (pm09). ②Sow at 4°C (40°F) for 12 wks, move gradually to 20°C (75°F) for germination (tchn). ③Kujawski & Davis (2001) recommend 4 weeks cold moist stratification to improve germination. Growth rate moderate. Seedling vigor medium. Vegetative spread rate none. Moderately self sows in good habitats.

seed counts & rates: 300,000 (usda, ecs), 497,531 (gnih02) seeds per pound.

cultivation: Full sun medium to wet soils. Tolerant of medium & fine textured soils. Anaerobic tolerance none. CaCO₃ tolerance medium. Drought tolerance medium. Fertility requirement medium. Salinity tolerance none. Shade tolerance intermediate. pH 4.5-8.0. Zones 5-9. Species prefers rich, moist, slightly acidic soils. Height can be controlled by pinching stems back in the spring. Dead head after flowering to avoid seedlings.

bottom line: Test data indicate dormant seeding is strongly required. Germ 14.3, 14.3, na, r9-19.5 (10.5)%. Dorm 54.8, 54.8, na, r51.5-58 (6.5)%. Test na.

Description: Native, erect, perennial forb, 4.0-6.0 tall, 3.0-4.0 spread; 6 inch minimum root depth; inflorescence cyme; pappus fuscous to purplish; N 2n = 34.

Comments: status: Special concern in Kentucky. Presumed extirpated in Ohio. phenology: Blooms July to September. The flowers are a deeper, richer purple, & bloom slightly earlier than our local sp. Excellent specimen plantings, wetland borders, cottage gardens, wildflower gardens, meadows, naturalizing, & rain or bog gardens. Our colony is in a lowland ‘rain garden’ that receives runoff from inside & outside our greenhouses. According to Britton & Brown (1913), rare white flowered individuals are known.

Associates: Nectar source *Atalopedes campestris* Sachem, *Polites origines* Crossline Skipper, *Polites peckius*, Peck's Skipper. Deer tolerant.

ethnobotany: Used medicinally by the Cherokee for childbirth pain, stomach ulcers, blood medicine, toothaches, & a gynecological aid. (Moerman)

VHFS: [*Serratula noveboracensis* L, Sp Pl 2: 818. 1753; *Vernonia harperi* Gleason; *V noveboracensis* var *tomentosa* B]

J Kujawski & KM Davis, 2001, Propagation protocol for production of plug + transplants of *Vernonia noveboracensis* plants; USDA NRCS - Norman A Berg National Plant Materials Center, Beltsville, Maryland. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 4 August 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.



Vernonia noveboracensis

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. Second line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image.

XANTHIUM Linnaeus 1753 **COCKLEBUR, CLOT-WEED** *Xanthium* New Latin, from Greek *xanthion*, a plant used to dye the hair yellow, from *xanthos* yellow. A genus of 2-3 spp, cosmopolitan, of uncertain original distribution. x = 18

Xanthium spinosum Linnaeus **SPINY COCKLEBUR**,
key features: “whitish-downy, armed with triple, slender, subaxillary spines” (Wood)



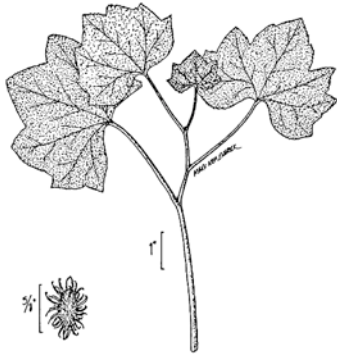
Xanthium spinosum

Line drawing courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image.

Xanthium strumarium Linnaeus *NOX AR, IA COMMON COCKLEBUR, aka COCKLEBUR, ROUGH COCKLEBUR, (*strumarium* -a -um Latin of tumors or ulcers, goiter-like, from *struma*, goiter.) Possibly (?) native to the New World.

“A common weed of cultivated fields & waste places.” (ewf55 as *X commune* Britt.) “Indigenous to the remotest parts of Upper Louisiana” (Nuttall 1817 v2).

Native?, erect, annual; fruits hard, 2-celled burr, about 1” long, covered with stiff, hooked prickles, which like the similar fruit of the burdock, facilitate the dispersal of the seed; key features: “rough, unarmed” (Wood) Noxious weed in Arkansas. Secondary Noxious Weed in Iowa. This sp is considered invasive or weedy by several authorities.



Xanthium strumarium

Line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* USDA Natural Resources Conservation Service. Not copyrighted image. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database. - Not copyrighted image

Selected *Compositae* sources are included in the main bibliography in the closing section.

Endnotes & abbreviations. The following math functions violate Abbey’s 1st Law, which see.

++ The listed numbers are seed count mean, seed count median, seed count mode, seed count standard deviation, seed count max, seed count min, seed count range.

** The listed numbers are Germ mean, germ median, germ mode, germ standard deviation, germ range (range); Dorm mean, dorm median, dorm mode, dorm standard deviation, dorm range (range); Test mean, test median, test mode, test range. (#germ test : tz etc)

Reference abbreviations May 04 2014

- CEPPC California Exotic Pest Plant Council
- CIPC California Invasive Plant Council
- SEPPC Southeast Exotic Pest Plant Council
- SWSS Southern Weed Science Society
- RBG Kew RBG Kew, Wakehurst Place
- aes10 (AES 2010)
- afvp (Atlas of Florida Vascular Plants)
- anef (Angelo & Boufford: Atlas of New England flora)
- apl (Applewood)
- asfg (Audubon Society Field Guide)
- wade (Alan Wade, nd, various years, 95, &c)
- bsh (Baker Seed Herbarium, California)
- bb02 (Baskin & Baskin 2002, 2001, &c.)
- nlb05 Britton 1905
- cb03 (CC Baskin 2003, 2001, &c.)
- crfg California Rare Fruit Growers
- csvd (Currah, Smreciu, & Van Dyk 1983)

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tehn tomclothier.hort.net (-4°C 24°F stratification being corrected)
 cu00 (or cu02, &c, Cullina 2000, 2002, 2008)
 nd91 (Norm Deno, 1991, 1993)
 den28 (Densmore 1928)
 do63 (Dobbs 1963)
 mfd93 (Mary Fisher Dunham 1993)
 dh87 (Dirr & Heusser 1987)
 drwfp (Directory of Resources on Wildflower Propagation)
 ecs (Ernst Conservation Seeds catalog)
 ew12 (Everwilde 2012) also ew11
 ewf55 (Egbert W Fell 1955)
 ewf59 (Egbert W Fell 1959)
 fh (Robert W Freckmann Herbarium)
 fina (Flora of North America project)
 foc (Flora of China online)
 fop (Flora of Pakistan online)
 gni (Genesis Nursery, Inc)
 gc63 (Gleason & Cronquist 1963, 1991)
 gran (Granite Seeds)
 he99 (Heon et al 1999)
 hk83 (Hartman & Kester 1983)
 hpi (Hill Prairies of Illinois
 (Hilty website)
 Ilpin (Illinois Plant Information network)
 jf55 (Jones & Fuller 1955)
 jlh (JL Hudson, Seedsman, (if the phone doesn't ring its me))
 kpw (Kansas Prairie Wildflowers)
 krr (Kenneth R Robertson)
 lbj (Lady Bird Johnson Wildflower Center Native Plant Information Network)
 m14 (Mohlenbrock 2014) also m86, m99, m02, m05, m06, &c
 mbg (Missouri Botanic Garden)
 msue (Michigan State University Extension)
 nae Native American Ethnobotany (Moerman, University of Michigan Dearborn)
 now36 (Nowosad et al 1936)
 nyfa (New York Flora Atlas)
 orghp (Ontario Rock Garden Hardy Plant Society)
 ppc (Philips Petroleum Company)
 pots (Plants of the Southwest 2000)
 pm09 (Prairie Moon 2009) also pm02, pm11, &c
 pnnd (Prairie Nursery no date)
 pph (Prairie Propagation Handbook)
 ppi (Prairie Plants of Illinois)
 psdg (Plants of South Dakota Grasslands)
 pug13 (plants.usda.gov accessed 2013, 2014)
 oed Oxford English Dictionary online
 rain (Ranier Seeds)
 rrn97 (Reeseville Ridge Nursery 1997)
 rvw11 (Reznicek et al 2011)
 rs ma (Ray Schulenburg Morton Arboretum)
 rhs Royal Horticultural Society
 sh94 (Shirley Shirley 1994) & don't call me Shirley
 sk08 (Stuppy & Kessler 2008)
 sm23 (Smith 1923) also sm32, sm33, sm28, &c.
 sw79 (Swink & Wilhelm 1979)
 sw94 (Swink & Wilhelm 1994)

tlp (Time Life Perennials)
tlw (Time Life Wildflowers)
tpg The Prairie Garden
uconn (UConn Plant Database)
us97 (USDA 1997)
w12b (Weakley Nov 2012) also w07-12
wfatp (Vance & Vance 1979)
wfn (Wildflowers of Nebraska)
wfnp Wildflowers northern prairies)
ws92 (Wilhelm & Swink 1992)
w73 (Alphonso Wood 1873)
ry64 (Richard Yarnell 1964)
yy92 (Young & Young 1992)
Reliquum etiam non scriptum est.