

Monocotyledons 2

Revised 04 May 2015

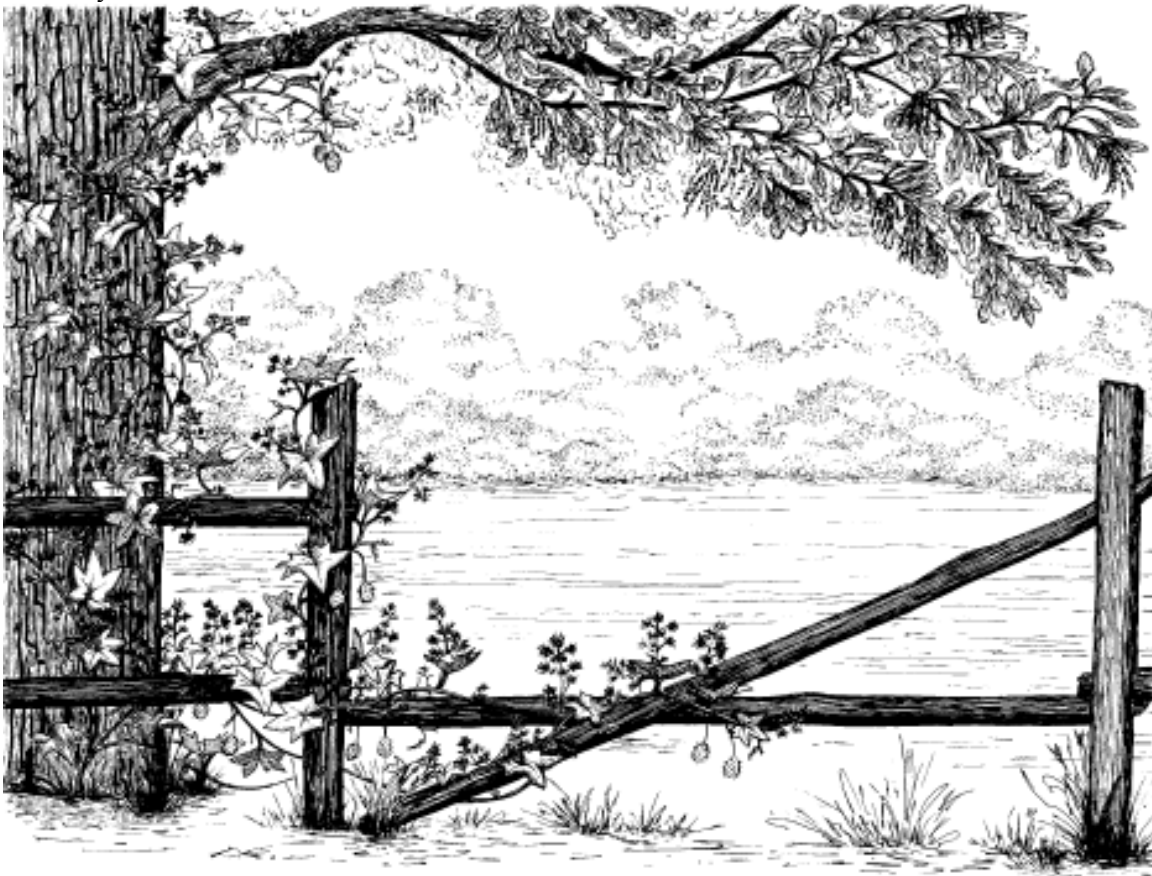


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JUNCAGINACEAE LC Richard 1808 **ARROWGRASS FAMILY** *Juncaginaceae* Juncagina'ceae (yun-kag-in-AY-see-ee) plants of the Arrow-grass family, modern Latin *Juncagine-ae*, from *Juncāgo*, from *juncus* rush, Tournefort's original name for the type genus of the family, now *Triglochin*.

TRIGLOCHIN Linnaeus 1753 **ARROW GRASS** *Juncaginaceae* *Triglochin* from the Greek *treis*, three & *γλωχίς*, *glochis*, for the pointed follicles of *T palustris*. About a dozen spp of perennial herbs in North America (4), the Mediterranean, & Australasia. Linnaeus published the genus name as neuter, but the root *γλωχίς*, *glochis*, is feminine. The fruits have been variously classified, including schizocarps with 3 or 6, 1 seeded mericarps. (Haynes & Hellquist fna) $\times = 6$. The 2 spp in Illinois have a very curious distribution.

Triglochin maritima Linnaeus *IL, IA, NJ, OH **ARROW-GRASS**, aka **COMMON BOG ARROW GRASS**, *DOPPEL-DREIZACK* (G), *HAVSSÄLTING* (SW), **SEA ARROW-GRASS**, **SEASIDE ARROWGRASS**, *TROSCART MARITIME* (FC), (*maritimus -a -um*, maritime, of the sea) obl

Habitat: Pond edges & pannes, sandy shores, swamps, & wet ditches; brackish or fresh marshes & bogs. "Coastal & mountain marsh areas & moist alkaline meadows; 0--4000 m" (Haynes & Hellquist in fna). **distribution/range:** Rare in Illinois, Cook, Kane, Lake, McHenry, Peoria, & Tazewell cos. Illinois is at the southern margin of this sp range. Circumboreal, North America & northern Eurasia.

Culture: No treatment, saturated soils. 225,008 (jfn04), 469,000 (wns01) seeds per pound.

Kew Storage Behaviour: Orthodox 100% viability following drying to mc's in equilibrium with 15% RH & freezing for approximately 3.56 years at -20°C at RBG Kew, WP; Thousand Seed Weight: 0.98g; Germination 81% to 100% with various combinations of scarification, stratification, & temperature regimes.

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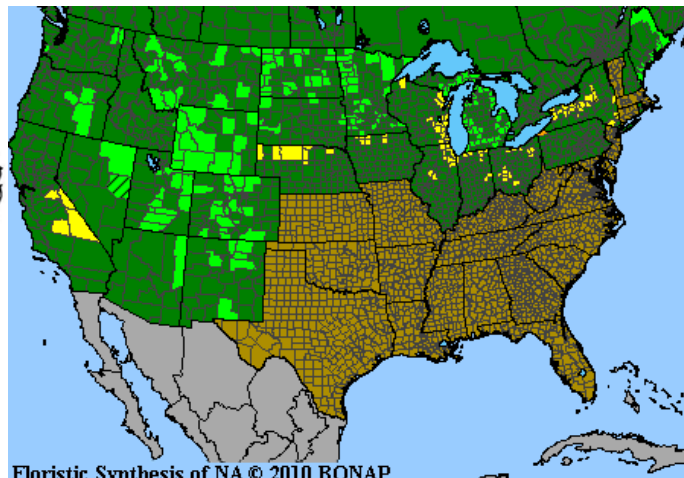
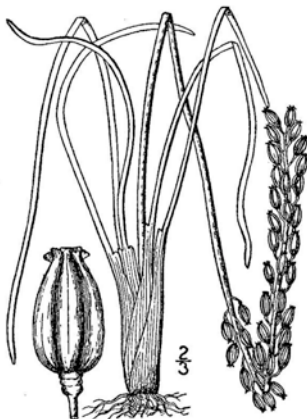
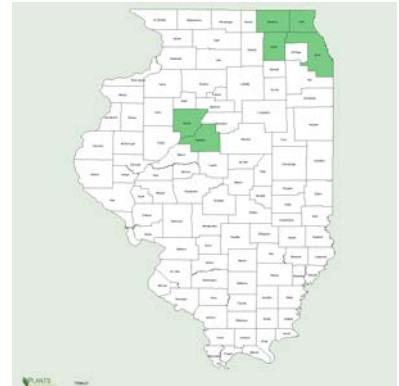
Description: Variable sp. Native, erect, perennial, forb with very slender stems 0.7-3.0' tall; Leaves erect, up to 20" long; inflorescence a 4"-16" spike-like cluster (raceme), flower 6-parted, each flower stalk curved; fruit an oblong capsule (follicle), $N\ 2n = 12, 24, 36, 48, 120$. **key features:** Inflorescence 0.24-1.25' raceme, individual flower stalks curved, capsules oblong (fh). Leaves terete (Ilpin).

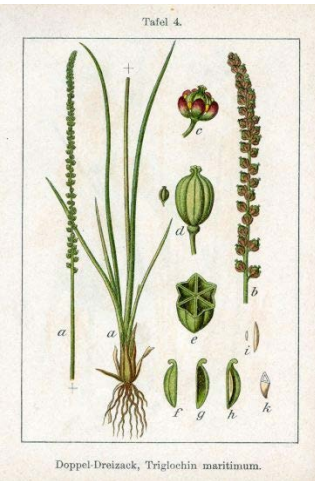
Comments: Threatened in Illinois, Iowa, & Ohio. Endangered in New Jersey. Species is considered weedy or invasive in part of its range, or under certain situations or applications. (Stubbenieck et al 1994, Whitson et al 1996) Potentially a weed of economic consequence. **phenology:** Blooms 5,6,7,8(9). C3. Calcareous.

Associates: Attracts birds. ♂ Toxic to livestock, cyanide producer. Non-mycorrhizal.

ethnobotany: Seeds & other parts were used for food, parched or as a vegetable, by Native Americans. Roasted & used as a coffee substitute.

VHFS: [*Triglochin concinna* JB Davy, *T concinna* var *debilis* (ME Jones) JT Howell, *T debilis* (ME Jones) Å&D Löve, *T elata* Nutt, *T elatum* Nutt, orth var, *T maritima* Thunb, *T m* var *altoandina* Cabrera, *T m* subsp *asiatica* Kitag, *T ma* var *asiatica* Ohwi, *T m* var *debilis* ME Jones, *T m* var *deserticola* Buch, *T m* var *deserticola* Phil, *T m* var *elata* (Nutt) A Gray, *T m* f *maritima*, *T m* f *multifissa* Lepage, *T m* L, orth var, *T m* var *debile* ME Jones, *T m* var *debile* ME Jones, *T m* var *elatum* A Gray, *T m* L var *elatum* (Nutt) A Gray, orth var]





Triglochin maritima

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Photos William & Wilma Follette USDA-NRCS PLANTS Database - Not copyrighted images. 2nd line drawing Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de. Color illustration Jacob Sturm, Johann Georg Sturm - *Deutschlands Flora in Abbildungen* (1796). Copyright expired. Source: www.biolib.de. Seed images courtesy of National Plant Germplasm System, M Cashman, USDA, ARS, GRIN North America map courtesy of BONAP (2010)

Triglochin palustris Linnaeus *IL, IN, IA, NY, PA, RH, WI ARROW-GRASS, aka *ECHTER DREIZACK* (G), *GIUCASTRELLO ALPINO*, *KÄRRSÄLTING* (SW), MARSH ARROW-GRASS, MARSH ARROWGRASS, SLENDER ARROWGRASS, SMALL ARROWGRASS, *TROSCART DES MARAIS* (F),

Habitat: "Coastal & mountain marsh areas & moist alkaline meadows; 0--3700 m (Haynes & Hellquist fna).

distribution/range: North & South America, Eurasia, & north Africa. Rare in Illinois, Cook, Kane, Kankakee, Kendall, Lake, McHenry, Peoria, & Tazewell cos. Curiouser & curiouser! Illinois is at the southern margin of this sp range.

Culture: propagation:

Kew Storage Behaviour: Orthodox 80 % viability following drying to mc's in equilibrium with 15 % RH & freezing for 1 month at -20°C at RBG Kew, WP; Thousand Seed Weight: average 1.96g 0.471-3.83), Germination data available 80 % germination; germination medium = 1% agar; germination conditions = 33/19°C, 12/12; (RBG Kew, Wakehurst Place), C3?

asexual propagation:

cultivation:

bottom line:

greenhouse & garden:

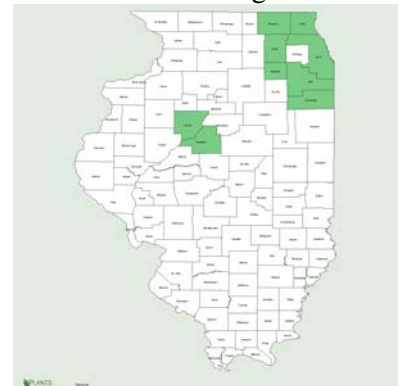
Description: Native, erect, perennial forb; stems 0.7-1.3' tall, very slender;

leaves erect, up to 1.0' long & narrow; inflorescence 0.33-0.67' spike-like raceme; flowers 6-parted, each flower stalk thin & straight; fruit linear capsule follicle; $N 2n = 24$. key features: Leaves terete (Ilpin). Leaves up to 1.0' long, individual flower stalks thin & straight, inflorescence 0.33-0.67' raceme, & follicles linear (fh).

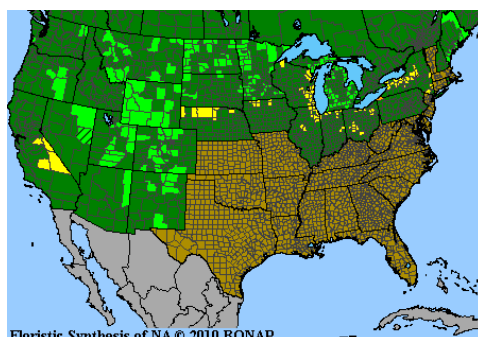
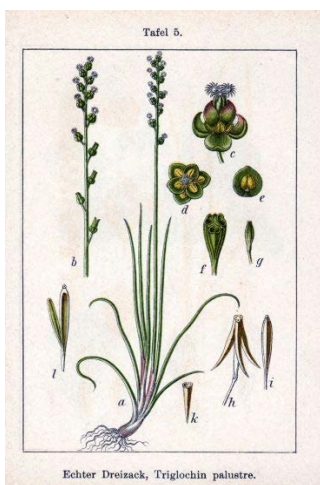
Comments: status: Threatened in Illinois, Indiana, Iowa, & New York. Extirpated in Pennsylvania. Historical in Rhode Island. Special Concern in Wisconsin. phenology: Blooms (5)6-7. C3.

Associates: Poisonous to livestock.

ethnobotany:



VHFS: In Britton & Brown as *Triglochin palustre*. [*Triglochin palustre* L, *T palustris* var *crassiculmis* Tzvelev, *T p fernaldiana* J Rousseau, *T p f palustris*, *T p* var *salina* Mert & WDJ Koch, *T p f uzonicum* Kom]



Triglochin palustris

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Color illustration Otto Wilhelm Thomé: *Flora von Deutschland, Österreich und der Schweiz* (1885). 2nd line drawing Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de. 2nd color illustration Jacob Sturm, Johann Georg Sturm - *Deutschlands Flora in Abbildungen* (1796). Copyright expired. Source: www.biolib.de. 3rd color illustration Jan Kops, F W van Eeden - *Flora Batava of Afbeelding en Beschrijving van Nederlandsche Gewassen, XVI Deel.*, Volume 16 (1881) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de North America map courtesy of BONAP (2010)

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LEMNACEAE Gray **DUCKWEED FAMILY** *Lemnaceae* Lemna'ceae (lem-NAY-see-ee) plants of the Duck-weed family, from New Latin, from Linnaeus, *lemna*, from λέμνα, *lemna*, the Greek name for star-grass, *Callitriche verna*, a water plant, & -*aceae*, the standardized Latin suffix of plant family names. A family of 4 genera & 37 spp (4 genera & 19 spp in northern North America) of nearly worldwide distribution. Mohlenbrock maintains *Lemnaceae*. Some authors place the *Lemnaceae* in the *Araceae* (w12). Go figure.

LEMNA Linnaeus **DUCKWEED, LENTICULES** *Lemnaceae* *Lemna* Lem'na (LEM-na) New Latin, from Linnaeus, *lemna*, from λέμνα, *lemna*, the Greek name for star-grass, *Callitriche verna*, a water plant. Very small aquatic herbs having simple fronds with a single root. x = 10, 21, 22.

Lemna minor Linnaeus "Common in stagnant water" (ewf55).

Lemna spp DUCKWEED, aka WATERFLAXSEED, DUCK'S MEAT,

Habitat: Fresh slightly acidic or hard water. Ponds, potholes, sloughs, bays, or sloughs. distribution/range:

Culture: Scatter live, freshly harvested plants among rushes, brush, flooded downed trees, sheltered bays, land-locked ponds, or sloughs.

Description: Perennial. Waterfowl, marsh birds, & shorebirds eat plants.

Lemna trisulca Linnaeus (*trisulcus -a -um* with three furrows.)

“Frequent but less common than the above (*L minor*) in similar situations” (ewf55).

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SPIRODELA Schleiden

Spirodela polyrhiza (Linnaeus) Schleiden (*polyrrhizus -a -um, polyrhizus* many-rooted, or thickly-rooted.) see *Lemna*.

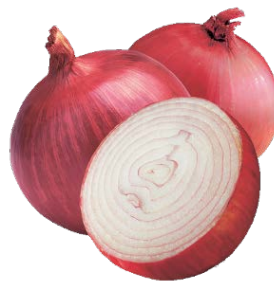
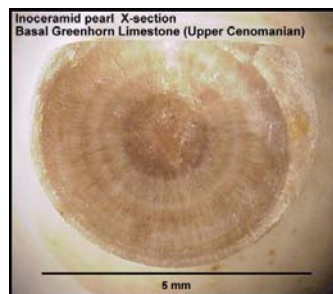
“Looks much like *Lemna minor* & frequently found growing with it but again the two will be found entirely separate. Common.” (ewf55)

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LILIACEAE AL de Jussieu 1789 LILY FAMILY New Latin, from the classical Latin name of the lily, from Old English *lilie* wk fem, from Latin *lilium*, adopted from Greek λείρον, *leiron*. In recent years the old Lily family as known from eastern North America, has been split into about 20 to 30 families. This former broad-based *Liliaceae* is considered artificial & polyphyletic; molecular research reinforces the reorganization. In the broad sense, the family contains 280 genera & about 4200 spp (70 genera & 478 spp in northern North America). It is *sensu strictu* considered to consist of about 11 genera & 550 spp of the Northern Hemisphere. The seeds are often flat & wind-dispersed or thick with fleshy elaiosomes. $x = 3-27+$. Many spp have bulbs & contractile roots that progressively pull the bulb into the soil each year until consistent temperature regimes are reached.

Mohlenbrock (2014) limits this family in Illinois to *Clintonia*, *Erythronium*, *Hosta*, *Lilium*, & *Tulipa*. *Allium* & *Nothoscordum* are sometimes placed in *Alliaceae* (m14).

Linnaeus 1753 **ONION, GARLIC, LEEK, RAMPS, CHIVES** *Liliaceae Allium* (AL-ee-um) New Latin, from *allium*, *alium*, the classical Latin name for garlic, from Greek name ἄγλις, *aglis*, for *A sativum*, garlic; perhaps akin to Sanskrit *aluka*, the edible root of an aroid plant *Amorphophallus campanulatus*, possibly related to the Celtic root *all-*, burning, pungent. The Old English words *léac* ‘leek,’ & *gárléac*, Middle English *garleek*, *garleke*, now *garlic*, may have ancient roots in the *-λις, -lis* of Greek ἄγλις, *aglis*. The common name ONION is ultimately from classical Latin *ūniō*, *ūniōnis* m, a large single pearl, also a rustic Roman (vulgar Latin?) name for a single onion, from *ūnus* one (a meaning carried through 1370 in Middle French (oed)). Some feel the name is in reference to the similar shape of the onion & pearl or to the fashion of wearing single pearls alone being compared to the image of a large, single onion, but onions & pearls also have more compelling, similar concentric layers when cut open.



Pearl & onion cross-sections

About 500-700 (96 in northern North America) spp of perennial bulbous herbs, mostly of the Northern Hemisphere, distinguished by the characteristic odor, sheathing, mostly basal leaves, & umbellate white, pink, yellow, or red flowers, sometimes with aerial bulbils. $x = 7,8,9$. All native North American spp are $x = 7$, except *A schoenoprasum*, *A tricoccum*, & *A victorialis*, which are $x = 8$. Respectively, these groups are placed in the subgenera *Amerallium* & *Rhizideum*. 3 European $x = 7$ spp are also placed in *Amerallium*. *Allium* may also be placed in *Alliaceae* J Agard 1858 (Onion Family)(m14) or *Amaryllidaceae* (w12).

Pollinated by *Diptera*, bumblebees, & hummingbirds; attracts small mammals; some spp repel vampires, mosquitoes, & ticks, oh my! All *Allium* spp are considered noxious weeds in Arkansas, while individual sp are noxious in many states with “plow & cow” weed laws. The Mediterranean *Allium triquetrum* is realistically invasive & potentially noxious in California & Oregon. Many spp are garden vegetables or ornamentals. Some garden species are highly ornamental. Some culinary spp may persist or escape, including:

Allium ampeloprasum *L atroviolaceum* (Boiss) Regel WILD ONION, WILD LEEK from Eurasia

Allium cepa L GARDEN ONION from Central & sw Asia
Allium cepa L var *proliferum* (Moench) Regel EGYPTIAN WALKING ONION cv in Eurasia
Allium fistulosum L WELSH or BELGIAN ONION from Asia
Allium porrum L LEEK from Eurasia & N Africa
Allium sativum L GARLIC from Europe & west Asia
Allium schoenoprasum L WILD CHIVES from Eurasia
Allium tuberosum Rottler ex Sprengel CHINESE CHIVES from se Asia

☠ Poisonous lookalikes. There are many, closely-related, bulb-forming wildflowers that resemble WILD ONIONS, but they are toxic. If you feel justified in tempting karma & raping the wild to satisfy your gastronomic desires, take only those plants with a strong onion odor. (Caramelize or blacken the bulbs & greens in bacon grease (or prosciutto grease & e.v.o.o.) or butter or Smart Balance, & deglaze with a sweet *jeres*. Add fresh or thawed spinach, green beans, or Brussel sprouts & your favorite broth, with salt & pepper to taste, simmer.) When in doubt, go to the farmer's market. All wild spp & natural areas should be left unmolested. Many native spp are considered slightly toxic due to their sulfide content if eaten in quantity. Symptoms include vomiting, diarrhea, nausea, & terminal flatulence. They are reported to be toxic to dogs, cats, & some livestock.

Some variety of germination patterns in spp, with western spp Code D seeds need a period of warm moist stratification followed by cold stratification & will germinate after shifting back to warm (70°-40°-70°). & eastern spp Code A seeds will germinate within 4 weeks sown at 70°F (cu00). Many spp can be divided in spring. Seeds & or topset bulbils mature from summer to fall, depending on the spp, approximately 3-6 weeks after blooming. Seedlings should be sown on loose soil. Juvenile plants should be planted in loose soil at the depth they have been growing; contractile roots will pull the bulbs deeper, but not in urban bulldozer smear soils. Mature bulbs should be planted 3.0-4.0" deep. *Alliums* are well adapted to sites that are moist in winter & spring, but dry out in summer. Most upland spp are well suited for rock gardens. Division works well while plants are dormant.

Allium burdickii (Hanes) AG Jones NARROW-LEAF RAMPS, aka BURDICK'S LEEK, NARROWLEAF WILD LEEK, WHITE RAMPS,

Habitat: In Michigan, "rich forests, often on floodplains, but also occasionally in upland oak-hickory & rich deciduous forests of other kinds" (rvw11). In the se USA, "Northern hardwood forests, primarily at higher elevations than *A tricoccum*, perhaps also in cove forests & rich mountain slopes" (w12). distribution/range: "Low moist woods; occasional in the n ¼ of the state, rare elsewhere" (m14).

Culture: propagation:

asexual propagation:

cultivation:

bottom line:

greenhouse & garden:

Description: plant key features:

Comments: status: phenology: Blooms June. Fruits August.

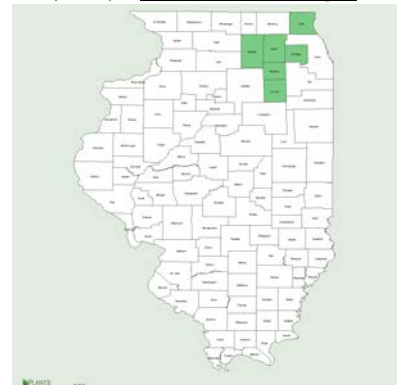
Associates:

ethnobotany:

VHFS:

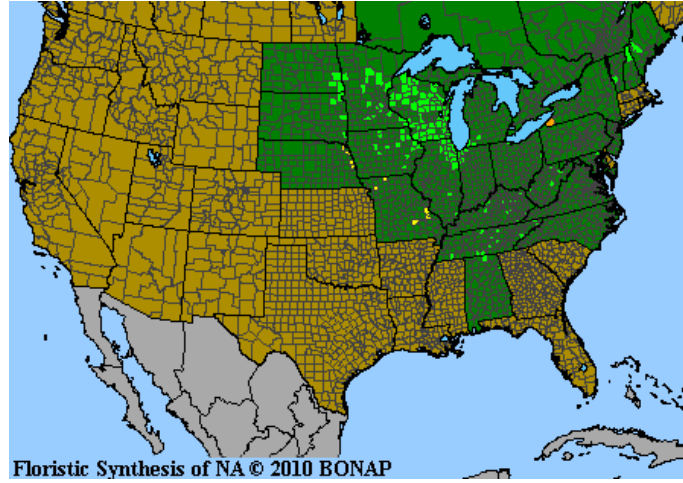
"We follow Jones (1979) in separating *A burdickii* from *A tricoccum*. In the field in leaf, the narrow silvery-green, pale-based leaves of *A burdickii* contrast sharply with the broader, bright green, red-based ones of *A tricoccum*. Based on Michigan collections, leaves of *A burdickii* are up to ca. 3.2 cm wide at the widest point, while those of *A tricoccum* are usually more than 3 cm wide & collections have been seen with leaves to 9.3 cm wide. In the herbarium, distinctions are more subtle, especially with flowering or fruiting material which can be virtually impossible to determine. Plants are generally smaller in all their parts, including the bulbs, with shorter flowering stems with fewer flowers, as noted in the key. In Michigan at least, the two spp are largely separated by flowering times; *A burdickii* flowers in mid- to late June. *Allium tricoccum* normally has more flowers & blooms from the last few days of June through early August. Doubtless overlooked, & a few ambiguous specimens are from the Upper Peninsula, so the range shown here for *A burdickii* may be incomplete." (rvw11)

"June; August. Only recently determined to be a separate taxon, *A burdickii* is apparently rare in our area. It blooms about a month earlier than *A tricoccum*. See Jones (1979) for more details & discussion.



Largely sympatric with *A. tricoccum*, it is somewhat more northern & midwestern, ranging from ME west to ND & south to NJ, & in the Mountains to (?) w VA” (w12)

AG Jones, 1979. A study of wild leek, & the recognition of *Allium burdickii* (*Liliaceae*). Systematic Bot. 4: 29-43.



Allium burdickii

Allium canadense Linnaeus *ME, NH, VT *NOX AR, DC, FL, IL, MD, ME, MI, MO, NJ, NY, OH, PA, RI WILD GARLIC, aka *AJO DE MONTANA* (SC), *AJO PORRO* (SC), *AIL DU CANADA*, CANADA GARLIC, CANADA ONION, CANADIAN GARLIC, FRASER MEADOW GARLIC, HYACINTH MEADOW GARLIC, *KANADALÖK* (SW), MEADOW GARLIC, MEADOW LEEK, MEADOW ONION, WILD CANADA ONION, WILD ONION, (*canadensis* -is -e of Canada or northeast USA) facultative

Habitat: Wet meadows, mesic prairies, mesic & dry savannas & woods, disturbed areas low woods, thickets, & meadows, flood plains. “Species is distributed in moist open woods, usually in level ground of valleys, meadows, bluff edges, open fields, roadsides, railroads & wastes; found in diverse ecological situations; flood plains with *Fraxinus americana*, *Prunus serotina*, *Prunus virginiana*, *Ulmus americana*; disturbed prairies” (Ilpin). In Michigan, “Usually in moist rich forests, floodplains, stream banks, or wet meadows” (rvw11). In the se USA, “Bottomland forests, pastures, roadsides. ... Though native, often appearing weedy.” (w12). “Roadsides, meadows, woods, & fields; 0--700 m” (McNeal & Jacobsen fna). distribution/range: “Our common early wild onion” (ewf55). In all Illinois cos. New Brunswick west to North Dakota (disjunct in Montana?), south to central peninsular Florida & Texas.



Culture: No treatment, the topset bulbils produce leaves while still on the mother plant. No pre-treatment needed. Sowing outdoors in the spring is the easiest method (he99). No pretreatment needed. Sow seeds on the soil surface at 70°F & water. (ew11) 8,279 (gnh13), 8,960 (pm02), 9,280 (ew11), 9,440 (jfn04), 15,655 (gnam07) seeds (topset bulbils) per pound. Seeds are rarely produced. Potted plants of this sp are rarely, if ever available. They should be contract or custom grown, & accepted as is. They are not difficult to propagate, but when started in a greenhouse, their annual life cycle is accelerated, & by the start of the planting season, the plugs are dormant with no top growth.

Bulblets can be short-lived & will dry out in woven poly bags in the seed room. Store in ziplock bags under refrigeration, monitor regularly. The bulblets have a finite life even in the refrigerator. We have had a properly stored lot with 65% fatality by May of the year following harvest.

Kew Thousand Seed Weight: average 8.9g. (3.18-14.6g.)

Kew Thousand Seed Weight: variety *fraseri* 2.83g

asexual propagation: Division of mature plants in early spring or fall (*mark plants before going dormant*).

cultivation: Space plants 9-12” centers. Full sun to woodlands.

bottom line: Limited test data indicate a significant percent of the bubils are dormant. Plant fresh or dormant seed in fall. Bulbils may not carry over well for spring planting. Germ 14.3, 8.0, na, sd 11.9, r4.0-31 (27)%. Dorm 71.3, 85, na, sd 21.5, r85-88 (3.0)%. Test 33, 31, na, r14-55 days. (#5)**

Description: Erect perennial, onion odor; from bulbs; 0.5-2.0'; leaves from the lower 20% of the stem; flowers white or pink; "fruits" stalkless topset bulbs, capsules & seeds rarely produced, seed coat shining; cells each with minute, central papilla; $N 2n = 14, 21, 28$. **key features:** "Umbels have bulblets & or flowers. Capsules are rarely developed: (Ilpin). "In *A vineale* the uppermost leaf arises near the middle of the stem, while in *A canadense* the leaves are all on the lower 20% of the stem" (rvw11).

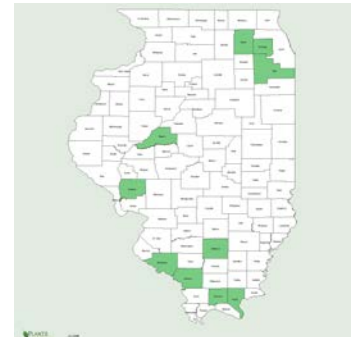
Comments: **status:** Special Concern in Maine. Endangered in New Hampshire. Threatened in Vermont. *A canadense* is a restricted (secondary) noxious weed in Illinois. This is a carry-over from the era of 'plow & cow' weed laws. If milk cows graze *A canadense*, it will give their milk an onion flavor. 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, Stubbendieck et al 1994, SWSS 1998, Whitson et al 1996). **phenology:** Blooms 4,5,6,7. Collect bulbils July to August. Plants go dormant after fruiting. Landscaping, can be aggressive & spread, but not competitive with grasses, edible. Do not confuse with the somewhat similar FIELD GARLIC, *Allium vineale*, the agricultural & nursery weed. Seed source nursery production from railroad row east of Amboy, Lee Co, & RR row DeKalb Co

Associates: Attracts bees & butterflies. Nectar source. Leaves & bulbs are eaten by Wild Turkeys. Reported to be highly deer resistant. ♀ "When eaten or strongly scented air inhaled, sp passes onion flavor to milk & other dairy products (Muenscher). When large amounts are eaten, may cause death" (Ilpin). For variety *mobile*, "Poisoning, possibly from alkaloids in leaves & bulbs may occur; also anemia, jaundice, hemoglobinuria, possible death (Stephens)" (Ilpin). Walnut tolerant.

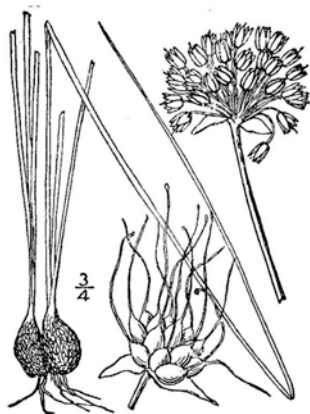
ethnobotany: Bulbs available in late spring. Edible, the strong flavored leaves can be used like chives in cooking & the bulbs cooked as any other onion. The bulbs were used fresh or dried. Used as food by Menominee, Pottawatomie, Sauk-Fox, & Iroquois (sm28, 33, Waugh 1916). Used in soup & considered a valuable wild food (Yarnell). "Bulbs have sweet flavor; bulblets of inflorescence can be pickled & eaten; entire plant before flowering can be boiled & made into soup; young leaves can be cut up for salads or garnishes" (Ilpin).

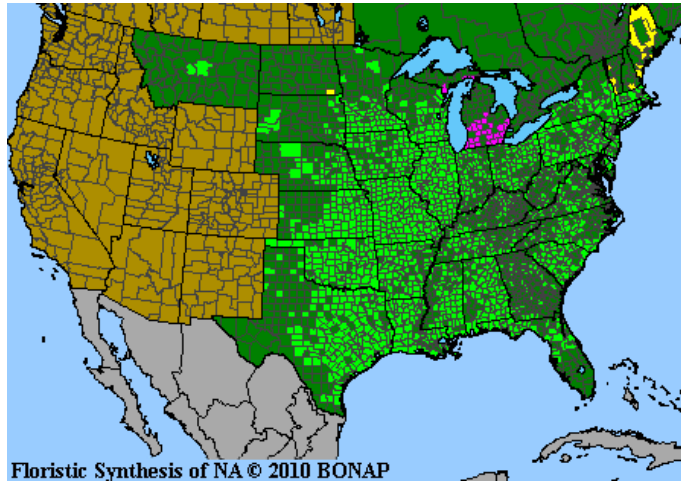
Plant was also used medicinally by Native Americans as a poultice for insect stings, a wash for eye & ear infections, a tea for coughs & vomiting, prevent worms, & to control scurvy.

VHFS: 6 named varieties. Ours is the widespread variety *canadense*. Variety *mobile* (Regel) Ownbey is also known from Illinois (see map to the side from plants.usda.gov but excluded from Illinois by several hundred miles by McNeal & Jacobsen in fna). Weakley (2012) notes the variety is perhaps better treated as a distinct sp. *Allium mutabile* Michx is sometimes considered here as var *mobile* (Regel) Ownbey. **Describe Illinois varieties.**



[*Allium canadense* Michx, *A canadense* Schult & Schult f, *A c* Herb ex Schult & Schult f, *A c* var *canadense*, *A c* subsp *ecristatum* (ME Jones) Traub & Ownbey, *A c* var *ecristatum* (ME Jones) Ownbey, *A c* subsp *fraseri* (Ownbey) Traub & Ownbey, *A c* var *fraseri* Ownbey, *A c* subsp *hyacinthoides* (Bush) Traub & Ownbey, *A c* var *hyacinthoides* (Bush) Ownbey, *A c* var *lavendulare* (Bates) Ownbey & Aase, *A c* subsp *lavendulare* (Bates) Traub & Ownbey, *A c* subsp *mobile* (Regel) Traub & Ownbey, *A c* var *mobile* (Regel) Ownbey, *A c* var *ovoideum* Farw, *A c* var *robustum* Farw]





Allium canadense

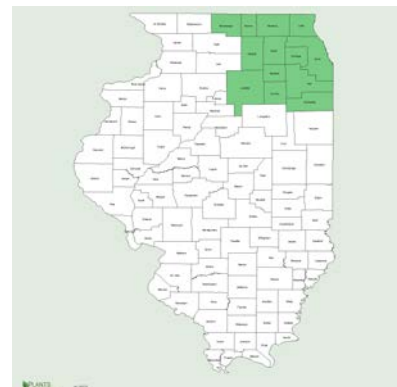
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. 2nd line drawing *A canadense* var *mobilense*. Seed photo Steve Hurst USDA-NRCS PLANTS Database. Seed image courtesy of National Plant Germplasm System, M Cashman, USDA, ARS, GRIN

Allium cernuum Roth *IA, MN, NY NODDING ONION, aka *AIL PENCHÉ* (F), *AMERIKAANSE LOOK* (DU), LADY’S LEEK, NODDING PINK ONION, NODDING WILD ONION, *PRÄRIELÖK* (SW), (*cernuus -a -um* (locally SIR-nyew-us, properly KIR-nyew-us) New Latin, drooping, nodding, downturned, like the flowers of *Narcissus*, from Latin *cernuus -a -um*, head foremost, face down, from *cernuare*, to fall headfirst, to somersault.) [fac-]

Habitat: Wet meadows, mesic & dry prairies. Ledges, gravels, & rocky or wooded slopes & crests. Dry stony slopes, often limestone outcrops.

“Species is distributed in rocky wooded ledges of bluffs; moister situations; sandier areas near Lake Michigan, especially calcareous” (Ilpin). “Missouri native plant which occurs primarily in rocky soils on glades, bluff edges, open woods & slopes in the Ozark region of the State” (mbg). In Michigan, “Marshy ground, swales & meadows, grassy forested banks, spreading along railroad embankments & roadsides” (rvw11). In the se USA, “Generally in open woodlands or around outcrops of shale, mafic, ultramafic, or calcareous rocks, in the mountains at low elevations” (w12). “Widely distributed on moist soils in mountainous & cool regions; 600--3500 m;” (McNeal & Jacobsen fna).

distribution/range: add notes on odd USA? Distribution vis à vie subspecies. “The distribution is oddly fragmented into largely Rocky Mountain, Ozarkian, & Appalachian segments, & it is quite possible that cryptic taxa are involved. See discussion of *A oxyphilum* at end of genus” (w12). In Illinois, restricted to the northeast cos. “Found on a roadside northeast of Roscoe but unknown elsewhere in this & in contiguous cos.” (ewf55) Also known from Ogle Co.



Culture: Easily propagated by seed or bulb division. “Moist cold treatment or fall sow. Light cover. Good germination. May self sow.” (mfd93) 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold, moist stratification (he99). Fall plant or cold stratify for up to 2 to 3 months for best results. Sow just below the soil surface at 60°F & water. (ew11) 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). Stratify 1-2 months & spring plant (pots). 30 days moist stratification required. Field sow fall. (pnnd). Seed capsules remain green until just before they dehisce when they turn tan or straw-colored. At this time—usually Sept to Oct—squeeze open the capsules. If the seeds are black or turning black, collect. Air-dry & store in a refrigerated container up to three years. Plant seeds outdoors in fall. Seeds germinate best if scarified. (lbj)

Seed dormancy is classified as physiological dormancy. 2,600,00 seeds per kilogram. Seed from Glacier National Park was grown in the park facilities. 5 month outdoor stratification of fresh seeds. Seeds are covered with medium. Germination characteristics of this sp are reported to vary according to fresh seed or seed dry stored for six months. Seed has also been reported to germinate equally well in light or dark. Germination occurs in mid May with seeds stratified outdoors. Germination is usually complete in 4 weeks. Overwinter in outdoor nursery under insulating foam cover & snow. Storage Duration: October to April. Bulb spp propagated from seeds should be directly seeded & grown in raised well, aerated beds & harvested & outplanted as dormant bulbs in early spring or fall of the second year. This sp does not form a root tight plug in a container. (Luna et al 2008)

Species flowers July 13 to August 26. Seed is harvested about September 1. After drying, run the seed through the Dybvig, dry, to separate chaff from the seed. Then it is run over the Clipper with a top screen of 1/12 & a bottom screen of 1/20 or 1/15. The last step is to run the seed through the Forsberg gravity seed table. Seed is damp stratified by mixing it with equal amounts of vermiculite & lightly dampening in a plastic bag or container. Store this seed for 3-4 months in a cold room of 34-36° F. Sow the seeds by hand by broadcasting. Try to sprinkle 3 - 5 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° F during the day, & 65-75° F at night. 75% germination is reached in about one week. (Flood et al 2001)

Seed from Rocky Mountain National Park. Small black seeds simply removed from papery covering. Many seeds are not filled & are easily crushed, these won't germinate. Sowing/planting technique: Manually sowed in seed pack flat, 2-3 seeds/slot, cover seed lightly with germination mix. Propagation Environment: Greenhouse, 65-70°F day/55°F night. Propagated on the heating pad (set at 70°F) under tent with misters set 8 am-8 pm, with 10 sec/15 min watering intervals. One week after germination, seedlings were moved to mister area without tent. Time to germination: 14 days. Germination uneven & occurs over many days. Germination: 50-75% with seed from Sprague Lake. (Butler & Frieswyk 2001)

Seeds exhibit physiological dormancy. Seeds are cold stratified & germinate at 20/10 C. Germination is equal in light & dark. (bb01)

Several sources state sowing dry stored seed without cold moist stratification works well, but this is probably a case of a widespread sp having various dormancy mechanisms in different parts of its range. In our region, dormant seed or moist cold stratify. 108,366 (gna05), 119,616 (wns01), 121,600 (pm02), 123,000 (ecs), 123,200 (pn02, jfn04, ew11, sh94), 129,622 (gna04), 129,730 (gn), 129,955 (gnih01), 133,628 (gna11), 137,600 (aes12), 142,297 (gna07), 152,272 (gna06) seeds per pound.

Kew Storage Behaviour: Orthodox, 90 % viability following drying to mc's in equilibrium with 15 % RH & freezing for 13 days at -20C at RBG Kew, WP; Thousand Seed Weight: average 3.85g (3.27-4.43g), Germination data 90 % germination; germination medium = 1% agar; germination conditions = 15°C, 8/16; (RBG Kew, Wakehurst Place) 85 % germination; germination medium = 1% agar; germination conditions = 20°C, 8/16; (RBG Kew, Wakehurst Place)

asexual propagation: Division in early spring or fall, or any time with a little care. When planted in favorable garden conditions, each bulb divides into 2 several times each year, with clumps quickly becoming sizable. Thrives with timely division. “Offset bulblets, which form around the base of the larger bulbs, can be divided in fall” (lbjwfc).

cultivation: Space plants (0.5)0.75-1.0(2.0) centers. Full sun to part shade, performs well in modestly rich soils. Tolerates clay soil, dry soil, & shallow, rocky soils. Once established, drought tolerant. Long-lived, hardy. The sp may be aggressive where competition is light, but is out-competed by Eurasian grasses.

bottom line: Genesis test data indicate this species has a strong requirement for dormant seeding. Consistently significantly to strongly dormant. Germ 18.9, 14.3, 26, sd 13.3, r2.0-52 (50)%. Dorm 72, 72.8,

78, sd 15.4, r33-94 (61)%. Test 32, 30, 22, r18-59 days. (#21)**

Description: Erect, herbaceous, perennial, native forb, all parts fragrant/aromatic; stems 0.7-2.0' tall, 0.25-0.5' spread, bending just below the delicate pink flowers; leaves, basal, flat, persistent, fragrant, at least some are evergreen; flowers lavender, pink or white (red/pink, white, pink to lilac pink), fruits are capsules with small black seeds; N 2n = 14.

Comments: status: Threatened in Iowa, Minnesota, & New York. phenology: Basal leaves evergreen, resumes growth in March. Blooms June to mid-August. Collect seeds October. C3. Great cut flowers for the olfactory impaired, interesting spherical, dried seed heads. Great in short prairie plantings & massed plantings, rock gardens, xeriscaping, cottage gardens, aroma gardens, & naturalizing. Seed source nursery plantings, genetic source Windrift Nursery, Ogle Co (Stillman Valley Twp) plus Illinois River sandstone prairie near Naplate, LaSalle Co.

Associates: Species is of special value to native bees. Pollinated by bees. Attracts bees, butterflies, & hummingbirds. Seldom browsed by deer, deer resistant. NODDING ONION is said to inhibit the growth of alfalfa & other legumes (Philbrick & Gregg 1979, Riotte 1978, Hatfield 1977, Allardice 1993). Walnut tolerant. No serious insect or disease problem.

ethnobotany: Edible, but it is a strong flavored onion, becoming more pungent as the seeds set. Try the flowers in a salad. Bulbs available in late autumn & early spring. "Species has very strong flavor, but if parboiled, is very good to eat; bulbs sometimes pickled (Medsger)" (Ilpin). Used by Ojibwa (spring food) & Menominee (sm32, Skinner 1921). Medical uses include cough, diaphoretic, diuretic, sores, stimulant, swelling, & vermifuge.

VHFS: Cv. 'Major' is a vigorous form with large flower clusters. Some authorities recognize varieties *neomexicanum* (Rydb) JF Macbr & *obtusum* Cockerell ex JF Macbr, which are not mentioned (placed in synonymy) in fna. [*Allium allegheniense* Small, *A oxyphilum* Wherry, *A recurvatum* Rydberg]

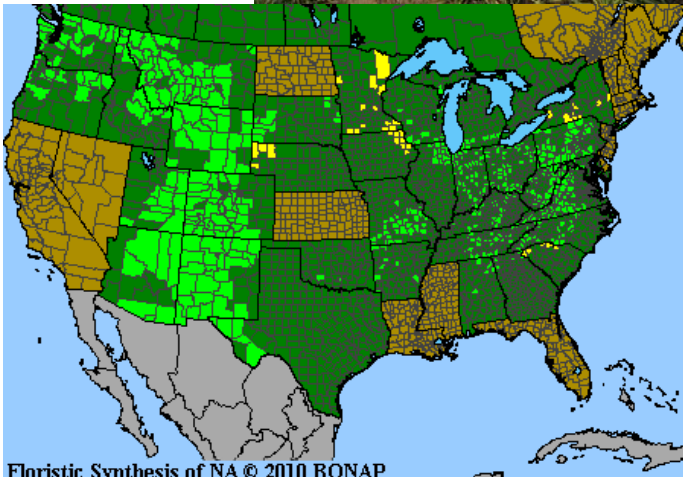
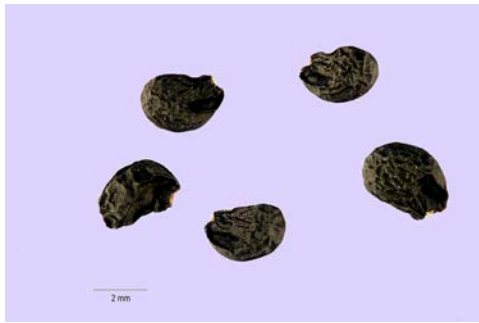
"*Allium cernuum* is the most widespread North American sp of the genus. It is closely related to *A stellatum*, & the character commonly used to differentiate them has been umbel orientation. In both spp, the inflorescence is nodding in bud, but in *A stellatum* it usually becomes erect by anthesis. In *A cernuum* the peduncle remains permanently recurved near the apex, although the inflorescence may sometimes become erect overall, or nearly so. While this character is helpful in identification, an almost exclusive reliance on it (even by one of the present authors in his youth) has obscured other clearer distinctions between the spp & has confused their geographic ranges. More reliable characters for differentiating these spp are bulb shape (elongate in *A cernuum*, ovoid in *A stellatum*) & perianth shape (campanulate in *A cernuum*, stellate in *A stellatum*). Unfortunately, perianth shape is often difficult to see in herbarium specimens." (McNeal & Jacobsen fna)

CC Baskin & JM Baskin, 2001. Propagation protocol for production of container *Allium cernuum* L plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 3 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

J Butler & C Frieswyk, 2001. Propagation protocol for production of *Allium cernuum* seeds; USDI NPS - Rocky Mountain National Park, Estes Park, Colorado. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 3 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

RM Flood, DJ Horvath, & G Blessman, 2001. Propagation protocol for production of container *Allium cernuum* Roth. 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 3 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

T Luna, J Evans, & D Wick, 2008. Propagation protocol for production of container *Allium cernuum* Roth plants (160 ml containers), USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 3 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.



Floristic Synthesis of NA © 2010 BONAP

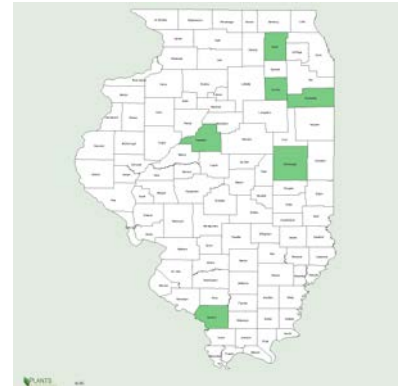
[add variety maps @ usda.plants.gov?](https://usda.plants.gov/)

Allium cernuum

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Tracey Slotta USDA-NRCS PLANTS Database

Allium schoenoprasum L *MI, MN, NH *NOX AR WILD CHIVES, aka *ASATSUKI* (J), *BEI CONG* (CH), *BIESLOOK* (DU), *CEBOLINHA-FRANCESA* (P), *CEBOLLETA* (SP), *CEBOLLINO COMÚN* (SP), CHIVE, *CIBOULETTE* (FC), *CIVETTE* (F), *CIPOLLINA* (I), *ERBA CIPOLLINA* (I), *EZO-NEGI* (J), GIANT GARLIC, *GRASLAUK* (N), *GRÄSLÖK* (SW), *PURLØG* (D), *RUOHOLAUKKA* (FI), *ΣΧΙΝΟΠΡΑΣΟ SCHINOPRASO* (GR), *SCHNITTLAUCH* (G), SIBERIAN CHIVES, WILD CHIVE, The common name CHIVES is from French *cive*, from Latin *cepa*, *cepa* f, also *cepe*, *cepis* n, the name for *Allium cepa*, the GARDEN ONION.

Habitat: “Wet meadows, rocky or gravelly stream banks & lake shores, circumboreal; 0--3500 m” (McNeal & Jacobsen fna). “Moist soils in wetland margins, springs & mountain meadows” (Evans et al 2008). CULINARY CHIVES may persist near old dumps, gardens, & habitations. distribution/range: This is the only *Allium* that is native to Eurasia & North America. Circumboreal, including the Balkans, Siberia, & Asia Minor. In North America, south into Oregon, Idaho, & into Minnesota, Michigan, New York, & Newfoundland. Boreal, not your typical Midwest native plant & undoubtedly, the Illinois records are escapes. Native, relict populations exist in upper Michigan & Minnesota (threatened in both states), but it is considered introduced in Wisconsin. Hmm. Culture: propagation: This species is discussed because of its boreal native & introduced status & its utility on green roofs. Beats the hell outa *Sedum ad nauseum*.



Seeds of the culinary plant need no treatment. “Seed dormancy is classified as physiological dormancy. 5 month outdoor cold, moist stratification of fresh seeds.” (Evans et al 2008). Sow at 20°C (68°F), germinates in less than two wks (tchn).

Kew Storage Behaviour: Orthodox Seeds maintained for 1-2 years in commercial storage conditions (Priestley, 1986), no loss in viability after 6 years hermetic storage at -20°C (Kretschmer 1989), long-term storage under IPGRI preferred conditions at VGBWellesbourne, at RBG Kew, WP. Oldest collection 12 years; germination change 80 to 85%, 12 years, 1 collection;

Thousand Seed Weight: average 0.90g, (0.73-1.07g),

Germination data 90 % germination; germination medium = 1% agar; germination conditions = 25°C, 8/16; (RBG Kew, Wakehurst Place)

100 % germination; germination medium = 1% agar; germination conditions = 26°C, 12/12; (RBG Kew, Wakehurst Place)

100 % germination; pre-sowing treatments = imbibed on 1% agar for 12 weeks at 5°C; germination medium = 1% agar; germination conditions = 20°C, 8/16; (RBG Kew, Wakehurst Place)

80 % germination; pre-sowing treatments = imbibed on 1% agar for 8 weeks at 2°C; germination medium = 1% agar; germination conditions = 21°C, 12/12; (RBG Kew, Wakehurst Place)

2,600,000 seeds per kilogram (Evans et al 2008). The culinary plant is available seasonally as seed packets & as plants in most garden centers. Wild native strains of the plant are unknown in the trade.

asexual propagation: Dense clumps are easily divided in spring or fall.

cultivation: Easy in average medium, well-drained soils in full sun or partial shade. Once established, very low maintenance & drought tolerant. Said to self-sow, dead head to prevent unwanted seedlings, which may also encourage new growth. Root rot may occur in poorly drained soils. Divisions may be potted & brought indoors to grow on the windowsill for the winter.

bottom line: Limited test data indicate little or no dormancy in culinary strains. Green roof seedings only with culinary materials. Germ 91%. Dorm zero%.**

greenhouse & garden:

Description: Largely introduced (& a rare boreal North American native) perennial, culinary herb; stems 1.0-1.5', spread 1.0-1.5'; leaves thin, tubular (fistulose), grasslike, dark green; inflorescence terminal tight umbel; $N 2n = 16$. key features: “The native wild chives of rocky river banks & rock crevices in the Lake Superior region & along the Escanaba River has been referred to var *sibiricum* (L) Hartm. Native plants appear to be less densely clumped (fewer stems in a clump), & perhaps generally coarser than garden chives, which may escape into disturbed sites, but the differences are difficult to apply in the herbarium.” (rvw11) “*Allium schoenoprasum* var *sibiricum* closely resembles domestic chives (*A. schoenoprasum* var *schoenoprasum*). The *sibiricum* variety has mostly cauline leaves approximately 2-4 mm (0.08-0.2 in) thick; a stem 2-5 dm (8-20 in) tall, with lilac-pink flowers. Domestic chives have basal leaves that are approximately 1-2 mm (0.04-0.08 in) thick, & the plant is much shorter than our native variety, at 1-2 dm (4-8 in) tall.” <http://www.dnr.state.mn.us> “Typical variety has leaves

basal & very slender, 1-2 mm. in diameter; stems 1-2 dm tall” (Ilpin). “(var sibiricum) This variety has stem rather stout, 2-5 dm tall, leaves are mostly cauline; 2-4 mm. in diam” (Ilpin).

Variety *schoenoprasum*, leaves slender, equal to or longer than the stems, bulbs several, crowded, native to Europe, is introduced?

Variety *sibiricum*, leaves coarse, shorter than the stems, bulbs few, 1-2, native to Europe & Asia, is native in upper Great Lakes, etc., but in part also considered introduced? GIANT CHIVES

Comments: status: Threatened in Michigan, Minnesota, & New Hampshire. NOX in Arkansas. phenology: Blooms April - May or June - August. C3. Culinary herb, imparting a mild onion flavor to foods, can be used as a garden annual. Leaves fragrant, flowers showy, edible when young, flowers can be used as a garnish. Good in the landscape, vegetable gardens, herb gardens, specimen plants, aroma gardens, container gardens, massed plantings, & near paths & at the front of borders. Sp has also been used on green roofs.

“*Allium schoenoprasum* is native in North America, but it is also cultivated & has widely escaped. It is an extremely polymorphic sp, & throughout its range both large & small races occur. These plants have been known as *A sibiricum*, *A schoenoprasum* var *sibiricum*, or *A schoenoprasum* var *laurentianum*, & many, largely unsuccessful, attempts have been made to distinguish the varieties. Until the variation can be worked out along natural lines, if any, instead of unstable features such as plant size, & color & shape of the tepals, recognition of these varieties is unsound. Because we are unable to separate native populations from many of the escaped ones, we cannot reliably map the native distribution of this taxon in the flora.” (McNeal & Jacobsen in *flna*)

Associates: Flowers attract bees. Deer resistant. Walnut tolerant. No serious insect or disease problems. ♂
“Inhalation or ingestion of volatiles may flavor milk (Muenscher). Poisoning of horses may occur in early spring when plant is abundant & other foliage absent (Stephens)” (Ilpin).

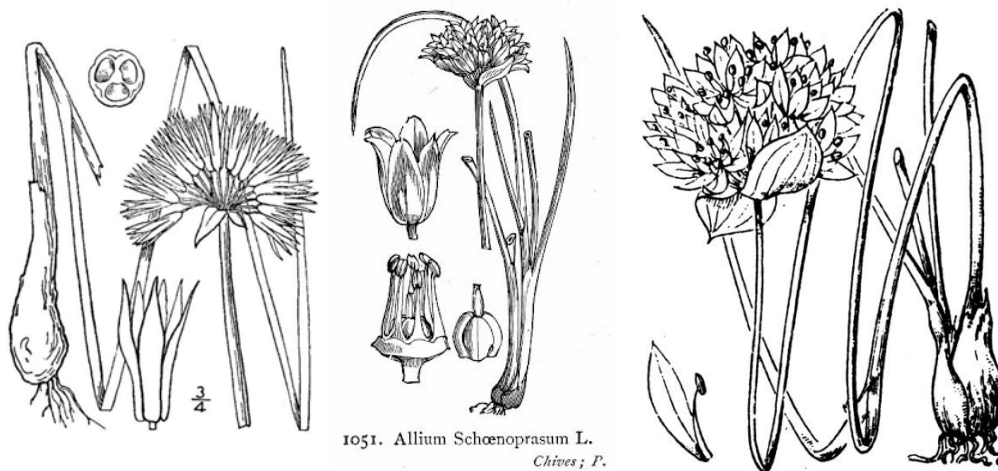
ethnobotany: ♂ Included in the FDA Poisonous Plant Database. Native Americans used the bulbs & leaves as food, cooked & raw, & as a seasoning. In Alaska, bulbs were preserved by freezing! The “skin” of the bulb was used by Indians of the Great Basin to produce a golden brown dye, as cooks may throw a few dried onionskins into the pot to provide a rich, more colorful broth.

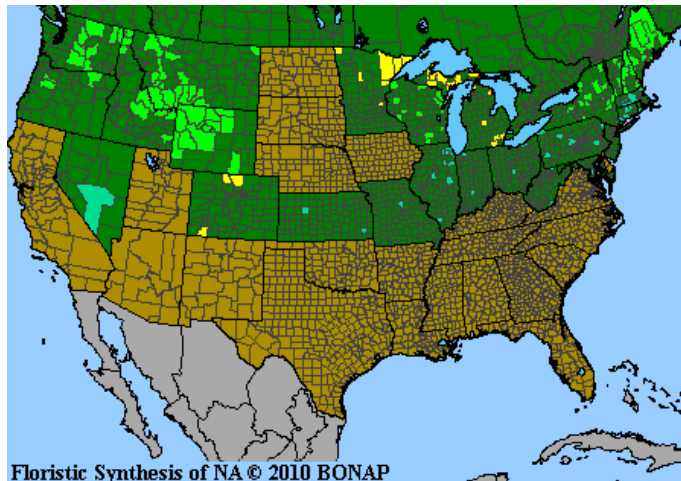
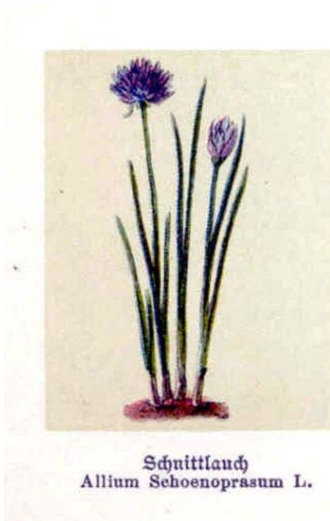
VHFS: In Britton & Brown (1913), this is *Allium sibiricum*. Ilpin maps variety *sibiricum* from Kankakee Co. [*Allium schoenoprasum* L subsp *sibiricum* (L) Celak, *A schoenoprasum* var *laurentianum* Fernald, *A schoenoprasum* var *sibiricum* (Linnaeus) Hartman, *A sibiricum* Linnaeus]

Taxon is related to both the WELSH ONION & the LEEK with wild populations having valuable genetic resources for cross breeding with horticultural crops, aka, fewer Frankenplants.

J Evans, T Luna, & D Wick, 2008, Propagation protocol for production of container *Allium schoenoprasum* L plants (160 ml conetainer), USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 1 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

add photo from seed id workshop?





Allium schoenoprasum

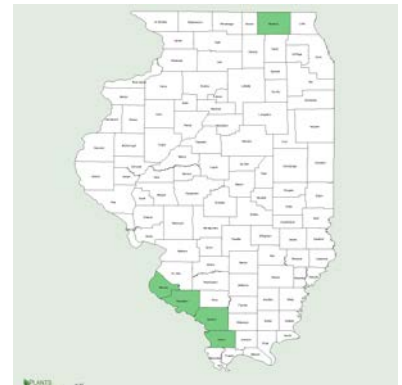
Line drawing (variety *sibiricum*) Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Line drawing Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de. Line drawing public domain from Hippolyte Coste - *Flore descriptive et illustrée de la France, de la Corse et des contrées limitrophes*, 1901-1906. Color illustration modified from Franz Bley, *Botanisches Bilderbuch* (1897/98) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de. Photo by Leo Michels - Source: <http://www.imagines-plantarum.de/> Public domain image. Color illustration Otto Wilhelm Thomé: *Flora von Deutschland, Österreich und der Schweiz* (1885) -

Allium stellatum Ker Gawler [or *A stellatum* Fraser, or Fraser ex Ker Gawl] * TN *NOX AR PRAIRIE OR CLIFF ONION, aka AUTUMN ONION, GLADE ONION, PINK FLOWERED ONION, WILD ONION, in Ojibwa *Mukode'cigawunj*, prairie skunk plant, the root word *cigaga*, to wit, Chicago. *Mukode* is an Algonquin root word meaning prairie. (*stellatus* -a -um New Latin stellate, starry, star-shaped, star-like, or radiating like the points of a star, from Latin *stellatus* -a -um, starry; set with stars; sparkling, glittering; shaped like a star or "X".) upl

Habitat: Dry prairies, often calcareous, hill prairies & bluffs. "Collected only once in Michigan, on low dunes near Manistique (*JH Ehlers 4072* in 1929, MICH). Probably not native quite this far east." (rvw11) In the se USA, limestone glades (w12). distribution/range: Rare in Illinois, Boone (? discovered by Roger Gustafson), Jackson, McHenry, Monroe, Randolph, & Union cos. Also mapped from Jo Daviess Co by BONAP (2011)

Culture: 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold, moist stratification (he99). Fall plant or cold stratify for up to 2 to 3 months for best results. Sow just below the soil surface at 60°F & water. (ew11) 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 or moist cold stratify. Division of mature plants in early spring or fall, or any time with a little care. 145,454 (gn), 162,000, 176,000 (pm02, ew11) seeds per pound.

asexual propagation: Division of mature plants late fall or early spring.



cultivation: Space plants 0.5-1.25'. Dry to mesic soils, full sun to partial shade. Drought tolerant.

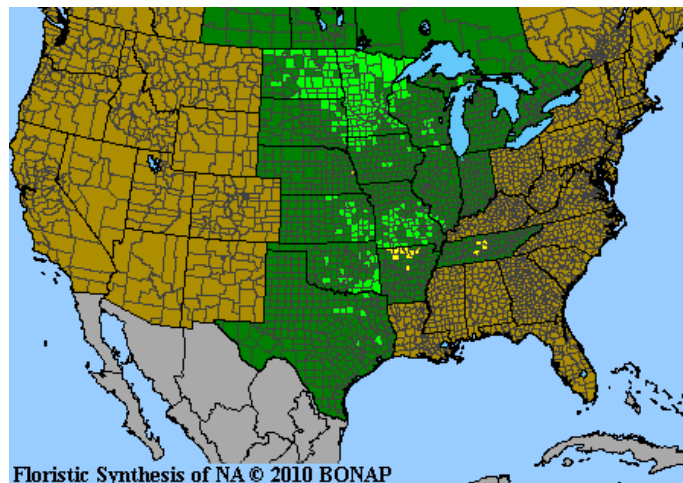
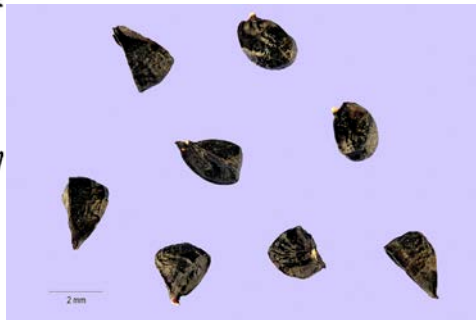
Description Native, erect, herbaceous, perennial forb, onion odor; 0.7-1.5' stems that do not bend below the inflorescence; flowers pink (deep pink, lavender, red), fruits are capsules with small black seeds. $N 2n = 14$.

Comments: status: Endangered in Tennessee. Noxious in Arkansas. phenology: Blooms 7-9(10). C3. Collect seeds October (he99). Great in rock gardens. "Showy rose to pink flowers; does well in cultivation, when grown in sunny exposure with a limey, rocky soil; flowers late in season & is a welcome addition to rock gardens" (Ilpin).

Associates: Attracts butterflies. Reported to be deer resistant. Milk cows grazing the plant or breathing the fumes will produce onion-flavored milk.

ethnobotany: Edible. Used as medicinal plant by Ojibwa for colds (den28)

⚠ All parts are considered slightly toxic if eaten in quantity, due to their sulfide content. Symptoms include vomiting, diarrhea, & nausea.



Allium stellatum

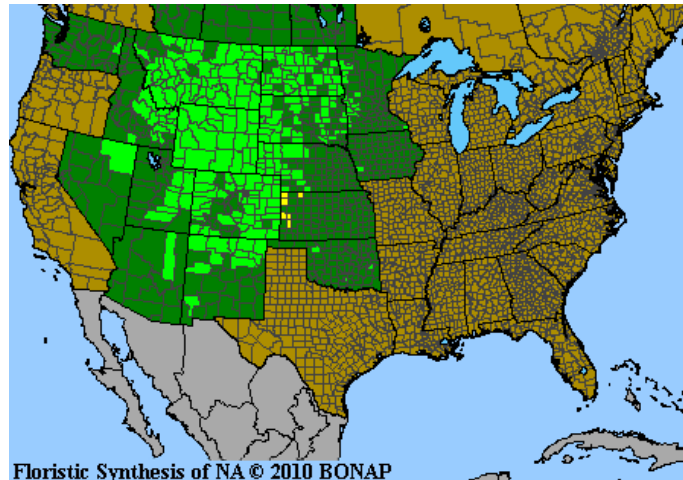
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Tracey Slotta USDA-NRCS PLANTS Database

Allium textile A Nelson & JF Macbr. TEXTILE ONION, aka PRAIRIE ONION, (*textilis -is -e* textile, woven, used for weaving, from Latin adjective, *textilis -is -e*, woven, from *texere*, to weave, to plait together.)

Native northwest, west, & southwest of our area. The closest populations are in southeast Minnesota & southwest Iowa.

60 days cold moist stratification (pm09).

$N 2n = 14, 28$.



Floristic Synthesis of NA © 2010 BONAP

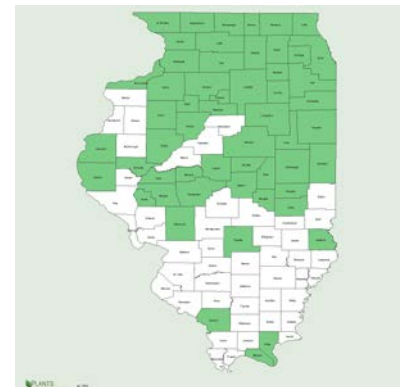
Allium textile

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database

Allium tricoccum Aiton *ME, RI, TN WILD LEEK, aka *AIL DE BOIS* (FC), *AIL SAUVAGE* (FC), RAMP, RAMPS, RAMPSCALLIONS, SMALL WHITE LEEK, WOOD LEEK, in Ojibwa *Sigagawunj* onion, the root word *cigaga*, to wit Chicago. (*tricoccum* -a -um New Latin, three-seeded, three-berried, from Latin *tri*, prefix, from *tres*, three, & *cocum*, *cocci*, berry.)

Habitat: Rich woods & bottom lands, rich deciduous woods that are moist in the spring. Open woods to woodland. Temperate deciduous upland & floodplain forests. In Michigan, “Rich deciduous forests, both on upland & floodplain sites, especially characteristic in moist areas of beech-maple-hemlock stands” (rvw11). In the se USA, cove forests & mesic slope forests (w12). “Moist ground in rich woods, depressions, streamside bluffs, & colluvial slopes; 0--1400 m” (McNeal & Jacobsen fna). **distribution/range:** Occasional in the north ½ of Illinois, rare elsewhere.

Culture: From stratified seed or division. Code C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70° cu00). In order to germinate, seeds need a warm, moist period followed by a cold, moist period. (In addition, not sure? (pm)? Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 60°F. (ew11). “Collect seeds as soon as they become exposed in the summer. Two months of cold-moist stratification if stored or planted in indoor (greenhouse) flats. Plant seeds 0.25” deep outdoors & transplant the small bulbs the following summer, setting them 1.0-1.5” deep. (lbj) In Upper Michigan, seed is harvested from mid August to September. Cold store until planted (up to 3 years). No pre-planting treatment was used. May require stratification: mix the seeds with an equal amount of moist perlite or vermiculite. Seal container & proceed with up to two months or more of cold moist stratification in a cool dry place. Sow year-round due to low variable success rates. (Schultz et al 2001) 22,400 (pm02 & ew11), 26,469 (gnam04) seeds per pound.



Kew Thousand Seed Weight: 14.379g (13.25-15.08g), Dispersal: Animal Diaspore is eaten intentionally; Assumption based upon diaspore morphology; (van der Pijl, 1982), Birds.; Diaspore=seed. The diaspore is mimetic of other edible diaspores.

asexual propagation: Mature bulbs produce offsets, which can be divided in the summer. Plant them 1.5 in deep & cover with? (lbjwfc).

cultivation: Space plants 12-15". Rich mesic soils in shade. Circumneutral soils, pH 6.8-7.2. Plants perform best with spring sunshine followed by shade, as in pre- & post-canopy forest setting.

bottom line: Sp has a strong requirement for dormant seeding. Consistently strongly dormant. Germ 2.3, 1.0, 1.0, sd 1.9, r10-5.0 (4.0)%. Dorm 90.3, 90, na, sd 2.9 (r87-94 (7.0)%). Test 30, 28, na, r21-42 days.**

Description: Native, erect, perennial forb, all parts with strong onion odor; red stems & leaf sheaths, 0.33-1.0' tall; shallow bulbs, mostly more than 0.75" thick; leaves basal, lance-like, flat, 1.0-2.0" (over 2.5 cm) wide, leaf blades emerge in spring then die back when in flower with flower stalks appearing in July; inflorescence 1.25" erect rounded umbel; flowers white, 6-merous, 0.25" wide; fruit a capsule with black seeds; $N 2n = 16$.

Comments: status: Special Concern in Maine, Rhode Island, & Tennessee (also Commercially Exploitable).

phenology: Leaves appear in May. Blooms June - August. Seed source DeKalb Co. "Leaves appear in earliest spring & resemble tulip leaves in size & shape; leaves disappear by flowering time. This typical variety with petioles & leaf sheaths reddish, blades mostly 2.6-6.0 cm. broad, elliptic. This & var *burdickii* have been observed as separate since 1877, but actual formal recognition did not occur until 1953. Menomini Indian name "shikako" or "skunk place" refers to Chicago, where abundant wild leeks grew." (Ilpin)

"A common woodland plant that is best known by its two leaves which appear early & are gone by flowering time. We have not seen the red sheathed form mentioned by Hanes in his Kalamazoo Co, Michigan, Flora." (ewf55)

Associates: Attracts butterflies. Seeds are ant dispersed. Reported to be deer resistant.

ethnobotany: Edible bulbs available in late autumn & early spring. The foliage & bulbs can be used in soups & salads. Used by Ojibwa & Menominee as spring food & dried for future use (sm32, 23, 33, Waugh 1916). Used as medicinal plant by Ojibwa, emetic (den28). Found growing at Wexford co site.

⚠ All parts are considered slightly toxic due to their sulfide content if eaten in quantity. Symptoms include vomiting, diarrhea, & nausea.

VHFS: [*Allium pictum* Mold, *A tricoccum* Blanco, *A tricoccum* var *burdickii* Hanes, *A tricoccum* f *pictum* AG Jones, *A tricoccum* var *tricoccum*, *A triflorum* Raf, *Ophioscorodon tricoccum* (Sol) Wallr, *Validallium tricoccum* (Sol) Small]

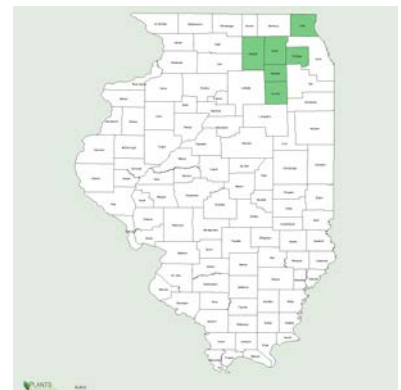
J Schultz, P Beyer, & J Williams, 2001. Propagation protocol for production of container *Allium tricoccum* Aiton plants; USDA FS - Hiawatha National Forest, Marquette, Michigan. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 2 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

move to *A burdickii*

Var *burdickii* has deep bulbs, mostly less than 0.75" thick; pale or green stems & leaf sheaths; leaf blades less than 2.5 cm wide; inflorescence 1.25" erect, rounded umbel; $N 2n = 16$, & blooms in June (6-7) with fruits maturing in July, C3. It is sometimes separated as *Allium burdickii* (Hanes) A G Jones, BURDICK'S LEEK, aka NARROW-LEAF RAMPS, NARROWLEAF WILD LEEK, WHITE RAMPS, which is Endangered in New York & Commercially Exploitable, Threatened in Tennessee. In Illinois, known from DeKalb, DuPage, Grundy, Kane, Kendall, & Lake cos in northeast Illinois. "Species is distributed in low moist woods; found in association with *Fraxinus americana*, *Prunus serotina*, *Prunus virginiana*, *Quercus alba*, *Quercus rubra*, *Tilia americana*, *Ulmus americana*" (Ilpin).

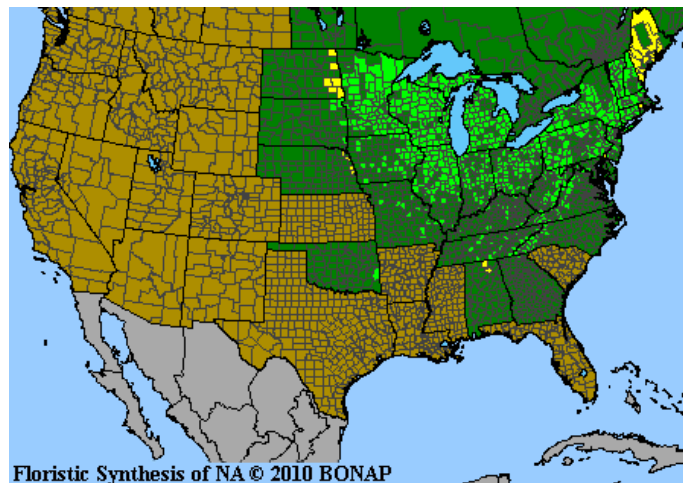
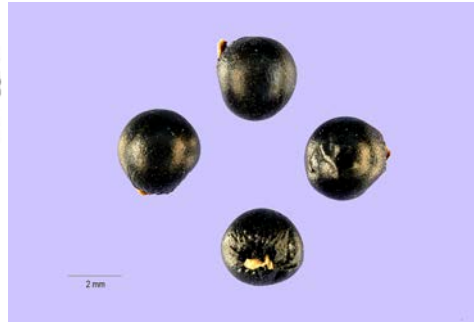
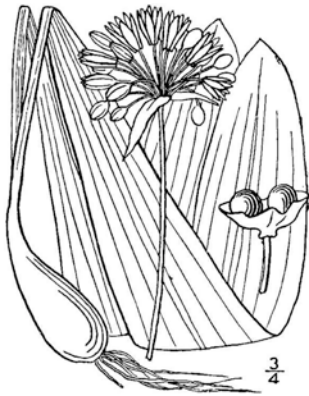
"Seeds exhibit morpho-physiological dormancy. Seeds are warm & cold stratified & germinate at 25/15°C." (bb01)

"Northern hardwood forests, primarily at higher elevations than *A tricoccum*, perhaps also in cove forests & rich mountain slopes. June; August. Only recently determined to be a separate taxon, *A burdickii* is apparently rare in our area. It blooms about a month earlier than *A tricoccum*. See Jones (1979) for more details & discussion. Largely sympatric with *A tricoccum*, it is somewhat more northern & midwestern, ..." (we12)



Add Jones (1979).

CC Baskin & JM Baskin, 2001. Propagation protocol for production of container *Allium burdickii* (Hanes) AG Jones plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 2 December 2012). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.
images available ARG/GRIN



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Allium tricoccum

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Tracey Slotta USDA-NRCS PLANTS Database. Photo *A. burdickii* RW Smith, courtesy Wildflower Center Digital Library.

***Allium vineale* L** *AR, CA, DC, HI, IL, MD, ME, MI, MO, NJ, NY, OH, OR, PA, RI, WV FIELD GARLIC, aka *AGLIO DELLE VIGNE* (I), *AIL DES VIGNES* (F), *AIL SAUVAGE* (F), *AJITO DE LAS VIÑAS*, *ALHO-DAS-VINHAS*, *ALHO-VINHEDO* (PB), COMPACT ONION, CROW GARLIC, FALSE GARLIC, *HJETALAUKKA* (FI), *KOCHS LAUCH* (G), *OIGNON SAUVAGE* (F), “ONION GRASS”, *PURPUSANDLÖK* (SW), *SANDLÖK* (SW), STAG GARLIC, *STRANDLAUK* (N), *VILDTLÖG* (D), *WEINBERG-LAUCH* (G), *WEINBERGSLAUCH* (G), WILD GARLIC, WILD ONION, (*vinealis* -is -e of or pertaining to vines or wines, living on vines, of vineyards; consisting of wine from Latin adjective *vīneālis*, from *vīnea* vine, or *vineā* -ea f vines in a vineyard, vines arranged in rows; vines, perhaps a reference to the plant being a weed of vineyards.)

Habitat: Lawns, pastures, roadbanks, other disturbed areas. We have seen this as a nursery weed in Stark Co. “Species is distributed in fields, meadows, borders of woods, railroads, wastes; meadows & turfs” (Ilpin). In Michigan, “Dry sandy open ground, oak-sassafras forests, & disturbed ground” (rvw11).

distribution/range: Native of Eurasia & North Africa (& Canary islands).

Culture: propagation:

Kew Storage Behaviour: Uncertain “The sp has been shown to form a transient soil seed bank, with seeds persisting in the soil for <1 year (Thompson et al 1997). Although this may suggest that seeds of the sp are short-lived under ambient conditions, & perhaps recalcitrant or intermediate, a



number of factors may have resulted in the inclusion of orthodox seeds within this category (see Thompson et al 1997 for further detail). Further research is necessary before the storage behaviour of the taxon can be reliably classified.”; Thousand Seed Weight: 19g

asexual propagation:

cultivation: Why?

bottom line:

greenhouse & garden:

Description: flowers green, violet, white; $N 2n = 32. 40$. key features: “Species is tough & has very rank smell & taste” (Ilpin). “In *A vineale* the uppermost leaf arises near the middle of the stem, while in *A canadense* the leaves are all on the lower 20% of the stem” (rvw11).

Comments: status: Noxious in 15 states & the District of Columbia. 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, Haragan 1991, Uva et al 1997, SEPPC 1996, SWSS 1998). phenology: Blooms late May - June. Species may grow in wheat fields, where the wheat-sized bulbils are harvested with the grain & contaminate flour, yielding unintentional garlic bread. Cows grazing on the plants give garlic-flavored milk. Information on this sp is included solely because the topset bulbils may inadvertently be sold as *A canadense*. The common names in the Romance & Germanic languages are quite interesting, enough to merit inclusion.

Associates: “Volatiles, by ingestion or inhalation, may flavor milk (Muenscher)” (Ilpin).

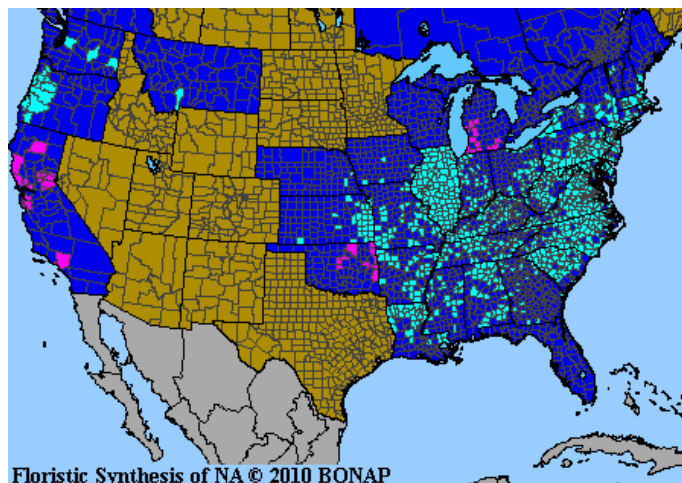
ethnobotany: ☞ Included in the FDA Poisonous Plant Database.

VHFS: [*Allium kochii* Lange, *A vineale* ssp *vineale*, *A vineale* var *vineale*, *A vineale* var *capsuliferum* Koch, *A vineale* var *compactum* (Thuill) Coss.]

add photo seed id workshop?



1053. *Allium vineale* L.
Crow Garlic; *P.*



Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. Line drawing Walter Hood Fitch - Illustrations of the British Flora (1924) - Permission granted to use under GFDL by Kurt Stueber. Source: www.biolib.de.

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ASPARAGUS Linnaeus **ASPARAGUS** *Liliaceae* Sometimes placed in *Asparagaceae* AL de Jussieu 1789 (m14, w12).

Asparagus officinalis Linnaeus **ASPARAGUS**, aka SPARROWGRASS, GARDEN ASPARAGUS,
“A roadside escape that is particularly common in sandy & prairie areas.” (ewf55)

CAMASSIA Lindley 1832 **WILD HYACINTH, QUAMASH LILY, CAMAS LILY, CAMASS, CAMAS** *Liliaceae* (fna, USDA) *Camassia* (ka-MA-see-a or camas'sia) New Latin, from English *camass* & New Latin *-ia*, from Native American (Shoshone) name *quamash* or *camass*. Bulbous herbs of North America. Sometimes placed in *Hyacinthaceae* (m14), *Agavaceae* (w12, 15), or *Asparagaceae*.

“The placement of *Camassia*, *Schoenolirion*, & *Hastingsia*, sometimes grouped as *Hyacinthaceae* subfamily *Chlorogaloideae*, has been uncertain; they are better placed in the *Agavaceae*, a position supported by molecular, serological, & biogeographic evidence. *Hostaceae* is included here (*Agavaceae*) based on recent molecular analyses (Steele et al 2012).” (Weakley 2012)

Seeds require cold moist stratification. Plants are best produced in a seedbed. Only one leaf is produced the first year, with 4-5 years to flower from seed. Code B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F. Some spp produce offsets. (cu00)

Camassia angusta (Engelmann & A Gray) Blankinship *IL, IN **NARROW WILD HYACINTH**, aka PRAIRIE CAMAS, WILD HYACINTH,

Habitat: In Illinois, railroad prairies. distribution/range: Western & central Illinois (Macon & Peoria cos) to Texas. Illinois is at the north-northeast limit of the sp range.

Culture: 60 days cold moist stratification (pm09).

asexual propagation:

cultivation:

bottom line:

greenhouse & garden:

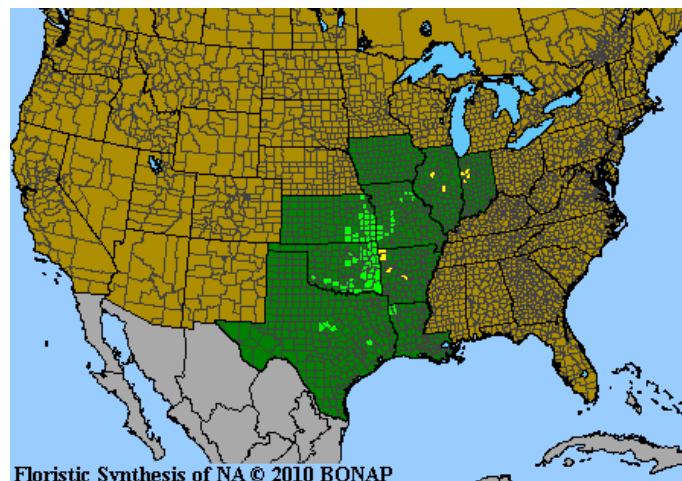
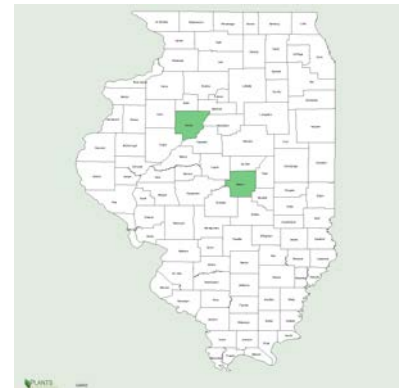
Description: flowers violet; N 2n = 30. key features:

Comments: status: Endangered in Illinois & Indiana. phenology: Blooms 5-7. C3. Our plants are from Ken Schaal. Species is cultivated in the eastern USA.

Associates:

ethnobotany:

VHFS: [*Scilla angusta* Engelm & A Gray, Boston J Nat Hist 5: 237. 1845, *Camassia fraseri* Torr var *angusta* (Engelm & A Gray) Torr, *Quamasia angusta* (Engelm & A Gray) Piper]



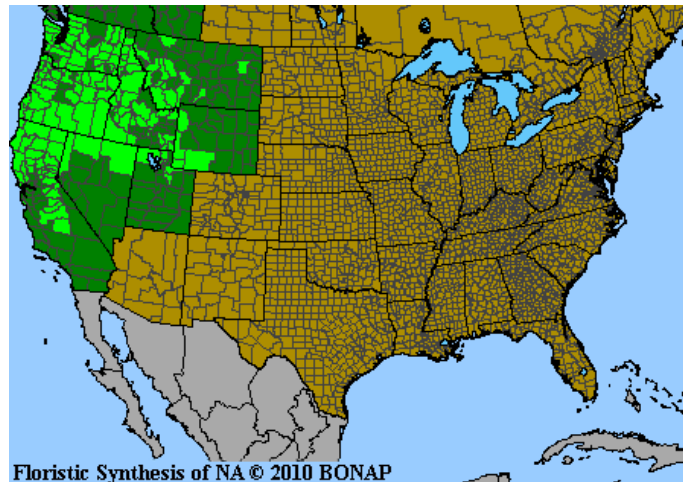
Camassia angusta

Camassia quamash (Pursh) Greene **BLUE CAMASS**, aka SMALL CAMAS, CAMAS LILY, COMMON CAMASS, SWAMP SAGO,

Habitat: Full sun, medium soils. distribution/range: Native northwest USA.

60 days cold moist stratification (pm09). No pretreatment needed. Sow seeds just below the soil surface at 40°F & water. Moderately difficult from seed. (ew11) Sow at +4°C (39°F), germ. erratic, often many months (tchn).

cultivation: Space plants 0.50-0.75'. A western sp that is offered by some native nurseries as a garden plant. It was an important food plant to many tribes of Native Americans.



Camassia quamash

Camassia scilloides (Rafinesque) Cory *MI, NC, PA, WI WILD HYACINTH, aka ATLANTIC CAMAS, *CAMASS*, *CAMMAS*, EASTERN CAMAS, PRAIRIE HYACINTH, *QUAMASH*, (*scilloides* (skil-OI-deez) like *Scilla*, the Old World squills, the sea squill *Urginea maritima*) The specific epithet is also spelled *scillioides*, as originally published. Although many use ATLANTIC CAMASS as the principle common name, the sp gets no closer to the Atlantic than a few cos in the upper Chesapeake Bay. fac+

Habitat: Mesic to wet mesic prairies, mesic savannas, & woodland borders. “Species is distributed in low rich woods, open woods & rocky open slopes. One author says sp has main habitat: open woodlands (with *Prunus serotina*, *P virginia*).” (Ilpin) In the se USA, moist forests, over circumneutral soils, in GA, VA, & WV on limestone, in NC on slopes & natural levees along the Roanoke River, in SC over gabbro” (w12). distribution/range: Known from but not mapped from Bureau & Putnam cos.

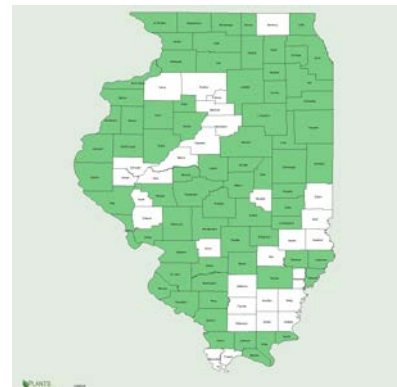
Culture: “Cold moist treatment, or fall plant. My experience suggests that it may be beneficial to cold store seed soon after collecting until ready to treat seed. Light to medium cover. Germination not reliable. Plants dormant by mid-summer.” (mfd93) 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold moist stratification (he99). Fall plant or cold stratify for up to 2 to 3 months for best results. Sow just below the soil surface at 70°F & water. Moderately difficult from seed. (ew11) Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination (tchn). Fresh seed or cold moist stratify immediately, cool soils, temperature sensitive. 67,200 (pm02, ew11), 85,790 (gnam04), 112,110 (gnhm12), 129,600, 172,977 (gnh14), 1,136,000 (aes12) seeds per pound.

asexual propagation: Division in fall, fall transplant only.

cultivation: Space plants 9-12”, but best planted in mass, minimum 3 plants, always plant odd numbers. Full sun to part shade or full shade, medium soils. Moist, well drained, organic rich soils. Limestone based, or circumneutral soils, pH 6.8-7.2. Allow 5-6 years to flower from seed. The plant goes dormant shortly after flowering & fruiting.

bottom line: Genesis seed tests confirm a strong requirement for dormant seeding. Consistently strongly dormant. Germ 4.0, 4.0, 2.0, sd 2.3, r1.0-8.0 (7.0)%. Dorm 89, 90, 90, sd 8.0, r71-97 (26)%. Test 27, 29, 29, r13-37 days. (#11)**

Description: Native, hardy, erect, perennial forb, (0.5-)-1.0-2.0'; from bulbs, sometimes clustered; flowers to 1” (2.5 cm), 6 tepals blue (variously light blue, occasionally white; blue, violet, or white), 3-merous, 3-5 veined, stamens protruding, anthers bright yellow; capsules deciduous, pale green to light brown, triangular globular; N 2n = 30.

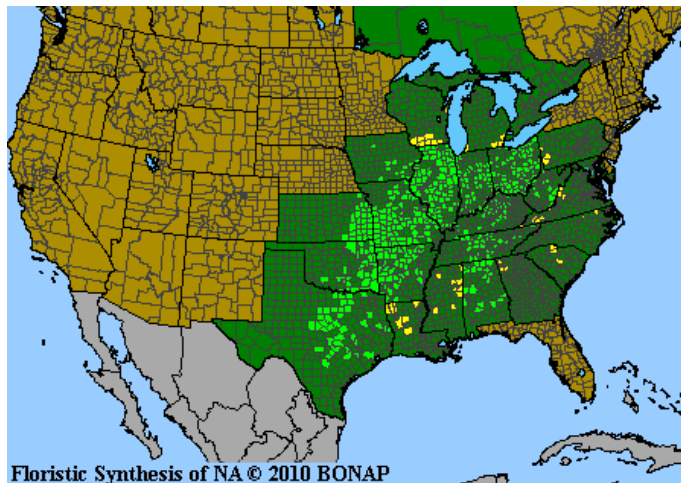


Comments: status: Threatened in Michigan & North Carolina. Endangered in Pennsylvania & Wisconsin.
phenology: Blooms 4,5,6. *Camassia scilloides* flowers two to three weeks earlier than sympatric populations of *C. angusta* (fna). Ephemeral, plants are going dormant as the seeds mature. Seeds mature early summer. In northern Illinois, collect seeds in June. Collect seeds in se Wisconsin in June - July (he99). Flowers showy, fragrant, attractive cut flowers if you must. Useful in landscaping, specimen plantings, massed near paths, savanna gardens, a slow grower. Seed source, nursery production, genetic source railroad remnants, near Sheffield & Putnam. "Known on low prairies in Boone but unknown to us in this co." (ewf55)

Associates: Attracts bees & butterflies. Nectar source. Walnut tolerant.

ethnobotany: "Species is related to western *Camassia quamash*, which has been eaten. *Camassia scilloides*, eastern sp, has not been reported as being eaten." (Ilpin) Others report the bulbs were eaten by Native Americans & early explorers.

VHFS: [*Camassia esculenta* (Raf) Cory, *Cyanotris scilloides* Raf, Amer. Monthly Mag & Crit Rev 3: 356 1818, *Quamasia hyacinthina* (Raf) Britt, *Schoenolirion texanum* (Scheele) Gray]



Camassia scilloides

Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. 2nd 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. Illinois map courtesy plants.usda.gov. North America map courtesy of BONAP (2010)

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CLINTONIA BLUEBEAD *Liliaceae* *Clintonia* New Latin, from DeWitt *Clinton* died 1828 American statesman, & New Latin *-ia*. Perennial herbs having yellow or white flowers on a naked stalk in early summer with the stalk sheathed below by the bases of two to four oblong or ovate leaves. Maintained in *Liliaceae* by Mohlenbrock (2014).

Clintonia borealis (Aiton) Rafinesque BLUEBEAD, aka BLUE BEAD LILY, CLINTONIA, CLINTON'S LILY, CORN LILY,

Habitat: distribution/range:

Culture: Seeds are hydrophilic, clean pulp & sow immediately outside. Slow from seed, up to seven years to flower. Most germination second summer, first true leaf the summer after. Division of rhizomes also works, & tissue culture is recommended. 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 & cold, typically 40°-70°-40°-70°, * seeds are hydrophilic, intolerant of dry storage, & G chemical inhibitors. (cu00)

Comments: status: phenology: Blooms ? Seed matures late summer to early fall.

Associates: ethnobotany: Root used as medicinal plant by Ojibwa & Pottawatomie (sm32, 33) Ojibwa used for sores & burns (den28). Amusement (den28)?

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CONVALLARIA Linnaeus 1753 **LILY-OF-THE-VALLEY** *Convallaria* Sometimes placed in the *Ruscaceae* (as in m14) or *Asparagaceae*.

Convallaria majalis Linnaeus LILY-OF-THE-VALLEY, aka EUROPEAN LILY-OF-THE-VALLEY, 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 in a year or more. Poisonous. (tchn)

“An infrequent but persistent escape to roads & alleys.” (ewf55) Species may persist for decades.

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ERYTHRONIUM Linnaeus 1753 **TROUT LILY** *Liliaceae Erythronium* (e-rith-RON-ee-um) from *Erythronium*, a Greek name for another plant, from Greek *erythros*, red, from Sanskrit *rohita* red, reddish, *rudhira*, red, bloody. North American perennial herbs having a corm & a pair of usually mottled basal leaves & one or more scapose flowers. Maintained in *Liliaceae* by Mohlenbrock (2014).

Seed is hydrophilic & matures late spring to early summer. Seed set may vary widely from year to year. Plants are self-sterile & the various spp will interbreed. The seed of some western spp may tolerate drying. Germination is two-stage, with bulb & roots the first year & slender cotyledon the next spring. Slow to develop, seedlings should remain undisturbed for several years. Approximately five years to flower from seed. Codes D seeds need a period of warm moist stratification followed by cold stratification & will germinate after shifting back to warm (70°-40°-70°) or C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70°, & * seeds are hydrophilic, intolerant of dry storage. (cu00)

Erythronium dens-canis, *grandiflorum*, *hendersonii*, *montanum*, *oregonum*, & *revolutum*, 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).

Erythronium albidum Nutt WHITE TROUT LILY, aka DOG’S-TOOTH VIOLET, FAUN LILY, WHITE ADDER’S TONGUE, WHITE DOG-TOOTHED VIOLET, (*albidum -a -um* AL-bi-dum white for the white flowers.) Native, perennial forb, 0.5-0.75’; from a corm; flowers white; blooms April -June.

“Very common in woods. We do not have the yellow sp.” (ewf55) Walnut tolerant.

Erythronium americanum Ker Gawl YELLOW ADDER’S TONGUE, (*americanus -a -um* (a-me-ri-KAH-nus) American)

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HEMEROCALLIS Linnaeus 1753 **DAY-LILY** *Liliaceae* This genus is sometimes placed in its own family, *Hemerocallaceae* (*Hemerocallidaceae*) (m14) or in *Xanthorrhoeaceae* R Brown 1810 (w12).

Hemerocallis flava Linnaeus “A common escape” (ewf55). *H. fulva*?

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LILIUM Linnaeus 1753 **LILY** *Liliaceae Lilium* (LEE-lee-um) New Latin, from the classical Latin name for a lily, from OE *lilie* wk. fem., from Latin *lilium*, adopted from Greek *λείρον*, *leiron*. Herbaceous plants having scaly bulbs, whorled or scattered leaves, showy flowers with a perianth of six segments, versatile anthers, a 3-lobed stigma, & a capsular fruit. x = 12. Maintained in *Liliaceae* by Mohlenbrock (2014).

Seeds mature in early fall. Seeds require a warm moist period followed by a cold moist period. Germination is hypogeal. Lilies are slow growers from seed. Code D seeds need a period of warm moist stratification followed by cold stratification & will germinate after shifting back to warm (70°-40°-70°).

Separation of bulb scales will produce plants twice as fast as seed. (cu00) Young bulbs of some species need protection from chipmunks.

The literature sources of propagation information for *L. michiganense*, *L. superbum*, & *L. canadense* are somewhat mixed & should be interpreted as indicative of propagating Midwest native lilies as a whole.

Lilium canadense Linnaeus YELLOW WOOD LILY, aka CANADA LILY, *LIS DU CANADA*, *Winabojó 'bikwuk'*, Winabojó's arrow (Ojibwa), (*canadensis -is -e* of Canada or northeast USA)

Culture: "First warm moist treatment for 60 to 90 days then moist cold treatment, or direct fall sow. Light cover. Seedlings go dormant mid-summer. Seedlings may need to overwinter in seed flats before ready to transplant. Fair germination. Tedious growing." (mfd93)

Description: $2n = 24$.

Associates: Pollinated primarily by ruby-throated hummingbirds.

ethnobotany: Bulb used for food by Miami (Stickney 1896). Used as medicinal plant by Ojibwa for snake-bite (den28).

Lilium michiganense Farwell MICHIGAN LILY, aka TURK'S CAP LILY, fac+

Habitat: Fens, moist savannas & open woods, swales, mesic to wet prairies, streamsides, swamps & bottoms, rich organic soils. Often a calcophile. distribution/range:

Culture: In order to germinate, seeds need a warm, moist period followed by a cold, moist period (pm09). In order to germinate, seeds need a warm, moist period 60-90 days, followed by a cold, moist period. Sow seeds outdoors in spring & wait one year. (he99) Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination (tchn). 72,000 (sh94), 73,397 (gnaer04), 108,800 159,972 (gnam07), 160,000 (pm01, aes10) seeds per pound.

asexual propagation: Division of mature bulbs.

cultivation: Finicky! Success is directly related to establishing a good garden spot. Adapts well to flower gardens with full sun to partial shade, & rich, loamy soil, which retains some moisture but well drained. Established plants tolerant of some dryness.

bottom line: Plant fresh seed or dormant seed that has been stored in a ziplock bag & refrigerated. Dry stored seed may be of low viability. Germ 3.0-4.0%. Dorm 39-65%. Test 26-42 days.**

Description: Native, erect perennial forb, 2.5-4(-7)', very showy orange (red/pink) flowers; $2n = 24$.

Comments: status: phenology: Blooms 6,7. In northern Illinois, collect seeds in September. Collect seeds in se Wisconsin in September (he99). Great in the landscape, formal beds, specimen plantings, rain gardens. Seed source nursery production, genetic source Kane Co.

"Rather common, usually found on wet prairies but also to some extent in low woods. (*L. superbum* L)" (ewf55)

Associates: Butterfly nectar plant. Pollinated by *Lepidoptera*, including Monarchs, Swallowtails, the Pipevine, & Great Spangled Fritillary. Attracts hummingbirds. Walnut tolerant.



Lilium michiganense

Lilium philadelphicum Linnaeus var **andinum** (Nuttall) Ker Gawler PRAIRIE LILY, aka *LIS DE PHILADELPHIE*, RED LILY, WOOD LILY, (*philadelphicus -a -um* New Latin of or from the Philadelphia, USA region; *andinus -a -um* from the high Chilean Andes, reference unclear.)

Habitat: Dry woods, meadows, prairies, & forests, in sandy soils. Tallgrass prairies, open woods, thickets, roadsides, & powerline row. Acidic soils. distribution/range:

Culture: 60 days cold moist stratification (pm09). Seeds germinate after about 60 days of cold, moist stratification, or no pre-treatment needed, sowing outdoors in the spring is the easiest method. (he99) Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination (tchn). 72,000 (sh94), 240,000 (pm02) seeds per pound.

asexual propagation: Division of mature bulbs & offsets (clone).

Description: Erect perennial; 3'; flowers orange, showy; 2n = 24.

Comments: status: phenology: Blooms 6,7. Collect seeds in se Wisconsin in September (he99).

L umbellatum Pursh “Much less common than the preceding (*L michiganense*). Found in low prairies in Shirland Township, a similar situation o the C & NW Ry east of Winnebago & also in drier places & in the edge of woods.” (ewf55)

Associates: Pollinated by the *Papilio glaucus* EASTERN TIGER SWALLOWTAIL. Hummingbirds are occasional visitors. Grazed by deer. Threatened by loss & degradation of habitat & herbivory by increasing deer populations.

ethnobotany: Bulb used for food by Sauk-Fox (sm28). Used as medicinal plant by Ojibwa (Gilmore 1933). Pioneers sometimes brought prairie lilies into their flowerbeds. My mother had some of these lilies in her back yard that she had received from an elderly couple that settled east of Manlius about 1900. Much of that original farm has too many fens & seeps to farm all the ground.

VHFS: Variety *andinum* occurs west of Ohio, characterized by smaller stature, long seed capsules 4-8 cm., scattered leaves & a single whorl of flowers, growing low grassy vegetation of tall- & mid-grass prairies & mountain meadows.



Lilium philadelphicum

Lilium superbum Linnaeus TURK’S CAP LILY, aka AMERICAN TURK’S CAP LILY, (*superbus -a -um* magnificent, superb, proud, from Latin *superbus*, proud, superior, distinguished, magnificent.)

Habitat: Wet mesic to wet savannas & woods, rich organic soils. Full sun to partial shade, mesic soils.

distribution/range: Limited to the southern tip of Illinois.

Culture: In order to germinate, seeds need a warm, moist period followed by a cold, moist period (pm09). In order to germinate, seeds need a warm, moist period 60-90 days, followed by a cold, moist period. Sow seeds outdoors in spring & wait one year. (he99) Fall plant or cold stratify for up to 2 to 3 months for best results. Sow just below the soil surface at 70°F & water. (ew11) 80,000 (ew11) seeds per pound.

cultivation: Space plants 1.5-2.0’.

Description: Erect perennial, 3-6', striking orange yellow flowers. N 2n = 24.

Comments: status: phenology: Blooms

Associates: Pollinated primarily by the swallowtail butterflies including the *Papilio troilus* Linnaeus SPICEBUSH, *Battus philenor* Linnaeus PIPEVINE, & *Papilio glaucus* Linnaeus EASTERN TIGER. Attracts *Speyeria cybele* (Fabricius), Great Spangled Fritillary.

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MAIANTHEMUM GH Weber ex Wiggers 1780 **CANADA MAYFLOWER, WILD LILY-OF-THE-VALLEY**
Lilaceae Maianthemum (mah-YANTH-e-mum) from Greek *maios* the month of May & *antheon* blossom, referencing the flowering time. Perennial herbs. Mohlenbrock (2014) *Maianthemum sensu stricto*, Weakley (2012), *sensu lato*. *Smilacina*, which see, is sometimes placed here.

Seeds are hydrophilic. The 1/8-inch seeds ripen late summer, turning from silver-brown to red. Clean the seeds & sow immediately outdoors. Codes B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F, * seeds are hydrophilic, intolerant of dry storage, & G chemical inhibitors. Easy by dividing rhizomes (cu00). *Maianthemum bifolium*, 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).

Maianthemum canadense Desfontaines *KY, NJ WILD LILY-OF-THE-VALLEY, aka SCURVY BERRIES, TWO LEAFED SOLOMON'S SEAL, WESTERN FALSE LILY-OF-THE-VALLEY, (*canadensis -is -e* (kan-a-DEN-sis, kan-a-DEN-see) of Canada or northeast USA)

Habitat: Woods & recent clearings. distribution/range:

30,400 (aes10) seeds per pound.

Associates: ethnobotany: Berries available in summer through winter. Used for food by Pottawatomie (sm33). Used as medicinal plant by Ojibwa & Pottawatomie (sm32, 33).

“Uncommon in moist woods & ravines. Ours are, apparently, variety *interius* Fern but there is great variation in the pubescence, some plants being almost entirely glabrous.” (ewf55)

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MELANTHIUM *Liliaceae Melanthium* New Latin, from Greek *mela*, black, dark, & Greek *anth-*, from *anthos*, blossom, flower & *-ium*, from Greek *-io*, of, like, from the dark color of the fading perianth. A small North American genus (4 spp) of perennial herbs with heavy rootstocks & erect leafy stems bearing a terminal panicle of yellowish flowers having clawed perianth segments. x = 8. Sometimes placed in *Melanthaceae* (the type genus of the family) as in Mohlenbrock (2014).

☠ *Melanthium* spp should be considered poisonous, containing steroidal precursors similar to *Veratrum*.

Melanthium virginicum Linnaeus ☠ *IL, IN, KY, NJ, NY, OH, TN [new nomenclature this will be *Veratrum virginicum* (L) WT Aiton] BUNCH FLOWER, aka BUNCHFLOWER LILY, VIRGINIA BUNCHFLOWER, (*virginicus -a -um* of or from Virginia, USA, Virginian.) facw+

Habitat: Wet meadows & wet savannas. May persist with weedy associates. distribution/range: West central Illinois, aka ‘Forgottonia’. Native south of Wisconsin.

Culture: Dormant seed or moist cold stratify. 60 days cold moist stratification (pm11). Seeds germinate after about 60 days of cold moist stratification (he99). Fall plant or cold stratify for 2 to 3 months for best results. Sow just below the soil surface at 70°F & water. (ew11) 144,000 (pm02, ew11) seeds per pound.

cultivation: Space plants 1.5-2.0'. Full sun to partial shade, wet to mesic soils.

Description: Erect, herbaceous, perennial, native forb; roots; stems 3.0-4.0(-5.0)', stems hairy; leaves; flowers white, 6-merous, petals stalked; seeds pale yellow to tan, broadly winged; N 2n = 16. key features: “clawed tepals of *Melanthium virginicum* distinguish it from *M parviflorum* & *M woodii*, which have tepals with gradually attenuate bases.” (fna)

Comments: status: Threatened in Illinois & Ohio. Endangered in Indiana, Kentucky, New Jersey, New York, & Tennessee. phenology: Blooms 6,7,8. Collect seeds in se Wisconsin in September (he99).

17 years after the fact, there it is! *Where it was 'planted' in 1995!* In 1995, we dumped our waste greenhouse potting soil into an area of a field that had very poor soil, where previous owners had dumped construction debris, barbed wire, washing machines, a few old Buicks, & 1200 used tires. The area is along the lane to our office & is highly visible to everyone coming & going. We hoped to improve the soil & have some nice natives growing there. The area was deeply disked several times & plugged with native spp in the summer

of 1995. In early summer 2011, a large, blooming *Melanthium* appeared, from seed long in the ground. Stick that in your monitoring report &/or performance standards. Compare the entry for *Polemonium reptans*.

Associates: ☠ Rootstock is poisonous.

VHFS: [*Melanthium dispersum* Small, *Veratrum virginicum* (L) Aiton f]



Melanthium virginicum

NOTHOSCORDUM Kunth 1843 **GRACE GARLIC, FALSE GARLIC, FALSE ONION** *Liliaceae* *Nothoscordum* from Greek *nothos*, false, & *scordon*, garlic. Sometimes placed in *Alliaceae*, as in Mohlenbrock (2014) or in the *Amaryllidaceae* by Weakley (2012).

Nothoscordum bivalve (Linnaeus) Britton ☠ * IN, OH **FALSE GARLIC, aka CROWPOISON, GRACE GARLIC,**
Habitat: Open woods, prairies, & barrens. distribution/range:

Culture: propagation: (Code C Ken Schaal). 368,000 (gni) seeds per pound.

Description: An onion-like plant mostly lacking the onion or garlic odor. Tepals whitish to cream, yellow-orange anthers, flowers not fragrant.

Comments: status: Rare in Indiana. Threatened in Ohio. phenology: Blooms May have a remount bloom. This plant is poisonous & should not be tasted.

VHFS: [*Ornithogalum bivalve* Linnaeus, Sp Pl 1: 306. 1753, *Allium bivalve* (L) Kuntze, *A striatum* Jacquin, *Nothoscordum striatum* (Jacquin) Kunth, *N texanum* ME Jones]

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ORNITHOGALUM Linnaeus **CROW POISON** *Liliaceae* *Ornithogalum* from the Greek *ornis*, a bird, & *gala*, milk. Bulbous perennial herbs. Europe, North Africa, Asia Minor. Sometimes placed in the *Hyacinthaceae* (m14) or in the *Asparagaceae*.

Ornithogalum umbellatum Linnaeus **STAR OF BETHLEHEM**, (*umbellatus -a -um* (um-bel-AH-tus) for the flowers appearing to be in umbels.) An old fashion ornamental perennial, may persist near old homesites. 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). “Escapes infrequently & is then likely to spread persistently.” (ewf55)

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POLYGONATUM P Miller 1754 **SOLOMON’S SEAL, SCEAU-DE-SALOMON** *Liliaceae* *Polygonatum* (po-li-go-NAH-tus) with many knots or nodes, from Greek *Polygonaton* from πολυ-, *poly-*, many, much, & γόνυ, *gony*, a knee, an angle, in reference to the jointed rhizome.

Seeds are hydrophilic & ripen in early fall when the berries are blue-black. Remove seeds from pulp & plant immediately outdoors. The pulp may contain germination inhibitors. Roots emerge the first year, cotyledons the second year. Pot & grow an additional two years. Codes C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70°, * seeds are hydrophilic, intolerant of dry storage, & G chemical inhibitors. (cu00) Dig rhizomes in fall, removing the end 2-4” as a division. Replant the ends & back sections. Plants may be stunted as they first emerge. Such production beds can be divided on a three-year rotation. X = 10 (9-15).

Polygonum biflorum (Walter) Elliott SMOOTH SOLOMON'S SEAL, is sometimes maintained as a separate taxon. 1-3', white-yellow flowers; blooming May-June; 19,200 (aes10) seeds per pound; rain gardens.

Polygonatum canaliculatum (Mühlenberg ex Willdenow) Pursh [revised name is *Polygonatum biflorum* (Walter) Elliott var *commutatum* (Schult & Schult f) Morong] SMOOTH SOLOMON'S SEAL, aka GIANT or GREAT SOLOMON'S SEAL, KING SOLOMON'S SEAL, SMOOTH SOLOMON'S SEAL, SOLOMON'S SEAL, The common name is from the jointed rhizome; where the leaf stalks abscise a distinctive scar is left, said to resemble the official seal of King Solomon. facu

Habitat: Mesic & dry savanna, mesic woodlands, woods & thickets (often under good bird perches). Dry to moist deciduous woods, in sandy soil, roadsides, railway embankments, old fields. Rich, dry to moist woods; thickets; calcareous hammocks. Forests. Moist, rich, acid soils, though also occurs in calcareous areas.

distribution/range:

Culture: Fruits must be macerated very soon after harvest before other treatments. Double dormant.

Plant fresh seed or keep seed moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatments. Seeds need a cold, moist period followed by a warm, moist period followed by a 2nd cold, moist period, or sow outside & allow 2 years for germination. (pm09, 11). "Double dormant. Field sow fall." (pnnd) Species has 'double dormant' seeds requiring alternating moist cold & warm periods, sow outside & allow 2 years for germination. Difficult from seed, best from cuttings. (he99) Fall plant or cold stratify at 40°F for 2 to 3 months then move to 70°F. Some seeds may take two seasons to sprout. (ew11) Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear. (tchn). "Plant seeds immediately or treatment will be necessary. Cold-moist stratify for 2 months at 40°." (lbj) 12,419 (gna06), 12,800 (pm11, ew11, aes10), 19,200 (pn01, jfn04), 19,032 (gna04), 22,146 (gna05), 22,512 (gnhg12), 25,205 (gnh13) seeds per pound.

asexual propagation: "Rhizome cuttings will grow but may lie dormant a whole year. Divide the rhizomes in spring or fall when the plants are dormant. Set them horizontally, buds up, 18 in apart & 1 in deep." (lbj)

cultivation: Space plants 2.0-3.0'. Prefers high humus soils. Species grows well at prairie woodland interface. Seeds are dispersed by birds & new plants appear under perches in a fire managed landscape. In a naturalized savanna or woodland, space plants widely, 10-15' apart to form nice colonies, interplanted with *Anemone virginiana*, *Aster macrophyllus*, *Aster cordifolius*, *Geranium maculatum*, *Hydrophyllum virginianum*, *Phlox divaricata*, *Polygonum virginianum*, *Taenidia integerrima*, & *Zizia aurea*.

bottom line: Dormant hand plant new crop (fresh) seed, or fresh seed that has been properly stored. Double dormant/multiple cycles. Germ 3.3, 1.0, 1.0, sd 4.5, r0.0-13 (13)%. Dorm 82, 90, na, sd 15.4, r55-97 (42)%. Test 33, 32, na, r23-41 days. (#12)**

Description: Arching to erect, herbaceous, perennial, native forb; deep rhizomes; 1.0-3.0' arching stems; leaves sessile to clasping, alternate, bright yellow-green; flowers pale green to white (green/brown, white, cream), axial, followed by attractive bluish-black (deep purple) berries, 0.25-0.50", with a whitish bloom; N 2n = 20, 40, polyploid complex. key features: Petal-like tepals united, clusters hanging downward along the stem; leaves clasping, hairless, alternate (fh).

Comments: status: Can be weedy or invasive in some parts of its range (Stubbendieck et al 1994) phenology: Blooms 5,6,7. C3. In northern Illinois, collect seeds in September - October. Collect seeds in se Wisconsin in August - September (he99). Collect seeds in September (lbj).

This sp adds four features to your woodland garden. The most prominent feature is the arching stems, a strong structural element. The pendant, cream-colored flowers & attractive blue-black berries are often hidden under the leaves, & may go unnoticed. Plant a few specimens where they can be closely observed, particularly on the uphill side of a path or drive, where the flowers & fruits are easily seen. Finally, in landscaping, shade gardens, shady rain gardens, woodland borders, forests, savannas & woodland edges. Roots are rhizomatous, but not strongly colonizing, plants slowly enlarge into an open clone; all the stems in a clone arch the same direction. In part of its range, in favorable habitats, this plant is said to tower to 7 feet tall; not a plant for the meek & timid. Seed source nursery woods & roadsides, & remnant savannas, Green River Lowlands & Rock River Hills, Whiteside Co.

Associates: Attracts birds & butterflies. Nectar source for hummingbirds & long tongued bees. Seeds are dispersed by birds, & once established, new plants will appear under places where birds perch. Prairie Chickens eat the berries. Deer eat foliage; in spring 2010 & 2011, deer stripped the leaves & flower buds on many of our plants. Mammals eat the roots. Walnut tolerant.

ethnobotany: ☞ Berries are poisonous to humans, low toxicity if ingested. Symptoms include vomiting & diarrhea. Rhizomes available in autumn. “If rootstocks are collected, make sure they have large circular scars; do not confuse with *Podophyllum* roots; Hardin & Arena imply that edibility is uncertain” (Ilpin). Iroquois & early settlers used root & young shoots for food. Used as an incense & medicinal charm by Ojibwa (Gilmore 1933).

VHFS: Long known as *Polygonatum canaliculatum* (Muhl) Pursh. Ours is the widespread variety *Polygonatum biflorum* (Walter) Elliott var *commutatum* (Schult & Schult f) Morong. Alternate (JA & JH Schultes)

Polygonatum biflorum var *melleum* probably extirpated in Michigan. *Polygonatum biflorum* var *commutatum* endangered in New Hampshire.

JW Hardin & Jim Arena. 1969. Human Poisoning from Native & Cultivated Plants. Duke University Press, NC 167 pp.

Polygonatum commutatum (R & S) Dietrich (o-do-RAH-tum scented.) As Ojibwa headache medicine. Three spp probably used for food (den28).

Polygonatum commutatum (JA & JH Schultes) Dietrich “Common in fence-rows, brushy roadsides, & in woods.” (ewf55)

Polygonatum pubescens (Willdenow) Pursh SOLOMON’S SEAL, (*pubescens* becoming hairy, slightly hairy, downy, pubescent, with soft downy hair, from Latin *pubescens*, from *pubesco*, *pubescere*, *pubui*, to reach physical maturity or reach puberty, become pubescent, from *pubes*, youth, men, the hair that appears at puberty, & *-escens* (like *-ascens*) Latin adjectival suffix from *-escens*, indicating a process of becoming or developing, becoming like, having incomplete resemblance, often translated as the English suffix *-ish*.)

Forests. **distribution/range:** Flowers green/brow, white. Woodland gardens, tolerates less than ideal conditions. Seldom bothered by disease.

Associates: Walnut tolerant.

ethnobotany: Root used as medicinal plant by Ojibwa & Menominee (sm23, 32)

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Move to Maianthemum perhaps

SMILACINA Desf *Liliaceae* *Smilacina* New Latin, resembling *Smilax*, from *Smilax*, the classical Latin name *smilax*, in Pliny, from Greek σμίλαξ, *smilax*, bindweed, & *-īnus -a -um*, Latin adjectival suffix indicating possession or resemblance; in one source as the diminutive of *Smilax*. Sometimes placed in the genus *Maianthemum*. Mohlenbrock (2014) does not place *Smilacina* in *Maianthemum*. Sometimes placed in the *Ruscaceae* (m14) or in the *Asparagaceae*.

“The inclusion of the traditional *Smilacina* in *Maianthemum* will cause considerable consternation; LaFrankie's (1986) reasoning, however, seems very strong, & has been additionally supported by more recent evidence (Conran & Tamura in Kubitzki 1998a). The only consistent difference between the two previously accepted genera is whether the flowers are dimerous (*Maianthemum*) or trimerous (*Smilacina*). LaFrankie cites research that shows that the dimerous flowers of *Maianthemum* (sensu stricto) are the result of reduction from trimerous flowers, as indicated by vestigial vascular traces.” (w12)

Seeds are hydrophilic. Difficult from seed. Remove seeds from pulp & plant immediately outdoors in permanent location or in galvanized flat in shade house. The pulp may contain germination inhibitors. Germination is hypogeal. Roots emerge the first year, cotyledons the second year. Pot & grow an additional two years. Codes C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70°, * seeds are hydrophilic, intolerant of dry storage, & G chemical inhibitors. (cu00)

Dig rhizomes in fall, removing the end 2-4” as a division. Replant the ends & back sections. Plants may be stunted as they first emerge. Such production beds can be divided on a three-year rotation.

Smilacina racemosa (Linnaeus) Desfontaines FEATHERY FALSE SOLOMON'S SEAL, aka FEATHERY SOLOMON’S PLUME, FALSE SOLOMON’S SEAL, SOLOMON-PLUME, FALSE SPIKENARD, *Agong’osimum’* (*racemosus -a -um* (ra-kay-MO-sus) New Latin from *racemus*, *recemus*, the stalk or a cluster of a bunch of grapes, & *-osus*, plenitude or notable development, with a raceme, for the elongated inflorescence, a cluster of flowers each on their own stalk & arranged along a single central stem.) facu

Habitat: Mesic & dry savanna, rich moist woods, woods, clearings, & bluffs. Forests. **distribution/range:**

Culture: Propagate from seeds separated from pulp & sown immediately, division in spring. (wfp). Moist cold

stratify (Wade). Clone. Seeds need a cold, moist period followed by a warm, moist period followed by a 2nd cold, moist period, or sow outside & allow 2 years for germination. Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment. (pm09) Slow germinator - up to a year or more. Store seeds in layers of moist sand in the shade. Check seeds regularly in the spring, and sow them all as soon as radicles appear. (tchn). "Double dormant. Field sow fall." (pnnd). Moist cold stratify or dormant seed-double dormant -temperature sensitive. 8681 (gnh13), 10,810 (gna05), 12,600 (lhn91), 14,400 (pn02, jfn04, aes10) seeds per pound.

cultivation: Partial shade to full shade. Clay soil tolerant.

bottom line: Dormant hand plant new crop (fresh) seed, or fresh seed that has been properly stored.

Double dormant/multiple cycles. Germ 6.3, 4.5, 4.0, sd 4.6, r1.0-15 (14)%. Dorm 85.6, 86, 86, sd 4.9, r75-93 (18)%. Test 33, 31, 31, r25-44 days. (#15)**

Description: Native, erect, herbaceous, perennial forb; 1.5-3.0'; flowers white.

A variety of chromosome races are known (2n = 36, 72, 144). The eastern ssp. *racemosum* is tetraploid; ssp. *amplexicaule* (Nuttall) LaFrankie is diploid & more western; these are perhaps more appropriately treated as species" (w12).

Comments: status: phenology: Blooms 4,5,6. Attractive dried infructescence, pick just as fruits start turning. Aggressive rhizomes. Landscaping, best for naturalized gardens or savanna, woodland, or forest gardens, shady borders. Seed source remnants Rock River Hills near Como, Whiteside Co, IL.

"Common in woods particularly in the black oak woods in Sugar River sand area." (ewf55)

Associates: Walnut tolerant.

ethnobotany: Berries available in August to October. Berries used for food by Mascouten & roots used by Ojibwa (sm32). Root used as medicinal plant by Ojibwa, Menominee, & Pottawatomie (sm32, 23, 33). Ojibwa medicine for diseases of women (den28).

VHFS: Formerly *Vagnera racemosa* (Linnaeus) Morong. [*M racemosum*, *S racemosa* var. *racemosa*, *S racemosa* var. *cylindrata* Fern, *Vagnera racemosa* (L) Morong, *V australis* Rydberg]

Smilacina stellata (Linnaeus) Desfontaines STARRY FALSE SOLOMON'S SEAL, aka SMALL FALSE SOLOMON'S SEAL, STAR FLOWER, STAR-FLOWERED SOLOMON'S SEAL, STARRY SOLOMON'S PLUME, (*stellatus* -a -um stellate, starry, star-shaped, star-like, or radiating like the points of a star, from Latin *stellatum*, with stars, starry.) fac-

Habitat: Sand savannas, mesic to dry or sand prairies & woodlands. Moist woodlands & forests.

distribution/range:

Culture: propagation: Cloning is easiest. Seeds need a cold, moist period followed by a warm, moist period followed by a 2nd cold, moist period, or sow outside & allow 2 years for germination. Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment. (pm09) Clone or sow seeds immediately when ripe. Difficult from seed, readily spreads from rhizomes (he99). Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination (tchn). The seed is not commercially available.

asexual propagation: Clone. Divide mature plants in early spring.

cultivation: Do not plant near other desirable plants. Said to tolerate clay soils. We have a native colony on sand that has only afternoon shade.

Description: Erect, herbaceous, perennial, native forb; 8-20"; flowers white;

Comments: status: phenology: Blooms 4,5,6. Collect seeds in se Wisconsin in August (he99). Not suited for small gardens or placement near other desirable plants. Spreads wildly by rhizomes. Best for naturalized woodland & forest gardens.

"Common on bluffs & in thickets & woods." (ewf55)

Associates: Walnut tolerant.

VHFS: New nomenclature is *Maianthemum stellatum* (Linnaeus) Link,

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Linnaeus 1753 GREENBRIER, CARRIONFLOWER, SMILAX *Liliaceae* sometimes in its own little family *Smilacaceae* Ventenat 1799 (m14, w12). *Smilax* (SMEE-laks) from the classical Latin name. New Latin, from Latin, a kind of oak, yew, bindweed, from Greek; perhaps akin to Greek *smilē* wood-carving knife; from the use of oak in carving. 300 species of herbs & evergreen & deciduous woody climbers subcosmopolitan in temperate & tropical regions. "Our deciduous species are a monophyletic group within *Smilax*, with a classic eastern North American - eastern Asian disjunction, & are treated as section *Nemexia* or subgenus *Luiste*

(Wilbur 2004, Fu et al. 2005). Smilax berries & shoots provide important food sources for many wildlife species, including black bears (*Ursus americanus*). (w12)

Macerate, scarify, dormant seed-recalcitrant or double dormant.

“Identification notes: The CARRIONFLOWERS or deciduous *Smilaxes* (lead 1a) are sometimes mistaken for *Dioscorea* because of a superficial similarity. They can be readily distinguished even in vegetative condition by *Smilax* section *Nemexia* having 3 (-5) main veins, the 3 central rejoining at the leaf apex (vs. *Dioscorea* with 7-13 main veins), & secondary veins in a complex reticulate pattern (vs *Dioscorea* with secondary veins forming simpler & largely perpendicular cross-connections between the primary veins).” (w12)

Smilax ecirrhata (Englemann ex Kunth) S Watson “A small plant which flowers in early spring & is frequent in moist woods.” (ewf55)

Smilax herbacea Linnaeus CARRION FLOWER, aka COMMON CARRION FLOWER, 1-3'; flowers green, blooms May-June; 496 (aes10) seeds per pound. [relate this.](#)

Smilax hispida Rafinesque (or Muhl) GREENBRIER, aka BRISTLY GREENBRIER, “Common in thickets & fencerows particularly in the sand areas.” (ewf55)

Smilax lasioneura Hooker CARRION FLOWER, aka JACOB’S LADDER, MIDWEST CARRION FLOWER, *Ma'kodji'bik*, bear root (Ojibwa), (*lasioneurus -a -um* woolly-nerved, from Greek λάσιος, *lasios* hairy, shaggy, & ancient Greek νεῦρον, *neuron*, sinew, tendon, penis, plant fibre, bowstring, (plural) strength, vigor, cognate Sanskrit *snāva*) [upl]

Habitat: Mesic savanna, fencerows, moist woods, & edge of fields. distribution/range:

Comments: Further germination pretreatments not sure? (Prairie Moon)? 13,580 (gnhm15) seeds per pound.

bottom line: Dormant seed only. Germ 3.0%. Dorm 91%. Test 31 days. (#1).**

Description: Herbaceous, viney, native forb; flowers green; blue fruits.

Comments: Blooms 5,6,7 “Common in woods, thickets, & fencerows.” (*S herbacea* var *lasioneuron* (Hook) A DC)” (ewf55) Genetic source Waterman, DeKalb Co.

Associates: ethnobotany: Berries used as food by Sauk-Fox (sm28). Root used as medicinal plant by Ojibwa (sm32). Ojibwa medicine for physic & urinary system (den28)

VHFS: [*Smilax herbacea* Linnaeus var *lasioneura* (Hook) A DC] *Smilax lasioneuron* Hook. ????

Smilax tamnoides Linnaeus var **hispida** (Torr) Fernald BRISTLY GREEN BRIER, aka CHINAROOT, HELLFETTER, upl

Habitat: Wet savannas, mesic woodland, shaded floodplains, usually moist woods. distribution/range:

Description: Climbing shrub; 4.0-12'; flowers green.

Comments: status: phenology: Blooms 5,6

Associates: ethnobotany: Used for malicious magic by Ojibwa (Gilmore 9133)

VHFS: [*S hispida* Muhlenbergia] [Combine with S. hispida.](#)

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STREPTOPUS Michaux 1803 **TWISTED-STALK, MANDARIN** *Liliaceae Streptopus* 7 spp in temperate to subarctic Europe, Asia, & North America.

Streptopus roseus Michaux **TWISTED-STALK**, aka *Agwin'gusibug'*, ground-squirrel leaf (Ojibwa)

Culture: Seeds are hydrophilic. Seeds ripen in late summer when fruits turn red. Clean seed removing the flesh & plant immediately outdoors. Long, grass-like cotyledons emerge in spring. Seedling should not be disturbed until after 2nd growing season. Plants mature in 3-4 years. Codes B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F, * seeds are hydrophilic, intolerant of dry storage, H seeds require light to germinate. Division as in *Disporum* & *Uvularia*. (cu00)

Associates: ethnobotany: Root used as medicinal plant by Ojibwa & Pottawatomie (sm32, 33). Ojibwa medicine for stye on eye (den28)

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TRILLIUM Linnaeus 1753 **TRILLIUM, TOADSHADE, WAKE-ROBIN** *Liliaceae Trillium* New Latin, from *tri-* three, & *-illium*, as in *cillium*, *verticillium*; alternately from Latin, *trilix*, triple, referring to the flowers

having parts in threes. Primarily North American herbs having short rootstocks & an erect stem bearing a whorl of three leaves & a large solitary flower at the summit with a corolla that is white, pink, purple, yellow, or greenish & is followed by a many-seeded berry. Some authors place this genus in the *Melanthiaceae* or *Trilliaceae* (m14, w12).

Trillium ripens in mid to late summer, about 8-10 weeks after flowering. The seeds are in a fleshy capsule that turns yellow-green or red when ripe. The seeds are hydrophilic, have large elaiosomes, & are ant dispersed. Clean seed & sow outdoors immediately. A root emerges 1st spring & a cotyledon the 2nd year. Container culture is slow but works, or sow in a prepared seedbed or near the mother plant. Codes C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70°, * seeds are hydrophilic, intolerant of dry storage, & G chemical inhibitors. Division can be traumatic to the mother plant. Offsets are occasionally produced. (cu00) Picking a trillium flower with the leaves will deprive the root of nourishment & will kill the plant.

Additional common names from <http://www.trilliumresearch.org/commonnames.html>

Trillium cernuum Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh. (tchn)

Trillium cuneatum Rafinesque SWEET BETSY, AKA BLOODY BUTCHER, LARGE TOADSHADE, PURPLE TOADSHADE, WEDGE-PETAL TRILLIUM,

Forests, shade; Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh. (tchn) flowers green/brown, sessile; clay soil tolerant, walnut tolerant. X (4+) years to flower from seed. Eastern USA native, appears similar to PURPLE TRILLIUM. Seeds may be moved 0.1-0.25 miles by yellow jacket wasps.

<http://www.tuckreader.com/the-bloom-calendar-phlox-&-trillium/>

Trillium erectum Linnaeus RED TRILLIUM, aka STINKING BENJAMIN TRILLIUM, STINKING WILLIE, WET DOG, WAKE ROBIN TRILLIUM,

Forests, shade; Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh. (tchn) flowers red/pink; clay soil tolerant, walnut tolerant. X (4+) years to flower from seed.

Trillium gleasoni Fernald LARGE TRILLIUM,

“Not uncommon in woods. We have but one form, none with purple petals have been seen. (*T flexipes* Raf)” (ewf55)

Trillium grandiflorum (Michaux) Salisb TRILLIUM, aka GREAT WHITE TRILLIUM, LARGE-FLOWER TRILLIUM, LARGE WHITE TRILLIUM, WHITE WAKEROBIN, WHITE TRILLIUM, WHITE WAKE ROBIN, WAKE-ROBIN, WAKE ROBIN TRILLIUM, *Ini'niwin'dibige'gun* (Ojibwa)

Habitat: Rich woods & thickets; rich moist woodlands. Forests, shade. distribution/range: Occasional in n ½ of Illinois, very rare elsewhere.

Culture: “Fall plant or cold stratify at 40°F for 2 to 3 months. Sow seeds just below the soil surface at 60°F & water. Slow.” (ew12) Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh. (tchn) 240,000 (ew12) seeds per pound.

cultivation: Space plants 1.0-1.25' centers. Rich, friable, mesic soils, partial shade to woodlands. Clay soil tolerant in one source, perhaps a reference to clayey timber soils. It takes approximately 6 years from seed to flower.

Description: 0.8-1.0'; whorl of 3 large oval leaves, with a single white flower above; seeds with a light colored crest or strophiole.

Comments: status: phenology: Blooms April to May. The flower opens as pure white, aging to pink.

Associates: Seeds have an elaiosome or strophiole, which attracts ants that carry the seeds back to their nests, eat the elaiosome, & “plant” the discarded seeds in middens. Some colonies appear clustered, possibly due to ants dispersing the seeds. Walnut tolerant.

ethnobotany: Floral emblem of Ohio & Ontario. Used as medicinal beverage by Menominee, Pottawatomie, & Ojibwa (sm23, 33, den28). Greens are edible. Ojibwa medicine for rheumatism, cramps, & soreness of ear (den28). Rhizome has been used as astringent & a tonic expectorant (den28).

Trillium luteum (Muhlenberg) Harbison YELLOW TRILLIUM, aka LEMON TOADSHADE, LEMON-SCENTED TOADSHADE, WAX TRILLIUM, YELLOW TOADSHADE,
Forests, shade; Sow immediately outdoors. Short viability seed will germinate in the spring or in the spring of subsequent years. Very short viable. Store seed cold and moist. Sow fresh. (tchn) flowers yellow, sessile, appears to be sitting on the leaves; clay soil tolerant, walnut tolerant. X (4+) years to flower from seed.
distribution/range: Eastern USA native, Tennessee, Smoky Mountains.

Trillium nivale Riddell SNOW TRILLIUM, aka DWARF SNOW TRILLIUM,
"Commonly attributed to this co but we have not found it nearer than White Pines Park in Ogle Co."

Trillium recurvatum Beck PURPLE TRILLIUM, aka EASTERN PETIOLED TOADSHADE, BLOODY BUTCHER, PRAIRIE TRILLIUM, PRAIRIE WAKE-ROBIN,
"Common in woods." (ewf55)



Trillium recurvatum

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UVULARIA Linnaeus 1753 **BELLWORT, MERRYBELLS** *Liliaceae* *Uvularia* New Latin, from *uvula* & *-aria*, from *uvula*, the hanging structure in the back of the throat, for the resemblance of the hanging flowers. Temperate eastern North American herbs, about 5 spp, having erect stems, sessile or perfoliate leaves, & yellowish drooping bell-shaped flowers. This is placed in the *Colchicaceae*, the MEADOW SAFFRON family by some authors (m14, w12).

The hydrophilic seeds ripen in midsummer, as the capsules start to yellow. The maturing seeds turn from translucent white to tan. Dry capsules for 3-7 days & sow immediately or store moist. Seedlings are hypogeal, emerging above ground the second spring. Pot & grow on 2 more years. Codes C seeds will germinate only after multiple cycles of warm & cold, typically 40°-70°-40°-70°, & * seeds are hydrophilic. Divide rhizomes in late summer as plants die down. (cu00)

Uvularia grandiflora JE Smith LARGE-FLOWERED BELLWORT, aka YELLOW BELLS, YELLOW BELLWORT,
Habitat: Rich woodlands. "Common in damp woods & ravines." (ewf55) Southeastern US, cove forests & other rich, forested sites (w12). distribution/range: Common thru Illinois.
Culture: Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment (pm09). 35,080 (gnh13) seeds per pound.

cultivation: Said to like humusy, acid soils, but Cullina (2000) calls it a lime-lover & dusts with dolomite powder yearly!

bottom line: Dormant seeding under an existing overstory is absolutely necessary. Germ 8.0%. Dorm 87%. Test 41 days.**

Genetic source Wacktown Timber, Greenville Township, Bureau Co, just east of Church School.

Associates: ethnobotany: Used as medicinal plant by Ojibwa, Menominee, & Pottawatomie (sm32, sm23, sm33)

Uvularia sessifolia Linnaeus WILD OATS, aka BELLWORT, SESSILE-LEAVED BELLWORT, STRAW LILY,

Habitat: Rich woodlands. distribution/range: Not common, southern 1/3 of Illinois.

Charm & ceremonial uses: used as part of hunting medicine by Ojibwa (sm32) (smoked????)

VHFS: [*Oakesialla sessifolia* (L) S Watson]

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VERATRUM Linnaeus ☞ **FALSE HELLEBORE, SKUNK-CABBAGE, CORN-LILY, VARAIRE, VÉRÂTRE,**
Liliaceae *Veratrum* New Latin, from *vērātrum*, *vērātri*, Latin name for hellebore, from Latin *vere*, true, &
ater, black, referring to the black rhizomes found in some spp. A genus of about 55 spp of coarse herbs having
short poisonous rootstocks, large plicate clasping leaves in three vertical ranks, & paniced flowers with the
perianth segments adnate to the ovary, 25-30 spp worldwide, 5 in northern North America. $x = 8$. Sometimes
placed in the *Melanthiaceae* as in Mohlenbrock (2014). *Melanthium* is sometimes included in this genus.
Formerly *Acelidanthus* Trautvetter & CA Meyer, *Evonyxis* Rafinesque, *Leimanthium* Willdenow.

Seeds ripen early summer as the capsules yellow. The seeds germinate after a single cold moist period,
producing only cotyledons the first year. Slow from seed, leave in the flat 1st year. 6-7 years to flower from
seed. (cu00)

Veratrum viride Aiton ☞ *GA AMERICAN or FALSE HELLEBORE, aka AMERICAN WHITE HELLEBORE, BEAR
CORN, BIG HELLEBORE, BLUE HELLEBORE, CORN LILY, CORNHUSK LILY, DEVIL'S BITE, DUCK RETTEN,
GREEN FALSE HELLEBORE, GREEN HELLEBORE, INDIAN HELLEBORE, INDIAN POKE, ITCH-WEED, ITCHWEED,
POOR ANNIE, TICKLEWEED, *VÉRÂTRE VERTI*, WHITE-HELLEBORE,

Habitat: Wet woods & swamps, moist clearings & shaded woodlands. distribution/range: Native e 7 se of our
area. Occurs in New England & the southern Appalachians, plus the northern Rockies & Cascades. These two
populations were separated by continental ice sheets, & have been treated as one sp, separate spp, subsp, or
varieties.

Culture: Sow at 18-22°C (64-71°F) for 2-4 wks, move to -6 to -7°C (19-21°F) for 4-6 wks, move to 5-12°C (41-
53°F) for germination (tchn).

Description: Erect, herbaceous, perennial, native forb; roots; stems to 6'; leaves; green flowers; $N 2n = 32$. key
features:

Comments: status: Special Concern in Georgia. phenology: Blooms June to July.

Associates: ethnobotany: ☞ STRONGLY POISONOUS.

VHFS: Variety *viride* is considered a pasture weed in New England & Quebec.

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HELLEBORE or HELEBORE

Helleborus Greek, *helleborus*, ancient name for this plant, from ἑλεῖν, *Helein*, to cause death, & βόρα, *bora*,
food, alluding to the well known poisonous qualities. (*Ranunculaceae*)

From Iroquois uses of maize & other food plants Arthur C Parker 1910. Originally published Albany:
University of the State of New York (Education Department Bulletin/University Of The State Of New York; No
482) (Museum Bulletin/ New York State Museum: 144)

Citing Peter Kalm "While the ground is being prepared for sowing, the seed is soaked in warm water or
a decoction made of helebore root & some other herb which the writer has not yet identified. These roots are
said to be a "medicine for the corn" but in reality, the "medicine" is a poison for crows & other field pests that
might eat the seed corn. A bird eating this "doctored" corn becomes dizzy & flutters about the field in a way
which frightens the others."

This reference to Hellebore could be *Veratrum viride*. *Helleborus*, *Eranthis*, & *Serapias* are also called
HELLEBORE, but they are unlikely as they are introduced. See also *Symplocarpus foetidus* for a similar
reference

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ZIGADENUS Michaux 1803 Occasionally spelled *Zygadenus*. **DEATH CAMAS** *Liliaceae* *Zigadenus* New
Latin, alteration of *Zygadenus*, from Greek *zygaden*, jointly, in pairs, from *zygon* yoke, pair, & *aden*, gland,
similar to *zeugnynai* to yoke, join, Sanskrit *yuga* yoke, *yunakti* he yokes, joins. Once upon a time in a galaxy
far, far away, a genus of 15+ spp North American & Asian herbs having basal linear leaves & a terminal panicle
of whitish or greenish flowers with a flat spreading perianth. According to Weakley (2007), *Zigadenus* is

redefined as a monotypic genus of SE North America, consisting of *Z glaberrimus* Michaux. $N 2n = 52$. Sometimes placed in the *Melanthiaceae* as in Mohlenbrock (2014).

Zigadenus glaucus Nuttall (or a double Nutt?) [new nomenclature *Z elegans* Pursh ssp *glaucus* (Nutt) Hultén]
* AZ, IL, IN, NY, PA, TN, WI WHITE CAMASS, aka ALKALI GRASS, DEATH CAMASS, ELEGANT CAMAS, MOUNTAIN DEATHCAMAS, (*elegans* (AY-le-gahnz) elegant, graceful, neat, nice, from Latin adjective *elegans*, (gen) *elegantis*, elegant, choice, fine, handsome, neat, tasteful, luxurious, or sometimes in bad sense fastidious, fussy, or too nice.) The common name may be seen as CAMASS or CAMAS.

Habitat: distribution/range:

Culture: 60 days cold moist stratification, or best planted outdoors in the fall. (pm09). Sow seeds outdoors in fall, or use cold moist stratification. Very slow growing. (he99) No pretreatment needed. Sow seeds just below the soil surface at 70°F & water. Slow to germinate. (ew11) Sow at 20°C (68°F), germination slow (tchn).

cultivation: Space plants 1.5-2.0' on center. Mesic soils, full sun to part shade.

Description: Erect, herbaceous, perennial, native forb, smooth; roots from a bulb; stems 4-24"; leaves grass-like; flowers -merous; $N 2n = 32$. key features: Dark or yellow spots near the flower center; leaves mostly basal.

Comments: status: Salvage Restricted in Arizona. Endangered in Illinois & Tennessee. Rare in Indiana. Threatened in New York. Special Concern in Wisconsin. phenology: Blooms July - August. Collect seeds in se Wisconsin in July (he99). 672,000 (ew11), 8,000,000 (sh94) seeds per pound

VHFS: What's in a name? That which we call *Zigadenus* ...

Plain & simple, the Lily *Zigadenus* is actually the BUNCHFLOWER *Anticlea*. In addition, *Zigadenus* is actually in the *Melanthiaceae*, but the entire type genus *Melanthium* is now placed in *Veratrum* by Zimmerman, so now where does *Zigadenus* go? be grateful the Land of Lincoln has only one sp with which to contend.

[*Anticlea chlorantha* (Richardson) Rydb, *A elegans* (Pursh) Rydb, *Melanthium glaucum* Nutt, *Zigadenus elegans* Pursh subsp *glaucus* (Nutt) Hultén, *Z elegans* Pursh var *glaucus* (Nutt) Preece ex Cronquist, *Z glaucus* (Nutt) Nutt]

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NARTHECIACEAE EM Fries 1846 **BOG-ASPHODEL OR NARTHECIUM FAMILY.**

“As circumscribed here (excluding *Tofieldiaceae*), a family of about 5 genera & 40 species, of e Asia, e North America, n Europe, & the Guyana Shield of n South America” (w12)

Weakley (2012) & Mohlenbrock (2014) place *Aletris farinosa* in this family.

ORCHIDACEAE AL de Jussieu 1789 **ORCHID FAMILY**

APLECTRUM Torrey 1818 **PUTTYROOT, ADAM & EVE** *Orchidaceae* *Aplectrum* from Greek *a* for privative & *plectron*, for a spur; meaning lack of spur. A genus of two spp, one in eastern North America & one in Japan. *Aplectrum* has a single overwintering leaf, the underside purplish that withers before the appearance of the flowering stalk (w12). (*Aplectrum* Nuttall or *Aplectrum* (Nuttall) Torrey)

Aplectrum hyemale (Muhlenberg ex Willdenow) Torrey **PUTTYROOT**, aka **ADAM-&-EVE**, “Rare. In the maple woods on Newburg road east of Rockford, in Laona Heights Forest Preserve & in the woods across the highway from it.” (ewf55)

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CALAPOGON R Brown 1813 **GRASS-PINK** *Orchidaceae* *Calopogon* beautiful beard, from New Latin, from Greek *καλος*, *kalos*, beautiful, & ancient Greek *πάγων*, *pōgōn*, beard, referring to the hair like protuberances on the lamellae. A small genus of about 5 sp American bulbous orchids having grasslike leaves & spike-like racemes of pink bearded flowers. (*Calapogon* LC Rich)

Calapogon pulchellus (Salisb) R Brown **GRASS-PINK**, “Rare, being known only in a shallow bog in Rockton Township where there are a few plants.” (ewf55)

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COELOGLOSSUM Hartman 1820 **FROG ORCHID, LONG-BRACTED ORCHID**

Genus maintained by m14 & w12

See *Habenaria viridis* (Linnaeus) R Brown.

CORALLORHIZA Gagnebin 1755 **CORALROOT** *Orchidaceae* *Corallorhiza* New Latin, from *corall-*, Middle English, from Middle French, from Latin *corallum*, *corallium*, from Greek *korallion* & *-rhiza*, Greek a root, referring to a root. A genus of leafless root-parasitic or saprophytic orchids of wide distribution in temperate regions having small purplish or yellowish racemose flowers with an entire or lobed lip.

Corallorhiza maculata Rafinesque **CORALROOT**, “The only known station in the co is the crest of a small ravine in the woods east of Roscoe where it grows sparingly.” (ewf55)

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CYPRIPEDIUM Linnaeus 1753 **LADY’S SLIPPER ORCHID** *Orchidaceae* *Cypripedium* (kip-ree-PEE-dee-um) from Greek *Kypris*, Aphrodite, Venus, & *pedilon* a slipper, (or Latin *pes*, foot, perhaps an orthographic error for Greek *pedilon*, slipper (fna)) referring to the shape of the flowers.

Cypripedium acuale Aiton **STEMLESS LADY’S SLIPPER**, aka **PINK LADY’S-SLIPPER**, **MOCCASIN-FLOWER**, **LOW LADY’S SLIPPER**, (*acaulis -is -is* (ay-KAW-lis) lacking an obvious stem, without a stem or stalk, or seemingly so, noting privation, from Greek α -καυλος, *a-kaulos*, Latin *a-caulis*, from Latin noun *caulis*, *caulis* m, from the Greek *καυλος*, *kaulos*, the stem or stalk of a plant.)

Associates: ethnobotany: Root used as medicinal plant by Menominee (sm23).

Cypripedium calceolus Linnaeus var **pubescens** (Willd.) **YELLOW LADIES’-SLIPPER**, aka **YELLOW LADY’S-SLIPPER**, (*calceolus -a -um* (kal-KEE-o-lus) *calceolus*, *calceoli*, a shoe, slipper, small shoe, half-boot, the diminutive of *calceus*, a shoe from *calceus* & *-olus*, Latin diminutive suffix) (*pubescens*, becoming hairy, from Latin *pubescens*, pubescent, from *pubesco*, to reach puberty, become pubescent.)

“Of this we have two distinct varieties both of which are rare. Var *pubescens* (Willd) Correll is the larger plant & has larger flowers. We have found it only in a woods in Coon Creek bottom where, we were told by an old member of the owner family, it was formerly abundant. Var *parviflorum* (Salisb) Fern is more common & has been found in Kishwaukee gorge & in the sandy woods east of Roscoe; also at Castle Rock in Ogle Co.” (ewf55)

Associates: ethnobotany: Used as medicinal plant by Ojibwa & Menominee (sm23, 32). Found in Menominee sacred bundles (sm32)

Cypripedium candidum Muhlenberg ex Willdenow *WI **WHITE LADY’S-SLIPPER**,

Habitat: Wet mesic to wet prairies & savannas. Calcareous humus. distribution/range:

Culture: propagation: Germination method unknown (he99).

Description: plant 6-10”; flowers white with purple stripe within; key features:

Comments: status: Threatened in Wisconsin. phenology: Blooms May - June. “Commonly attributed to the co but a prolonged search of the likely places has failed to reveal it.” (ewf55)

Associates: Requires symbiotic root fungus.

VHFS:

Cypripedium hirsutum Mill **LADYSLIPPER**, *Ago ’biso ’win*, a word referring to sewing as Ojibwa toothache medicine. Rhizomes & roots described as tonic, stimulant, & diaphoretic (den28)

Cypripedium reginae Walt **SHOWY LADY’S SLIPPER**,

Associates: ethnobotany: Used as medicinal plant by Ojibwa (den28).

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GOODYERA R Brown 1813 **RATTLESNAKE ORCHID** *Orchidaceae* *Goodyera* after John Goodyer, English botanist (1592-1664). A genus of small orchids of the northern hemisphere with creeping rhizomes, stalked ovate leaves, & small flowers in a twisted raceme.

Goodyera pubescens (Willdenow) R Brown RATTLESNAKE PLANTAIN, aka RATTLE-SNAKE LEAF, SCROFULA WEED, “Rare. Sandy woods east of Roscoe & Kishwaukee River gorge. Also at Castle Rock in Ogle Co.” (ewf55)

Goodyera repens (Linnaeus) R Br var **ophioides** Fern RATTLESNAKE PLANTAIN, (*repens* creeping, creeping & rooting, from Latin, *repens*, participle of *repo*, *reperere*, *repsi*, *reptus*, crawl or creep; having creeping & rooting stems.) (*ophioides* serpent-like, from ancient Greek ὄφις, *ophis*, serpent, &, *-oides*, Greek suffix indicating like, resembling, like something else.)

Medicinal uses: Used as medicinal plant by Pottawatomie (sm33)

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HABENARIA Willdenow 1805 **LONGSPUR ORCHID, HABENARIA** *Orchidaceae Habenaria* New Latin, from Latin *habena* strap, thong, from *habēre* to have, hold, & New Latin *-aria*; from the shape of parts of the flowers. A very large genus of about 600 spp of somewhat glabrous orchids chiefly of the northern hemisphere (tropical & subtropical in the Old World & New World) with usually small flowers having the lip lobed, entire, or fringed & borne in racemes or spikes. **Rewrite as Platanthera.**

Habenaria bracteata (Muhlenberg) R Brown BRACKETED ORCHID, “Though rare it is our most common sp in the sense that it occurs in more places. Killbuck Creek bank at the Forest Preserve, the woods east of Roscoe & the Kishwaukee River Gorge at Camp Hillcrest. There is a marked difference in the size of the plants.” (ewf55)

Habenaria flava TUBERCLED ORCHID, aka pale GREEN ORCHID, ‘TUBERCLAD’ ORCHID, “To 8”, yellow green flowers, blooms June - September, wet to wet-mesic prairies & savannas, in wet meadows, shady places, marshes, swamps, threatened, humus soils, germination L, collect seed unknown” (he99).

Habenaria lacera (Michaux) Lodd GREEN FRINGED ORCHID, “Found only in the boggy places in Sugar River sand area but there plentiful over small areas especially in Rockton Township.” (ewf55)

Habenaria psychodes (Linnaeus) Sprengel PURPLE ORCHID, “Only found once & then a very few plants in a fence row in the low prairie west of Yale bridge. (ewf55)

Habenaria leucophaea (Nuttall) Gray PRAIRIE ORCHID, “16-40”, attractive spike of white, lacinated flowers, blooms June - July, wet to wet-mesic prairies, humus soils, germination unknown, collect seeds unknown” (he99)
“This is now so rare that it is practically extinct. We have found it in very few places, a bog in Rockton Township, a low prairie west of Winslow bridge, which is west of Shirland, & on a drainage ditch in Laona Township west of Yale bridge. We have found altogether not to exceed a dozen plants.” (ewf55)

Habenaria viridis (Linnaeus) R Brown REIN ORCHIS, aka BRACKETED GREEN ORCHIS, LONG-BRACKETED FROG ORCHID,

Associates: ethnobotany: Used as a love charm & aphrodisiac by Ojibwa (sm32).

Coeloglossum viride (Linnaeus) Hartman)m14)

Coeloglossum viride (Linnaeus) Hartman var. *virescens* (Muhl ex Willd) Luer.

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LIPARIS L C Richard 1817 **WIDE-LIP ORCHID, TWAYBLADE** *Orchidaceae Liparis* New Latin, from Greek *liparops*, fatty, shiny, bright, from *lipos*, fat. A genus of about 250-350 spp of cosmopolitan terrestrial orchids having two broad shining leaves & terminal racemes of irregular flowers

Liparis lilifolia (Linnaeus) L C Richard ex Ker-Gawler *CT, MA, NY, RI, VT TWAYBLADE, aka LARGE TWAYBLADE, MAUVE SLEEKWORT, RUSSET-WITCH, BROWN WIDE-LIP ORCHID, leaves 2, lance-ovate or oval; scape 3-cornered; inner petals filiform, reflexed, 2-coloured; lip concave, obovate, mucronate.

Endangered in Connecticut, New York, & Rhode Island. Threatened in Massachusetts & Vermont.

“In the woods opposite Arlington Cemetery on Charles Street it grows with the showy orchis. Not seen elsewhere in the co, the closest being Jo Daviess Co.” (ewf55)

Formerly *Malaxis liliifolia*.



Liparis liliifolia, Tomahawk Bluffs

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MALAXIS *Orchidaceae* *Malaxis* New Latin, from Greek, *malaxis*, the act of softening, from *malassein* to soften, in reference to the texture of the leaves; alternately classical Latin *malaxāre*, from ancient Greek *μαλάσσειν*, *malassein*, soften (aorist infinitive *μαλάξαι*, *malaxai*). A genus of terrestrial orchids with solid tubers that produce simple stems bearing one or few leaves & a raceme of tiny mostly greenish flowers.

Malaxis unifolia Michaux GREEN ADDER’S-MOUTH,

Associates: ethnobotany: Root used as medicinal plant by Ojibwa (sm32)

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ORCHIS Linnaeus **SHOWY ORCHIS** *Orchis* New Latin, from Latin, *orchid*, *orchis*, from ancient Greek ὄρχις, *orchis*, testicle, referring to the shape of the frequently paired tubers; akin to Avestan *ərəzi*- testicle, Middle Irish *uirgge* testicle, (Irish *uirghe*, *úiri*), & Armenian *amorjik*’ (plural) testicles. Mohlenbrock (2014) places this in *Galearis* Rafinesque 1833.

Orchis spectabilis Linnaeus **SHOWY ORCHIS**, “Uncommon but found in most of the more mesophytic woods & in ravines; the “dells” of Hall Creek, the woods on Spring Creek road & Charles street road & a damp place in Sugar River Forest Preserve” (ewf55). **Rewrite as *Galearis spectabilis* (Linnaeus) Rafinesque.**

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SPIRANTHES L C Richard 1817 **LADIES’ TRESSES, PEARL-TWIST, SPIRAL ORCHID** *Orchidaceae* *Spiranthes* New Latin spiral flowers, with coiled flowers, from Greek *σπείρα*, *speira*, spire, coil, & *ἄνθος*, *anthos*, flower, a Midwestern orchid genus with spiral inflorescence. Fruits are capsules with incredibly small seeds, ripening in late fall. Cullina (2000) has had seedlings volunteer in pots which were near a blooming *S odorata*. The seedlings never appear in empty flats, but in pots of other spp such as daylilies & coralroots. Cullina feels *Spiranthes* may use some commonly available mycorrhiza, which is present in peat-bark-perlite mix as it breaks down. Codes B seeds will germinate upon shifting to 70°F after 90 days of cold moist stratification at 40°F, & H seeds require light to germinate. Division of the fleshy root sprouts & the central crowns is possible in early summer. (cu00)

Spiranthes cernua (Linnaeus) L C Richard **NODDING LADIES TRESSES**, aka **LADIES’ TRESSES**, (*cernuus -a -um* (locally SIR-nyew-us, properly KIR-nyew-us) New Latin, drooping, nodding, downturned, like the flowers of *Narcissus*, from Latin *cernuus -a -um*, head foremost, face down, from *cernuare*, to fall headfirst, to somersault.)

Habitat: Sand prairies, fens, dry savannas, dry woodlands, & old fields. distribution/range:

Culture: “Fall plant or cold stratify for 2 to 3 months for best results. Sow seeds just below the soil surface at 70°F & water.” (ew12) Germination method unknown (he99). Sow at -4 to +4°C (24-39°F) for 12 wks, move to 20°C (68°F) for germination (tchn). Seed viability may be low. It is rumored that it is not difficult to transplant. 240,000 (ew12) seeds per pound.

cultivation: Space plants on 0.25-0.50' centers. Mesic soils, full sun to partial shade. Calcareous soils.
Description: Erect perennial; 0.25-0.4'; inflorescence three-ranked spiraling raceme; flowers white to cream;
Comments: status: phenology: Blooms 8-9. Collect seeds in se Wisconsin in October (he99). "Found abundantly in a number of places in Sugar River sand area in boggy spots but not seen elsewhere in the co. Also in Boone Co." (ewf55)
Associates: Pollinated by long-tongued bees & short-tongued bees.

Spiranthes magnicamporum Sheviak FRAGRANT LADIES TRESSES,

Habitat: Hill, sand, & mesic prairies, & dry upland woods. distribution/range:

Description: 1-2'

Associates: Pollinated by long-tongued bees, short-tongued bees. Attracts game birds & songbirds.

Spiranthes gracilis (Bigel) Beck SLENDER LADIES'-TRESSES,

Habitat: Dry open woodlands. distribution/range: Rare, restricted to s ½ of Illinois.

Associates: ethnobotany: Ingredient of hunting charm to bring game to Ojibwa (sm32) (smoked possibly?)

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TRIPHORA Nuttall 1818 **THREE BIRDS ORCHID** *Orchidaceae* *Triphora* New Latin, from *tri-*, threefold, & *-phorus*, *-phora*, bearing; from the fact that it usually bears few to three flowers, or the 3 crests on the lip of the type sp. A genus of about 25 spp of terrestrial orchids of eastern north America, the West Indies, & Central & South America, having fleshy tubers, ovate usually clasping leaves, axillary flowers that have an erect lip but are crestless & spurless, & fruit that is a drooping capsule.

Triphora trianthophora (Swartz) Rydberg THREE BIRDS ORCHID, aka NODDING POGONIA, NODDING ETTERCAP, "Commonly attributed to the co but it has not been seen by us." (ewf55)

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PONTERIACEAE Kunth 1816 **PICKERELWEED FAMILY**

HETERANTHERA Ruiz & Pavón 1974 **MUD-PLANTAIN, DUCK-SALAD** *Pontederiaceae* *Heteranthera* having unlike anthers in the flowers, New Latin, from Greek ἕτερος, *heteros*, the other of two, other, different, & ἀνθηρος, *antheros*, anther, flowering, blooming. Genus of 10-12 spp herbaceous annuals & perennials of tropical & temperate America & Africa. Fruits capsular, elongate; seeds 10-200, testa with longitudinal wings. *Heteranthera dubia* seed has physiological dormancy; cold moist stratify seed for 150 days & germinate at 30°C in light (C Baskin 2003).

Heteranthera limosa (Swartz) Willdenow *KY, MN, TN MUDPLANTAIN, aka BLUE MUDPLANTAIN, DUCK-SALAD, *LIRIOR MENOR DEL LIMO*, (*limosus* -a -um pertaining to or of marshes or muddy places, growing in boggy places, from the Latin adjective *limosus* -a -um, mud filled, slimy, from its growth in mucky or peaty wetlands.)

Habitat: Shallow water or emersed at pond edges & in roadside ditches; artificial impoundments; sloughs & ditches. Best adapted for growth in water less than 5 cm deep (fna). distribution/range: Muddy shores, shallow water; scattered in Illinois (m14). Known from sw Whiteside Co, Illinois, far north of its range. Global warming or inadequate plant geography? South Dakota to Illinois, south to Mississippi & Texas, outliers in California, Arizona, & Florida, central & South America. Behaves as a weed in rice fields.

Culture: ?

Description: Tufted annual, submerged or emergent native aquatic forb, 2.5-10", flowers blue star-like; seed an achene, 9-14 winged; 2n = 14; key features:

Comments: status: ET, Special Concern in Kentucky. Threatened in Minnesota & Tennessee. This sp may be weedy in parts of its range (SWSS 1998). phenology: blooms 5(6)-7(9)

Associates:

VHFS: [*Leptanthes ovalis* Michx, *Pontederia limosa* Swartz]

CC Baskin 2003. Propagation protocol for production of container *Heteranthera dubia* (Jacq) MacM plants; University of Kentucky, Lexington, Kentucky. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 7 December 2010). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

PONTERERIA Linnaeus 1753 **PICKERELWEED** *Pontederiaceae Pontederia* (pon-te-DE-ree-a) New Latin, from Giulio (or Guilo) *Pontedera*, (1688-1757), professor of botany at Padua & New Latin *-ia*. American aquatic, perennial, herbaceous plants having leaves with long sheathing petioles & flowers in a dense spike.

Pontederia cordata Linnaeus *KY **PICKERELWEED**, aka LANCE-LEAF PICKEREL WEED, *LANGUE DU BOEUF*, PICKEREL RUSH, *PONTÉDÉRIE CORDÉE*, (*cordatus -a -um* (cor-DAH-tus) from Latin, for the heart-shaped leave base.)

Habitat: Mucky fairly fresh soil, shallow ponds, streams, marshes. Swampy edges of lakes & streams, tidal shores. distribution/range: Wet areas, sometimes in standing water; occasional in most of Illinois, except for the e cent cos (m14). Ontario to Nova Scotia & New England; south to northern Florida; west to Missouri & Oklahoma; north to Minnesota. Also Mexico, Central America, & South America.

Culture: Seed is recalcitrant, store cool & wet. Fall plant or cold stratify at 40°F for 1 month, then move to 70°F, some seeds may take 2 seasons to sprout (ew11). Growth rate moderate. Seedling vigor medium. Vegetative spread rate none. 4167(gn), 5,000 (usda, ecs), 8,000 (ew11), 20,000 (jfn04), 20,064; 20,800 (aes10), 23,244 (gnaj07), 34,496 (gnaer04) seeds per pound. Ernst recommends 1 lb per 1000 square feet. Seed availability may vary widely from year to year. Extended high water in summer may destroy seed crops. Bare root & quart potted plants are available early in the planting season. GT-38 plugs are available sporadically early in the season.

asexual propagation: Regularly divide the plant to keep it from growing too large (lbjwc).

cultivation: Space plants 1.5-3.0'. 600 roots per acre on 3.0-4.0' centers (Anon 1981, math is not IDNR's strong suit). Full sun to partial shade, in water to moist soils. Fresh water or some salt tolerance, slightly brackish. 1'-3' deep. Anaerobic tolerance high. CaCO₃ tolerance medium. No drought tolerance. Fertility requirement medium. Salinity tolerance low. Shade intolerant. pH 6.0-8.0. Native to Zones 3a to 9b, but always use local materials! Plant April to November (Anon 1981).

bottom line: Dormant seeding is strongly required for field sowing. Moist cold stratify or fall plant is mandatory for profitable greenhouse germination. A single lot with 88% germ is known. Flipflop species. Germ 16.8, 4.0, 4.0, sd 27.1, r0.0-81 (81)%. Dorm 58.5, 65, 95, sd 35.4, r5.0-95 (90)%. Test 24, 20, 19, r17-40 days.**

Description: Native erect, perennial, emergent semi-aquatic herb growing in shallow water of streams & ponds & having cordate or sagittate leaves & spikes of blue flowers, 3-merous; stems 1.0-2.0'; fruits utriculate, seed 1, ovoid; key features: (check ILPIN; add usda sheets)

Comments: status: Threatened in Kentucky, but it is considered invasive in some parts of the country (SWSS 1998). phenology: Blooms July-September. Used in shoreline restoration, improving wetland & wildlife habitat, water gardens, permanently wet swales. Individual flowers are open for only one day, but a flower spike may have fifty to several hundred flowers. Seed source restored wetlands Lee Co.

Although this is a monocot & distantly related to grasses, it is not a grass as some silly nurseries say.

“In Sugar Creek sloughs west of Shirland & in a Killbuck Creek slough at U.S RT No. 51” (ewf55).

Associates: Attracts bees, butterflies, & dragonflies. Provides nectar for bees. Nectar source for *Anatryone logan* DELAWARE SKIPPER, *Ancyloxypha numitor* LEAST SKIPPER, *Euphyes bimacula* TWO-SPOTTED SKIPPER, *Euphyes dion* DION SKIPPER, *Euphyes dukesi* DUKES SKIPPER, *Panoquina ocola* OCOLA SKIPPER, *Poanes viator* BROAD-WINGED SKIPPER, *Poanes yehl* YEHL SKIPPER, & *Problema byssus* BYSSUS SKIPPER. Provides food & cover for wildlife. Waterfowl eat seeds & plants. Aquatic furbearers (esp. muskrats) eat seeds & plants. Fish utilize cover. Minimal deer resistance.

ethnobotany: Leaves & seeds are said to be edible. “PICKERELWEED has often been used for food. Each fruit contains a nutritious, starchy seed that can be eaten straight from the plant or dried & added to granola & other cereals. The dried seeds can also be boiled, roasted to improve flavour or ground into flour. The young leaves have sometimes been eaten raw in salads or boiled & served with butter.” (Kershaw in lbj) VHFS: M14 includes var *angustifolia* (Pursh) Torr with the species. [*Narukila cordata* (L) Nieuwl, *Pontederia angustifolia* Pursh, *P cordata* var *lanceolata* (Nutt) Grisebach, *P cordata* var *lancifolia* (Muhl) Torr, *P lanceolata* Nutt, *P lancifolia* Muhl, *Unisema cordata* (L) Farwell]



Pontederia cordata

Photo by Jock Ingels

POTAMOGETONACEAE Dumortier 1829 **Pondweed**

POTAMOGETON Linnaeus 1753 *Potamogetonaceae* *Potamogeton* (po-ta-mo-GAY-ton) from the classical name, from the Greek *potamos*, a river, & *geiton*, a neighbor. Aquatic herbs. Waterfowl eat seeds & plants. Marsh birds & shorebirds eat seeds. Aquatic furbearers (esp muskrats) eat plants. Predator & prey fish spp use plants for cover.

Potamogeton crispus Linnaeus “Planted in the State Fish Hatchery northwest of Rockford & it has escaped sparingly to a small stream but it is not established.” (ewf55)

Potamogeton filiformis Pers “Rare in Rock River near the Illinois Central railroad bridge.” (ewf55)

Potamogeton foliosus Raf “Our common pondweed, found in most of the streams in the co (Winnebago).” (ewf55)

Potamogeton lucens Linnaeus “Found sparingly in Killbuck Creek in Winnebago & Ogle cos. (Probably *P. illinoensis* Morong.)” (ewf55)

Potamogeton natans Linnaeus COMMON PONDWEED, OBL

Habitat: Common in lakes in shallow water. distribution/range:

Description: 360,000 (jfn04) seeds per pound

Potamogeton nodosus Poir LONG LEAF PONDWEED,

Habitat: Fresh water, ponds, & streams. distribution/range:

Culture: Anon 1981 says plants at 1’ intervals, or broadcast seed (???)

Description: Perennial aquatic.

Potamogeton pectinatus Linnaeus SAGO PONDWEED, (*pectinatus -a -um* (pek-ti-NAH-tus) comb-like, for the arrangement of the leaves.)

Habitat: Lakes, streams & ponds with hard clear water. Water may be fresh, marl, alkali, or brackish, from 1.5’ to 8’ deep. “Locally plentiful but less common than *P. foliosus*.” (ewf55) distribution/range:

Culture: “Seeds. Plant in fall ... 40 lbs/acre, planted at 1.5’ intervals. Tubers. Plant in late spring or late fall. ...100 tubers/acre, planted at 1.5’ intervals” (Anon 1981) 360,000 (jfn04) seeds per pound

Description: Perennial aquatic.

Potamogeton pusillus Linnaeus “Uncommon. Found only in Kent Creek near Levings’ Park southwest of Rockford.” (ewf55)

Potamogeton richardsonii (Benn) Rydb REDHEAD GRASS,

Habitat: Fresh, moderately brackish, or alkaline lakes or ponds, streams, & rivers. distribution/range: Northeast Illinois only.

Culture: Anon 1981 says “ plant in spring or fall. Recommended planting rate of 1000 roots per acre at 3’ intervals.”

Description: Aquatic perennial. Good bass cover.

Potamogeton zosteriformis Fern “Locally plentiful throughout.” (ewf55)

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ZANNICHELLIA Linnaeus 1753 **HORNED PONDWEED** *Potamogetonaceae* *Zannichellia* New Latin, from Gian Girolamo *Zannichelli* (1662-1729) Venetian botanist, physician, & pharmacist (apothecary), & New Latin *-ia*.

Zannichellia palustris Linnaeus **HORNED PONDWEED**, “Found native in Kent Creek near Levings’ Park, Rockford. In a small stream near the State Fish hatchery it is probably an escape.” (ewf55)

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SPARGANIACEAE BUR REED FAMILY

SPARGANIUM Linnaeus 1753 **BUR-REED** *Sparganiaceae*, sometimes placed in the *Typhaceae*. New Latin, from Latin *sparganion* bur reed, from Greek, diminutive of *sparganon*, swaddling band. A genus of about 14 spp (9 in US & Canada) comprising the family *Sparganiaceae*, marsh or aquatic herbs of temperate regions with simple or branching stems, linear leaves, & monoecious flowers in globose heads. Bur-reeds form dense stands along the shores of shallow lakes & ponds. Waterfowl & marsh birds eat the seeds & muskrats eat the entire plant. *Sparganium* is closely related to *Typha* & sometimes placed in *Typhaceae*.

Sparganium erectum, sow at 22°C (72°F) in muddy compost for 6 wks, move to +1 to +4°C (33-39°F) for 4-6 wks, then allow temperatures to raise gradually (tchn).

“The virtues of *Sparganium*: The roote is good to be geven wyth wyne agaynste the poyson of serpentes.” William Turner, 1562. A new herball. republished 1995, GTL Chapman, MN Tweddle, eds. Cambridge U Press.

Sparganium americanum Nuttall *IL **AMERICAN BUR REED**, aka **AMERICAN BUR-REED**, **BUR-REED**, **LESSER BUR REED**, *RUBANIER D’AMÉRIQUE*, **OBL**

Habitat: Marsh, fens, ditches. Muddy shores & shallow water, swamps.

“Shores & shallow neutral-to-alkaline waters, sometimes forming large stands” (fna). distribution/range: Eastern N America - Nova Scotia & Ontario to Minnesota, south to central Florida, east Texas, & Oklahoma. Species is not common in the “Prairie Peninsula”. (see distribution map fna) In northern Illinois cos only, but also native south of Illinois.

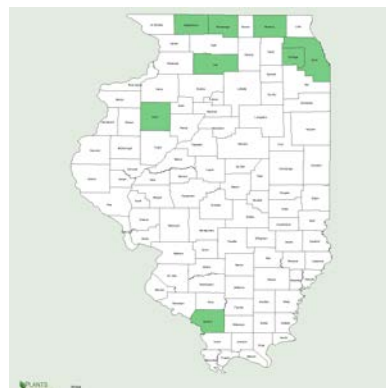
Culture: Growth rate moderate. Seedling vigor high. Vegetative spread rate rapid. 15,600 (jfn04), 50,000 (ecs), 70,915 (gnhe14), 78,669 (gnhe03) seeds per pound.

cultivation: Anaerobic tolerance high. CaCO₃ tolerance low.

Drought tolerance none. Fertility requirement low. Salinity tolerance none. Shade tolerance intermediate. pH 4.9-7.3. Flood depth 0-6.0”. Hardy zones 3-9.

bottom line: Dormant seed or seed as the site becomes available. Further treatments unknown. Germ 4.5, 5.5, na, sd 3.3, r0.0-8.0 (8.0)%. Dorm 69.2, 64, na, sd 13.8, r55.5-88 (32.5)%. Test 36 days.**

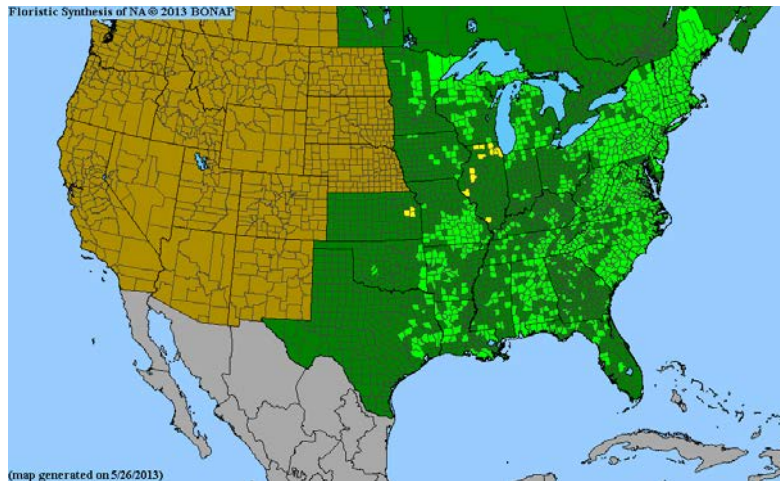
Description: Native, colonizing, erect, grass-like, emergent perennial, 1.0-3.2’; stems stout; rhizomatous 8” minimum root depth; inflorescence branched or unbranched (?) stalk, axis thick, somewhat zigzag, with a few 0.75” spherical heads of flowers, heads green in early season, becoming brown & bur-like late, male & female flowers in separate heads on the same stem; leaves flat, not stiff, strap-like, thickish, to 1 in wide, bright green, 2-ranked, ascending, flat above, becoming “channeled” below, taller than the inflorescence; female flowers green to white, 3-merous; fruit dull brown nutlet (achene) with straight beak in bur-like heads; key features: Fruit dull brown, leaves not stiff (fh).



Comments: status: Endangered in Illinois because of a biogeographical accident (northern Illinois is at an edge of its range). phenology: Blooms (5)6-7. Seed source wet ditches, Green River Lowland. Attractive dried seed heads. Landscaping, erosion control, wetland ground cover, mass plantings, naturalizing, storm water basins.

Associates: Provides food for waterfowl, muskrats, & beavers. Provides cover & nesting for amphibians, fish, & waterfowl. Deer resistant. Wind pollinated.

ethnobotany: Roots & stem bases can be cooked & eaten.



Sparganium americanum

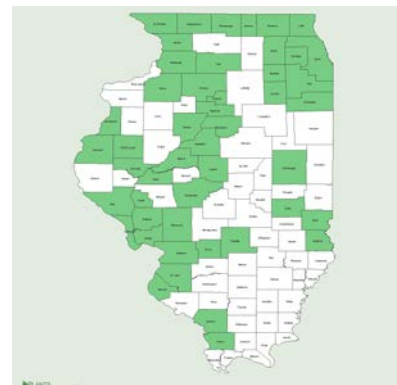
Line drawing Britton & Brown (1913) courtesy of Kentucky Native Plant Society. Seed photo Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image. Second line drawing Mark Mohlenbrock, USDA-NRCS PLANTS Database / USDA NRCS *Wetland flora: Field office illustrated guide to plant spp.* Not copyrighted image. North American genus map courtesy of BONAP (2013)

Sparganium eurycarpum Engelman (or Engelman ex A Gray) *KY, NH COMMON BUR REED, aka BROADFRUIT BUR-REED, GIANT BUR-REED, LARGE BUR-REED, (*eurycarpum* from Greek εὐρύς, *eurys*, wide, & καρπός, *karpos*, fruit.) Obligate

Habitat: Shallow water, seasonally inundated, muddy ditches, upland swamps. “Common in swamps & along borders of sloughs & streams.” (ewf55) distribution/range:

Culture: Prolonged dormancy & low germination rates. Dry seed is quite buoyant & will strand on shoreline. One method is soak seed in bucket of water outside all fall, winter, let freeze, & in the spring sow in saturated soils. Some say scarify & store in 36°-37°F water for as least one year (us97). Seeds need a cold, moist period followed by a warm, moist period followed by a 2nd cold, moist period, or sow outside & allow 2 years for germination. Further germination pretreatments not sure? (pm09). “Sow seeds just below moist soil surface at 70F for 1 month. Move to 35°F for 1 month, then gradually raise temps.” (ew12) Growth rate moderate.

Seedling vigor high. Vegetative spread rate rapid. 8,000 (pm), 8,290(gni), 8,800 (ew12), 9,488 (lhn), 9,536



(jfn204), 9,600 (aes10), 10,000 (ecs), 12,217 (gna05), 13,046 (gnh02), 22,700 (wns01) seeds per pound. In mixes plant 0.2 to 1.0 lbs pls per acre. Seed, bare root plants, chunks of rhizomes, & potted plants available. Plant availability may be limited at times due to incredible demand.

cultivation: Space plants 2.0-6.0' centers. Alternately, plant every 1.0-1.2 linear feet of shoreline in critical areas. Established plants prefer 12" water in shallow marshes (range 24" to 2"). Nutrient load tolerance low to moderate. Siltation tolerance low to moderate. Anaerobic tolerance high. CaCO₃ tolerance medium. Drought tolerance none. Fertility requirement low. Salinity tolerance none, or low to moderate. Shade tolerance intermediate, partial to full sun. pH 5.0-8.0 (usda), or 6.7 to 8.8.

bottom line: Dormant seed or seed as the site becomes available. Further treatments unknown. Germ 2.5, 1.0, 1.0, sd 2.9, r0.0-8.0 98.0%. Dorm 86.5, 88, 88, sd 8.5, r63-95 (32)%. Test 35, 33, 29, r29-51 days.**

Bare root material is more successful in spring, but it is only marginally successful at best. Plant rhizomes in mud in up to 2" of water in spring. Those few that grow will spread rapidly. Use 2-6' centers for plugs. Seed-grown or cloned plugs grow best, but availability may be limited by mid-summer. Seed availability may fluctuate widely during years with persistent high waterlevels in natural wetlands.

Description: Perennial emergent herb, or perennial aquatic, or an emergent aquatic; stems 3.0-5.0'; 12' minimum root depth, globular white flowers, followed by round seed heads.

"Flowers are in globose heads. Species has persistent creeping rhizomes & stiff erect leaves." (Ilpin)

Comments: status: Endangered in Kentucky. Threatened in New Hampshire. phenology: Blooms 5,6,7,8, June to August. C3. Wetland restoration, lower shoreline zone for erosion control. Spreading rhizomatous, root system buffers wave action on lake & pond margins. Seed sources Elburn, Kane Co, & in Bureau Co, emergent wetland Gold Twp, & drainage ditch Fairfield Twp.

Associates: Provides food & cover for many types of wildlife. Waterfowl, marshbirds, shorebirds, songbirds, pheasant, & beaver eat seeds. Leafy growth is good cover for nesting marshbirds, waterfowl & muskrats. Aquatic furbearers (esp muskrats) use cover & eat stems & foliage. Roots (tubers as they are commonly called; they are actually rhizomes) are eaten by ducks.

VHFS: [*Sparganium eurycarpum* Engelm ssp *eurycarpum* Engelm [superfluous autonym]]



Sparganium eurycarpum

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THISMIACEAE THISMIA FAMILY

TRILLIACEAE Lindley 1846 **TRILLIUM FAMILY** Part of a broadly defines *Liliaceae*.

TYPHACEAE AL de Jussieu 1789 **CATTAIL FAMILY**

TYPHA Linnaeus 1753 **CATTAILS, "BULRUSH", SMALL BULRUSH, REED-MACE, REED-MAIZE** (a corruption of the previous?) *Typhaceae Typha* New Latin, from Greek *typhe* cattail, plant used as stuffing for beds, Old Norse *thufa*, mound, Old English *thuf*, tuft, crest, Latin *tumere* to swell. Tall erect herbs occurring in fresh & salt marshes & have sword-shaped leaves & monoecious flowers in dense spikes with the staminate uppermost.

Typha angustifolia Linnaeus **NARROW-LEAVED CATTAIL** (*angustifolius -a -um* narrow-leaved) OBL

Habitat: Along expressways, marshes, & is tolerant of alkaline & saline soils. Wet meadows, marshes, shores, & ditches, at times in calcareous or brackish habitats. distribution/range:

Culture: Sow in muddy compost 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) gradually, for germination (tchn). Growth rate rapid. Seedling vigor medium. Vegetative spread rate rapid. 6,000,000 (jfn04), 14,000,000 (ecs) seeds per pound.

cultivation: Anaerobic tolerance high. CaCO₃ tolerance low. Drought tolerance low. Fertility requirement medium. Salinity tolerance medium. Shade intolerant, full sun. pH 3.7-8.5.

Description: Rhizomatous, 4.0-9.0'. 10" minimum root depth.

Comments: status: phenology: Blooms June - July. Provides food for geese, muskrats, beavers, & cover for nesting ducks & spawning fish. "While there is no question that this sp is far more widespread locally than it was at the turn of the century, we are retaining it as a native to the general region until firmer data are presented." (sw94)

"Found only in an abandoned gravel pit southeast of Rockford. Both the spp of *Typha* grew in this pond & many of the plants showed a mixture of the characteristics of the two spp suggesting hybridization. This station is now destroyed. Known in Boone Co." (ewf55)

Typha latifolia Linnaeus BROAD-LEAVED CAT-TAIL, aka CATTAIL, COMMON CATTAIL, REED-MACE, *Apuk'we* (Ojibwa) (*latifolius -a -um* broad-leaved) obl

Habitat: Seasonally inundated wet meadows, marshes or shallow water, & low areas. Marshy, muddy, or sandy spots with water up to 1.5' deep. Degraded swamps, marshes, wet shores & ditches. Occurs in dense clusters in & around aquatic areas. distribution/range: "Common in wet places." (ewf55)

Culture: Sow in muddy compost 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) gradually, for germination (tchn). Moist cold stratify, light, hot soils, saturated soils. Plant roots in spring 1000 per acre. Plant 0.5 lb pls per acre in fall, spring, or summer (gran). Growth rate rapid. Seedling vigor medium. Vegetative spread rate rapid. 6,000,000 (jfn04), 10,000,000 (gran), 14,000,000 (ecs) seeds per pound.

cultivation: Moderately coarse to fine soils. Anaerobic tolerance high. CaCO₃ tolerance medium. Drought tolerance none. Fertility requirement medium. Salinity tolerance low. Shade tolerance intermediate. pH 5.5-7.5, neutral to basic or acidic soils.

Description: Aggressive, rhizomatous, sod forming, perennial aquatic; 3.0-10', typically 5.0' 14" minimum root depth.

Comments: status: Generally considered invasive. phenology: Blooms 6,7 Limited use in wetland restoration. Cool season, aggressive.

"Other common plants, which presented themselves at different places on our route through the prairies" *Typha latifolia* L. (Short 1845).

Associates: Provides food for geese, muskrats, beavers, & cover for nesting ducks & spawning fish. Excellent cover for wildlife. Waterfowl eat rootstocks & seeds, use cover. Marsh birds & shorebirds eat seeds. Aquatic furbearers (esp. muskrats) use cover, eat leaves & rootstocks, & use plant for nesting material.

ethnobotany: Leaves used to make mats for thatching wigwams by Ojibwa, Pottawatomie, & Menominee; mats made in summer (sm23, 32, 33). Ojibwa utility plant (den28). Archaeological record: Kettle Hill & Ash Cave in Ohio.

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XYRIDACEAE Agargh 1823 **YELLOW-EYED GRASS FAMILY**

XYRIS Linnaeus 1753 **YELLOW-EYED GRASS** *Xyris*

Xyris torta JM Smith MOUNTAIN YELLOW-EYED GRASS

"Found only in the boggy places in Sugar River sand area; Section 3 Rockton Township & Section 23 Shirland Township; uncommon in both places." (ewf55)

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Credo Elvem etiam vivere.

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)
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.