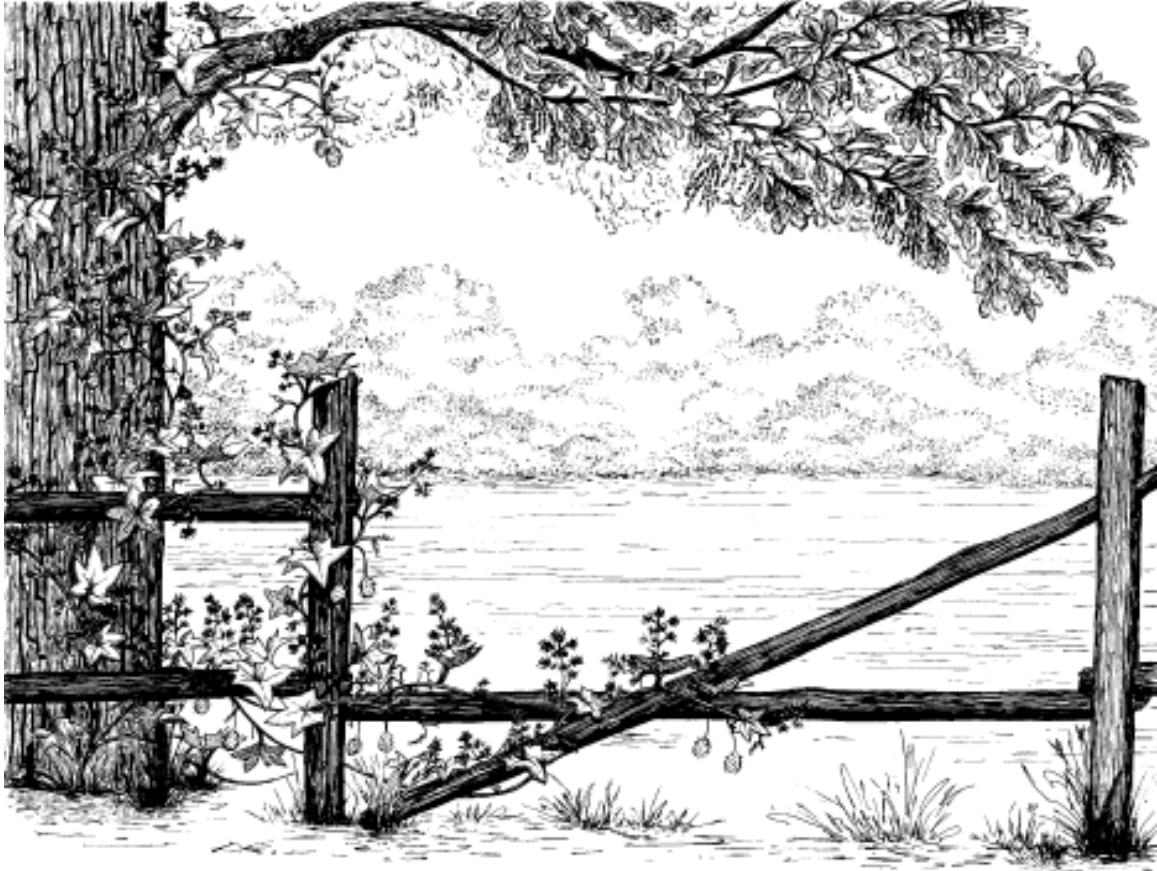


# Monocotyledons

Revised 13 July 2015



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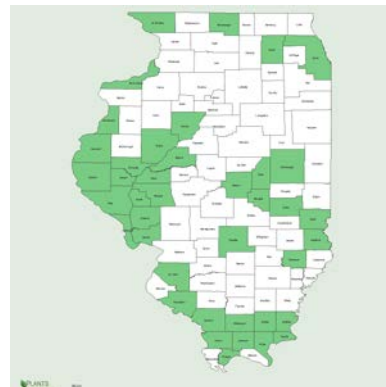
**IRIDACEAE** A. L. Jussieu 1789 **IRIS FAMILY** A family of about 65 (60) genera & 1810 (1500) species, with 16 genera, 92 species (9 genera 19 species introduced) in northern North America, perennial herbs, rarely annual, or shrubs with a woody caudex. The Iris family is important in ornamental horticulture & the cut flower industry, including *Iris*, *Gladiolus*, *Freesia*, & *Crocus*. Saffron dye is obtained from *Crocus*, & essence of violets, used in perfumes, is extracted from the rhizomes of *Iris*.

**BELAMCANDA** Adanson 1763 **BLACK-BERRY LILY, BELAMCANDA** *Belamcanda* is apparently based on a West Indian vernacular name. A genus of 1-2 herbaceous perennials of Asia, including Japan. Some authors place this within *Iris*.  $x = 16$ . Genus is maintained by Mohlenbrock (2014). Formerly *Gemmingia* Kuntze or *Pardanthus* Ker Gawler.

### Move to *Iris domestica*?

*Belamcanda chinensis* (Linnaeus) de Candolle (or (Linnaeus) Redouté) BLACKBERRY LILY, aka BELAMCANDA, BLACKBERRY LILLY, BLACKBERRY-LILY, *FLOR-LEOPARDO* (P), *IRIS TIGRE* (F), LEOPARD'S FLOWER, LEOPARD-LILY, *LEOPARDENBLUME* (G), *MARAVILLA* (SP), *MARIPOSA* (SP), *SHEHAN*, *SHEGAN* (CH),

“Occasional along railroads & roadsides usually in sandy prairie areas” (ewf55). “Species is thoroughly established in roadsides & hillsides. It is distributed in rocky open woods, & pockets of bluffs; it is adventive along roads” (Ilpin). In the se USA, “Dry woodlands, forests, edges of granitic flatrocks, suburban areas” (w12). “Grassland, pastures, woodland clearings, disturbed limestone glades, rocky outcrops; introduced” (Goldblatt fna). Introduced from central Asia, India, China & Japan. Known but not mapped from Lee Co, Illinois.  
Surface sow at 20°C (68°F) in light under constant humidity, germination slow (tchn).



Kew Storage Behaviour: Orthodox; Storage Conditions: Long-term storage under IPGRI preferred conditions at RBG Kew, WP. Oldest collection 21 years; germination change 100 to 90%, 14 years, 1 collection; Germination 100 % germination; germination medium = 1% agar; germination conditions = 26/16°C, 12/12; (RBG Kew)

Very attractive perennial with orange lily-like flowers & iris leaves but it will persist & self sow in a burned landscape. Others say it is short lived, but not so in our experience (12-15+ years). Lacks the petal-like style branches of *Iris*; large fleshy black seeds. The species has been crossed with other IRIS to produce the horticultural “CANDY LILIES”.

N 2n = (16, 27), 32. In China, the plants are usually cultivated (*hence Iris domestica?*) & the rhizomes are used in traditional Chinese medicine. The chromosomal, gene sequence, & gross morphological data show this to be the closest relative to *Iris dichotoma*. (Flora of China online)

VHFS: In the new nomenclature, this is *Iris domestica* (Linnaeus) Goldblatt & Mabberley. [*Belamcanda chinensis* var *taiwanensis* SS Ying, *B pampaninii* H Léveillé, *B punctata* Moench, *Ixia chinensis* L, *Gemmingia chinensis* (L) Kuntze, *Pardanthus chinensis* (L) Ker Gawler]



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**IRIS** Linnaeus **IRIS, POISON FLAG** *Iridaceae* *Iris* (EE-ris, but mostly as EYE-ris) after Greek goddess of the rainbow. Rhizomatous or bulbous perennials, ca. 280 species worldwide, 34 in northern North America. Leaves ensiform, seeds with or with an obvious aril. ♀ X = uncertain. Native North American *Iris* belong to the subgenus *Limniris*, sometimes called the BEARDLESS IRISES. The Cream song, S.W.L.A.B.R. or She Was (or Walked) Like A Bearded Rainbow (aka Sex with LSD Always Brings Relief) was inspired by a bouquet of “Bearded Rainbow” Iris that the composer, Jack Bruce, had delivered to his girlfriend.

Store seeds of all species slightly moist in ziplocks under refrigeration; some species are strongly recalcitrant. We treat all species as at least partially hydrophilic. Wetland species require light to germinate (nd91), but a layer of coarse sand may help. A 4-6 week soak may help remove germination inhibitors from

some western species (Deno). Other than the three species listed below, partially dried storage & cold moist stratification works. Codes B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F or C seeds will germinate only after multiple cycles of warm and cold, typically 40°-70°-40°-70°, \* seeds are hydrophilic, intolerant of dry storage, (H seeds require light to germinate). Easy by division in summer when new fans are putting out new roots. *Iris* can also be divided in spring. (cu00)

*Iris cristata*, *I lacustris*, & *I verna* have elaiosomes like BLOODROOT seed & the seeds are ant dispersed. Horticulturally, they need to be handled & planted as fresh seed (& probably *I tenuis* in the same fashion). The seeds of the Japanese *Iris rossii*, native to dry sunny hillsides, are also gathered by ants. Experience says our local *Iris* species are at least semi-recalcitrant. Of the 34 species growing in North America north of Mexico, 3 species have arils, & 16 species have seeds that wrinkle when dry. Dry wrinkled seeds are an indication of hydrophilic seeds. Such seeds die, have reduced viability, or require multiple temperature cycles to germinate when dried as assumed orthodox seeds. They need to be handled as above.



The “fleshy seeds” of *Iris foetidissima*

Midwestern wetland species of *Iris* have corky to very corky seeds, presumably an adaptation to hydrochory.

⚠ The rootstocks & rhizomes contain the poisons irisin, iridin, or irisine that affect humans, cattle & hogs.

The large wetland *Iris* of the upper Midwest are a bit confusing, especially the names & the plants. Our taller native, northern Illinois wetland *Iris* is commonly called SOUTHERN BLUE FLAG, but has been named at various times by various authors *Iris virginica* L var *shrevei* (Small) E Anders, *I shrevei* Small, or *I versicolor* L var *shrevei* (Small) B Boivin. *Iris versicolor* L, NORTHERN BLUE FLAG, has been collected in one central Illinois co, but northern Illinois is several hundred miles south of its range in the northern 2/3 of Wisconsin. The two are sympatric in much of Wisconsin. One often sees *I versicolor* specified in error in the Chicago metro wetland projects. With the large amount of wetland planting in northeast Illinois, & the many wetland nurseries in Wisconsin, invariably some of the wild-harvested plants used have been the wrong species. *I versicolor* has to be on the increase in the Chicago area & elsewhere beyond its range. Perhaps global warming will thin out the riffraff.

The *Iris* seed used in Chicago metro wetland plantings potentially is of three species, the above two plus the introduced *I pseudoacorus*. When *Iris* seeds are harvested, the plants of all three species are difficult to differentiate by vegetative characteristics alone. When seed is to be harvested from a particular stand, it is best to observe each stand of plants in bloom to properly identify the species.

*I pseudoacorus* leaves narrow, up to 1.5 cm broad; leaf base usually not purple; seeds lustrous, corky

*I versicolor* leaves 2-3 cm broad; leaf base usually purple; finely pitted shiny seeds, not corky

*I virginicus* leaves 2-3 cm broad; leaf base often brown, occasionally purple; deeply pitted dull seeds, corky

The significant differences between *I versicolor* & *I virginica* are well summed by Reznicek et al (2011).

“The cauline leaves of *I versicolor* are shorter than the tops of the inflorescence, while in *I virginica* the cauline leaves frequently overtop the flowers. The ovaries of *I versicolor* (at anthesis) are somewhat shorter (1–2 cm long), at least one of them frequently exerted on the pedicel beyond the tip of the spathe, while in *I*

*virginica* the ovaries (before forming fruit) are 1.5–3 cm long & usually are not exerted. The bases of plants of *I versicolor* are more frequently flushed with purple than are those of *I virginica*, which are generally brown. All of these characters are variable, & several must often be considered before identification can be made. A hybrid between the two species has been described as *I ×robusta* ES Anderson, based on two colonies studied in Mackinac Co near St Ignace & at Engadine. Partial albinos (or pale blue forms) are more common in *I virginica*.”

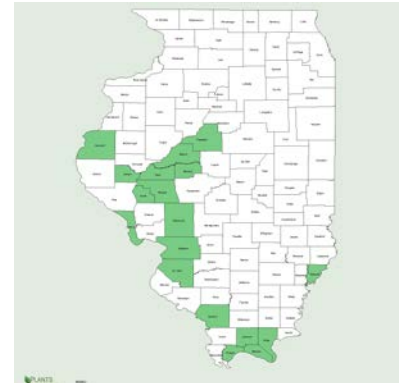
E Anderson, 1936. The species problem in *Iris*. Ann. Missouri Bot Gard 23: 457–509.



2-merous garden *Iris*

***Iris brevicaulis*** Rafinesque \*OH, TN BLUE WATER IRIS, aka BLUE IRIS, LAMANCE IRIS, LEAFY BLUE FLAG, SHORT-STEM IRIS, SHORT-STEMMED IRIS, ZIGZAG IRIS, (*brevicaulis* -is -e short-stemmed, with short stalks, from Latin adjective *brevis* -is -e, short; little, -i-, & Latin noun *caulis*, *caulis* m., from the Greek *καυλος*, *kaulos*, the stem or stalk of a plant, in reference to the short flower stems) obl

**Habitat:** Seasonally inundated wetlands, swamps, wet meadows, & open, moist woodlands. “Species is distributed in wet meadows, open woodlands - in sunlight or shade; woodland habitats of low rich valley woods bordering sloughs or streams, or base of wooded slopes in ravines.” (Ilpin) “This Missouri native is most often found in the wild in damp grasslands, along streams, in sloughs, in woodland valleys, & in ravines at the base of wooded slopes” (mbg). In the se USA, swamps, bottomlands, bogs, seeps, & marshes (w12). Wet prairies, marshes, wet savannas, sunlight or shade, along ponds & stream banks, open woodlands. (Henderson fna). **distribution/range:** Scattered in the southern 2/3 of Illinois, middle & lower Illinois River Valley, southwestern Illinois, & Hancock, Jackson, Johnson, Macoupin, Madison, Massac, Pope, Pulaski, St. Clair, & Wabash counties, central Indiana, Missouri & south.



**Culture:** **propagation:** 120 days cold moist stratification. Best planted outdoors in the fall. (pm09) Dormant seed. 5,648; 9,265 (gna08) seeds per pound.

**asexual propagation:** Spreads by rhizomes. Division of mature plants in spring or summer.

**cultivation:** Place plants in medium to wet, well-drained, humusy soil in full sun to partial shade. Prefers rich, humusy, slightly acidic soils. Species will do well in good garden soil under normal growing conditions. On the down side, species may not flower every year. We have been growing St. Louis area genetic material in northern Illinois for 25 years, where it seems quite at home.

**bottom line:** Plant fresh seed or dormant seed that has been properly stored as slightly moist seed. Dried seed may be of low viability. Species is best from plugs or divisions. Germ 1.0%. Dorm 28%. Test 41 days.\*\*

**Description:** Central & southern Illinois native, perennial, forb, erect, spreading, or prostrate; 1.0-1.5’ tall, 0.75-1.0’ spread; stems declining or semierect, sharply zigzag, with a flower at every bend; leaves basal; flowers blue or blue violet with yellow-white accents, flowers are hidden in the foliage; followed by interesting hexagonal ridged pods; seeds very corky; 2n = 42, 44. **key features:** “Flowers of this species are deeper blue or blue-purple than those of other native species in the state” (Ilpin).

**Comments:** **status:** Endangered in Ohio & Tennessee. **phenology:** Blooms 5-6(7). In northern Illinois, collect seeds in August. Good cut flowers & dried seed pods. Landscaping, bog gardens, rain gardens, & wetland restorations where biogeographically appropriate. *I brevicaulis* is an up close & interesting iris with the flowers nested in the leaves (*at about 5-6" from the ground*), followed by ribbed seedpods. It is best placed near paths or the front of wet borders where its qualities can be appreciated.

**Associates:** In the wild, it provides cover for fish, frogs, aquatic furbearers, waterfowl, marsh birds, & shorebirds. Attracts birds. Provides food for aquatic mammals. Species may contain a gastrointestinal irritant affecting livestock. Deer tolerant.

**ethnobotany:** ☞ "Species is probably poisonous with irritant in leaves or rootstocks, producing gastroenteritis; resinoids (Stephens)." (Ilpin)

**VHFS:** [*Iris alabamensis* Small, *I brevicaulis* fo *boonensis* (Daniels) RC Foster, *I brevipes* Small, *I foliosa* Mack & Bush, *I foliosa* Mack & Bush var *boonensis* Daniels, *I hexagona* Walter, var *flexicaulis*, (Small) RC Foster, *I mississippiensis* Alexander] "*Iris brevicaulis* hybridizes with *I fulva* to produce *I × fulvala* Dykes, & with *I giganticaerulea* to produce *I × flexicaulis* Small." (Henderson fna)



*Iris brevicaulis*, growing in an old kitchen sink buried in the garden

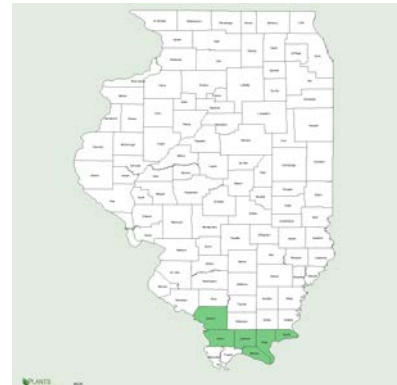
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

**Iris cristata** Aiton \*MD, PA DWARF CRESTED IRIS, aka CRESTED IRIS, DWARF WILD IRIS, *KRYPIRIS* (SW), (*cristatus -a -um* kris-TAH-tus crested, comb-like, from Latin adjective *cristatus -a -um*, tufted, crested; having a comb or tuft on head; plumed; [*cristatus: ales => cock*]; in *Iris cristata*, it is a reference to the crested ridges along the central yellow or white purple striped band on the sepals.)

**Habitat:** Lowland woods, usually along streams. "Species is distributed in rocky wooded slopes, along bluffs, in cherty or limestone soils, & along sandy stream banks; also in low woods. This species thrives in shaded rock gardens, preferring well-drained slopes; multiplies readily." (Ilpin) "In Missouri, it typically occurs on rocky, wooded slopes, on bluffs & along streams in the southeastern Ozark region (Steyermark)" (mbg). In the se USA, moist forests, rich woods, & roadbanks (w12). "Rich woods, ravines, bluffs, usually in calcareous soil" (Henderson fna). Rocky, rich, wooded slopes; bluffs; sandy stream banks. **distribution/range:** In southern Illinois, native to Hardin, Jackson, Johnson, Massac, Pope, & Union counties.

"Species is found only in southern tip of Illinois. It is recorded in Kingsbury (1964) as extending north only into Missouri; it is unclear if Illinois populations are native or introduced." (Ilpin) The Illinois collections have a continuous distribution with collection records in adjacent states (bonal11).

**Culture:** **propagation:** Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment (pm09). "Collect the leathery capsule approximately 6-8 weeks after flowering when they have turned brown. Only a small percentage of flowers in a population will produce capsules. Storage greatly reduces viability. If seeds are collected, they should be planted immediately in acid soil. Seedlings will take two or three years to flower." (Ibj)



asexual propagation: Propagating by division is much more reliable than seeds. Divide in early fall when the leaves have begun to yellow.

cultivation: Best in organic-rich, medium moisture, well drained soils in full sun to partial shade, with partial shade preferred; tolerates close to full shade. Full sun to part shade, but will tolerate full shade. Grows well on well-drained slopes. Plants in full sun must have soil constantly moist. Said to prefer well-drained, rich acidic soils, but in the wild it is noted from calcareous soils. pH <6.8; or 6.1-6.5 or 6.6-7.5. Zones 3 to 9. Overly rich soils will encourage rank, vegetative growth. I have twice failed to keep this alive in Whiteside County.

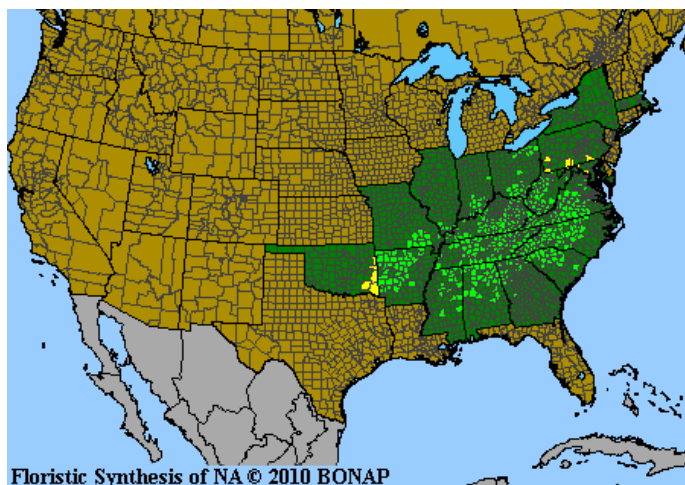
Description: Southern, herbaceous, perennial, native forb; low growing, colonial, with clusters of narrow, pointed leaves 4-9.0-(-16)" tall, 0.5-1.0' spread; roots network of branching rhizomes; stems flowers are on very short stems, often appearing stemless, one, rarely two flowers per stalk; leaves narrow, short sword-shaped yellowish-green to medium green, to 6" long, foliage forms a nice ground cover in wooded areas; pale blue, lilac or lavender iris flowers with gold crests, to 2.5" across; followed by capsules at ground level, with "seeds yellowish brown, 3.2-3.5 mm, smooth, with *narrow, white appendage wrapped around seed, 3.4-4 mm, quickly drying upon exposure to air.*" (Henderson in fna, emphasis added), will naturalize.  $N 2n = 24, 32$ . key features: "Species has a faint spicy fragrance; is alternately constricted & has enlarged creeping rhizomes which are characteristic of this species." (Ilpin)

Comments: status: Endangered in Maryland & Pennsylvania. phenology: Blooms April-May. Forms extensive colonies. Low growing & rapidly spreading under optimum growing conditions. Useful as an attractive groundcover, in shaded areas of rock garden, perennial border, woodland gardens, naturalizing, & woodland groundcovers. We have managed to kill this plant quite easily.

Associates: Attracts hummingbirds & bees, nectar source. Deer resistant. Snails & slugs may be pests.

Ethnobotany: Native Americans used the species to treat skin ulcers, a liver aid & as a urinary aid. ♂ Parts of the plant are poisonous if ingested. Handling the plant may cause skin irritation or allergic reaction. "Probably contains a gastrointestinal irritant; resinoids" (Stephens in Ilpin).

VHFS: [*Iris cristata* Ait var *alba* Dykes, *I cristata* subsp *lacustris* (Nutt) Iltis, *I cristata* var *lacustris* (Nutt) Dyke, *Neubeckia cristata* (Ait) Alef]

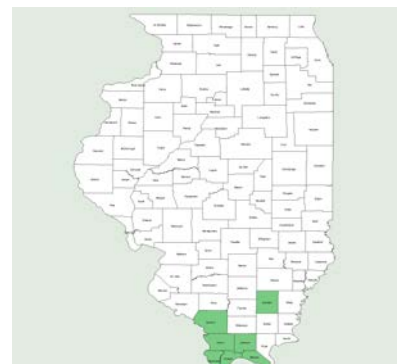


Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society.

**Iris fulva** Ker-Gawler \*KY, TN SWAMP RED IRIS, aka RED IRIS, COPPER IRIS, *KOPPARIRIS* (SW), (*fulvus* -a -um FUL-vus fulvous, tawny, tawny yellow, yellowish brown, orange-gray-yellow, reddish brown, from Latin *fulvus* -a -um tawny, yellowish brown, for the flowers)

Habitat: Swamps, usually in shallow water or low wet areas. "Ditches along highways & railroads; bald cypress swamps, slough borders, bayous, ponds, along open ditches & drainage canals, & swampy woods." (Ilpin) "Freshwater marshes; stream banks; pine savannahs; cypress swamps; wet pastures" (Ibj). In the se USA, swamp forests & wet hammocks (w12).

distribution/range: Arkansas, Illinois, Kentucky, Mississippi, Missouri, & Tennessee. In southern Illinois, Alexander, Hamilton, Jackson, Johnson,



Massac, Pulaski, & Union counties.

Culture: propagation: Growth rate moderate. Seedling vigor high. Vegetative spread rate moderate. Seed spread rate slow.

asexual propagation: Division of clumps.

cultivation: 2728-19360 plants per acre. Tolerant of medium & fine textured soils. Anaerobic tolerance high. CaCO<sub>3</sub> tolerance high. Drought tolerance low. Fertility requirement medium. Fire tolerance medium & resproutability none. Water usage medium to high. Salinity tolerance none. Shade tolerant. Saturated, rich soils, in sun or part shade. pH 6.8-7.2, or 5.0-8.5.

bottom line:

greenhouse & garden:

Description: Southern Illinois native perennial forb; leaves rather soft; flowers rusty-red or rarely yellow to 6" wide (brick red to orange, rarely yellow), capsule indehiscent, remains green, hexagonal in cross section, seeds corky, irregular, flattened;  $N 2n = 42$ . key features: Leaves rather soft, flowers rusty-red or rarely yellow, capsule indehiscent. "Leaves ensiform (sword-shaped), flowers copper colored to brownish-orange; leaves not confined to base of plant; striking when in flower, often growing nearly submerged in water" (Ilpin).

Comments: status: Endangered in Kentucky. Threatened in Tennessee. phenology: Blooms 5-6. Flowers are distinctly flat-topped compared to other species. Partially hardy in Whiteside County.

Associates: Attracts hummingbirds & bees. Nectar source.

ethnobotany: ☞ Probably contains a gastrointestinal irritant; resinoids.

VHFS: *Forma fulvaurea* has yellow perianth. [*Iris cuprea* Ph, *I ecristata* Alexander, *I × fulvala* Dykes, *I fulvaurea* Small, *I vinicolor* Small]



*Iris fulva*

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

***Iris germanica*** Linnaeus GERMAN IRIS, aka COMMON IRIS, *DEUTSCHE SCHWERTLILIE* (G), FLAG, FLAGS, *FLEUR-DE-LIS* (LYS) (F),

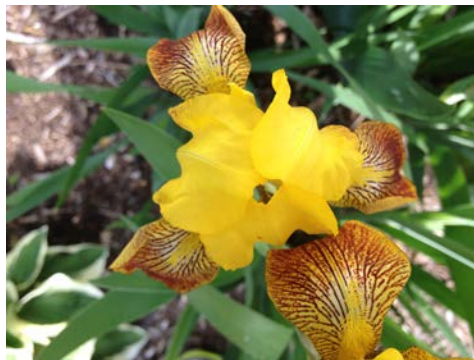
Habitat: Introduced, rarely escaped or persisting in old house yard plantings; along roads, wastes, about abandoned houses. "The common garden *Iris* rarely (or one might say barely) escapes from cultivation, but can doubtless be found in more counties than those mapped. ... Not all garden irises should be called *I germanica*, & the name is not used here in a strict sense." (rvw11) distribution/range: Native to central & southern Europe.

Description: Introduced perennial forb to 3', stems stout, flower purple, blue-violet, yellow, brown, or white in various patterns, 3" wide, purple, leaf sword-shaped, hairless;  $N 2n = 24$ .

Comments: status: The official state cultivated flower of Tennessee. phenology: Blooms 4-6. Plants persistent, resumes growth May, flower buds May, flowers May. "The oldest of cultivated irises, unknown as a native wild plant; one of the dozen or more species involved in the parentage of the tall bearded irises of horticulture... thousands of color variations..." (unknown source quoted in Ilpin)

Associates: A source of "orris-root" of perfume ingredients. ☞ This is probably a gastrointestinal irritant; resinoids (Stephens in Ilpin). The roots & rhizomes are poisonous, with primary poisons irisin, iridin, & irisine, affecting cattle, humans, & swine.

VHFS: Also as *I x germanica* L. “This is considered as a hybrid in SCS-V.1. Ref. 16 says "The oldest of cultivated irises, unknown as a native wild plant; one of the dozen or more species involved in the parentage of the tall bearded irises of horticulture... thousands of color variations..."” (Ilpin). “*Iris germanica* is considered to have been a natural hybrid between *I pallida* & *I variegata* L, both of which also have the chromosome number  $2n = 24$ ” (Henderson fn). Mohlenbrock (2002) separates yellow flowered bearded iris as *I flavescens*. [*Iris australis* Tod, *I croatica* Horvat & MD Horvat]



*Iris germanica* & *I flavescens* in the garden.

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 public domain from Hippolyte Coste - *Flore descriptive et illustrée de la France, de la Corse et des contrées limitrophes*, 1901-1906.

***Iris germanica*** Linnaeus var ***florentina*** (Linnaeus) Dykes ORRIS-ROOT, aka FLORENTINISCHE SCHWERTLILIE, IRIS DE FLORENCE (F), IRIS-FLORENTINO (P), LIRIO BLANCO (SP), LÍRIO-BRANCO (PB), LIRIO DE FLORENCIA (SP), LÍRIO-FLORENTINO (PB), LÍRIO-GERMÁNICO (PB), LÍRIO-TEUTÓNICO (PB), ORRIS, (Orris, probably from Medieval Latin *yreos*, \**ireos*, an unexplained derivative or altered form of iris, arbitrarily applied to the white-flowered species in



contrast to the purple ('*Yris purpureum florem gerit, yreos album*', Sinon. Barthol. 25/2), a term applied to the FLORENTINE IRIS.)

Iris taxon with a fragrant & "medicinal" rhizome.

[*Iris florentina* L.]



*Iris germanica* L. var *florentina*

Seed photo Tracey Slotta USDA-NRCS PLANTS Database. - Not copyrighted image.

**Iris lacustris** Nuttall \*F, MI, WI DWARF LAKE IRIS, aka GREAT LAKES IRIS, NORTHERN LAKE IRIS, (*lacustris -is -e* New Latin of a lake, referring to a lake, by extension, living in ponds or lakes, from Latin *lacuster*, of a lake, from *lacus*, lake, or from *lacus*, lake, & *-stris*, from *-ester*, adjective suffix for nouns denoting origin, place of growth, or habitat.)

Habitat: "Moist, sandy gravel, limestone shores of lakes" (fna). "Woods, often under white cedar, Lake Michigan shores; in limy, gravelly soil" (fh) "Moist sands, gravel, & limestone crevices, usually slightly shaded, at edges of conifers (cedar, fir) along the northern shores of Lakes Michigan & Huron. Particularly well developed on the rubble of old beach ridges, at such places as Wilderness State Park." (rvw11)

distribution/range: Ontario, Michigan, Ohio (? in one source), Wisconsin. "An endemic Great Lakes species, it is known outside of Michigan only from Manitoulin Island & the Bruce Peninsula of Ontario & the Door Peninsula of Wisconsin. Formerly known from the vicinity of Milwaukee, Wisconsin, & Windsor, Ontario." (rvw11)

Culture: Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment (pm09).

Description: Native, northern perennial forb; from rhizomes, cloning; leaves 6.0" long, 0.5" wide, flattened, sword-shaped, in fan-shaped clusters; flower stems less than 2.0" tall; flowers deep blue, sometimes lilac or white, with yellow crests, 1.5" wide, 1.5-2.5" high; "seeds dark brown, with *white appendage spiraled around seed*, ca. 3 mm, quickly drying when exposed to air." (fna emphasis added),  $2n = 32, 42$ . key features: 2.0-3.0" tall forb, mostly stalkless, leaves greater than 0.33" wide (fh).

Comments: status: The floral emblem of Michigan. Federally Threatened. Threatened in Michigan & Wisconsin. phenology: Blooms 5. 95% of the known plants are in Michigan.

Associates: Insect pollinated, self-compatible, seed set low. The fresh seeds have a single, white, corkscrew-shaped appendage, called an eliasome, which is an energy rich food for ants. The seeds are removed to ant nests, the eliasome is consumed, & the intact seed discarded by the ants.

Ethnobotany:

VHFS: [*Iris cristata* Solander ex Aiton subsp *lacustris* (Nuttall) HH Iltis, *I cristata* var *lacustris* (Nutt) Dykes]

Old isolated, stable variant of *I cristata*?

EM Chittenden & PH Carrington, 1996. Endangered & Threatened Plants in Michigan. Michigan State University Press. 53p.



*Iris lacustris*

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos Doug Sherman, courtesy of Wildflower Center Digital Library.

***Iris missouriensis*** Nuttall \*NOX CA, NV WESTERN BLUE FLAG, aka *INDIANIRIS* (SW), *MISSOURI-SCHWERTLILIE* (G), ROCKY MOUNTAIN IRIS, WESTERN IRIS, WILD BLUE IRIS, (*missouriensis* -is -e (mi-sur-reen-sis) of, pertaining to, or from Missouri or the Missouri River.)

Habitat: Wet mountain meadows. Vernal moist grassy or rocky areas. distribution/range: Native in the western Great Plains, Rocky Mountains & westward.

Culture: Cold moist stratify 120 days (Wade). Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn) Plant in late fall, or stratify 90 days & sow in spring (pots 2000). Several years to flowering from seed. 44,000 seeds per kilogram (Cox et al 2008). 20,608 (wns01), 26,400 (appl, ew11) seeds per pound.

“Seeds are placed in a 5 month outdoor cold, moist stratification. A second seed lot was artificially cold, moist stratified for 120 days at 2°C. Germination began at 100 days during stratification. Germinants were planted into containers & grown under cool temperatures (15° to 19°C) in a greenhouse.

Seeds that were fall sown germinate in early spring under cool, fluctuating outdoor temperatures. Seeds that were artificially stratified were planted as germinants. Seeds germinated while in stratification at 2°C. Germinants were planted into containers & grown under cool greenhouse temperatures.

Medium is kept slightly moist during germination. Germination was very non-uniform & continued over 4 weeks. Germination ceased when temperatures were higher than 21°C during the day. Seedlings had developed 1 true leaf 3 weeks after germination.” (Cox et al 2008)

Kew Thousand Seed Weight: Average 15.8g; Oil content: Average 14.2%; Protein Content: Average 14.35%.

Cultivation: Space plants 1.25-1.5'. Very rhizomatous, needs divided regularly.

Description: Western herbaceous, perennial, native forb, to 2', rhizomatous, flowers blue-purple to lilac (or to near white) w/ yellow-orange stripe down middle of each petal; seeds wrinkled; N 2n = 38.

Comments: status: Noxious species in California & Nevada. This taxon is considered weedy or invasive in some parts of its range or under certain applications (Assorted authors. 200\_. State noxious weed lists for 46 states, Whitson et al 1996). phenology: Blooms 5-6. In the west, large populations are known that cover hundreds of acres.

Associates: Attracts hummingbirds. Increases under grazing. Livestock avoid the unpalatably bitter leaves.

ethnobotany: ☠ Touching the seeds, rootstock, or sap may result in minor skin irritation. Ingesting plant parts causes nausea, vomiting, abdominal pain, diarrhea, & elevated temperature.

VHFS: [*Iris arizonica* Dykes, *I longipetala* Herbert var *montana* Baker, *I missouriensis* fo *alba* H. St. John, *I missouriensis* var *albiflora* Cockerell, *I missouriensis* fo. *angustispatha* RC Foster, *I missouriensis* var *arizonica* (Dykes) RC Foster, *I missouriensis* var *pelogonus* (Goodd) RC Foster, *I montana* Nutt ex Dykes, *I pariensis* S. L. Welsh, *I pelogonus* Goodding, *I tolmieana* Herbert]

R Cox, J Evans, T Luna & D Wick, 2008, Propagation protocol for production of container *Iris missouriensis* Nutt. plants (300 ml Deepots), USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 26 November 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery



*Iris missouriensis*

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

***Iris prismatica*** Pursh ex Ker-Gawler \*ME, MD, NH, NY, PA, TN SLENDER BLUE FLAG IRIS, aka BOSTON IRIS, SLENDER BLUE IRIS, SLENDER BLUE FLAG, (*prismaticus -a -um* prismatic, prism-shaped, having several longitudinal angles & intermediate flat faces.)

Habitat: Swampy, peaty soils (fna). distribution/range: Native to the east coast states, inland in Georgia, North Carolina, Tennessee, & Kentucky.

Culture: 120 days cold moist stratification. Best planted outdoors in the fall (pm09). 32,000 (pm02) seeds per pound.

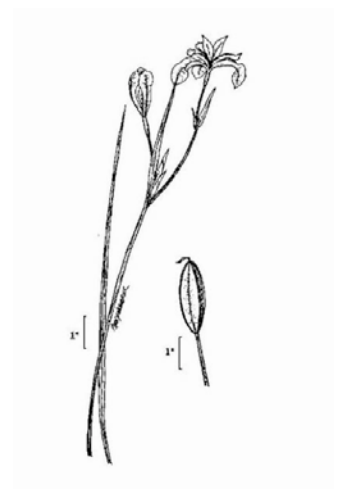
Description: Eastern native perennial forb, flowers blue, light blue, & white on individual plants; seeds are smooth;  $N 2n = 42$ .

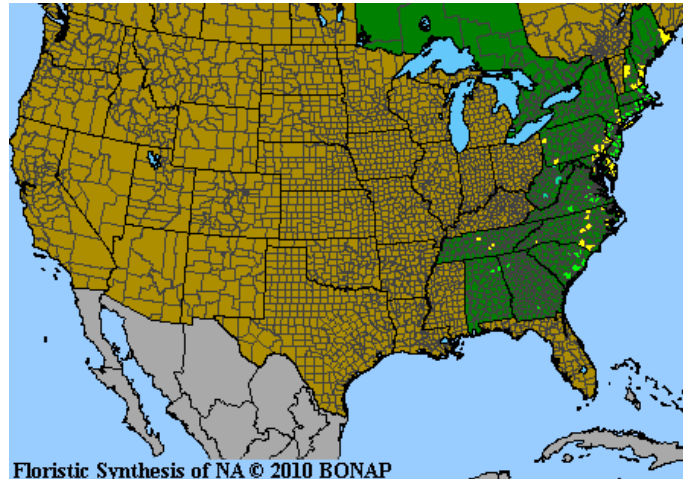
Comments: status: Threatened in Maine, New Hampshire, New York, & Tennessee. Endangered in Maryland & Pennsylvania. phenology: Blooms late May. Not a Midwest native but great in rich soil meadow plantings. Absolutely stunning in mass plantings. Low maintenance, surviving almost 2 decades of annual burning, 30° below zero, frequent droughts, & benign neglect in rich mesic soils in Ronald Reaganland. It has not self-sown in a decade plus. Excellent specimen plant or massed. Our colony is from seed grown plants and ranges from white to dark purple.

Associates: Seed pods are heavily parasitized.

ethnobotany:

VHFS: [*Iris carolina* Radius, *I prismatica* Pursh ex Ker Gawl var *austrina* Fern, *I prismatica* var *prismatica* ]





Floristic Synthesis of NA © 2010 BONAP

*Iris prismatica*

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 species*. Not copyrighted image. North America map courtesy of BONAP (2010)

***Iris pseudacorus*** Linnaeus YELLOW FLAG, aka *FLEUR-DE-LIS*, *IRIS JAUNE*, PALE YELLOW IRIS, TALL YELLOW IRIS, WATER FLAG, YELLOW FLAG, YELLOW FLAG IRIS, YELLOW IRIS, YELLOW WATER IRIS, WATER FLAG, (New Latin *pseudacorus* –a -um (sood-A-ko-rus) false *Acorus*) obl

Habitat: “Species is distributed in shallow waters; planted in gardens, often around pools or low wet ground; muddy calcareous springs” (Ilpin). In Michigan, “A European species, locally spread from cultivation into wet lake shores, river edges, marshes, & ditches; sometimes forming dense stands” (rvw11). In the se USA, “swamps, marshes, streams, ponds, streambanks, cultivated as a water plant” (w12). distribution/range: Native to southern & western Europe & Africa. It has been collected in 44 of the lower 48 states (BONAP 2011). “It is found especially along the Fox River in Kane County” (sw79 in Ilpin). There is a fine colony of very large plants in a wet depression north of the black top near the Captains Cove, Utica, Illinois, opposite Starved Rock. Culture: Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn) Dormant seed, bottom heat. Easy with GA3. 24,000 (ew11) seeds per pound.

cultivation: Space plants 2.0-3.0'. Full sun to partial shade, wet to mesic soils.

Description: Introduced perennial, rhizomes pink, capsules prismatic to oblong-ovoid, obscurely 3-angled with obvious groove at each angle; seeds D-shaped, corky, lustrous.  $N 2n = 34$ . key features: : “This is a handsome & striking species with tall erect leaves a meter or more high. The tall stems bear the bright yellow flowers equal or shorter than the leaves.” (Ilpin)

Comments: Blooms 5,6(6-8). The steroidal wetland *Iris*. A European species that is larger than most of our native specimens & is naturalizing our ditches. A striking plant, in bloom visible from a distance, worthy of a place in our gardens & pond shores *only if* dead-headed after blooming. Species is probably more tolerant of urban hydrology & water quality than native iris. Reliably produces a large crop of seed, & self sows badly. The ill-informed collect seeds in northern Illinois in July - August.

This species may be a weed of economic impact.

Associates:

**Ethnobotany:** This species probably acts as a gastrointestinal irritant; resinoids (Stephens in Ilpin).

**VHFS:** It is very difficult to differentiate from robust specimens of BLUE FLAG after blooming, & a portion of the BLUE FLAG seed trade from wild harvesters is invariably this species. “It is very difficult distinguish this species in the vegetative condition from either *I shrevei* or *I versicolor*, except that the leaves of *I pseudacorus* are usually narrower, up to 1.5 cm broad, while the leaves of the other two are usually 2-3 cm broad, in addition, the base of the leaves of *I pseudacorus* are usually not purple as they are in *I versicolor* & occasionally in *I shrevei*. (m06)



*Iris pseudacorus*

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 species*. Not copyrighted image.

***Iris pumila*** Linnaeus DWARF IRIS, aka *DVÄRGIRIS* (SW), DWARF-FLOWER-DE-LUCE, IRIS, PYGMY IRIS, (*pumilus -a -um* Latin small, dwarf, dwarfish, low or little)

**Habitat:** Dry grassy areas, persisting where planted, including old dwellings & pioneer cemeteries. “Species is distributed in rock gardens, other gardens; wastes” (Ilpin). In Russia, “stony slopes, steppes, on gravelly soil, solonchaks” (Ornamental plants from Russia [www.efloras.org](http://www.efloras.org)) **distribution/range:** Native to central & eastern Europe & Asia (Asia Minor). Sparingly known from Illinois, Indiana, Michigan, & Ohio. DuPage County, Illinois. Known from but not mapped from Bureau County. Species is probably more common than currently known.

**propagation:** ①Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn)

②Kew Storage Behaviour: Orthodox p; 95% viability following drying to mc's in equilibrium with 15% RH & freezing for 2 months at -20°C at RBG Kew, WP; Thousand Seed Weight: 15.80g; Germination data: 95 % germination; pre-sowing treatments = imbibed on 1% agar for 12 weeks at 5°C; germination medium = 1% agar; germination conditions = 25/10°C, 8/16; (RBG Kew, Wakehurst Place.) 86 % germination; pre-sowing

treatments = seed scarified (pericarp excised at proximal end, close to embryo), germination medium = 1% agar; germination conditions = 30/20°C, 8/16; (RBG Kew, Wakehurst Place.)

Description: Introduced low, perennial forb; stemless or with stem very short, bearing one flower, leaves to 15 cm long, to 7 mm wide; flowers purple, sepals to 17 mm broad, upper surface of sepals bearded; seeds are light brown, subspherical, 3-5 mm diameter, wrinkled;  $N 2n = 30, 31, 32, 36$ .

Comments: status: phenology: Blooms late March to mid May. Flowers are usually dark red-purple. Leaves may winter over. Cultivated since the 16<sup>th</sup> century & used for the breeding of dwarf bearded iris. European plants may range from yellow to lilac.

This plant is known to persist in two Bureau County remnant prairie pioneer cemeteries, where it appears to be non-aggressive. Henderson (fna) notes that most, if not all modern dwarf Iris are hybrids, but some herbarium specimens from the 19<sup>th</sup> century seem to represent wild forms of *I pumila*. The plants in the pioneer cemeteries may be old enough to be wild forms of the species.

Associates: ☞ Probably acts as a gastrointestinal irritant. Possibly poisonous to livestock.

VHFS: A distinct species considered of natural hybrid origin. It has been repeatedly bred with tall bearded iris & their mixed progeny. <http://www.tropicos.org/NameSearch.aspx?name=Iris+pumil> lists 30 forms, varieties, & subspecies.



*Iris pumila*, pioneer cemetery prairie, Bureau County

Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image.

***Iris setosa*** Pallas ex Link ARCTIC BLUE FLAG, aka ARCTIC IRIS, BEACH HEAD IRIS, BEACH-HEAD IRIS, BEACHHEAD IRIS, CANADA BEACHHEAD IRIS, MOUNTAIN IRIS, SHAN YUAN WEI, WILD FLAG, (*setosus* -a -um bristly-hairy, bristly, beset with bristles, from Latin *seta*, a bristle.)

Habitat: Boggy meadows, shores, & dunes. distribution/range:

Culture: Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment (pm09). Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn)

Description: Seeds D-shaped, very smooth.  $N 2n = 34, 36, 38$ . key features:

Comments: status: phenology: Blooms July - August.



*Iris setosa*

Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image.

**Iris sibirica?** Eurasian, but probably a more common escape or waif than thought?

Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to +1 to +4°C (33-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn)



*Iris sibirica*

***Iris tenax*** Linnaeus OREGON IRIS, aka KLAMATH IRIS, OREGON FLAG, OREGON IRIS, TOUGH-LEAF IRIS, TOUGHLEAF IRIS, WILD IRIS, (*tenax* tenacious, gripping, strong, holding fast, tough, ultimately from Latin verb *tenere*, to hold, to keep, & *-ax* suffix meaning with a sense of ‘inclining or apt to’, or from adjective *tenax*, *tenacis*, holding fast, clinging, tenacious, retentive.)

Habitat: Fields & open woods, dry soil. distribution/range: California, Oregon, & Washington.

Culture: Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn) 28,800 (ew11) seeds per pound.

Cultivation: Space plants 0.75-1.25'. Partial shade, dry soils.

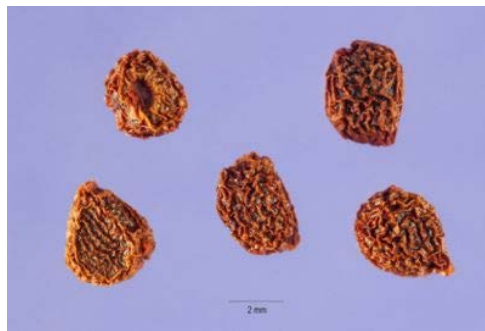
Description: Western native perennial, seeds are D-shaped to irregular, wrinkled. key features:

Comments: status: phenology: Blooms Sp is listed as it is now in the Midwest seed trade.

Associates: Attracts hummingbirds.

ethnobotany:

VHFS:



*Iris tenax*

Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image.

***Iris versicolor*** Linnaeus BLUE FLAG, aka *BROKIRIS* (SW), DAGGER FLOWER, HARLEQUIN BLUEFLAG, *IRIS VARIABLE* (F), *IRIS VERSICOLOR* (F), LIVER LILY, NORTHERN BLUE FLAG, POISON FLAG, VARIED-COLOR IRIS, *VERSCHIEDENFARBIGE SCHWERTLILIE* (G), WATER FLAG, WATER IRIS, WILD BLUE IRIS, WILD IRIS, (*versicolor* (ver-SI-ko-lor) variously colored, changing color, from Latin *versicolor*, from *vers-*, participle stem of *vertĕre* to turn, change, & *color*, color.)

Habitat: Marshes, wet meadows, wet prairies, ditches, edges of ponds, & turfy shores. Marshes, swamps, wet meadows, along shorelines, & in forested wetlands. Wet meadows & streambanks. In Michigan, “Wet places



generally: lake shores, marshes, river borders, stream bottoms, meadows, ditches, swamps, & sphagnum bogs” (rvw11). distribution/range: In Illinois adventive in Cook & Menard counties. Naturalized in United Kingdom & Germany.

It is not native to northern Illinois & should not be planted in the wild or in commercial restorations. Never the less, sp is often specified in northern Illinois plantings. Unfortunately, our local sp was designated as *I versicolor* in the past. *I versicolor* has a more northern distribution than the next native species & local reports are referred by some to *I virginica shrevei*. *I versicolor* is adventive, very rare, or non-existent in our part of the Midwest, & it is not native to northern Illinois. It is erroneously specified in Chicago-metro plantings by the biogeographically challenged. It is undoubtedly established in several counties in the Chicago metro area in wetland restorations.

Culture: propagation: ①120 days cold moist stratification, or best planted outdoors in the fall (pm09). ②“90 days moist stratification required for germination. Requires scarification. Field sow fall.” (pnnd). ③120 days cold moist stratification (pm09). ④Sow seeds outdoors in fall, or 120 days cold moist stratification (he99) Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) ⑤Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn) ⑥90 days cold moist stratification at 36° F (usda).

seed counts & rates: 16,000 (aes12), 18,000 (Rook 2002, ecs), 20,000, 20,800 (pm02, ew11), 24,000 (pn02), 24,329 (gnasr04) seeds per pound.

Kew Thousand Seed Weight: average 15.02g, (14.3-15.9g).

asexual propagation: Maturing plants form large clumps that can be divided after flowering.

cultivation: Space plants 1.5-2.0'. Full sun to partial shade, wet soils. Sandy, loamy soils, water less than 4.0" deep. Clay soil tolerant. AES (2010) reports some salt tolerance. pH 5.0-7.0.

bottom line: DO NOT specify or plant in Illinois restorations! Dormant seed properly stored, slightly moist seed. Dried seed may be of low viability or deeply dormant. Flipflop species. Germ 40.3, 30, na, sd 31.8, r11-90 (79)%. Dorm 52.3, 61.5, na, sd 31.9, r4.0-82 (78)%. Test 42, 47, na, r25-50 days.\*\*

Description: Erect, perennial, semi-aquatic to emergent, 2'-3' tall forb; stems equal to or slightly taller than the leaves; from stout rhizomes, sometimes partially exposed; leaves sword-shaped, cross-section V-shaped, in flat, fan-shaped cluster: *cauline leaves of I versicolor are usually shorter than or equal to the height of the flowers; leaves usually purple at the base*; flowers blue to purple, rarely white, 6-parted, 4" wide, short-stalked, either *no spot or a greenish-yellow spot at the base of the sepals, (sepals with pubescent, green or greenish yellow patch surrounded by heavily veined, purple-on-white signal at base of blade.)*, fruit 3-angled, cylindrical capsule with large, corky seeds; seeds D-shaped, finely pitted, (regularly pebbled), shiny, & not corky (fna). N 2n = 108. key features: ①Flowers with either no spot or a greenish-yellow spot at the base of the sepals (fh). ②“Signal a greenish-yellow, papillate patch, surrounded by an area of heavily veined purple-on-white” (w12). Comments: status: Native upper Midwest. phenology: Blooms May to June (6-7). Collect seeds in se Wisconsin in August - September (he99). Very showy. Useful in landscaping, tolerates wet soils, used in moist rain gardens, bog gardens, shoreline & pond plantings; attractive large blue flowers are good as fresh cut flowers or dried seed pods.

*I versicolor* is becoming a weed in New Brunswick, Prince Edward Island, & Nova Scotia.

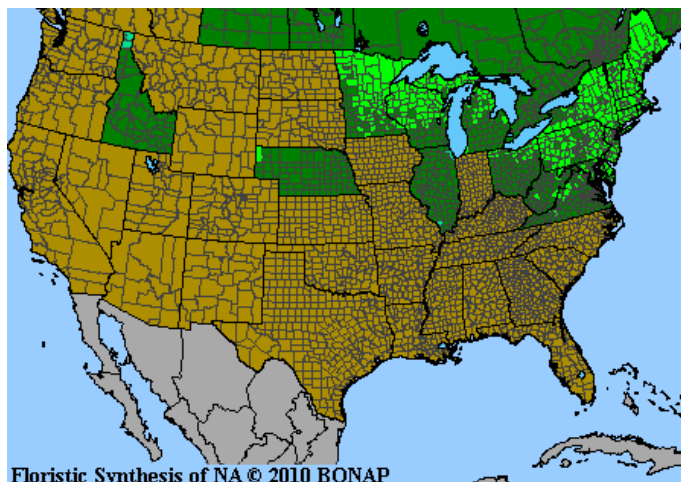
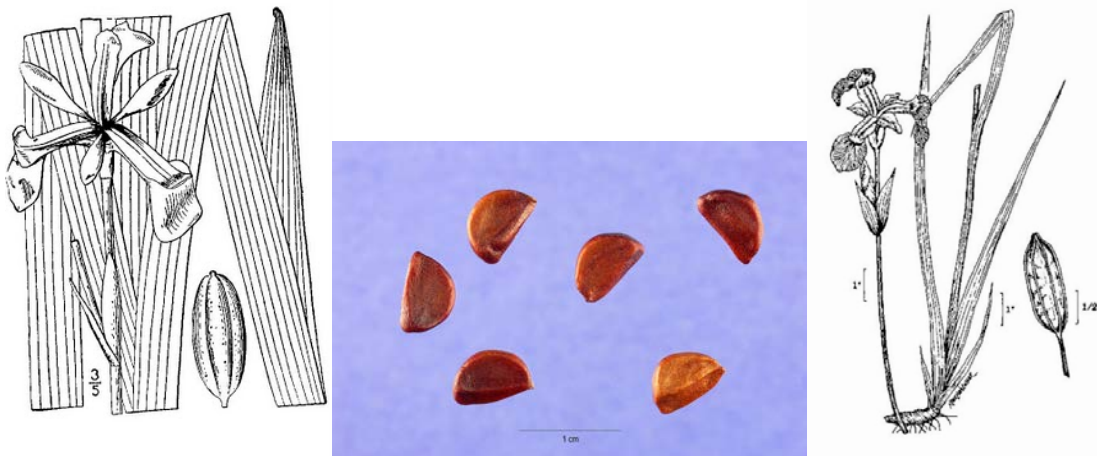
Associates: Pollinated by bees & *Diptera*. Attracts hummingbirds. Attracts waterfowl & small mammals. Provides food for waterfowl, marsh birds, muskrats, & short-lived, foolhardy, wetland specialists. Reported as deer resistant. Livestock will not eat the foliage.

ethnobotany: Root used as medicinal plant by Ojibwa & Pottawatomie (sm32, 33). Ojibwa used as poultice (den28). Leaves used for weaving mats & baskets by Pottawatomie (sm33). Leaf fibers were used to make cordage. Used as a charm against snakes by Ojibwa (sm32).

☞ Touching the seeds, rootstock, or sap may result in minor skin irritation. Ingesting plant parts causes nausea, vomiting, abdominal pain, diarrhea, & elevated temperature.

VHFS: “E Anderson (1936) showed rather conclusively that *Iris versicolor* arose as an amphidiploid between *I virginica* (n = 35) & *I hookeri* (*I setosa* var *canadensis*) (n = 19)” (fna). Said to hybridize with *I virginica shrevei*, artificial crosses have been made. 10± forms & varieties are known.

“*Iris versicolor* is very similar to *I shrevei* (*I virginicus*), but the former has a greenish yellow spot at the base of the sepals rather than a bright yellow spot. It also has finely pitted, shiny seeds, rather than deeply pitted, dull seeds. In the vegetative state, *I shrevei* (*I virginicus*) usually has leaves with a brown base, while *I versicolor* has leaves with a purplish base. (m06)



*Iris versicolor*

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 species*. Not copyrighted image. North America map courtesy of BONAP (2010)

***Iris virginica* Linnaeus var *shrevei*** (Small) E Anderson [also known as *I shrevei* Small] \*NY, PA BLUE FLAG, aka BLUE FLAG IRIS, *FLAGGIRIS* (SW), *IRIS DE VIRGINIE* (F), SHREVE’S IRIS, SOUTHERN BLUE FLAG, VIRGINIA BLUE FLAG, VIRGINIA IRIS, WILD BLUE IRIS, WILD FLAG, Weakley (2012) reserves the common name SOUTHERN BLUE FLAG for *Iris virginica* Linnaeus var *virginica*. (*virginicus* -a -um pertaining to, of or from Virginia, USA, Virginian.) Obligate

**Habitat:** Wet meadows, drainage ditches, & upland swamp. Full to partial sun; wet; meadows, streambanks; in sandy, loamy soil. Seen as a shoreline-emergent in the Hennepin Canal. “Open swampy or wet ground of meadows, river bottom prairies, swales along railroads, ditches, pond & slough borders.” (Ilpin) In Michigan, “Ponds & lake shores, marshes & sedge meadows, ditches, streamsides, river banks & thickets, swamps, & rarely bogs” (rvw11). Prefers wet meadow zone. **distribution/range:** Probably in every Illinois county.

**Culture:** “Fall sow direct or in flats, or sow fresh seed, or moist cold treatment 120 days. Scarifying/cracking hulls may help/ medium to light cover. Good to fair germination.” (mfd93). Best planted outdoors in the fall, or 120 days cold moist stratification. (pm09). Sow seeds outdoors in fall, or 120 days cold moist stratification (he99) “90 days moist stratification required for germination. Requires scarification. Field sow fall,” (pnnd). Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11). Impervious seed coats. Shake in dry sharp sand or nick carefully with a file. Sow at 18-22°C (64-71°F) for 2-4 wks, move to -4 to +4°C (24-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. (tchn) If propagation is by seed, sow immediately in an outdoor seedbed. Dry storage of *Iris* seed greatly

reduces viability. (lbj) 99% germination in 9 days reported (us97), & I saw Elvis & JFK at the Seven-Eleven last Thursday. Use of GA3 replaces need for cold moist stratification, with very favorable results (gni).

“Seed is collected by hand from nursery stock. The plant flowers from approx. May 22 to June 1. Seed is harvested July 15. Seed is damp stratified by mixing it with equal amounts of vermiculite & lightly dampening in a plastic bag or container. Stratify seed for 3-4 months in a cold room of 34-36° F. Sow the seeds by hand by broadcasting. Try to sprinkle 2 seeds per cell. Seed purity rates vary from year to year. Thus, it is easier to thin than to transplant. Cover the seeds to one times their depth with the same growing media. Use a dibble board or roller to gently press seed & cover soil in the cell.

Set the greenhouse temperatures to be 70-80° during the day, & 65-75° at night. 75% germination is reached in about three weeks. Plants must be watered by hand during germination. Set the hose on gentle shower to prevent seeds from splashing out.

Once germination is successful, the greenhouse temperature may be turned down gradually depending on outside temperatures. Plants are irrigated in the morning by soaking for 20 to 30 minutes. This allows the foliage to dry out during the day. Once true leaves appear, the plants may be fertilized. Start with 50 ppm of Rapid Grow or Peter's Liquid Fertilizer once a week. This rate is increased to 200 ppm gradually, & again, decreased to 50 ppm before moving the plants outside to the shadehouse. It is important to rinse fertilizer residue off the foliage by running the irrigation for 30 seconds. Plants should be thinned to 2 plants per cell. This should be done before the roots are too extensive.

When foliage reaches 8 to 10 inches, the plants need to be pruned back to 3 or 4 inches. This is accomplished by turning the flats on their sides & cutting with scissors or sheers. Make sure the clippings are all removed from the flats to prevent disease spread

7 months active growing. The first greenhouse crop will be moved to a hoop house in late January to February. To acclimate the plants, the irrigation rate is reduced to 50 ppm before moving & greenhouse temperatures are decreased to 55-60 degrees day. The second & third crops are moved directly to the shadehouse in April & May. Again, greenhouse controls & fertilization rates are adjusted in preparation for the move. Plants that reach 8-10 inches in the shadehouse will require pruning also.

Length of hardening phase 1 month. Flats may be unplugged in October or November as long as most of the tops have died down. Plugs that are not shipped may be stored for spring planting in cold rooms kept above freezing, preferably 40-50 degrees. Try to remove most of the dead foliage as you can before bagging the root plugs for storage. Store them on plastic bags to ensure the roots do not dry out.

Storage duration approximately 4 to 6 months. Plugs may be shipped at any time as long as the receiver has cold storage.” (Blessman et al 2001)

Seeds require cold moist stratification for 120 days, or dormant seeded on top of soil, little or no cover. Removing the corky hull helps. Germinates best in warm soils. Dormant seed or moist cold stratify (120 days), saturated soils, light. 12,877 (gna03), 13,600 (aes12), 14,400 (agre07), 14,467(gn), 14,885 (gna05), 15,655 (gna07), 16,000 (pm01, sh94), 19,200 (ew11), 22,400 (pn02, jfn04), 29,009 (gnh02) seeds per pound. In mixes, plant 0.06-0.25 lb pls per acre (us97), or 0.063-0.094 lb pls per acre (gni). Best from fresh or moist stored seed or rootstocks; economically best from plugs. Seed, plugs, & bareroot stock are available from a number of sources.

asexual propagation: Clump division is the usual method of increase. Divide in early fall when the leaves begin to turn yellow. Keep stringy roots attached to the stubby rhizome sections. (lbj) Division of mature clumps in early spring.

cultivation: Space plants 1.5-2.0'. Best grown in wet, boggy, Nutrient load tolerance moderate. Not salt tolerant. Siltation tolerance moderate. Partial to full sun. pH data not available. Humusy soils. Seasonally flooded soils to ≈ 3” inches with spring high water. Will not tolerate constant inundation of 6-8”. Bare root material & plugs should be spring planted. Bare root material may be refrigerated for a brief period prior to planting. Plant bare root material 2-3” deep or plugs at same level as they have been growing, on 1-1.5' centers. Growing points should be visible above ground. Young shoots do not tolerate flooding. May be planted in a pot & sunk into the edge of a pond or other water feature. Species is rhizomatous & forms colonies.

bottom line: Dormant plant properly cold stored, slightly moist seed. Dried seed may be of low viability or deeply dormant. Germ 9.1, 6.0, 1.0, sd 10.9, r0.0-50 (50)%. Dorm 78.5, 84, 90, sd 17.9, r28-95 (67)%. Test 34, 34, 43, r16-46 days. (#22:9)

greenhouse & garden: Using 2013 crop seed, seeds sown in flats then placed in a coldframe was vastly superior to artificial stratification.

Description: Erect, native perennial, semi-aquatic (emergent), 1(2-)-3.0' tall forb with usually 1.0-3.0 spreading branches; creeping, often colony-forming rhizomes; leaves widely linear to sword-shaped, erect or arching, *cauline (stem) leaves that often exceed the flowers; leaves usually brown at the base*; flowers blue purple, rarely white, bases yellow, very showy, 6-parted, 3" wide, short-stalked; hairy, *bright yellow spot* (bright yellow pubescent patch or signal) at the base of the sepals; fruit 3-angled, *elliptical to oval capsule; seeds deeply pitted, dull*, usually D-shaped, corky;  $N 2n = 70, 72$ . key features: ① Flower with a hairy, bright yellow spot at the base of the sepals. (fh)

Comments: status: Endangered in New York & Pennsylvania. phenology: Blooms May to July. In northern Illinois, collect seeds in late July - September. Collect seeds in se Wisconsin in August - September (he99). Attractive cut flowers, dried seed stalks & pods used in winter bouquets. Useful in the landscape, bog gardens, water gardens, pond shorelines, rain gardens, wetland restoration, upper shoreline zone, & vegetated swales. Seed source nursery production, genetic source DuPage, Kane, & Will counties.

"*I shrevei* Small WILD IRIS Our common & only wild blue flag. Variouslly designated as *I versicolor*, *I virginica* var *shrevei*." (ewf55)

Associates: Attracts butterflies. Nectar source for *Euphyes bimaculata* TWO-SPOTTED SKIPPER. Hummingbirds have been observed feeding on nectar. Provides cover for amphibians, foraging habitat for snakes, & habitat for numerous insects. Waterfowl & muskrats eat seeds. Reported as deer resistant. Grazing animals do not eat much, has a sharp taste. Probably a gastro-intestinal irritant. The leaves are eaten by poultry & cattle (Steyermark 1963). No serious insect or disease problems.

ethnobotany: Caution!!!! ☹ Handling rhizomes (any plant parts) may cause severe dermatitis. "Some people may get dermatitis from roots especially, rootstock has irritant which, when eaten, can cause complications in the digestive tract, causing mild poisoning" (Ilpin). Possibly allergenic.

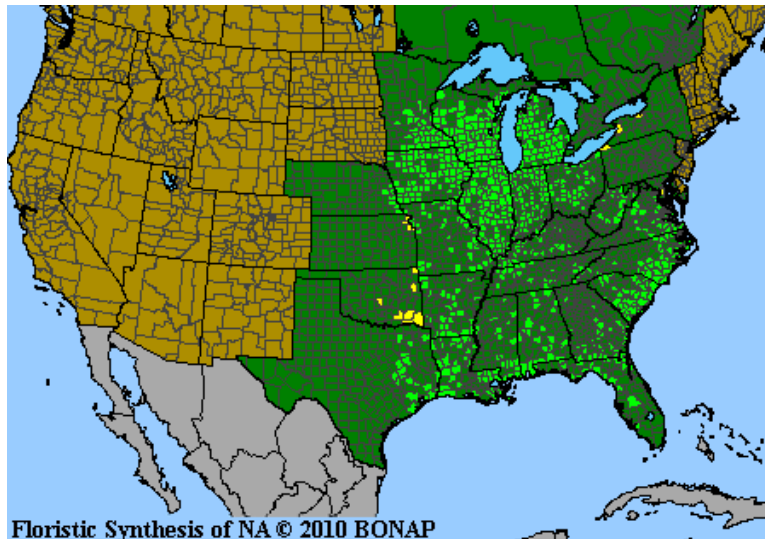
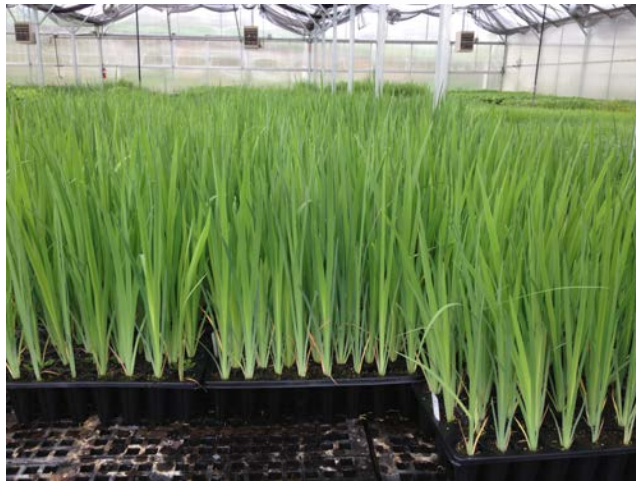
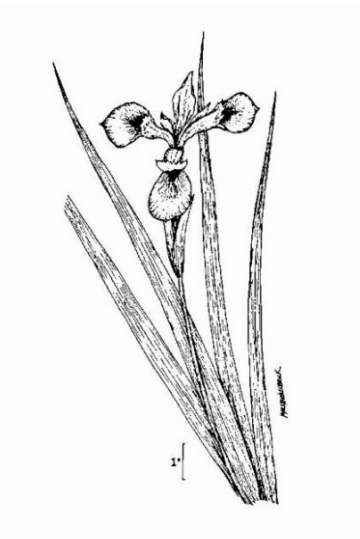
VHFS: [*Iris caroliniana* S Watson, *I georgiana* Britton, *I shrevei* Small, *I virginica* var *shrevei* (Small) ES Anderson] "Plants of *Iris virginica* from the southeastern & south-central states having stems 2-3-branched & seldom falling to the ground after flowering, & with capsules long-cylindric have been recognized as var *shrevei*" (fna). Where sympatric, said to hybridize with *I versicolor*.

Plants to 10 dm tall, usually with 1-2 well-developed branches; capsule 7-11 cm long ..... *I virginica* var *shrevei*

Plants to 6 dm tall, little or not at all branched; capsule 4-7 cm long ..... *I virginica* var *virginica*" (Weakley 2010)

G Blessman, DJ Horvath, & RM Flood, 2001. Propagation protocol for production of container *Iris virginica* (Small) E Anders *shrevei* plants (1+0 container plugs), Illinois Department of Natural Resources - Mason State Nursery, Topeka, Illinois. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 27 November 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.





*Iris virginica*

Line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS. *Wetland flora: Field office illustrated guide to plant species*. Not copyrighted image. North America map courtesy of BONAP (2010)

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**SISYRINCHIUM** Linnaeus 1753 **BLUE-EYED GRASS, IRISLETTE, SATIN FLOWER** *Iridaceae Sisyrrinchium*  
New Latin, from Greek *sisyrinchion*, *sisyrinchium*, from Greek σῦς, *sys*, pig, & ῥύγχος, *rynkhos*, snout, an obtuse reference to swine grubbing the roots for food, or for a resemblance of the unopened, singular spathe of

some species to a hog's snout. A genus of about 80 species of the New World (37 in northern North America), Hawaii, with 1 species in New Zealand & one probably introduced species in Great Britain. x = 8.

Several websites report *Sisyrinchium* as being non-toxic, but it is better to be cautious. Knight & Walter (2001) report cardiac glycosides are present in the plants.

Fruits are capsules with small round seeds that ripen in summer. Harvest when the turn from greenish yellow to brown or black. When ripe the pods split open into 3 segments. Most germinate the first spring after cold moist stratification, but some germinate 2<sup>nd</sup> spring. Seedlings may bloom 1<sup>st</sup> year. Code B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F or C seeds will germinate only after multiple cycles of warm and cold, typically 40°-70°-40°-70°. Mature fans can be divided at any time in the summer. (cu00) *S. albidum* & *campestre* fall sow, or if you cannot, try moist cold treatment & sow in early spring. Light cover. Fair germination. (mfd93) (Code C, G, D Ken Schaal). 976,000 (gn) seeds per pound.



Dry remnant, Whiteside County

***Sisyrinchium albidum*** Rafinesque COMMON BLUE-EYED GRASS, aka BLUE-EYED GRASS, PALE BLUE EYED GRASS, WHITE BLUE EYED GRASS, WHITE BLUEEYED GRASS, (*albidus* -a -um whitish, dirty white, whitish, from Latin *albus*, white, & *-idus* adjectival suffix indicating a state or action in progress.) facu

Habitat: Mesic, dry, hill, gravel, & sand prairies; open woods & fields. In Michigan, “Dry often sandy open fields, railroad embankments, oak-hickory forests; grassy, sometimes moist banks, shores, & pastures, even marshy ground” (rvw11). distribution/range:

Culture: ①60 days cold moist stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate. Seeds germinate most successfully in cool soil. Best planted outdoors in the fall. (pm09). Seeds germinate after about 60 days of cold moist stratification, or sow seeds outdoors in fall. Seeds germinate most successfully in cool soil. Sow in early winter through early spring. Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover (or light cover). (he99) Sow at 20°C (68°F), if no germination in 3-4 wks,



move to -4 to +4°C (24-39°F) for 2-4 wks (tchn). Dormant seed or moist cold stratify 90 days. Germinates best in cool soils. In one source as “easy from fresh or dry stratified seed” (krr). 348,800 seeds per pound.

“*Sisyrinchium albidum* General prairie. Blooms mid May to mid June; PALE BLUE. Harvest July. 8”; easy by #1, SEEDLING TRANSPLANT; blooming 2nd year, reliable. Clumps can be divided into 40 or more plants in April after 1 growing season, plants banded like seedlings.” (rs ma)

bottom line: Initial test data indicate dormant seeding is strongly necessary. Germ 2.0%. Dorm 94%. Test 22 days (#1)\*\*.

Description: Erect, herbaceous, perennial, native forb; 0.25-0.75'; narrow grass-like leaves; flowers blue (violet) to white, 6-merous. N 2n = 32.

Comments: status: phenology: Blooms 4-7. In northern Illinois, collect seeds in early to mid-June. Collect seeds in se Wisconsin in July (he99). “Our common blue-eyed grass, often white. It blooms early in dry places as roadsides, railroads, & dry prairies” (ewf55).

Associates: Roots are eaten by herbivores.

ethnobotany: Used as a charm to ward off snakes by the Menominee (sm23).



*Sisyrinchium albidum*

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Jennifer Anderson - 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 species*. Not copyrighted image.

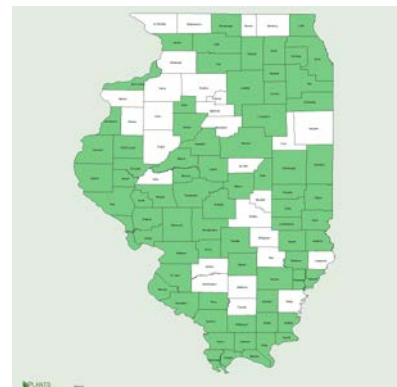
***Sisyrinchium angustifolium* Miller** \*WI STOUT BLUE-EYED GRASS, aka *BERMUDIENNE À FEUILLES ÉTROITES* (F), BLUE EYEGRASS, BLUE-EYED GRASS, COMMON BLUE EYEDGRASS, COMMON BLUE-EYEDGRASS, NARROW-LEAF BLUE-EYED-GRASS, NARROW-LEAVED BLUE EYED GRASS, NARROWLEAF BLUE-EYED GRASS, POINTED BLUE EYED GRASS, (*angustifolius -a -um* angustifo'lius (an-gus-ti-FO-lee-us) narrow-leaved, from Latin *angustus*, adjective, drawn together; narrow, *-i-*, connective vowel used by botanical Latin, & *folium*, *foli(i)*, n., noun, a leaf.) The confusing stout & narrow common names are from someone confusing the Latin *angustus -a -um*, narrow, steep, close, confined, with *augustus -a -um*, majestic, dignified, venerable.

Habitat: Moist meadows, grassy areas, & open woods; damp open woods & streambanks. In Michigan, “Moist shores, meadows, fields, thickets, & swales; oak-hickory forests, forest borders, grassy clearings. Plants with simple stems & sessile spathes belong here if the stems are very broadly winged” (rvw11). “Moist meadows, stream banks, swamp edges, sandy meadows, moist open woods; 0--800 m” (Cholewa & Henderson fna).

distribution/range:

Culture: propagation: 60 days cold moist stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate (pm009). Seeds germinate after about 60 days of cold, moist stratification.

Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover. (he99) “Fall plant or cold stratify at 40°F for 1 month for best results. Sow seeds just below the soil surface at 70°F &



water.” (ew12) Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks (tchn). 464,000 (ew12) seeds per pound.

cultivation: Space plants on 0.5-1.0' centers. Mesic soils, full sun to partial shade.

bottom line: Initial test data indicate dormant seeding is strongly necessary. Germ 1.0-2.0%. Dorm 89-94%. Test 22 days. (#3)\*\*

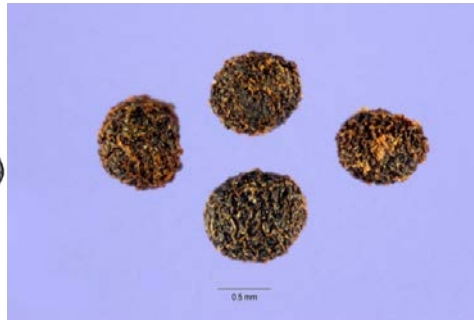
Description: Erect perennial, plant bright deep green; stems 0.25-1.25', branched; flowers light blue to violet 6-merous;  $N 2n = 96$ . key features: “The stems are more broadly winged & it is much less common than the two preceding (*S montanum* & *S albidum*). (*S gramineum* Lam)” (ewf55)

Comments: status: Special concern in Wisconsin. phenology: Blooms 5-7. Collect seeds in se Wisconsin in July (he99). Genetic source Ashton, Lee County.

Associates:

ethnobotany:

VHFS: [*Sisyrinchium graminoides* EP Bicknell]



### *Sisyrinchium angustifolium*

1<sup>st</sup> & 2<sup>nd</sup> line drawings Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. Color photos Jennifer Anderson - USDA-NRCS PLANTS Database - Not copyrighted image. 3<sup>rd</sup> line drawing Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: [www.biolib.de](http://www.biolib.de).

***Sisyrinchium atlanticum* Bicknell** \*IL EASTERN BLUE-EYED GRASS, aka EASTERN BLUE EYED GRASS, EASTERN BLUEEYED GRASS, (*atlanticus* -a -um of Atlantic areas, of the Atlantic coast (for the western limit of the classical world, the name Atlantic ultimately from the Atlas Mountains in North Africa, in Latin *Atlas*, *Atlantis*.)



Habitat: “Railroad prairie, might be in acid soils of low sandy prairies, wet prairie swales of upland, & wet open upland meadows bordering sink-hole typical of locations whose flora show ancient connections with the Atlantic & gulf coast plain vegetation” (Ilpin). In Michigan, “Very local in sandy, moist fields & moist sandy shores” (rvw11). distribution/range: In Illinois, Iroquois, Kankakee, Livingston, Macoupin, Pope, & Union counties.

Culture: propagation:

asexual propagation:

cultivation:

bottom line:

greenhouse & garden:

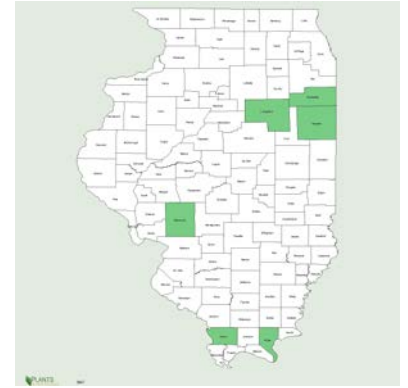
Description: key features: “The conspicuously forking stems with long slender peduncles & the very glaucous leaves & stems are notable features of this species” (Ilpin). “The peduncles are generally strongly geniculate at the base, as are most of the spathes also” (rvw11).

Comments: status: Endangered in Illinois. phenology: Blooms

Associates:

ethnobotany:

VHFS:



*Sisyrinchium atlanticum*

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photo Robert H. Mohlenbrock USDA-NRCS PLANTS Database - Not copyrighted image. 2<sup>nd</sup> line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS. *Wetland flora: Field office illustrated guide to plant species.* USDA Natural Resources Conservation Service. Not copyrighted image.

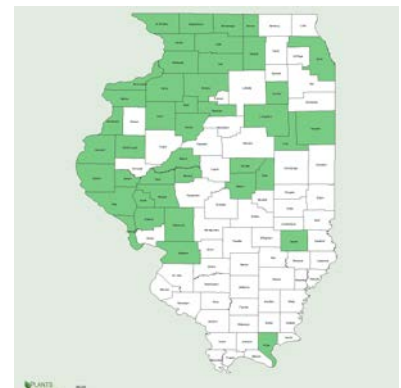
***Sisyrinchium campestre*** EP Bicknell PRAIRIE BLUE-EYED GRASS, aka BLUE-EYED GRASS, WHITE-EYED GRASS, (*campester*, *campestris*, *campestre* or *campestris*, *campestris*, *campestre* campes'tris (kam-PES-tris) Latin adjective of the fields, flat lands, or plains, growing in fields.)

Habitat: Dry to moderately moist meadows, prairies, & open woods.

“Meadows, sandy places, open woodlands, grassy places along railroads” (Ilpin). “It is native to Missouri where it occurs in open woods, glades, prairies & grassy areas throughout the State” (mbg).

distribution/range:

Culture: Germinates second spring after dormant seeding (cu00). 60 days cold moist stratification. Surface sow, seeds are very small or need light to naturally break dormancy & germinate. Seeds germinate most successfully in cool soil. Best planted outdoors in the fall. (pm09). Seeds germinate after about 60 days of cold moist stratification, or sow seeds outdoors in fall. Seeds germinate most successfully in cool soil. Sow in early winter through early spring. Seeds need light to break dormancy & germinate. Plant on top of growing media & do not cover (or light cover). (he99) “Fall plant or cold stratify at 40°F for 1 month for best results. Sow seeds just below the soil surface at 70°F & water.” (ew12) Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-



39°F) for 2-4 wks (tchn). Freely self seeds in good growing conditions. 429,924 (gnh11), 439,072 (gnhm13), 720,000 (ew12, aes10), 1,106,341 (gnh14), 7,568,000 (sh94) seeds per pound. Variety *alba* pretreatments as per the species.

asexual propagation: Garden plants can be divided every 2-3 years to maintain vigor.

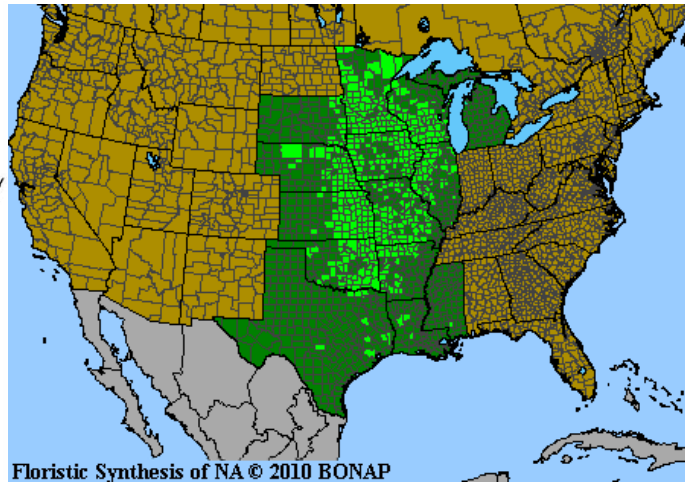
cultivation: Space plants on 0.75-1.0' centers. Rich mesic soils with good drainage that do not dry out in full sun to part shade. Deadhead after blooming to avoid unwanted seedlings. Low maintenance.

bottom line: Test data indicate dormant seeding is strongly necessary. Germ 8.0, 9.0, na, sd 3.7, r3.0-12 (9.0)%. Dorm 86.7, 87, na, sd 3.7, r82-91 (9.00)%. Test 31, 32, na, r29-41 days.\*\*

Description: Native, erect, perennial forb; stems 0.5-1.2', 0.25-1.5 spread; flowers white to pale blue tepals, with a yellow eye, 3- or 6-merous;  $N 2n = 32$ . Similar to *S. albidum*.

Comments: status: phenology: Blooms 5-6. Collect seeds in se Wisconsin in July (he99). Great in landscaping, specimen plantings, rock gardens, cottage gardens, woodland gardens, & mass plantings near paths. An early spring bloomer to help shake the winter blahs.

Associates: Reported as deer resistant. No serious disease or insect problems.



*Sisyrrinchium campestre*

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

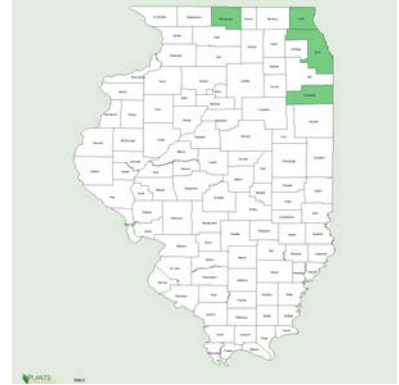
**Sisyrrinchium montanum** Greene \*IL, IN, NJ, OH, WA BLUE-EYED GRASS, aka *BERMUDIENNE MONTAGNARDE* (F), MOUNTAIN BLUE EYED GRASS, STRICT BLUE EYED GRASS, (*montanus -a -um* referring to or of mountains, by extension growing on the mountains, from Latin *mons*, mountain, & *-anus -a -um*, adjectival suffix indicating position, connection, or possession by.)

Habitat: Moist dune flats. In Michigan, “Moist open, often grassy places; sandy, gravelly shores (or in rock crevices), mixed forests, especially in disturbed areas & clearings; old railroad beds, banks of ditches, & roadsides through wet ground” (rvw11). “Moist meadows, stream banks, open woods; 0--3100 m; var *crebrum*, moist, rocky crevices, moist meadows especially near coast & along Saint Lawrence Seaway; 0--200 m”

(Cholewa & Henderson fna). distribution/range: Northern Wisconsin, northern Indiana, absent in Illinois (or very rare in Illinois, Cook, Kankakee, Lake & Winnebago counties).

Culture: Sow at 20°C (68°F), if no germination in 3-4 wks, move to -4 to +4°C (24-39°F) for 2-4 wks (tchn).

Description: Native, erect, perennial forb; stems 0.25-1.5' tall, flat & obviously winged, to 0.13" wide, stout, & unbranched; leaves narrow, almost as long & as wide as the stem; inflorescence a single cluster at the top of the stem, sheaths (spathes) green to bronze, usually connected at the base, outer sheath 1.5-3.0" long; flower blue violet (violet), 3-(6-)merous, 0.75-1.25" wide, tepal bases yellow, tips notched with a sharp point; fruit small capsule, roundish, tan to dark brown or purplish;  $N 2n = 96$ ; key features: Stems winged & unbranched; inflorescence at the top of the stem; spathes green to bronze, usually connected at the base (Freckmann). See the discussion at <http://michiganflora.net/species.aspx?id=1485>.

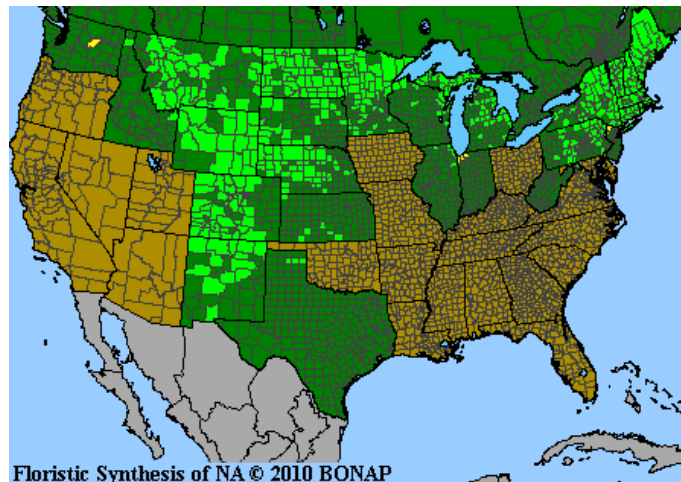


Comments: status: Endangered in Illinois, Indiana, New Jersey, & Ohio.

Sensitive species in Washington. phenology: Blooms 5-6. "Less common than *S albidum* & more likely to be found in moister places. The flowers are darker in color, very rarely white, & it blooms later than *S albidum*" (ewf55).

Associates:

VHFS: Variety *crebrum* is known from Kankakee County.



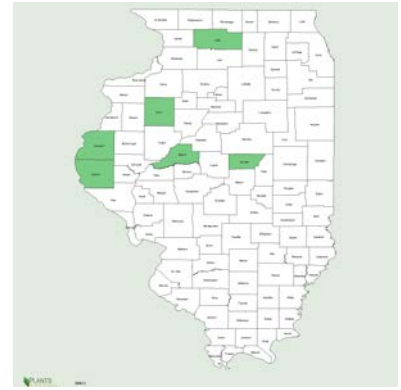
*Sisyrinchium montanum*

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos by permission granted to use under GFDL by Kurt Stueber. Source: [www.biolib.de](http://www.biolib.de) North America map courtesy of BONAP (2010)

***Sisyrinchium mucronatum*** Michaux \*ME, MA, NY, OH BLUE-EYED GRASS, aka MICHAUX' BLUE-EYED GRASS, NARROW-LEAVED BLUE-EYED GRASS, NEEDLE TIP BLUE EYED GRASS, SLENDER BLUE-EYED GRASS, (*mucronatus -a -um mucronatus* (moo-kro-NAY-tus) New Latin, mucronate, pointed, terminating an organ with a

straight, stiff & sharp point, from Latin, point, edge & *-atus*, Latin suffix indicating possession, likeness, or 'provided with', in reference to the sharp point on the tip of the tepals.)

Habitat: In Michigan, "Wet meadows, fields, & ± open ground; most abundant in moist calcareous flats & open fen-like thickets near the north end of Lake Huron" (rvw11). "Prairies, roadsides, moist open woods, rocky & sandy open shores; 0--700 m" (Cholewa & Henderson fna). distribution/range: Rare in Illinois, Adams, DeWitt, Hancock, Knox, Mason, & Ogle counties. The Illinois records are disjunct by several hundred miles from other populations to the north, east, or south, being the only records in the greater Prairie Peninsula. Why?



Culture: propagation:

asexual propagation:

cultivation:

bottom line:

greenhouse & garden:

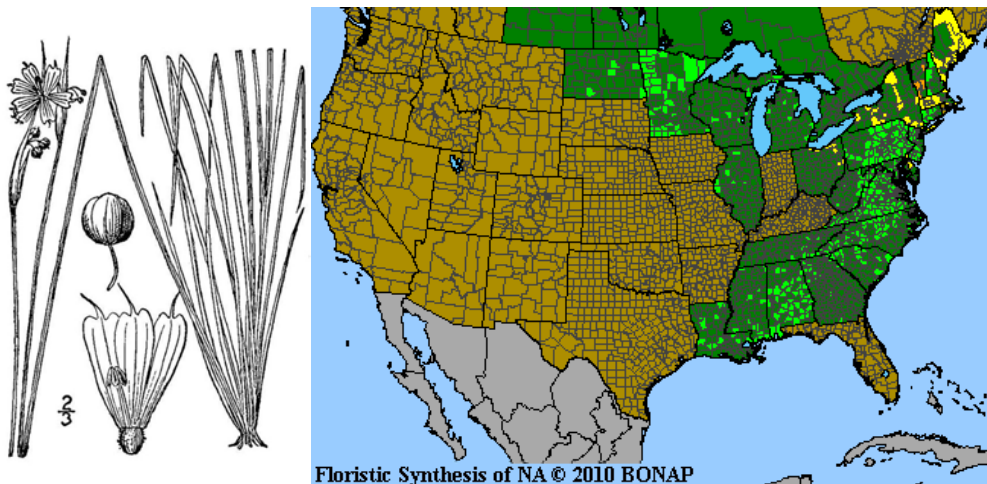
Description: Native, erect, perennial forb, delicate, wiry, dark green, drying dull green to olive; cespitose, rhizomes barely discernable; stems simple, 0.25-1.25' tall, flat & barely winged, almost wiry, largest only to 0.06" wide, unbranched, often purplish tinged; leaves narrow, much shorter than the stems; inflorescence single cluster at the top of the stem, sheaths (spathes) purplish, usually connected at the base, outer sheath 1.33-2.0' long; flower tepals dark blue to blue violet, occasionally white (violet to white), 3-merous, 0.75-1.0" wide, bases yellow, tip notched to rounded with a sharp point; fruits small, roundish capsule, tan to light brown with a purplish tinge; seeds globose to obconic, lacking obvious depression, 0.8–1.5 mm, usually granular;  $N 2n = 32$ . key features: See the discussion at <http://michiganflora.net/species.aspx?id=1486>.

Comments: status: Special concern in Maine. Endangered in Massachusetts, New York, & Ohio. phenology: Blooms

Associates:

Ethnobotany:

VHFS: [*Sisyrrinchium angustifolium* Miller var *mucronatum* (Michx) Baker, *S bermudiana* L var *mucronatum* (Michx) Baker, *S intermedium* EP Bicknell, *S versicolor* EP Bicknell]



Floristic Synthesis of NA © 2010 BONAP

*Sisyrrinchium mucronatum*

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. North America map courtesy of BONAP (2010)

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*Credo Elvem etiam vivere.*

Endnotes & abbreviations. The following math functions violate Abbey's 1<sup>st</sup> 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)  
tchn 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)  
fna (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.*