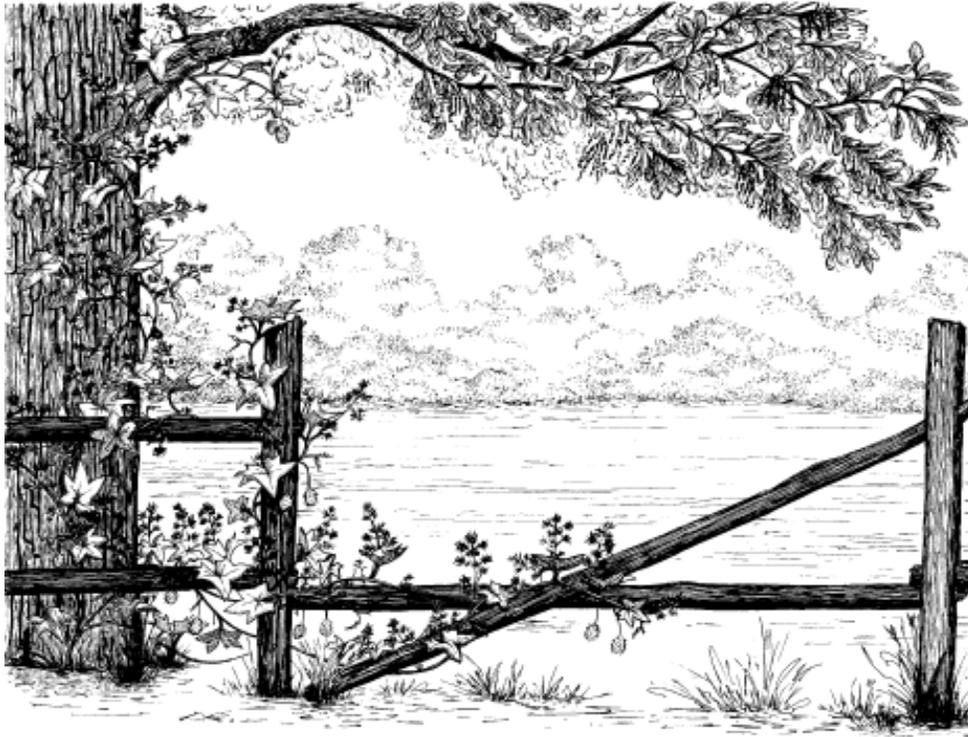


Why do you build me up, Buttercup Baby?

Revised 04 May 2015



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RANUNCULACEAE AL de Jussieu 1789 **BUTTERCUP FAMILY** A family of ca 62 genera & 2450 spp of herbs, shrubs, & vines, of temperate & boreal regions. ☞ Almost all genera have narcotic properties, some of them being ‘highly prejudicial to animal life’. These properties are lessened by boiling heat or by drying, or heightened by spirits & sugar. Fruits are achenes, berries, or follicles. The BUTTERCUP family has many species with hydrophilic, or recalcitrant, seeds. Care must be taken in their proper use in restoration. The follicles of some species resemble medieval jester hats. Some *Saxifragaceae* produce similar fruits, ie the garden Peonie.

why do you build me up (build me up)
buttercup baby?
just to let me down (let me down)
and mess me around?
and then worst of all (worst of all)
you never call baby

like you say you will (say you will)
 but I love you still
 I need you (I need you)
 more than anyone darlin
 you know that I have from the start
 so build me up (build me up)
 buttercup don't break my heart
 Mike D'Abo & Tony Macaulay 1968



Folliculi, a typical fruit type in *Ranunculaceae*, on *Aquilegia*

ACONITUM Linnaeus 1753 **MONKSHOOD, ACONITE, WOLF-BANE** *Ranunculaceae* *Aconitum* from the Latin name, *aconitum*, the Monk's Hood, a poisonous plant, from ancient Greek ἀκονίτιον, *akoniton*, loosely translated as unconquerable poison or according to Pliny, the name aconite is from the Black Sea port of Aconis. Alternately from the Greek name *akonite*, without dirt, or ἀκονίτιος, *akinitos*, without dust, because the plant grew in rocky soil or on dry rocks; alternately from Latin *lycoctonum*, *lykoktonon*, Greek *lykoton*, from *lykos*, wolf, & the base of *kteinon*, to kill, wolf slaying, referring to the plant's use as an arrow poison when hunting wolves. According to Gledhill, *Aconitum* is the name of a hill in Pontus, used by Theophrastus for the poison aconite, ἀκονίτιον. A circumboreal arctic & alpine genus extending south in the Rockies & Appalachian Mountains & in scattered interglacial refugia. Aconites produce diterpene alkaloids that range from relatively nontoxic to deadly poisonous. Fruits are many-seeded follicles. $x = 8$.

Aconitum columbianum Nuttall subsp ***columbianum*** *WI ☞ COLUMBIAN MONK'S-HOOD, (Columbian, of western North America; from Columbia. From the range map of this species, WESTERN MONKSHOOD would be a more appropriate common name.)

Habitat: Moist cool cliffs in shades forests. distribution/range: Largely western mountains, but disjunct in the Driftless Area of Wisconsin & Iowa; also in Ohio, & New York.

Culture:

Description: Erect, herbaceous, perennial, native forb; roots thick turnip-like; stems 1.5-2.5' tall; leaves wide, palmately-lobed into 5-7 deeply cut segments; inflorescence usually one branched cluster of a few stalked flowers; flowers purple to white, 0.75" long, top helmet-shaped, -merous; $N 2n = 16, 18$. key features: The top of the flower is helmet shaped, palmately lobed leaves; **all parts should be considered deadly poisonous**, but this is probably not an extremely toxic aconite.

Comments: status: phenology: Blooms August to October.

Associates:

VHFS: [*Aconitum columbianum* Nutt subsp *pallidum* Piper, *A columbianum* Nutt var *bakeri* (Greene) HD Harr, *A columbianum* Nutt var *columbianum*, *A columbianum* Nutt var *ochroleucum* A Nelson, *A geranioides* auct pro parte, non Greene, *A hansenii* auct pro parte, non Greene, *A infectum* Greene, *A leibergii* auct pro parte, non Greene, *A mogollonicum* auct pro parte, non Greene, *A noveboracense* A Gray ex Coville, *A noveboracense* A Gray ex Coville var *quasiciliatum* Fassett, *A uncinatum* L subsp *noveboracense* (A Gray ex Coville) Hardin, *A viviparum* auct pro parte, non Greene]



Aconitum columbianum

Seed photo courtesy of Bend Seed Extractory, Seeds of Success, <http://seedsofsuccess.smugmug.com>

Aconitum napellus Linnaeus GARDEN ACONITE, aka VENUS'-CHARIOT, (*napellus* little turnip, from *napus*, turnip, a reference to the tuberous roots) Perennial forb, introduced from Europe, rare escape in Wisconsin. Species persists in old gardens or escaping from gardens. 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. Short viable. (tchn)

Add *A uncinatum*.

ACTAEA Linnaeus 1753 ☞ **BANEERRY, COHOSH, HERB CHRISTOPHER, NECKLACE-WEED**

Ranunculaceae Actaea (ak-TEE-a) from Pliny, from Greek *ακτεα*, *ακταια*, *aktea*, *aktaia*, an old name for the elder (*Sambucus nigra*), for the similar leaves, & from its wet habitat, or for the leaves or the fruits; alternately Latin *actaea* from Pliny, for a strong-smelling plant, HERB CHRISTOPHER. Fruits of both species of *Actaea* are poisonous, or at least unpalatable.

The common name baneberry is from the poisonous nature, a bane, as in that which causes death or destroys life. The poisonous principal is an essential oil or glycoside, protoanemonin, found in all parts of the plant but concentrated in the berries & root. Symptoms include gastroenteritis, stomach cramps, headache, dizziness, vomiting, diarrhea, & circulatory failure. (Rook 2002)

Freshly harvested seed planted within a few days germinates about half the following spring & the rest a year later. Dried seed takes two or three years to germinate. Cullina (2000) code B or C*, G. Seeds are hydrophilic & mature mid- to late summer. Hard-seededness is noted in some reports of seed analysis.

Transplant in spring to a lightly shaded spot.

Actaea X ludovici B Boivin HYBRID ACTAEA, *Actaea alba* (L) Mill X *A rubra* (Aiton) Willd
Native perennial forb.

VHFS: [*Actaea alba* (L) Mill X *A rubra* (Aiton) Willd, *A pachypoda* Elliott X *A rubra* (Aiton) Willd]

Actaea pachypoda Elliott ☞ DOLL'S EYES, aka NECKLACE WEED, WHITE BANEERRY, WHITE BEADS, WHITE COHOSH, WHITE DOLL'S EYES, (from Latin *pachys*, *pachy*, thick, fat, & *pus*, *pod*, foot, meaning thick

stalk, for the thick pedicles.) The common name is a reference to the white fruit with the black, persistent stigma resembling a doll's eye. upl

Habitat: Mesic woods, mesic woodland, moist soils. Forests.

Culture: ①Seeds require multiple alternating cold moist stratification & warm moist stratification (pm09).

②Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) ③Sow at 18-22°C (64-71°F) for 2-4 wks, move to +2 to +4°C (34-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination (tchn). ④Wash clean 40-70-40 (85-90% in 3-6 weeks) with fresh seed, 70-40 (85-90% in 3-6 wk) with seed dry stored 6 mo 70 or 40. Seeds outdoors in August germinates 25% in November & March & April. (Deno 1993).

48,786; 55,371 (gnhm14), 80,000 (ew11) seeds per pound.

asexual propagation: Division difficult.

cultivation: Space plants 1.0-2.0'. Reported as clay soil tolerant, but best in rich, humusy soils. Zones 3-8. Companion plant ferns, *Asarum canadense*, & spring ephemerals.

bottom line: Species must be dormant seeded. Germ 2.0%. Dorm 95%. Test 23 days.**

greenhouse & garden: Fresh seed, dormant seed, double dormant.

Description: Erect, herbaceous, perennial, native forb; stems 1.5-2.5 ft; leaves alternate; 2-3 times 3-parted into separate, sharply toothed, oval-oblong leaflets, usually hairless on the bottom; inflorescence a 2" dense, long-stalked cluster usually longer than wide; flowers white, 4-10-merous, petals falling off leaving numerous white stamens; mature stigma as wide or wider than the ovary; fruit a several seeded, white berry, occasionally red, on a pink to red, very thick stalk, 8-12 seeded; N. key features: Mature stigma as wide or wider than the ovary; white on a pink to red, very thick stalk; leaf 3-parted, hairless on the bottom.

Comments: status: phenology: Blooms 4,5,6. Attractive cut flower & dried seed head. Shade gardens, the airy, fine-textured foliage has season long interest. Forms ground cover when grouped. White flower, followed by chalky white fruit with an "eye spot" formed by the persistent stigma. Fruits persist for 4-6 weeks late summer into early fall. Fruit is poisonous. ☠

"Uncommon in rich woods & ravines. Spring Creek woods, the "dells" of Hall Creek & the Kishwaukee River ravines above New Milford. We have not seen red berries on this species. (*A pachypoda* Ell)" (ewf55 as *A alba* (L) Mill)

In cleaning seeds in 2011, some of the fruits were hand cleaned & the seeds were counted. In 26 fruits, 175 seeds were produced, averaging 6.73 seeds per fruit. There were 1@3, 2@4, 4@5, 3@6, 10@7, & 7@8 seeds per fruit.

Associates: Deer resistant. Walnut tolerant.

ethnobotany: Used as medicinal beverage by Ojibwa (Gilmore 1933)

VHFS: [*Actaea alba* Ell, *A alba* auct non (L) Mill, *A pachypoda* Elliott f *microcarpa* (DC) Fassett, *A pachypoda* Elliott f *rubrocarpa* (Killip) Fern] A red-fruited form is also known, form *rubrocarpa*, which according to Cullina (2000), comes true from seed about 50% of the time. It may represent a hybrid with *A rubra*.



Actaea pachypoda

Actaea rubra (Aiton) Willdenow RED BANE BERRY, aka *ACTÉE ROUGE*, COHOSH, RED COHOSH, NECKLACEWEED, SNAKEBERRY, *Wi'cosidji'bik*, drawing plant or root, Ojibwa, In France *POISON DE COULEUVRE*, in Finland *LÄNNENKONNANMARJA*, (from Latin *ruber*, *rubr-*, red, ruddy.)

Habitat: Woods & thickets. Moderately moist woods & forests, in rich soil. Mixed coniferous & hardwood forests, sugar maple woods, red pine, & white pine. Forests. distribution/range: North America & Eurasia.

Culture: Propagation: Fruit set typically high, 100%. ① “Moist cold treatment, very light cover.” (mfd93)

② Seeds need a cold, moist period followed by a warm, moist period followed by a 2nd cold, moist period (pm09). ③ Sow at 18-22°C (64-71°F) for 2-4 wks, move to +2 to +4°C (34-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination (tchn). ④ Extended germ for fresh seed. 40-70-40 18% in 4-6 weeks for seed dry storage 6 months 40 & 40-70-40 4% seed dry storage 6 months at 70 (Deno 1993).

⑤ “Seed requires dormant period, usually taking 2 years to germinate in the wild. Seedling growth good in both sun & shade. While survival is better in the shade, seedlings in the sun are slightly larger & have more biomass allocated to roots. Seedlings begin to bloom in their third year. Difficult from seed. Stratification & a moist seeding mixture are necessary for germination. Reported results mixed. Stratify warm 4 weeks, cold 6 weeks. Plant without bottom heat. Rootstock easy to transplant fall or spring when dormant” (Rook 2002) 544,000 (wns01) seeds per pound.

cultivation: Clay soil tolerant (timber clay). Frequent in moist microsites. Tolerates fires. Hardy to USDA Zone 3 (average minimum annual temperature -40°F).

bottom line: Species must be dormant seeded. Germ 9.0%. Dorm 88%. Test 25 days.**

Description: Native erect, deciduous, bushy-shaped perennial forb; roots poisonous, thick rootstock; stems 1.5-3.0' one to several, branched; leaves alternate; 2-3 times 3-parted into separate, sharply toothed & lobed, oval-oblong leaflets often with some hairs in the bottom; flowers in a fluffy cluster; flowers white, 4-10-merous, sepals 3-5, greenish white, 2-4.5 mm, petals 4-1, distinct, cream-colored, stamens 15-50, pistil 1 simple, ovules many per style, style very short or absent, small white petals falling off leaving numerous, showy white stamens, mature stigma narrower than the ovary; infructescence a 2" ball-like, dense, long-stalked cluster usually about as wide as long; fruits are showy, poisonous, several-seeded (± 16), red berry, occasionally white, on greenish, thin stalks, each containing 9-16 seeds; seed red-brown (dark brown to reddish brown), about 0.13" long, obconic to wedge-shaped, rugulose; N. key features: Mature stigma narrower than the ovary; red berry on green thin stalks; leaves three-parted. Differs from WHITE BANE BERRY by the shape of the fruit cluster; flatter rather than elongated, on slender stalk rather than thicker.

Comments: status: Native. phenology: Blooms May - June (July) & fruits August to October. In Minnesota leaves & flowers in first 3 weeks of growing season, leaves die back in midsummer. Flowers have a rose-like fragrance. An attractive woodland ornamental, handsome foliage with brilliant red berries, which are unpalatable & may cause illness if consumed. Grown with care in woodland gardens, its open, airy foliage works very well interspersed with ferns. Planted in mass, species forms an interesting ground cover.

“Less common than the above (*A pachypoda*), in the same places, especially the ravines above New Milford. The albino forma *neglecta* (Gillman) Robins is quite unusual.” (ewf55)

Associates: Pollinated by several insects; may be self-sterile; The berries eaten by deer mice, white-footed mice, red squirrels, eastern chipmunks, & red backed voles. Some small mammals remove & eat the seeds leaving the pulp. Many birds consume fruit, including Yellow Bellied Sapsucker, American Robin, Gray Cheeked Thrush, Brown Thrasher, Gray Catbird, & Grouse. Several bird species eat the fruit but void the seeds. Seeds are dispersed by birds & small mammals; chipmunks may bury seed.

ethnobotany: Roots used as medicinal beverage by Ojibwa & Pottawatomie (sm32, 33). Used for diseases of women (den28). Rhizome reported to be emeto-purgative & parasiticide. Indians of the northwest used a weak root decoction to treat colds, arthritis, syphilis, rheumatism, & emaciation. Chewed leaves were put on boils & wounds to stimulate blood flow.

VHFS: A white-fruited form is also known. It lacks the persistent stigma of DOLL'S EYES.

[*Actaea arguta* Nutt, *A arguta* Nutt var *viridiflora* (Greene) Tidestr, *A eburnea* Rydb., *A neglecta* Gillman, *A rubra* (Aiton) Willd f *neglecta* (Gillman) BL Rob, *A rubra* (Aiton) Willd subsp *arguta* (Nutt) Hultén, *A rubra* (Aiton) Willd subsp *rubra*, *A rubra* (Aiton) Willd var *arguta* (Nutt) Lawson, *A rubra* (Aiton) Willd var *dissecta* Britton, *A rubra* (Aiton) Willd var *gigantea* R.R. Gates, *A spicata* L subsp *rubra* (Aiton) Hultén, *A spicata* L var *arguta* (Nutt) Torr, *A spicata* L var *rubra* Aiton, *A viridiflora* Greene]



Actaea rubra

Seed photo courtesy of Bend Seed Extractory, Seeds of Success, <http://seedsofsuccess.smugmug.com>

ANEMONE Linnaeus 1753 **ANEMONE, ANÉMONE, WINDFLOWER, PASQUEFLOWER** *Ranunculaceae*
Anemone (a-ne-MOW-nee, anemo'ne, or anem'one) Wind flower, a name used by Theophrastus, from Latin & Greek *anemōnē*, from ἄνεμος, *anemos*, the wind, for it was thought that the flowers did not expand until beaten by the wind, or in reference to the elevated & windy habitat of many species; or a corruption of the Semitic name for Adonis, *Na'man* (*Na'amen*, *Naâmān*). His blood is said to have given rise to the blood red flowers of *A coronaria*. Alternately from the nymph Anemone who was turned into a flower by a jealous goddess, & forever buffeted by the north wind. Colloquially mispronounced a-NEM-oh-nee. Herbaceous genus (rarely shrubs) of about 140-200 species widely distributed in the more temperate & subarctic regions of Eurasia, North America, Central America, South America, & Africa, that have lobed or divided often-involucral leaves & showy flowers that lack petals but have showy sepals. *Hepatica* & *Pulsatilla* are sometimes placed in this genus. Most anemones are fond of limey soils. Many cultivated species are tuberous. Some species have hydrophilic seed. Fruits are achenes. $x = 7$ or 8 . Genus common names include ANEMONY.

Many members of the *Anemone* genus contain protoanemonin, an irritating acrid oil that is an enzymatic breakdown product of the glycoside ranunculin. While protoanemonin can cause severe topical & gastrointestinal irritation, it is unstable & changes into harmless anemonin when plants are dried or heated.

Rhizomatous & tuberous anemones produce seeds that are hydrophilic, Code B or Code C*. Most caespitose or caudex-forming species have semi-recalcitrant seeds that decline in viability after six months. Seeds mature late spring to mid-fall, depending on the species.

Anemone canadensis Linnaeus *CT, KY, MD, TN CANADA ANEMONE, aka CANADIAN ANEMONE, CANADIAN WINDFLOWER, MEADOW ANEMONE, (*canadensis -is -e* (kan-a-DEN-sis) of or from Canada or the north-east USA, of Canadian origin.) facw subgenus *Anemonidium*

Habitat: Wet meadows & prairies, mesic prairies, mesic savanna, open woodlands, calcareous or alluvial soils. Damp thickets, streamsides & ditch banks. In the se USA, moist forests, rare (w10). "Common, growing in large patches on low prairies, roadsides, & other damp places." (ewf55)

Culture: ①Seeds 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). ②Species has 'double dormant' seeds requiring alternating moist cold & warm periods, sow outside & allow 2 years for germination (he99). ③Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F for 1 month, then bring back to 50°F. (ew11) ④Sow at 18-22°C (64-71°F) for 2-4 wks, move to +2 to +4°C (34-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for slow germination (tchn). 96,000 (sh94), 97,600; 115,831 (gna11), 128,000 (pm02), 137,600 (ew11, aes12), 142,722 (gna06), 148,000 (jfn04), 164,343 (gnhm02), 205,802 (gna05) seeds per pound.

"*Anemone canadensis* Moist to mesic prairie. Blooms late May to mid July; PURE WHITE. Harvest August-September. 1 1/2'; percent of germination very low, but rapidly forms large vegetative colonies. Only method #1 tried. Three SEEDLING TRANSPLANTS of 1964 have become a vegetative colony of many square rods." (rs ma)

asexual propagation: Easy by division at any season with care.

cultivation: Space plants 1.0-2.0+. Rich, mesic soils, full sun to partial shade. Prefers humusy soils, but is also clay soil tolerant. Hardy zones 3-6. One plant may grow to 30' diameter in a fifteen years.

bottom line: Our data consistently show high percentages of dormant seed; dormant seed with properly cold-stored, moist seed. Recalcitrant. Multiple cycles. Consistently dormant. Germ 6.4, 4.0, 2.0, sd 7.6, r0.0-34 (34)%. Dorm 65.3, 65, 43, sd 18.7, r30-89 (59)%. Test 33, 33, 32, r28-37 days. (#25).**

greenhouse & garden: Seeds are hydrophilic. Easy from fresh seed sown as soon as it is ripe or immediately cold moist stratified seed.

Description: Erect perennial; rhizomatous, colonial; stems 1.0-1.25'; flowers white; seed is an achene;

Comments: status: Endangered in Connecticut & Tennessee. Historical in Kentucky. Endangered & extirpated in Maryland. phenology: Blooms 6-7. The seeds are a rich tan-brown when ripe. In northern Illinois, collect seeds during the 2nd to 4th weeks of July. In se Wisconsin collect seeds August - September (he99). Attractive late spring, early summer bloomer. Landscaping, ground cover in open woodland gardens, calcareous slopes, ditch banks, meadows, swales, & rain gardens. Important late spring early summer color. Can be aggressively rhizomatous, forms large colonies quickly in rich soil. Genetic seed source McHenry Co, Grafton Twp. You may see the cryptic common name ROUND-LEAF THIMBLEWEED in some ACOE job specifications.

Associates: Butterfly nectar plant. Pollinated by bees & syrphid flies. The plant is self-fertile. Plants seem immune to rabbit predation. Said to be deer resistant.

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



Anemone canadensis

Anemone caroliniana Walter *IN, WI CAROLINA ANEMONE, aka PRAIRIE ANEMONE, (*carolinianus* -a -um ca-ro-lin-ee-AH-nus of Carolina, Carolinian, of North or South Carolina, USA) upl Subgenus *Anemone*; section *Anemone*; group *Coronaria*.

Habitat: Sand & limestone prairies, dry rocky barrens. Calcareous soils. Does not like tall or aggressive competition. "Found infrequently in dry open places & on prairies & hills." (ewf55)

Culture: Seeds are hydrophilic. ① Fresh seed should be planted within days of ripening, cool soils. ② Cullina code B*. ③ 60 days cold moist stratification (pm15). ④ Sow at 20°C (68°F), if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). 2,268,000 seeds per pound.

asexual propagation: Division of mature plants very early spring or fall. Mark plants to be divided as they are dormant in the summer.

Description: 2.0-8.0'; colonial, roots tuberous; flowers white to pink to purple, to deep blue, followed by a diminutive, ragged, thimbleweed seed head that quickly disintegrates; cottony plumed achene; $N 2n = 16$

Comments: status: phenology: Blooms April & May, the first prairie flower to bloom for those south of the native range of PASQUE FLOWERS. In northern Illinois, collect seeds in late May. This is the easternmost species of the tuberous type anemones. The plants go dormant in the summer, with new foliage emerging in the fall & overwintering. Non-competitive, does not like tall competition. May form a raggedy-man ground cover in sharply-drained sands. Tolerates cemetery mowing & horse grazing. Species forms colonies 1.0-2.0' or more in diameter, with few flowers per colony.

In the sand country of west Bureau & southern Whiteside cos, this is our first spring flower of the prairies. Because its foliage hugs the ground, protecting the plant from mowers & horses, this plant may persist in odd places. We have found CAROLINA ANEMONE in a well-kept sandy cemetery, a mowed natural area parking lot, in impenetrable colonies of PRICKLY PEAR CACTUS, & in a degraded remnant prairie pasture severely overgrazed by horses.



Anemone caroliniana, mowed sandy cemetery, Green River Lowland.

Anemone cylindrica A Gray *OH THIMBLE WEED, aka CANDLE ANEMONE, LONG FRUITED ANEMONE, LONG-HEADED ANEMONE, (*cylindricus -a -um* cylindrical (of stalks), modern Latin *cylindric-*, from Greek a roll, cylinder, from κυλινδρικός, *kylindrokos*, from κύλινδρος, *kylindros*, cylinder.) upl

Habitat: Dry & mesic prairies, hill & sand prairies, open woods dry open soil, prairies, & slopes, sandy fields & barrens, open sandy woods.

Culture: ①“Moist cold treatment, or cold treatment, or dry stored, or fall sown. Prefers cool soils: sow in fall or early spring. Light cover. Variable germination.” (mfd93). ②No pre-treatment necessary other than cold, dry stratification (pm09). ③30 days moist stratify improves germination, but not necessary. Field sow fall or spring. (pnnd). ④No pretreatment needed. Sow seeds just below the soil surface at 65°F & water. (ew11) ⑤Sow at 20°C (68°F), if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). ⑥Easy from dry stratified seed, dry storage (180 days). 335,008 (jfn04), 363,000 (gn), 376,000 (ew11), 416,000* (pm02), 549,969* (gnh01), 560,000 (sh94), 568,000 (aes12), 630,876 (gnh11), 742,436* (gnh03), 794,401 (gnam06) seeds per pound,

“*Anemone cylindrica* Mesic to dry prairie. Blooms mid Jun to mid July; GREENISH WHITE. Harvest October. 2'; easy by method #1. Successful by SEEDLING TRANSPLANT. No results from other methods. Blooms 2nd year. No results from other methods to date.” (rs ma)

asexual propagation: Careful division of mature plants.

cultivation: Space plants 1.0-1.25' Tolerates clay soils. Full sun to partial shade.

bottom line: Test data show that dormancy varies from year to year, & some years dormant seeding is required to insure germination. Flipflop species. Germ 71.6, 80.3, 80, sd 28.6, r3.0-98 (95)%. Dorm 14.3, 1.0, 0.0, sd 27.3, r0.0-89 (89)%. Test 35, 32, 41, r28-43 days. (#21)**

greenhouse & garden: Moist cold stratify or dormant seed, cool soils.

Description: Erect, herbaceous, perennial, native forb; stems 1.5-2.0'; flowers white, followed by a head of cottony plumed achenes.

Comments: Threatened in Ohio. Blooms 6,7,8. In southeast Wisconsin, collect seeds September - October. Attractive dried seed heads, must be cut slightly 'green' for use in dried arrangements, as ripe ones may disintegrate into a mass of 'cotton'. Landscaping, specimen plantings, & xeriscaping. The defluffed seed is tannish-gray, & larger than the similar brownish-black *A virginiana* achenes. Seed source nursery production plots, genetic source DuPage, Campton Twp, Kane, & Will cos (Horlock).

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

Associates: Pollinated by bees & syrphid flies. Reported to be deer resistant.

ethnobotany: Roots used as medicinal beverage by Ojibwa (sm32).

VHFS:

Anemone patens Linnaeus var **wolfgangiana** (Besser) Koch) PASQUE FLOWER, aka CUTLEAF ANEMONE, HARBINGER OF SPRING, HARTSHORN-PLANT, PRAIRIE CROCUS, PRAIRIE SMOKE, *PULSATILLE*, *Gogeda'djibug*, Ojibwa, (*patens*, spreading out, opening up, the variety is named for its discoverer Friedrich Wolfgang, 19th century botanist) The common name PASQUE FLOWER is a reference to the plant blooming in early spring, during Easter or Passover; also the name of a flower of European calcareous grasslands. *Pasc-*, *pasch*, is a root meaning Easter or Passover in many European languages. *Pasch* has come to us through Latin, Norman, French, Greek, Aramaic, Syriac, & Hebrew. See the discussion in the OED. upl

Habitat: Limestone prairies, dry prairies, & gravel hill prairies. distribution/range: Illinois & Wisconsin west to the Rocky Mountains.

Culture: ① "Sow shortly after ripening for germination the same year, or moist cold treatment 14-21 days to 60 days. Do not over mist/water. Variable germination." (mfd93) ② 60 days cold moist stratification (pm09). 60 days cold moist stratification, or best planted outdoors in the fall (pm15). ③ Sow seeds immediately when ripe, or seeds germinate after about 60 days of cold, moist stratification (he99). ④ 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) ⑤ Sow at 18-22°C (64-71°F) for 2-4 wks, move to +2 to +4°C (34-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination (tchn). 288,000* (pm02, sh94, ew12, aes12), 806,400 (wns01) seeds per pound.

"*Anemone patens wolfgangiana* Dry hill tops. Blooms April; PALE VIOLET. Harvest June. 8"; plt seeds while fresh, transplant next spring; flowers following spring. Seeds should be planted while fresh; emergence occurs same season. Susceptible to spring fire, needs small neighbors of low fuel content." (rs ma)

asexual propagation: Division of mature plants.

cultivation: Space plants 1.0-1.25'. Calcareous soils. Pots (2000) says cool moist soil??, but they're in a desert.

bottom line: Best established from plants.

greenhouse & garden: Sow in fall or stratify 30 days & spring plant. Dried stored seed produces good green house crop (gni). Fresh seed is nondormant & germinates shortly after sowing. Cold moist stratify 60 days.

Description: Native, erect, perennial forb; 0.5-1.0' covered with silky hairs; pink to blue (pale-purple) flowers, stems in flower very short, in fruit 8-12"; tails of achenes 1.25" long.

Comments: status: Floral emblem of Manitoba & South Dakota. phenology: One of the first flowers in early spring, April & May, followed by feathery seed heads. Collect seed late May to June. Rock gardens, non-competitive, does not tolerate shade, grassy competition, or moist soils. Seed source nursery production original source gravel hill prairies near Byron, Illinois. This plant, like *Geum triflorum*, is naturally known only from the northern tiers of cos in Illinois. This 'boreal' aspect may limit this species use in roof gardens, where it is best established from plants.

"Rather frequent on dry hill-tops, gravel bluffs, & upland prairies. Usually in very exposed places. The

gravel hills north of Forest Hills Country Club, hill-tops east of Roscoe, the limestone hill east of Lovejoy school north of Loves Park. This & *Hepatica* are our first spring flowers.” (ewf55)

Associates: Pollinated by bees & syrphid flies. Attracts butterflies. Deer resistant.

ethnobotany: Root used as medicinal plant by Ojibwa (den28). Ojibwa headache medicine plant is alterative, sedative, & antispasmodic (den28).

VHFS: The alternate nomenclature is *Anemone patens* L var *multifida* Pritz, as in m14 or *Pulsatilla patens* (L) Mill ssp *multifida* (Pritz) Zamels, as in pug13. [*Anemone patens* Linnaeus, formerly *Pulsatilla hirsutissima* (Pursh) Britton. Also known as *A ludoviciana* Nutt, *A nuttalliana* DC, *A patens*, *A patens nuttalliana*, *Clematis hirsutissima* Pursh, *Pulsatilla ludoviciana* (Nuttall) A Heller, *P patens multifida*]

“*Anemone patens* Linnaeus var *multifida* (a species included in this treatment) was called *Pulsatilla multifida* (Pritz) Juzepczuk for the former Soviet Union by SV Juzepczuk (1970) & *Pulsatilla patens* (Linnaeus) Miller var *multifida* (Pritz) Li SH & Huang YH for China by Wang W-T (1980).” (fna)





Anemone patens

Anemone quinquefolia Linnaeus WOOD ANEMONE, aka ANÉMONE À CINQ FOLIOLES, LOW ANEMONE, MAYFLOWER, NIGHTCAPS, WINDFLOWER, (*quinquefolius -a -um* (kwing-kwee-FO-lee-us) with 5 leaves, or leaflets; with five leaves diverging from one point.) Common name is from its woodland habitat. Subgenus *Anemonanthea*, section *Anemonanthea*, series *Quinquefoliae*

Habitat: Calcareous upland woods, moist soil. Woodland edges, moderate to dense shade, rich moist soil.

Culture: ? 272,000 (pm 01) seeds per pound. Currently unavailable as seeds or plants in the general market, but it was available as bare root plants briefly at one time. 2014 available again. (See Rod Bowen in MN)

cultivation: Division of rhizomes while the plant is dormant in late summer or fall.

Description: Native, colonial, spring ephemeral perennial wildflower; stem slender, 2-8" tall; leaves dark green, deeply cut, usually appearing as five, occasionally three, leaflets, hence the species name; disappearing by midsummer, solitary, divided leaves also arise from the spreading rootstalk; flowers white, 0.75", usually with five petals (actually sepals), fruit a small dry capsule.

Comments: status: phenology: Blooms in the spring & quickly goes dormant. Forms largely self-sterile colonies with little seed set. Seed source ??????.

“Common in woods throughout. Groups of plants in which all flowers are pink are not uncommon.” (ewf55)

VHFS: This species was formerly lumped with the European *Anemone nemorosa* Linn. **Add varieties m14.**

Anemone virginiana Linnaeus *RI TALL ANEMONE, aka LARGE ANEMONE, TALL THIMBLEWEED, THIMBLEWEED, TUMBLE-WEED, WIND FLOWER, (*virginianus -a -um* of or from Virginia, USA, Virginian.) Several common names are in reference to the thimble-like ‘fruit’. [upl] Subgenus *Anemone*; section *Anemone*; group *Multifida*

Habitat: Mesic savanna, disturbed woodlands. Dry open woods, wooded slopes, & woodland edges.

Culture: ①No pre-treatment necessary other than cold, dry stratification (pm09). ②Seeds germinate after about 60 days of cold, moist stratification. Seeds germinate most successfully in cool soil. Sow in early winter through early spring. (he99) ③No pretreatment needed. Sow seeds just below the soil surface at 65°F & water. (ew11) ④Sow at 20°C (68°F), if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). 228,700 (gni fresh seed), 235,294 (gni), 320,000 (pn, jfn04), 322,672 (gna04), 383,446 (gna04B), 384,000

(ew11), 448,000* (pm01), 526,377 (gn06), 546, 001 (gnam04), 568,000; 656,000 (aes12), 664,714 (gnh01) seeds per pound.

asexual propagation: Careful division of mature plants.

cultivation: Space plants 12-15". Moderate shade tolerance, full sun to woodlands. Clay soil tolerant.

bottom line: Test data show that dormancy varies from year to year, & dormant seeding is required to insure germination. Flipflop species. Germ 60.8, 70.5, 98, sd 32.3, r1.0-98 (97)%. Dorm 27.9, 18, 0.0, sd 28.2, r0.0-81 (81)%. Test 35, 36, 39, r25-42 days.**

greenhouse & garden: Moist cold stratify or dormant seed, cool soils. Pleasantly self sows in a fire-managed landscape.

Description: Native, erect, herbaceous, perennial forb, somewhat hairy; stems 2.0-3.0'; attractive white flowers;

Comments: status: Historical in Rhode Island. phenology: Blooms 6,7,8. Collect seed August (Heon et al 1999). Calcareous soils. Attractive dried seed heads are useful in dried arrangements, but in the fall landscape, they eventually disintegrate into cottony masses. Landscaping, savanna gardens, woodland & shady borders, meadow restoration. Very attractive planted in mass in open woodlands. Species has naturalized quite well outside my old office window in 200-bushel corn, mesic black soils over sand, growing with *Carex emoryi*. It has even seeded into the washed dolomite gravel of our old plant holding area. Seed source nursery production, genetic sources savannah cemetery remnant, near Mendota, LaSalle Co, & woodland edges, Wyonet & Thomas, Bureau Co. The defluffed seed is brownish black, & smaller than the similar, tannish grey defluffed seeds of *A cylindrica*.

“Open woods & rocky river banks. More common than *A cylindrica* which has longer heads.” (ewf55)

Associates: Walnut tolerant.

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

VHFS: Add varieties w12.



Anemone virginiana

ANEMONELLA Spach **RUE ANEMONE, WINDFLOWER** *Ranunculaceae* Now included in *Thalictrum*. *Anemonella* (ann-emm-on-ELL-ah) little *Anemone*, from the genus name *Anemone* & *-ella*, a Latin feminine diminutive suffix, in one source as little *Anemone*-resembling, but that requires an *-oides*! “They do not know very good Latin, these botanists.” Albert Hofmann.

Anemonella thalictroides (Linnaeus) Spach **RUE ANEMONE**, aka **ANEMONE**, **ANEMONE RUE**, **ANEMONELLA**, **MAYFLOWER** [MAY FLOWER], **MEADOW-RUE** [MEADOW RUE, MEADOWRUE], [RUE-ANEMONE], **WINDFLOWER** [WIND FLOWER], **WINDFLOWER MEADOW-RUE** [WIND FLOWER MEADOW RUE], *Ūtsati uwadsiska* fish scales, from shape of leaves, Cherokee,

Habitat: Woodland edges, moist to dry & moist forests. “A common woodland spring flower.” (Fell 1955)

Culture: ①Seeds are hydrophilic & mature early summer. Harvest & sow as soon as ripe. Viability declines after 3-4 weeks of storage. Transplants must have crown at the surface to avoid rot. Tubers can be separated from the mother plant while dormant. (cu00) ②In order to germinate, seeds need a warm, moist period followed by a cold, moist period. Plant fresh seed or keep moist. Refrigerate in a ziplock bag until planting or starting other treatment (pm09). 208,000 (pm01, aes12), 215,008 (jfn04) seeds per pound

asexual propagation: Division as above.

cultivation: Dust with limestone every few years. Too much moisture in summer & fall may cause crown rot.

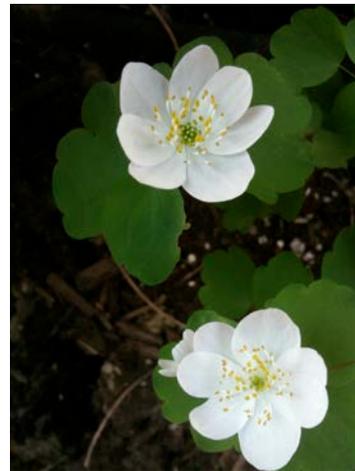
bottom line: Hand plant fresh seed or dormant seed with seed that has been properly stored. Recalcitrant. Germ 3.0%. Dorm 58%. Test 32 days.**

Description: Erect, herbaceous, perennial, native forb; roots small cluster of tubers; stems 4-8", hairless, slender leaves stalked basal leaves 2 times 3-parted with distinct, rounded leaflets, leaflet lobes with teeth towards the tip; inflorescence few-flowered, umbel-like cluster; flowers pink to white, 5-10-merous, 0.33-1.25" wide, petal-like sepals; N. key features:

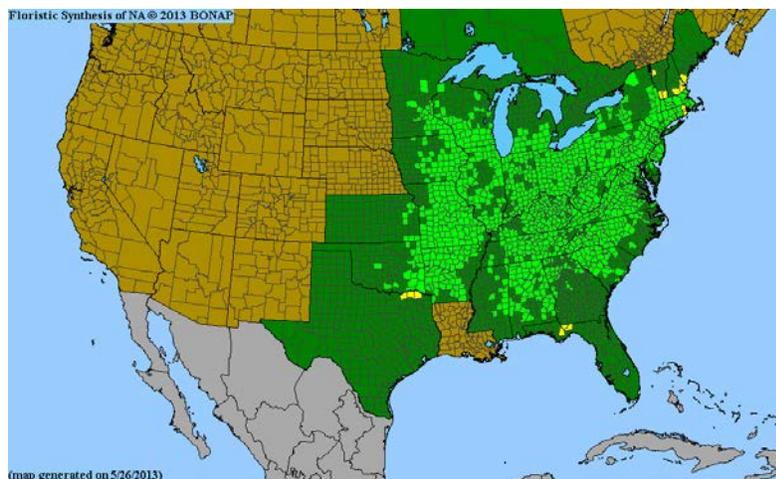
Comments: Seeds mature early summer. Plants go dormant in summer heat, but may continue to bloom if given sufficient moisture. Genetic seed source Kane & DuPage cos.

VHFS: This is usually called *Thalictrum thalictroides* (Linnaeus) Eames & Boivin. Species is maintained as *Anemonella* by Mohlenbrock (2014). "In *Thalictrum*, *T thalictroides* is unique in having umbelliform inflorescences & is therefore easy to identify. Based on this one distinction, many botanists still place it in the genus *Anemonella*. The leaflets, flowers, & fruits, however, are not unlike those of *Thalictrum*." (fna)

Variety *rosea*, a pink form that comes true from seed, is known from the upper Midwest. [*Anemone thalictroides* L, *Anemonella thalictroides* (L) Spach, *A thalictroides* (L) Spach f *chlorantha* Fassett, *A thalictroides* (L) Spach f *favilliana* Bergseng ex Fassett, *Syndesmon thalictroides* (L) Hoffmanns, *Thalictrum anemonoides* Michx, *T thalictroides* (L) AJ Eames & B Boivin]



Anemonella thalictroides



Anemonella thalictroides

AQUILEGIA Linnaeus 1753 **COLUMBINE, FIVE-BIRDS-TOGETHER** *Ranunculaceae* *Aquilegia* (ak-wi-LEE-jee-a, ah-quill-EE-gee-ah) The name is from either Latin *aquila*, eagle, for the curved spurs of some European species resembling eagle claws (the claw-like nectaries), or Latin *aqua*, water & *legere*, to collect or draw, for the nectar at the base of the spurs, or possibly the wet habitat of some species. Some say from medieval German *Acheleia*, *Akelei* (*Aquilegia vulgaris*), from the Indo-European root *-ak*, acute or sharp. *Acheleia*,

Αχέλεια, seems to be Greek, a village on Cyprus. The common name COLUMBINE is from Latin *columba*, *columbae*, f, dove or pigeon, for the perceived resemblance of the five spurs resembling doves drinking from a dish. Both the COLUMBINE & the dove were symbols of the goddess Venus. In one tradition, Venus (Aphrodite) was born from a dove egg that fell from heaven. A Holarctic genus of herbs having irregular, showy spurred flowers, containing a cyanogenic glucoside. Fruits are follicles.

“One of the most valuable perennials, grown for its attractive foliage & pretty, spurred flowers, which are unequaled for their grace & color”. Prefers light sandy soils, with some shelter, short-lived in sun. The red-flowered species are pollinated by hummingbirds. Europe has no hummingbirds & the native *Aquilegia* are short-spurred & blue flowered. Similar appearing, red-flowered, western USA species may be marketed in the Midwest *A canadensis*. The spurs of the flowers are reported to be edible, full of nectar, & sweet, but the rest of the plant, especially the seeds & roots of some species are poisonous.

Germination slow & erratic, best below 65°F in bright indirect light. Sow October to February, or give 3 weeks cold treatment (jlh). Pots says sow in fall or stratify 30 days & spring plant.

Cullina (2000) recommends outdoor treatment. Code B.

As a BUTTERCUP, the seed should be treated as sensitive to over-drying.

Aquilegia canadensis Linnaeus *FL WILD COLUMBINE, aka CANADA COLUMBINE, CLUCKIES, COMMON AMERICAN COLUMBINE, “HONEYSUCKLE”, JACK-IN TROUSERS, ROCK LILY, WILD HONEYSUCKLE, (*canadensis* -is -e kan-a-DEN-sis, of Canada or northeast USA.) fac-

Habitat: Mesic savanna, prairie edges, sandy areas, & rocky woods & on ledges, usually on calcareous rock such as limestone or dolomite. Rocky, wooded or open slopes. Forests, shade. distribution/range:

Culture: propagation: ① “Moist cold treatment or fall sow. Very light to light cover. Good germination, not reliable.” (mfd93). ② 60 days cold moist stratification (pm09, 15). ③ Germinates in 20-50 days. Germination best with GA3 (jlh). ④ Fall plant or cold stratify at 40°F for 1 month for best results. Then sow on the soil surface at 70°F & water. (ew11) ⑤ Sow at max 5°C (41°F), germination irregular, often several months (tchn). ⑥ 30 days moist stratification improves germination, but not necessary. Field sow fall, early spring (pnnd). ⑦ “Easy from scarified seed & dry stratified seed” (K Robertson). 400,000 (pn02, jfn04), 434,034 (gnh02), 439,652 (gnh14), 448,000 (aes12), 496,000 (gran), 504,000 (ecs, ew11), 506,696 (gnh11), 543,387 (gna04), 590,761 (gna07), 593,852 (gia04), 608,000 (pm02), 611,850 (gna10), 630,556 (gna06) seeds per pound. Pure stand plant 4 lb pls per acre (gran).

asexual propagation: Division of mature plants with care when not flowering.

cultivation: Space plants 12-18”. Best in areas that are moist in the winter & spring, but dry out on the summer. Moderate to high water requirements. Full sun to partial shade. Medium to high moisture. Moderately coarse to moderately fine soils. Neutral soils, some acid tolerance. Full sun to woodlands. pH 5.0-8.0. Some native nurseries routinely specify this species in full sun mixes, which, at \$500 plus per pound for seed, is ...

bottom line: Successionally plant fresh seed or dormant plant properly stored seed. Semi-hydrophilic, overdrying is detrimental. Flipflop species. Germ 35.8, 19, 19, sd 32.9, r3.0-98 (95)%. Dorm 46.3, 48.3, 74, sd 30.8, r0.0-92 (92)%. Test 34, 35, 38, r21-47 days. (#47).**

greenhouse & garden: Genesis 2nd best germination 03/96 with winter sown seed brought into green house in March, best 03/02 greenhouse sown, hit with GA3 (ProGib). Fresh seed should be stored at 5°-6° C (41°F) for up to 4 months. Moist cold stratify (30 days, or 3-4 weeks) @ 5°C may help germination. Shallow cover, small seeds need light to germinate. Seed sown early might bloom first year. GA3 helps. Reseeds & welcomingly self-sows in partially shaded, low competition, weed-free, in-situ soils. Successional restoration, scattering fresh-picked seed helps increase stands.

Description: Erect, herbaceous, perennial, native forb; stems 1.0-2.5’; with nodding red & yellow flowers; fruits are follicles with black shiny seeds. key features:

Comments: status: Endangered in Florida. phenology: Plants emerge in March. Blooms 4,5,6. Seeds mature early summer, with the pods splitting open & seeds quickly scattering. After flowering, plants die back to a few basal leaves during the summer. Excellent cut flowers, attractive dried seed heads. Useful in landscaping as specimen planting, ornamental beds, pollinator gardens, shade gardens, & savanna restorations. Seed source nursery plantings, genetic source Kane Co (Horlock) & New Bedford, Greenville Twp, Bureau Co.

Bob Horlock was Seedsman for The Natural Garden in the 1980s & early 1990s, & a pioneer in this industry. We were fortunate to have a friendly business relationship with Bob during the early years of our nursery. Bob’s seeds were collected in DuPage, Kane, & Will Cos. We traded back &

forth with him, & several of our production plots originate from his collections. Bob passed away in the early 1990s.

“Common in a variety of habitats & showing many variations.” (ewf55)

Associates: Attracts hummingbirds their pollinator. The flowers seem adapted for hummingbirds. In the northern Midwest, four species of hummingbirds visit this plant. Nectar source for butterflies. *Aquilegia* is the only larval food for the *Erynnis lucilius* COLUMBINE DUSKYWING. May develop crown rot & leaf spot if over-watered in the summer. Subject to root & crown borers. “Tracks” in the leaves are due to COLUMBINE LEAF MINERS. Reported to be deer proof. Walnut tolerant.

ethnobotany: Roots said to be eaten by Indians (jlh). Children suck nectar from the flower spurs. Root used as medicinal plant by Ojibwa (sm32). Seeds were scattered in stored clothes as a scent or rubbed on the skin as a love charm.

VHFS: Var *coccinea* (Small) Munz, with larger than typical sepals, is cited for this area, but is not validly distinct (sw94). *A formosa*, a more robust species of the Rockies & Canada is often sold as *A canadensis*.



Aquilegia canadensis

***Aquilegia coerulea* (caerulea?)** COLORADO BLUE COLUMBINE, (*coeruleus* (kie-RU-lee-us) cerulean, dark blue, deep sky blue, bright, deep blue, true blue, from Latin *caeruleus* -a -um, dark-colored, dark blue, cerulean, azure, sea-colored, sea-green.

Habitat: Native to high elevation in the Rockies. Does well in gardens in cool or shady sites.

Ⓞ Sow at 20°C (68°F), germination slow may take several months (tchn).

Moderately coarse to fine soils. Neutral to acidic soils. Moderate to high water requirement, partial shade.

Culture: Pure stand plant 4 lb per acre (gran). 363,328 (wns01), 368,000 (granite) seeds per pound.

Description: Western native perennial, 1-2.5', with large blue & white flowers blooming from June to August. Sometimes specified in “annual” mixes.

Aquilegia vulgaris DWARF COLUMBINE, (vul-GAH-ris common)

Habitat: Low to moderate moisture requirements. Full sun to partial shade. Cultivated species originally from Europe. Coarse to fine soils. Neutral to basic soils, some acid tolerance.

Culture: ① Sow at Max 5°C (41°F), germination irregular, often several months (tchn). Pure stand plant 4 lb. per acre (gran). 307,000 (gran) seeds per pound.

Description: Introduced perennial, 1-2.5', with purple, blue, pink & white flowers from May through August, spring to summer. Shorter than most species. Widely adaptable in the landscape

CALTHA Linnaeus 1753 **MARSH MARIGOLD, COWSLIP** *Ranunculaceae* *Caltha* (KAL-tha) New Latin, from Latin, pot marigold, from a Latin name for a strong-smelling yellow flowered plant, from Greek κάλαθος, *kalathos*, goblet, cup, for the yellow calyx may well be compared to a golden cup; or from the Greek name for some yellow flowering plants. Aquatic & marginal perennials. Fruitlets are follicles. Formerly known as *Caltha* (Rupp) L. Additional genus common names include MARSH-MARIGOLD [MARSHMARIGOLD, MARSH MARY-GOLD, MARSH MARYGOLD], MEADOW GOWAN, & MEADOWBOUTS

Caltha palustris Linnaeus MARSH MARIGOLD, aka AMERICAN COWSLIPS, BOOTS, BULL FLOWER, BULL-FLOWER, BULLFLOWER, BULLS-EYES, BULL'S-EYES BUTTERCUPS, CAPERS, COLTSFOOT, COLTSROOT, COMMON MARSH-MARIGOLD, COMMON MARSHMARIGOLD, COW LILY, COW-LILY, COWLILY (MISAPPLIED), COW LIPS, COW-LIPS, COWLIPS COWSLIP [COWSLIPS], COWSLOP [COW-SLOP], CRAZY BET [CRAZY-BET], CROWFOOT (MISAPPLIED), DRUNKARDS, GOLDFLOWER [GOLD FLOWER], GOOLS, GREAT BITTER-FLOWER [GREAT BITTER FLOWER], GREAT BUTTER-FLOWER [GREAT BUTTER FLOWER], HORSEBLOB [HORSE BLOBS, HORSE BLOB, HORSE-BLOB], KINGCUP [KING CUP], MARE BLEBS, MARE BLOBS, MARIGOLD, MARSH GOLDFLOWER [MARSH GOLD-FLOWER], MARSH MARIGOLD [MARSH MARYGOLD] (from Saxon *Merse Mear-Geallia* "MARSH-HORSE GOLD"), MAY BLOBS [MAY-BLOB], MEADOW BUTTERCUP [MEADOW BUTTERCUPS] (MISAPPLIED), MEADOWBOUTS [MEADOW BOUTS, MEADOW-BOUTS], MEADOW-BRIGHT [MEADOW BRIGHT], MEADOW-GOWAN [MEADOW GOWAN], MIREBLOB [MIRE BLOBS, MIRE-BLOB], MOUNTAIN MARSH-MARIGOLD [MOUNTAIN MARSH MARIGOLD], OPEN-GOWAN [OPEN GOWAN], PALSYWORT [PALSY WORT, PALSY-WORT], SOLDIER'S-BUTTONS [SOLDIER'S BUTTONS, SOLDIERS BUTTONS], SPRING COWSLIP [SPRING COWSLIPS], *SUMPF RINGELBLUME*, SWAMP-ROBIN, WATER-GOGGLES [WATER-GOGGLES], WATERBLOB [WATER BLOB, WATER-BLOB, WATER BLOBS], WATERBOUTS [WATER BOUTS], WATER-DRAGON [WATER DRAGON], WATER-GOWAN [WATER GOWAN], YELLOW MARSH-MARIGOLD [YELLOW MARSH MARIGOLD], *Mingde-Beguk*, wide leaf, Chippewa, *O'gite'bug* no translation, Ojibwa, (pa-LUS-tris *palustris*, of swamps, or growing in bogs) obl

Habitat: Swamps, wet woods & savannas, wet meadows, & fens. Wetlands that are not seasonally dry. Full sun to woodland, wet soils. **distribution/range:** Known but not mapped from Bureau Co.

Culture: Seeds are hydrophilic. ① "Sow immediately on ripening. If seed must be kept, do not permit it to dry. Store in a plastic bag in the refrigerator until ready to sow. Moist cold treatment has been recommended by some, but in my experience, fresh sown seed is best. Light cover." (mfd93) ② Fresh seed must be sown or moist cold stratified immediately. Seedlings do well as potted plants as long as they never dry out. Crowns can be divided in early spring before growth or in summer when dormant. Code D* (cu00) ③ In order to germinate, seeds need a warm, moist period followed by a cold, moist period. Further germination pretreatments not sure? (pm09) 60 days cold moist stratification (pm15). ④ Seeds germinate after about 60 days of cold moist stratification (he99). ⑤ Sow seeds just below moist soil surface at 75°F for 1 month. Move to 25°F for 6 weeks, then gradually raise temperatures. Somewhat difficult from seed. (ew11) ⑥ Sow at 22°C (72°F) in muddy compost for 2-4 wks, move to -5°C (23°F) for 4-6 wks, after which temperature should be raised gradually. Sow seed immediately after harvest (tchn).

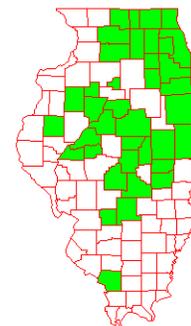
seed counts & rates: 416,000 (pm02), 608,000 (ew11), 647,185 (gna07), 683,132 (gnh13), 752,278 (gnam04), 755,200 (aes12), 756,000; 800,000 (jfn04), 853,383 (gnam11), 976,640 (wns), 1,035,616 (gnh14) seeds per pound.

availability: Availability is limited to the extent this sp should never be part of any general seed mix.

cultivation: Space plants 12-15". Rich, organic, moist soils, full sun to partial shade.

bottom line: Plant fresh seed or dormant seed using properly stored moist seed. Hydrophilic.

Multiple cycles? Dormancy appears to be increasing, but dorm as % of viable is always 92-100% of viable. Germ 3.6, 3.0, 2.0, sd 2.3, r0.0-7.0 (7.0)%. Dorm 68, 70, 70, sd 17.1, r35-85 (50)%. Test 35, 35, 35, r19-59 days. (#10)**



Caltha palustris

greenhouse & garden: Plants will self-sow in appropriate habitats.

Description: Erect, herbaceous, perennial, native forb; stems 1.5-2.5'; flowers yellow;

Comments: status: phenology: Blooms 3,4,5,6. Seeds mature late spring to early summer. In northern Illinois, collect seeds in mid-May - mid-June. Collect seeds in se Wisconsin in July (Heon et al 1999). Useful in landscaping, bog gardens, pond margins, clean water & ground water wetland restorations, & moist rain gardens with rich soil. Seed source nursery wetland plantings & remnant wetlands, Lee Co, Illinois.

“Uncommon in wet places. At times it blooms again in the fall.” (ewf55)

Associates: Attracts butterflies.

ethnobotany: Available for greens in late spring. Used for food by Ojibwa, Menominee, & Iroquois (sm23, 32, Waugh 1916). Root used as medicinal plant by Ojibwa (Gilmore 1933) treatment of coughs. Ojibwa medicinal plant for scrofulous sores (den28)



Caltha palustris

Illinois map courtesy of ILPIN.

CIMICIFUGA Wernischek 1763 **BUGBANE, BLACK COHOSH** *Ranunculaceae Cimicifuga* (kee-mi-ki-FEW-ga) New Latin, from Latin *cimex*, a bug, & *-i-* & *fugo*, *fugare*, to drive away, to repel, an allusion to the offensive odor of some species. *C. foetida* has been used as an insect repellent. Perennial herbs having two or three ternately divided serrate leaves & white flowers in long rod-like racemes. Fruits are follicles. This is sometimes placed in the genus *Actaea*. Formerly *Macrotys* or *Botrophis*.

Do not allow seed to dry. Plant fresh seed immediately in a warm location, maintaining warmth, place in cold frame in February.

Cimicifuga racemosa (Linnaeus) Nuttall *IL, MA **BLACK COHOSH**, aka **BLACK BUGBANE, BLACK SNAKEROOT, COMMON BLACK COHOSH**, (*racemosus -a -um* (ra-kay-MO-sus) New Latin from Latin *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.)

Habitat: Moist forests, wooded slopes, ravines, & woodland openings. distribution/range:

Culture: ①Seeds are hydrophilic. May self sow. 60 days cold moist stratification. ②In order to germinate, seeds need a warm, moist period followed by a cold, moist period (pm09, 15). ③Sow at 22°C (71°F) for 6 wks or more. Move to +2 to +4°C (34-39°F) for 6-8 wks. Then raise the temperature to 10°C (50°F). If no germination in 4-6 wks, repeat the cycle from the beginning. If the warm/cold cycles were not long enough, a new warm/cold cycle is needed. (tchn).

Description: 3-8', racemes of white flowers.

Comments: status: Endangered in Illinois & Massachusetts. phenology: Blooms June to August. Seed matures late summer to fall.

VHFS: Alternate nomenclature is *Actaea racemosa* Linnaeus, as in w12. [*Actaea racemosa* L var *racemosa*]

Add varieties w12.



Actaea racemosa racemosa

CLEMATIS Linnaeus 1753 **CLEMATIS, VIRGIN'S BOWER** *Ranunculaceae* *Clematis* Clem'atis (KLEM-at-is or KLEM-a-tis A frequent mispronunciation is kle'mātis.) New Latin, from Latin, *Clēmatis*, periwinkle, from Greek κληματίς, *klematis*, a name for a climbing or trailing plant, possibly periwinkle, brushwood, long, lithe branches, *clematis*, from *klema*, *klemat-*, twig; or κλήμα, κλήμα, *klema*, a vine-branch or tendril; akin to Greek *klan* to break, similar to Greek *kladus* sprout, twig, branch. Opposite-leaved slightly woody vines or erect perennial herbs having elongate plumose styles. The herbage is caustic & acrid. Fruits are achenes. Formerly known as *Atragene* L or *Viorna* Reichenb. Additional genus common names include BELL-RUE [BELL RUE], LEATHER FLOWER [LEATHER-FLOWER], LION'S-BEARD [LION'S BEARD], OLD MAN'S BEARD, OLD-MAN'S-WHISKERS [OLD MAN'S WHISKERS], PIPESTEM [PIPE STEM], PURPLE VIRGIN'S-BOWER [PURPLE VIRGIN'S BOWER], TRAVELER'S-JOY [TRAVELER'S JOY], VASEVINE [VASE VINE], VIRGIN'S-BOWER [VIRGINS-BOWER, VIRGIN'S BOWER, VIRGIN BOWER], *VITALBA*, & WHITE CLEMATIS. European species are known as TRAVELER'S JOY.

Seeds may be hydrophilic, with dry storage increasing dormancy. Germination characteristics vary between species. Code B, D, or maybe protracted A*. Seedlings may be slow growing. (cu00)

Clematis hirsutissima Southwestern USA species, sow in fall or cold moist stratify 90 days & sow in spring (pots2000).

Clematis pitcheri Torr & Gray *IN LEATHER FLOWER, aka BLUEBILL, PITCHER'S CLEMATIS, (Historically the specific epithet was capitalized. facu

Habitat: Wet savannas, floodplain woods, & floodplain fencerows.

distribution/range: Observed in Mercer & Whiteside cos; in the latter the Rock River bottoms, Erie to Hillsdale.

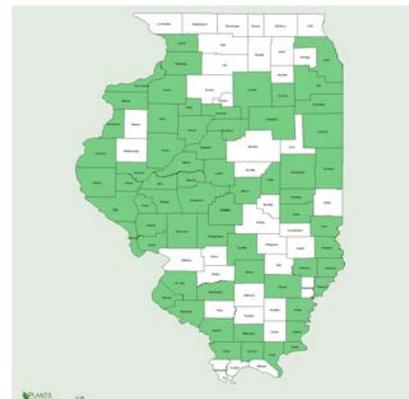
Culture: Moist cold stratify (30-90 days) or dormant seed. Light,

asexual propagation: Cuttings, division.

Description: Herbaceous vine, flowers lavender, leaves are strongly reticulate (llpin). Leaves rough with prominent veins, sepals lance-ovate.

Comments: status: phenology: Blooms 5,6. C3.

varieties?





Clematis pitcheri

Clematis virginiana Linnaeus VIRGIN'S BOWER, aka CLEMATIS, CLÉMATITE DE VIRGINIE, COMMON VIRGIN'S-BOWER [COMMON VIRGIN'S BOWER], COMMON WILD VIRGIN'S-BOWER [COMMON WILD VIRGIN'S BOWER], DEVIL'S DARNING NEEDLES [DEVIL'S-DARNING-NEEDLES], DEVIL'S-HAIR [DEVIL'S-HAIR], DEVIL'S-THREAD [DEVIL'S THREAD], LADY'S-BOWER [LADIES' BOWER], LOVEVINE [LOVE VINE, LOVE-VINE], MISSOURI VIRGIN'S-BOWER [MISSOURI VIRGIN'S BOWER], OLD MAN'S BEARD, PIPESTEM [PIPE STEM, PIPE-STEM], TRAVELER'S JOY [TRAVELER'S-JOY, TRAVELLER'S JOY, TRAVELLER'S-JOY], TRAVELER'S-IVY [TRAVELER'S IVY], VIRGINIA BOWER, VIRGINIA VIRGIN'S-BOWER [VIRGINIA VIRGIN'S BOWER, VIRGINIAN VIRGIN'S BOWER], VIRGIN'S-BOWER [VIRGIN'S-BOWER, VIRGIN'S BOWER, VIRGIN'S BOWER], WILD CLEMATIS, WILD HOPS (MISAPPLIED), WOODBINE, fac

Habitat: Mesic savanna, upland swamp, & moist wooded roadsides. Thickets, hedges, & woodland edges common in low ground, but occasional in upland habitats. **distribution/range:**

Culture: ①“Moist cold treatment or fall sow. Removing seed coat may help. Very light cover. Good germination.” (mfd93) ②30 days cold moist stratification (pm09). 30 days cold moist stratification, or best planted outdoors in the fall (pm15). ③No pretreatment needed. Sow seeds just below the soil surface at 70°F & water. (ew11) ④Sow at 20°C (68°F), germination slow (tchn). Growth rate slow. Seedling vigor low. Vegetative spread rate slow, according to the USDA, but “They are fast. Faster than you can believe. Don't turn your back. Don't look away. And don't blink.” (Doctor Who, personal communication) 162,000, 192,000 (usda, ecs), 217,600 (jfn04), 248,000 (aes10), 256,000 (pm02), 286,002 *gnh13), 295,189 (gna06), 312,027 (gna03), 329,224 (gna04), 373,026 (gnh11) seeds per pound.

asexual propagation: Cuttings or division of roots.

cultivation: Space plants 1.5-2.0 or more, best on a trellis or fencerow. Reported as clay soil tolerant. Full sun to partial shade, mesic soils. Anaerobic tolerance none. CaCO₃ tolerance low, but noted as tolerant of calcareous soils in another source. Drought tolerance medium. Fertility requirement medium. Salinity tolerance none. Shade tolerant intermediate. pH 5.0-6.8. Although it is quite beautiful in the fall, deadhead seed heads or you will eventually wish you had.

bottom line: Spring or dormant seed for field establishment. Occasional lots are strongly dormant. Flipflop species & crossover species of late. Germ 64.9, 79.5, 90, sd 32.5, r7.0-96 (89)%. Dorm 22.5, 1.0, 0.0, sd 35, r0.0-87 (87%). Test 31, 30, 29, r26-38 days. (#9)**

greenhouse & garden: Debearding helps, moist cold stratify (60-180) or dormant seed. Light or GA3, possibly temperature sensitive.

Description: Sub-woody vine climbing to 12.0-15.0'; 14" minimum root depth; clusters of small fuzzy-looking, four-petaled dazzling white flowers, followed by attractive plumed seeds. **key features:** *Clematis virginiana* has strongly toothed leaflets, while the similar escaped *C tenuiflora* / *paniculata* has rounded, mostly untoothed leaves. Leaves ternate, leaflets smooth, lobed, & cut dentate.

“This is our only species & is rather frequent on brushy stream banks, the edge of woods & in ravines. Kent Creek at Fannan's Crossing west of Rockford.” (ewf55)



Clematis virginiana

Comments: status: Considered invasive in parts of the northeast USA (Uva et al 1997). phenology: Blooms 7,8,9. C3. Seed matures mid summer to fall. Fresh flowers fragrant. Attractive dried seed clusters are great in dried arrangements. Landscaping, shade gardens, great for naturalizing in shade or rich soils, full sun, especially fences & trellises. In the long term, great for shady erosion control but may eventually diminish overall biodiversity. Do not plant near paths or in woodlands where you may want to stroll, although sp gives two seasons of beauty.

The plants are somewhat slow to mature, but they form large clumps in several years. Awesome on a fencerow. Once established, it will slowly self-sow to the point of being a pest. Apparently, it drives our twp road commissioner absolutely crazy. He doesn't understand mowing our road actually increases his 'weeds' (the flowers). This plant can make your woodland an impassable mass of vines where it is impossible to walk, and many desirable plants are overwhelmed. Beware, from the voice of experience.

Genetic source Bureau Creek bottoms, Tiskilwa & Bureau, & production source nursery plantings.

Associates: Walnut tolerant.

VHFS: [*Clematis cordata* Pursh, *C missouriensis* Rydb, *C virginiana* L var *missouriensis* (Rydb) Palmer & Steyermark]



Clematis virginiana

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

CONSOLIDA Gray. *Consolida* Latin *consolidatus*, to become solid or firm, from reputed ability to heal wounds. See also *Solidago* for more etymology. Eurasian ornamentals sometimes included in *Delphinium*, which see. Mohlenbrock (2014) maintains *Consolida*.

COPTIS Salisbury 1807 **GOLDTHREAD, COPTIDE** *Ranunculaceae* *Coptis* New Latin, irregular from Greek *koptein*, to cut off, from κόπτω, *kopto*, to cut; referring to the divided leaves, similar to a capon having something cut off. Small herbs of the northern temperate zone (14 species in temperate & boreal North America & Asia) with basal divided or compound leaves, a slender rootstock, & white flowers on a scape. Fruits are follicles. x = 9.

Seeds are hydrophilic & mature in mid- to late summer. Sow fresh seed outdoors in summer. Division in spring or summer, before or after tender new growth. Code D*. (cu00)

Coptis trifolia (Linnaeus) Salisb. GOLD THREAD, aka AMERICAN GOLDTHREAD, CANKERROOT [CANKER-ROOT], *COPTIDE TRIFOLIOLÉE*, GOLDTHREAD, GOLDENROOT, SAVOYANA, THREE-LEAVED GOLD-THREAD [THREELEAF GOLDTHREAD, THREELEAFLET GOLDTHREAD], YELLOW SNAKEROOT, *Oza 'widji 'bik*, yellow root, Ojibwa,

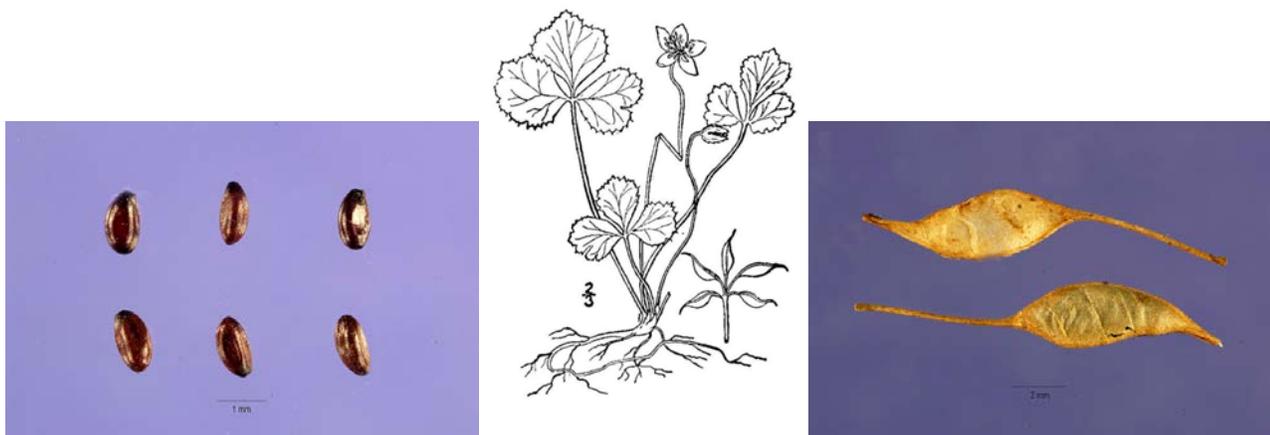
Habitat: Forest & bogs, moist to moderate moisture. Native north & east of Illinois.

Description: Erect, herbaceous, perennial, evergreen, native forb; roots slender, bright yellow to orange rhizomes, minimum depth; stems 2-3" tall; leaves 3-parted, basal, blades ternate with round teeth; flowers white, 3/8" wide petal-like sepals, 1- few, 2" to 6" stalks, 4-7-merous; N 2n = 18. key features:

Comments: status: phenology: Blooms May - June

Associates: ethnobotany: Root used as medicinal plant by Ojibwa, Menominee, & Pottawatomie (sm23, 32, 33). Used for dye by Ojibwa & Pottawatomie (den28, sm32, 33).

VHFS: [*Anemone groenlandica* Oeder, *Coptis groenlandica* (Oeder) Fern, *C trifolia* (L) Salisb subsp *groenlandica* (Oeder) Hultén, *C trifolia* (L) Salisb subsp *trifolia*, *C trifolia* (L) Salisb var *groenlandica* (Oeder) Fassett, *C trifolia* (L) Salisb var *trifolia*, *Helleborus trifolius* L]



Coptis trifolia

Seed & follicle photos by Jose Hernandez USDA-NRCS PLANTS Database. - Not copyrighted images

DELPHINIUM Linnaeus 1753 **LARKSPUR** *Ranunculaceae* *Delphinium* (del-FIN-ee-um) New or botanical Latin *Delphīnium*, from Greek δελφίνιον, *delphinion*, larkspur, diminutive of δέλφιν, *delphin*, a dolphin, from the shape of the nectary, or the fancied resemblance of some species to classical sculptures of dolphins. Mostly perennial erect branching herbs that are widely distributed in temperate parts of the northern hemisphere, have palmately divided leaves & irregular flowers in showy spikes, & include several containing extremely poisonous substances. Fruits are follicles. Our native species are as attractive or more so than the introduced species. Formerly *Delphidium* Raf, *Delphinium* (Tourn) L, or *Delphinium* Tourn. Additional genus common names include LARK-SPUR, & POISONWEED [POISON WEED].

Seeds of native species are hydrophilic & mature early to late summer. Dry one week & sow immediately in a coldframe for germination the following spring. Code B*. (cu00)

Delphinium ajacis Linnaeus **ROCKET LARKSPUR**, aka COMMON LARKSPUR, DOUBTFUL KNIGHT'S-SPUR [DOUBTFUL KNIGHT'S SPUR], DOUBTFUL LARKSPUR, GARDEN LARKSPUR, LARKSPUR,

Habitat: Full sun to partial shade, mesic soils. Low to moderate water requirement. Moderately coarse to moderately fine textured soils. Neutral soils, acid & base tolerant.

Culture: ☉No pretreatment needed. Sow seeds just below the soil surface at 70°F & water. (ew11) 144,000 (ew11), 150,000 (gran) seeds per pound. Pure stand plant 10 lb, per acre (gran).

asexual propagation:

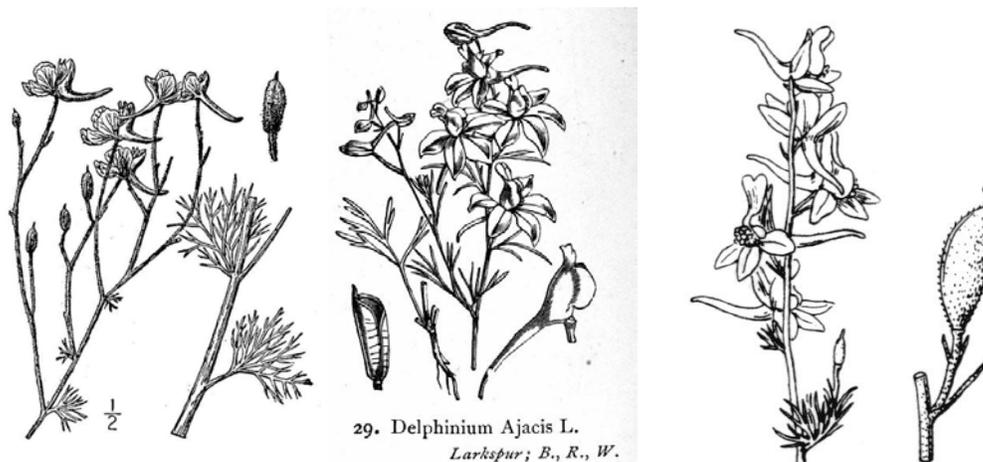
cultivation: Space plants 1.5-2.0'.

bottom line: Dormant seed or spring plant.

Description: Introduced annual, 12-36", with numerous spurred, multicolored white, pink, or blue, flowers from spring to summer, adaptable species. Attractive cut flowers.

Associates: Attracts butterflies & hummingbirds. Reported to be deer resistant.

VHFS: Now placed in *Consolida* Gray (m14). [*Consolida ambigua* (L) PW Ball & Heywood, *Delphinium ajacis* L, *Delphinium ambiguum* L]



29. *Delphinium Ajacis* L.
Larkspur; B., R., W.

Consolida ambigua

Delphinium carolinianum WILD BLUE LARKSPUR, aka AZURE LARKSPUR, BLUE LARKSPUR, CAROLINA LARKSPUR, PRAIRIE LARKSPUR,

Habitat: Full sun to partial shade, mesic soils. distribution/range:

Culture: ①60 days cold moist stratification (pm09, 15). ②Fall plant or cold stratify for 1 month at 40°F. Sow just below the soil surface at 50°F & water. Slow. (ew11)

cultivation: Space plants 1.5-2.0'.

Description: key features:

Comments: status: phenology: Blooms? Attractive cut flowers. 656,000 (ew11) seeds per pound.

Associates: Attracts hummingbirds & bumblebees. Toxic to livestock.

VHFS: Add subspecies m14.



Delphinium carolinianum

Delphinium exaltatum TALL LARKSPUR,

Habitat: Full sun to partial shade, mesic soils. distribution/range: Native southeast of our area.

Culture: ①60 days cold moist stratification (pm09, 15). ②Fall plant or cold stratify for 1 month at 40°F. Sow just below the soil surface at 50°F & water. Slow. (ew11) ③Sow at Max 5°C (41°F), germination irregular, often several months (tchn).

cultivation: Space plants 1.25-1.5'.

Description: key features: *Delphinium exaltatum* has erect follicles, nontuberous roots, & bifid lower petals. *D. tricorne* is a tuberous-rooted perennial with entire lower petals and divergent follicles.

Comments: status: phenology: Blooms Attractive cut flowers. 104,000 (ew11) seeds per pound.

Associates: Attracts hummingbirds & bumblebees.

VHFS:



Delphinium exaltatum

Delphinium tricorne Michaux DWARF LARKSPUR, aka DWARF WILD LARKSPUR, ROCK LARKSPUR, STAGGERWEED [STAGGER WEED, STAGGER-WEED], (three horned, three pointed, tri, prefix, from *tres*, three, & *cornis*, adjective *cornu*, horn, antler, & *is*, adjectival suffix) upl

Habitat: Mesic savanna, Jones' Timber west of LaFayette, & a few plants Rock Island RR west of Sheffield.

Cultivation ①60 days cold moist stratification (pm09, 15). Formerly thought of as double dormant, sow fresh seed in permanent location, cool soils, & cuttings. This species is 3-4 years to flower from seed. 651,424 seeds per pound.

Description: Erect perennial, native forb; 0.75-1.5'; flowers blue;

Comments: status: phenology: Blooms 4,5. C3. Landscaping.



Delphinium tricorne



Delphinium tricorne

Delphinium virescens Nuttall PRAIRIE LARKSPUR, aka CAROLINA LARKSPUR, EARLY LARKSPUR, PLAINS LARKSPUR, TALL WHITE LARKSPUR, WHITE LARKSPUR, WILD LARKSPUR, (*virescens* Latin turning or becoming green or greenish, greening, from *virescens*, becoming green, or flourishing from Latin *viresco*, to grow green.)

Habitat: Sand prairies. distribution/range: Native Hancock Co, Illinois, & Muscatine, Iowa, & west of our area. The Muscatine, Iowa area & western Mercer, Henderson, & Hancock cos, Illinois, have many species with western affinities.

Culture: ①60 days cold moist stratification (pm09). ②No pre-treatment needed, sowing outdoors in the spring is the easiest method, or seeds germinate after about 60 days of cold, moist stratification. Seeds germinate most successfully in cool soil. Sow in early winter through early spring. (he99) ③Fall plant or cold stratify for 1 month at 40°F. Sow just below the soil surface at 50°F & water. Slow. (ew11) 358,400 (wns01), 480,000 (shirley), 640,000; 960,000 (pm02, ew11, aes12) seeds per pound.

asexual propagation: Division of mature plants.

cultivation: Space plants 1.5-2.0'. Dry soils, full sun to partial shade.

Description: Native, erect perennial, 1.5-4.0', flowers blue to white, spurred.

Comments: status: phenology: Blooms 6,7. C3. Collect seeds in se Wisconsin in September (he99).

Attractive cut flowers.

Associates: Attracts butterflies & hummingbirds. Reported to be deer resistant.

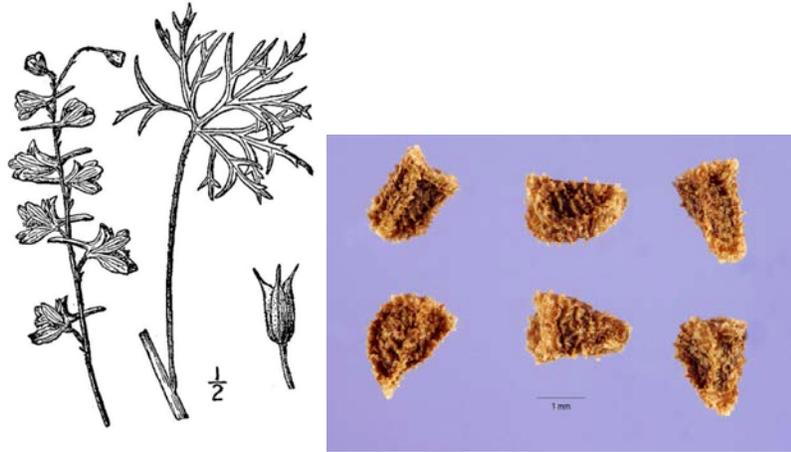
VHFS: Alternate nomenclature is *Delphinium carolinianum* Walter ssp *virescens* (Nutt) RE Brooks, as in Mohlenbrock (2014).

[*Delphinium albescens* Rydb, *D carolinianum* Walt ssp *penardii* (Huth) Warnock, *D penardii* Huth, *D virescens* Nutt, *D virescens* Nutt ssp. *penardii* (Huth) Ewan, *D virescens* Nutt var *macroceratilis* (Rydb) Cory, *D virescens* Nutt var *penardii* (Huth) Perry]



Delphinium carolinianum penardii





Delphinium virescens

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

ENEMION Rafinesque 1820 (**ISOPYRUM**) Formerly *Isopyrum* Linnaeus **ISOPYRUM** *Ranunculaceae*
Enemion listed by Dioscorides as another name for *Anemone*. Very similar to *Anemonella*. About 6 species
of temperate North America & eastern Asia. The separation from *Isopyrum* is controversial (Weakley 2012).
 $x = 7$. Additional genus common names include FALSE ANEMONE, FALSE RUE-ANEMONE [FALSE RUE
ANEMONE], & ISOPYRUM.

“*Enemion biternatum* has been mistaken for the superficially similar *Thalictrum thalictroides* because
of its white flowers & compound *Thalictrum*-like leaves. *Enemion biternatum* is easily distinguished, however,
by its few-seeded follicles & deeply lobed leaves with glandular-apiculate apices. *Thalictrum thalictroides*, on
the other hand, is characterized by having achenes & somewhat crenate leaves with notched apices.” (fna)

Isopyrum

fruit a follicle

petaloid sepals 5

Anemonella

fruit an achene

petaloid sepals 5-10, usually at least some flowers w/ 6 or

more

rewrite

Isopyrum biternatum (Rafinesque) Torrey & Gray [*Enemion biternatum* Rafinesque] *FL ISOPYRUM, aka
ATLANTIC ISOPYRUM, EASTERN FALSE RUE-ANEMONE [EASTERN FALSE RUE ANEMONE], FALSE ANEMONE,
FALSE MEADOW RUE, FALSE RUE-ANEMONE [FALSE RUE ANEMONE], RUE-ANEMONE [RUE ANEMONE],
(*biternatus* -a -um twice ternate, with two sets or clusters of three, as in a leaf, from Latin *bi*, from *bis*, twice,
ternus, in three's, -atus, possessive of or likeness of something, with, shaped, made.)

Habitat: “Rich forests, either on natural levees with very nutrient rich sediments or on slopes with underlying
mafic rocks” (w11). “Moist deciduous woods of valleys, flood plains, & ravine bottoms, occasionally in open
pastures, often on limey soils” (fna). distribution/range: Western New York, southern Ontario, west to
Minnesota, south to Tennessee & Arkansas; disjunct in the Piedmont & Coastal Plain of Virginia, North
Carolina, South Carolina, & the Florida Panhandle.

Culture: Propagation: ①60 days cold moist stratification? (pm09, 15). 176,000 (pm02) seeds per pound.

$N 2n = 14$. ①“*Enemion* is somewhat superficially similar to the much more common *Thalictrum thalictroides*,
with which it sometimes grows, but can be distinguished by the following characters: fruit a follicle (vs. fruit an
achene), petaloid sepals 5 (vs. 5-10, usually some at least of the flowers on a plant with 6 or more)” (w11).
Endangered in Florida.

“A common woodland plant that blooms early. It often persists for years in places that were formerly
wooded, as on roadsides & railroads.” (ewf55)

VHFS: Now placed in the genus *Enemion*, as *Enemion biternatum* Rafinesque. [*Isopyrum biternatum* (Raf)
T&G]



Enemion biternatum

FICARIA Schaeffer 1760 **LESSER CELANDINE** A genus of about 5 species, herbs, of Europe west to c Asia, some naturalizing in the e USA. See *Ranunculus ficaria*.

HEPATICA Hill. *Ranunculaceae* **LIVERWORTS** *Hepatica* (he-PA-ti-ka) New Latin, from Medieval Latin, liverwort, from Latin *hepatica*, feminine of *hepaticus* of the liver; Greek *hepar*, the liver for the shape & color of the 3-lobed leaves. According to the Doctrine of Signatures, it was believed Liverworts were medicinally beneficial in treating liver ailments. Perennial herbs of the north temperate zone that flower in the early spring & have lobed basal partly evergreen leaves & delicate white, pink, blue, or purplish flowers composed of colorful sepals. The basal leaves overwinter, often turning wine red, & are replaced at the end of the flowering season. Fruits are achenes. Genus common names include ANEMONE & HEPATICA. Hoot, Reznicek, & Palmer (1994) suggest *Hepatica* should be included in *Anemone*. The two native taxa hybridize.

Seeds are hydrophilic & ripen in late spring, approximately 4 weeks after flowering. Seeds are green when ripe, collect when the seeds are easily removed from the stem. Plant immediately, slow growing, leave flat undisturbed until second growing season. Code D*. Division of mature plants after flowering. (Cullina 2000)

SB Hoot, AA Reznicek, & JD Palmer, 1994, Phylogenetic relationships in *Anemone* (*Ranunculaceae*) based on morphology & chloroplast DNA. Systematic Bot. 19:169-200

Our two species were historically *Hepatica triloba* Chaix var *acuta* Pursh & *H triloba* Chaix var *obtusa* Pursh. They are now the same varieties of *H nobilis* Schreb.

Hepatica nobilis, sow immediately outdoors. Short viability seed will germinate in the spring. (tchn).

Hepatica acutiloba Augustine de Candolle * CT, FL, ME **LIVERLEAF**, aka **AMERICAN LIVERLEAF**, *ANÉMONE À LOBES AIGUS*, **HEART-LIVERLEAF**, **HEPATICA**, *HÉPATIQUE À LOBES AIGUS*, **LIVERWORT-HERB**, **SHARP-LOBED HEPATICA** [SHARP-LOBE HEPATICA, SHARPLOBE HEPATICA], **SHARP-LOBED LIVERLEAF**, Habitat: Mesic woods, calcareous woodlands. "Grows in woods, preferring the north side of hills & mountains" (Eaton 1829).

Culture: Recalcitrant seed, which cannot be dried or stored. 121,600 (aes12) seeds per pound.

Description: 0.3-0.75' tall; leaves with 3 deep, pointed lobes; flowers blue-lavender (blue/pink to white), 5-12-merous;

"This is our common hepatica & is found over the co in moist woods & ravines except in Sugar River sand area. Extra notches on the leaves are not uncommon & blunting of the apex in plants in Kishwaukee River gorge suggests hybridization with the next (*H americana*)."

(ewf55)
Threatened in Connecticut. Endangered in Florida. Possibly extirpated in Maine. Blooms March(April) - May.

Associates: ethnobotany: The root was used as medicinal plant by Menominee (sm23).

VHFS: *Hepatica triloba* has been applied to this species & to *H americana*. AKA *Anemone acutiloba* (DC) G Lawson.



Hepatica nobilis acuta, Anemone acutiloba

Photo Jennifer Anderson USDA-NRCS PLANTS Database. - Not copyrighted image

Hepatica americana (Augustine de Candolle) Ker-Gawler LIVERLEAF, aka AMERICAN LIVERLEAF, ANÉMONE D'AMÉRIQUE, HÉPATIQUE D'AMÉRIQUE, KIDNEY-LIVERLEAF, LIVERWORT-LEAF, ROUND-LOBED HEPATICA [ROUND-LOBE HEPATICA, ROUNDOBE HEPATICA], ROUND-LOBED LIVERLEAF, *Gabisan 'ikeag'*, "it is silent" Ojibwa,

Habitat: Dry woods, acidic woodlands. "Grows chiefly in woods, preferring the south side of hills & mountains" (Eaton 1829).

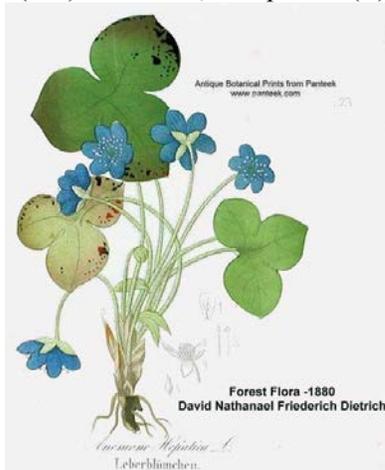
Description: Recalcitrant seed, which cannot be dried or stored. Seed & seed count not available.

"We have found this only in Kishwaukee River gorge below Camp Rotary. Here it is abundant over a small area where it grows with the above, the two being about equal in number of plants. There are many intergrades in leaf shape which Dr. Steyermark has called hybrids." (ewf55)

Associates: ethnobotany: Used as medicinal beverage by Pottawatomie & Ojibwa (sm33, Gilmore, 1933). Used by Ojibwa as medicine for convulsions (den28). Pottawatomie used as dye (sm33). Used for charm by Ojibwa (den28)

"The last species has lately come into great repute as a tonic, deobstruent & diuretic. Prof Tully believes its powers are exaggerated, & that it cannot be relied on in a dangerous disease; but that it may be considerably useful in moderate complaints. It ought not to be called the LIVERWORT, as this is the well known name of the *Marchantia polymorpha*. Its true English name is LIVERLEAF." (Eaton 1829)

VHFS: By some authors, this sp is now known as *Hepatica nobilis* Schreb var *obtusata* (Pursh) Steyermark or *Anemone americana* (DC) H Hara. [*Anemone americana* (DC) H Hara, *A hepatica* L, *Hepatica americana* (DC) Ker Gawl, *H hepatica* (L) Karst, *H triloba* Chaix var *americana* DC]



Hepatica nobilis obtusata, Anemone americana

Hepatica triloba Linnaeus

① Sow at Max 5°C (41°F), germination irregular, often several months (tchn).

Associates: ethnobotany: *Animu 'sid* as Ojibwa charm Darnell (1928).

HYDRASTIDACEAE Martinov 1820 GOLDEN-SEAL FAMILY

A family of 2(1) genera & 2 species of perennial herbs of temperate eastern North America & Japan. Intermediate between *Ranunculaceae* & *Berberidaceae*. $x = 13$. **expand from w12.**

HYDRASTIS Linnaeus 1759 **GOLDENSEAL, TURMERIC ROOT** *Ranunculaceae* *Hydrastis* New Latin, probably irregular from Greek ὕδωρ, *hydor*, water, for the plant growing in watery places; alternately referring to superficial resemblance to some species of *Hydrophyllum*. Formerly considered a monotypic genus, endemic to eastern North America, but now sometime combined with a species of east Asia in a classic relictual distribution. Herb having palmately lobed leaves & small greenish apetalous flowers. Fruit baccate, composed of 1-seeded achenes aggregated in a head. Sometimes placed in its own family *Hydrastidaceae* (w12). Maintained in *Ranunculaceae* by Mohlenbrock (2014).

Hydrastis canadensis Linnaeus ☞ *CT, GA, MD, MA, MI, MN, NJ, NC, PA, TN, VT GOLDENSEAL, aka GROUND RASPBERRY, INDIAN TURMERIC, ORANGE ROOT, TURMERIC ROOT, YELLOW-PUCCOON, *FARD INOLIEN*, *HYDRASTIS DU CANADA*, *RACIRIE JAUNISSE*, *SCEAU D'OR*, *KANADISCHE ORANGEWURZ*, *HIDRASTIS*, *RAÍZ DE ORO*,

Habitat: Mesic woods. “Mesic, very nutrient-rich forests, with circumneutral soils, over calcareous or mafic rocks such as limestone, amphibolite, & dolostone, sometimes forming large colonies after canopy disturbance such as logging” (w11). distribution/range:

Culture: ①Seeds are hydrophilic & ripen in late summer. Remove seeds from pulp, wash & quickly plant in metal flats outdoors. Do not allow seeds to dry. There will be some germination the first spring, but most the second spring. Code B & C*, G. (cu00, Davis 1999) ②Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other treatment. Best planted outdoors in the fall (pm09, 15). ③Sow seeds just below moist soil surface at 70°F for 1 month. Move to 30°F. for 1 month, then bring back to 50°F. (ew11)

cultivation: Space plants 0.75-1.25'. Partial sun to woodland, mesic soil. Shade tolerant, about 47 to 80% shade. Grows well with pH of 5.5-6.5, but is known to tolerate 4.8-7.8.

Description: Erect, perennial, native forb; roots thick-knotted yellow rootstock; stems; leaves large rounded leaves with usually 5 palmate lobes; N. key features: Fruit is a bright red berry with smooth, lustrous black seeds.

Comments: status: Endangered in Connecticut, Georgia, Massachusetts, Minnesota, New Jersey, & Vermont. Threatened in Maryland, Michigan, & New York. Special concern, endangered in North Carolina. Vulnerable in Pennsylvania. Special concern, commercially exploited in Tennessee. phenology: Blooms 4-5.

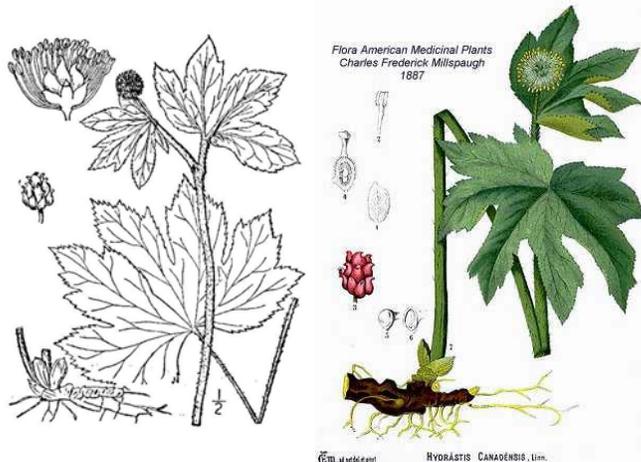
Associates: Squirrels & chipmunks relish the bright red fruit.

Ethnobotany: Formerly used in pharmacy as a bitter tonic. ☞ All parts of the plant are poisonous in quantity. The difference between a medicine & a poison is one of degree.

VHFS:

JM Davis, 1999. Commercial goldenseal cultivation. Hort Info Leaflet 131 Rev ed North Carolina Cooperative Extension Service, Raleigh. Web site <http://www.ces.ncsu.edu/depts/hort/hil/hil-131.html>

Adrienne Sinclair & Paul M Catling, ??? Cultivating the increasingly popular medicinal plant, goldenseal: Review & update. American Journal of Alternative Agriculture, volume 16 (3),



Hydrastis canadensis

ISOPYRUM Linnaeus [see **ENEMION** Rafinesque 1820 (Isopyrum)] **ISOPYRUM** *Ranunculaceae* *Isopyrum* (eye-so-PYE-rum) ancient Greek name from *Isopyron*, a species of *Fumaria*, from Greek ἰσο-, *iso-*, combining form of ἴσος, *isos*, equal, & πυρός, *pyros*, wheat, referring to its grain-like fruit. Very similar to *Anemonella*. About 6 species of temperate North America & eastern Asia. The separation from *Isopyrum* is controversial (Weakley 2011). $x = 7$. Additional genus common names include FALSE ANEMONE, FALSE RUE-ANEMONE [FALSE RUE ANEMONE], & ISOPYRUM.

Isopyrum thalictroides, ⊕sow at 18-22°C (64-71°F) for 2-4 wks, move to +2 to +4°C (34-39°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination Best if sown immediately after harvest (tchn).

PULSATILLA Miller **PASQUEFLOWER**

PASQUE FLOWER is placed here by some authors as *Pulsatilla hirsutissima* (Pursh) Britton, *Pulsatilla ludoviciana* A Heller, nom illeg, *Pulsatilla nuttalliana* (DC) Spreng, *Pulsatilla patens* (L) Mill ssp *hirsutissima* (Pursh) Zamels, *Pulsatilla patens* (L) Mill ssp *multifida* (Pritz) Zamels.

RANUNCULUS Linnaeus 1753 **BUTTERCUP, CROWFOOT** *Ranunculaceae* *Ranunculus* (rah-NUN-kew-lus) little frog, perhaps tadpole, from Latin *rana*, *ranae*, frog, & *-unculus*, diminutive suffix, little, obtusely referring to the wetland habitat of many species where frogs live, ie, marshes & ponds; also classical Latin *ranunculus*, *ranunculi* m, little frog, tadpole; also the name used by Pliny for a medicinal plant, perhaps 'crowfoot'. About 600 species of annual & perennial herbs, almost cosmopolitan, with the most diversity in Northern Hemisphere temperate & boreal regions. Formerly *Batrachium* DC. Fruits are achenes. $x = 7,8$. Seeds should be considered hydrophilic.

Formerly *Batrachium* SF Gary, *Cyrtorhyncha* Nutt, *Halerpestes* Greene, *Ranunculus* (Tourn) L *Batrachium* is the scientific Greek equivalent of Latin *Ranunculus*. Additional genus common names include CUCKOO BUDS, GOLDCUPS, *HAHNENFUSS*, KINGCUPS, *RANUNCOLO*, *RANONCULE*, *RENONCULE*, SPEARWORT, WATER CROWFOOT, WHITE WATER CROWFOOT, & YELLOW GOWANS.

reconcile varieties with m14.

Ranunculus abortivus Linnaeus SMALL-FLOWERED BUTTERCUP, aka ABORTIVE-FLOWERED BUTTERCUP, COMMON BUTTERCUP, CROWFOOT, EARLY WOOD BUTTERCUP, KIDNEYLEAF BUTTERCUP, LITTLE-LEAF BUTTERCUP, SMALL BUTTERCUP, SMALL-FLOWERED CROWFOOT, SMOOTH-LEAF CROWFOOT, (*abortivus -a -um* Latin aborted, miscarried, undeveloped, stunted, not coming to maturity, parts failing, malformed or missing, imperfect; producing abortion, from *aborior*, *aboriri*, *abortus*.) facw-

Habitat: Wet woods, disturbed soils, early successional, a soil seed bank species. In the se USA, “Low fields, disturbed areas, bottomlands, lawns, roadsides. ... A common weed in shady & sunny places.” (w11)

Culture: Fresh seed.

Description: Erect winter annual, biennial, or short lived perennial, native forb; 0.5-1.0'; small yellow flowers; $2n = 16$.

Comments: status: phenology: Blooms 4,5,6,7.

“A common small-flowered buttercup found mostly in moist woods but also in other damp places.” (ewf55)

[*Ranunculus abortivus* L ssp. *acrolasius* (Fern) Kapoor, A& D Löve, *R. abortivus* L var *acrolasius* Fern, *R abortivus* L var *eucyclus* Fern, *R abortivus* L var *indivisus* Fern, *R abortivus* L var *typicus* Fern] **Varieties?**



Ranunculus abortivus

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

Ranunculus acris Linnaeus TALL BUTTERCUP, aka ACRID BUTTERCUPS, ACRID CROWFOOT, BACHELOR'S-BUTTONS [BACHELOR'S BUTTONS, BACHELOR'S BUTTONS], BITING CROWFOOT, BITTER BUTTERCUP, BLISTER PLANT, BLISTER-FLOWER, BLISTERWEED [BLISTER-WEED], BLISTERWORT [BLISTER-WORT], *BOUTON D'OR*, BURWORT [BUR-WORT, BURRWORT], BUTTERCRESS [BUTTER CRESS, BUTTER-CRESS, BUTTER CRESSES], BUTTERCUP [BUTTERCUPS], BUTTER-DAISY [BUTTER DAISY], BUTTER-FLOWER, BUTTER-ROSE [BUTTER ROSE], COMMON BUTTERCUP, CRAZY, CROWFOOT, CUCKOO-BUDS, FIELD BUTTERCUP, GOLDBALLS, GOLDCUP [GOLD CUP], GOLDEN-KNOPS, GOLDICUP [GOLDICUPS], GOLD-KNOPS [GOLD KNOPS], GOLDWEED [GOLDWEED], GUILTY-CUP [GUILTY CUP], HORSE-GOLD [HORSE GOLD], KINGCUP [KING-CUP], MARY-BUDS, MEADOW BUTTERCUP, MEADOWBLOOM, PAIGLE, *PIÉ DE GALLINA*, *PIÉ DE NIBBIO*, PILEWORT, QUEEN'S-BUTTON [QUEENS-BUTTON], *RANUNCOLO COMUNE*, *RANUNCOLO DE FRIES*, *RENONCULE*, *RENONCULE ÂCRE*, *SCHARF HAHNENFUSS*, SHOWY BUTTERCUP, TALL BUTTERCUP, TALL CROWFOOT, UPRIGHT BUTTERCUPS, UPRIGHT CROWFOOT, YELLOW BACHELOR'S-BUTTONS, YELLOW CRESS, YELLOW DAISY, YELLOW POWAN, YELLOW PILEWEED [YELLOW PILE-WEED], YELLOW-CAUL, YELLOWS, YELLOW-WEED [YELLOW WEED], (*acris*, *acre* sharp-tasted, acrid, see *acer* (some times used as masculine, see *acer*.)

Introduced from Europe (& native in part?). "Pastures, fields, roadsides, disturbed areas" (w11). "A showy introduced species that is not common here. Waste ground near the IC bridge over Rock River & on Montague Road west of Rockford." (ewf55)



Ranunculus acris

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

Ranunculus fascicularis Muhlenberg ex Bigelow EARLY BUTTERCUP, aka Acrid Crowfoot, BUNDLE-ROOT BUTTERCUP [BUNDLE-ROOTED BUTTERCUP], COWSLIP, DWARF BUTTERCUP, EARLY BUTTERCUP, EARLY CROWFOOT, LOW BUTTERCUP, PRAIRIE BUTTERCUP, THICK-ROOT BUTTERCUP, TUFTED BUTTERCUP, (*fascicularis* -is -e Latin fascicled, clustered, in close clusters or bundles, banded, in bundles, from *fasiculus*, bundle, packet.)

Habitat: Residual soils over sandstone or dolomite. In the se USA, “wet flats with prairie affinities (with *Camassia scilloides*), rocky barrens & glades over mafic rocks (such as gabbro or diabase), ultramafic outcrop barrens (over olivine), & limestone barrens: (w11). distribution/range: Occasional in aeolian sand prairies of Green River, including Genesis remnants & McCune Sand Prairie.

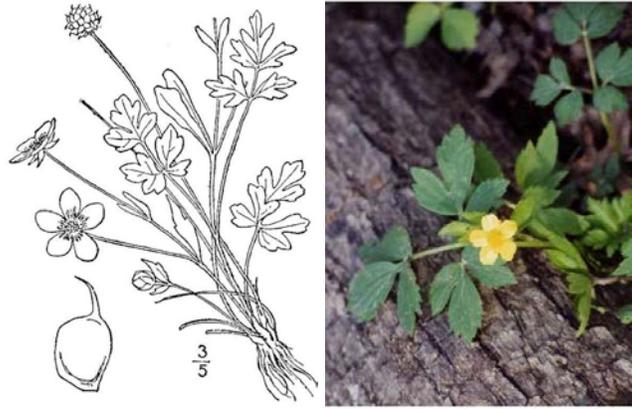
Culture: ①60 days cold moist stratification (pm09, 15). ②Sow seeds immediately when ripe, or seeds germinate after about 60 days of cold moist stratification (he99). ③“Sow seeds just below moist soil surface at 65°F for 1 month. Move to 41°F for 1 month, then bring back to 50°F” (ew11). ④Sow at 18-22°C (64-71°F) for 2-4 wks, move to 5°C (41°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. Short viable. (tchn) 160,000 (pm12), 280,000 (ew12) seeds per pound. Available as seed & bare root plants. Plants may seasonally sell out.

cultivation: Space plants 0.25-0.5’. Dry, well-drained soils, full sun to partial shade. Drought tolerant.

Description: Erect (as it were), herbaceous, perennial, native forb; stem 5-10”; leaves mostly basal, flowers yellow; 2n = 32.

Comments: status: phenology: Blooms 4-6. Occasional remontant bloom in October. Collect seeds in se Wisconsin in June - July (he99). Ephemeral, going dormant in summer. “Our common early buttercup. Open woods, pastures, etc.” (ewf55) Weakley (2011) notes species as tetraploid, n = 16.

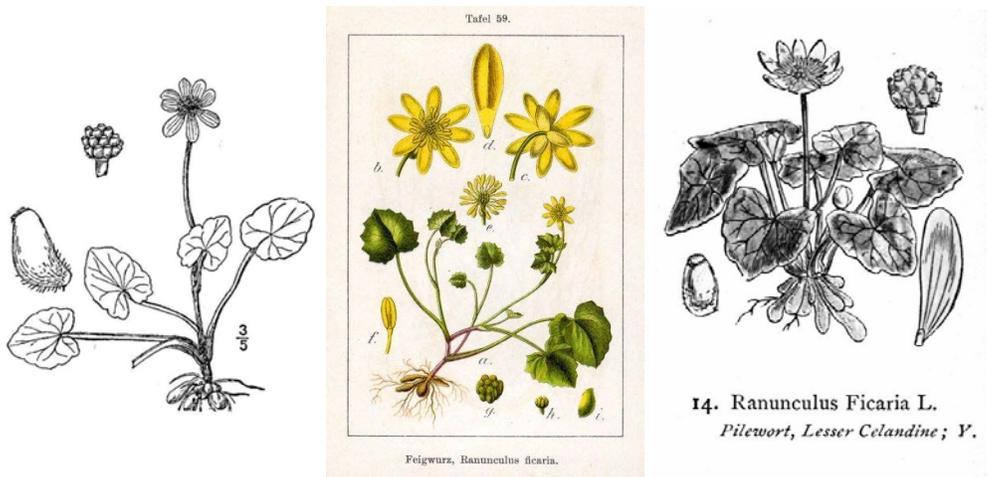
VHFS: [*Ranunculus fascicularis* Muhl, *R. fascicularis* Muhl ex Bigelow var *apricus* (Greene) Fern, *R. fascicularis* Muhl ex Bigelow var *typicus* L Benson]



Ranunculus fascicularis

1st photo Jennifer Anderson USDA-NRCS PLANTS Database. - Not copyrighted image

Ranunculus ficaria L FIG BUTTERCUP, aka *CELEDONIA MAYOR*, *ERVA-HEMMEROIDAL*, *FICAIRE*, *FICAIRE FAUSE RENONCULE*, LESSER CELANDINE, PILEWORT, *RANUNCULO FAVAGELLO*, *RANUNCULO FAVAGELLO MAGGIORE*, *RENONCULE FICAIRE*, *SCHARBOCKSKRAUT*, is reported as a lawn weed in the Chicago suburbs. Homeowners & landscapers spray & top kill the vegetation, but to their dismay, the plant regrows from its tubers. Invasive & expanding its range in North America, native to Europe. If it were not invasive, it would be an interesting groundcover. **3 varieties in m14**, 3 varieties in w12 as *Ficaria verna* Hudson.





Ranunculus ficaria

Ranunculus flabellaris Rafinesque YELLOW WATER BUTTERCUP, aka THREAD-LEAF BUTTERCUP, WATER BUTTERCUP, WATER CROWFOOT, YELLOW WATER CROWFOOT, YELLOW WATER CROWFOOT [YELLOW WATER CROW FOOT, YELLOW WATER CROW-FOOT] (*flabellaris -is -e* fan-shaped, with fan-like parts, wedge shaped.)

In se USA, “Pools in floodplains of small stream swamps, other stagnant or slowly moving waters: (w11). “Uncommon. Sugar River slough west of Shirland, Coon Creek at the Rockton-Shirland road & a drainage ditch west of Yale bridge over Sugar River. All these are in the sand area.” (ewf55)

[*Ranunculus delphiniifolius* Torr, *R delphiniifolius* Torr ex Eat, *R multifidus* Pursh, *R purshii* Richards var *polymorphus* Lunell, *R purshii* Richards var *schizanthus* Lunell]

Ranunculus hispidus Michaux BRISTLY BUTTERCUP, aka EARLY BUTTERCUP, HAIRY BUTTERCUP, HISPID BUTTERCUP, MARSH BUTTERCUP, (*hispidus -a -um* (HIS-pi-dus) Latin bristly, fine hairy, hairy rough, with stiff hairs or bristles.)

In se USA, rich moist forests, creekbanks, mesic to dry woodlands & forests, bottomlands” (w11).

distribution/range:

Culture: Propagation: Ⓣ60 days cold moist stratification (pm09). 192,000 (pm15) seeds per pound.

“Common in moist places in woods & on roadsides.” (ewf55)

Weakley (2011) notes species as tetraploid, $n = 16$. **Varieties.** Cf *R septentrionalis*.





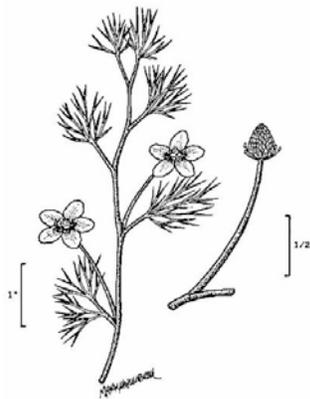
Ranunculus hispidus

1st photo Robert H Mohlenbrock USDA-NRCS PLANTS Database. - Not copyrighted image.

Ranunculus longirostris Godron WHITE WATER CROWFOOT, aka Eastern White Water Crowfoot, LONG-BEAK BUTTERCUP [LONGBEAK BUTTERCUP], LONG-BEAK WATER-CROWFOOT, *RENONCULE À LONG BEC*, *RENONCULE Ó LONG BEC*, STIFF WATER CROWFOOT [STIFF WATER-CROWFOOT], STIFF WHITE WATER CROWFOOT, (*longirostris* -is -e having long beaks.)

Submerged in streams. “Much less common than *R. trichophyllus*. A drainage ditch in Rockton Twp & a railroad ditch that empties into Kent Creek at North Central Avenue.” (ewf55) distribution/range:

VHFS: [*Batrachium circinatum* (Sibth) Rchb, *B. circinatum* (Sibth) Rchb ssp *subrigidum* (W Drew) A&D Löve, *B. longirostre* (Godr) FW Schultz, *Ranunculus amphibius* James, *R. aquatilis* L var *diffusus* Withering pp, *R. aquatilis* L var *longirostris* (Godr) Lawson, *R. aquatilis* L var *subrigidus* (W Drew) Breitung, *R. circinatus* auct non Sibth, *R. circinatus* Sibth--Asa Gray, *R. circinatus* Sibth var *subrigidus* (W Drew) L Benson, *R. subrigidus* Drew, *R. usneoides* Greene]



Ranunculus longirostris

Ranunculus pensylvanicus Linnaeus f BRISTLY BUTTERCUP, aka BRISTLY CROWFOOT, *RENONCULE DE PENNSYLVANIE*, PENNSYLVANIA BUTTERCUP, (*pensylvanicus* -a -um occasionally spelled *pennsylvanicus* of or from Pennsylvania, USA. Pennsylvania was an accepted alternative spelling throughout the 1700's to as late as the 1870's. Plants named at that time may have a specific epithet without the double “n”.) obl

Habitat: Seasonally inundated, muddy ditches, wet meadows, & marshy places. Floodplains & wet meadows. “One of the less common buttercups. It grows in ditches, marshes & other wet places, blooms late, & fruits abundantly.” (ewf55)

Culture: ①60 days cold moist stratification (pm09). ②Seeds germinate after about 60 days of cold moist stratification (he99).

greenhouse & garden: Moist cold stratify 60 days or dormant seed.

Description: Erect annual/perennial, hairy; stems 1.5-2.5'; yellow flowers; N 2n = 16;

Comments: status: phenology: Blooms 7,8,9. In northern Illinois, collect seeds in September-October. Collect seeds in se Wisconsin in September (he99). Wetland restoration. Seed source drainage ditches, Green River Lowland.

Associates: ethnobotany: Used as medicinal plant by Pottawatomie (sm33). Used for dye by Ojibwa & Pottawatomie (sm32, 33). Seeds were included in hunting medicine smoked to attract deer by Ojibwa (sm32). [*Ranunculus pennsylvanicus* L]



Ranunculus pennsylvanicus

Photo Edward G Voss USDA-NRCS PLANTS Database. - Not copyrighted image

Ranunculus recurvatus Poiret HOOKED BUTTERCUP, aka BLISTER PLANT, BLISTER-FLOWER, BLISTERWORT [BLISTER-WORT], BUTTERCUP, HOOKED CROWFOOT, CROWFOOT, LITTLE-LEAF BUTTERCUP, (*recurvatus -a -um* recurved, curved backward or curved downward.)

In se USA, "Bottomland forests, cove forests, swamps, mesic slope" (w11). distribution/range:

"A small-flowered buttercup that is less common than *R abortivus* & that grows in the same places."

(ewf55)

Blooms April to June

Associates: ethnobotany: Used as dye by Menominee (sm23).

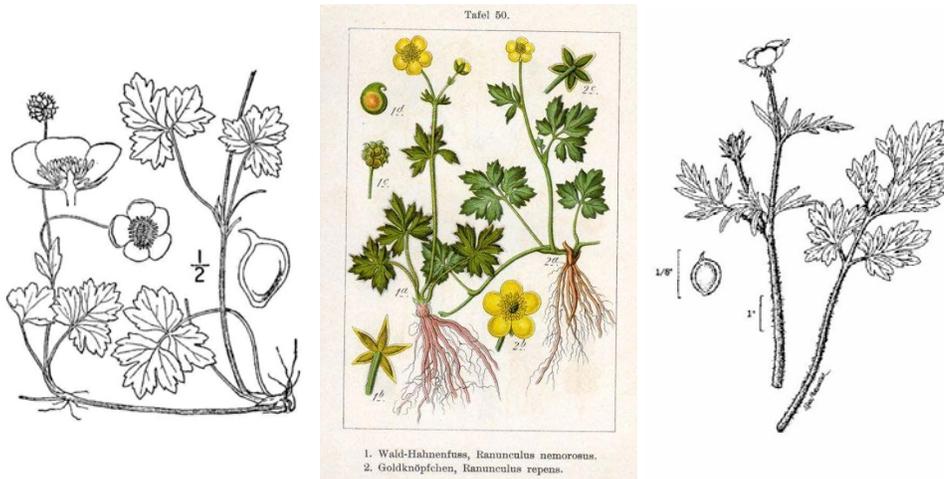


Ranunculus recurvatus

Ranunculus repens Linnaeus CREEPING BUTTERCUP, aka BUTTER-CRESS, BUTTER-DAISY (BUTTER DAISY), BUTTER-FLOWER, BUTTER-ROSE, CREEPING BUTTERCUP, CREEPING CROWFOOT, CROWFOOT, CURSED CROWFOOT, DEVIL'S-GUTS, DOUBLE-FLOWER CREEPING BUTTERCUP [DOUBLE-FLOWERED CREEPING BUTTERCUP], GARDEN RANUNCULUS, GOLDBALLS [GOLD BALLS, GOLD-BALLS], GOLD-KNOPS [GOLD KNOPS], GOLDWEED [GOLD-WEED], GRANNY-THREADS, *HAHNENFUSS*, HOD-THE-RAKE, HORSE-GOLD [HORSE GOLD], LANTERN-LEAVES, MEADOW BUTTERCUP, MEG-MANY-FEET, RAM'S-CLAWS [RAM'S CLAWS], *RANONCULE*, SETSTICKER, SITFAST, SPOTTED-LEAF BUTTERCUP, TETHER-TOAD, YELLOW-GOWAN [YELLOW GOWAN], (*repens* Latin creeping, creeping & rooting, from Latin, *repens*, participle of *repo*, *repere*, crawl or creep; having creeping & rooting stems.)

Disturbed areas, low ground. distribution/range: Introduced from Europe. "An introduced plant that resembles *R. septentrionalis* but is likely to be found in drier places, common on lawns & in perennial gardens." (ewf55)

VHFS: [*Ranunculus repens* L var *degeneratus* Schur, *R repens* L var *erectus* DC, *R repens* L var *glabratus* DC, *R repens* L var *linearilobus* DC, *R repens* L var *pleniflorus* Fern, *R repens* L var *typicus* G Beck, *R repens* L var *villosus* LaMotte]



Ranunculus repens

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

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

Ranunculus rhomboideus Goldie * IL, MI PRAIRIE BUTTERCUP, aka DWARF BUTTERCUP, LABRADOR BUTTERCUP, PLAINS BUTTERCUP, PRAIRIE BUTTERCUP, PRAIRIE CROWFOOT, (*rhomboideus -a -um* resembling a rhombic outline.) upl

Habitat: Hill prairies, dolomitic gravel prairies, & kames. distribution/range:

Culture: ① "Upon ripening in mid to late spring, sow seed immediately for germination the same season. Seed can be held in frig in plastic bag for few days. Light cover. Excellent germination." (mfd93) ② 60 days cold moist stratification. Plant fresh seed or keep moist. Refrigerate clean seed in a ziplock bag until planting or starting other

treatment. Best planted outdoors in the fall. (pm09, 15). ③ Sow seeds immediately when ripe, or seeds germinate after about 60 days of cold moist stratification (he99). ④ “Sow seeds just below moist soil surface at 65°F for 1 month. Move to 25°F for 1 month, then bring back to 50°F.” (ew12) ⑤ Sow at 18-22°C (64-71°F) for 2-4 wks, move to 5°C (41°F) for 4-6 wks, move to 5-12°C (41-53°F) for germination. Short viable. (tchn) ⑥ “Collect in late May & June. Fresh seed planted in June emerges in August & flowers the following spring. Seeds have low germination. Division of mature plants provides another means of increase.” (lbj)

320,000 (ew12, pm12), 448,000 seeds per pound.

“*Ranunculus rhomboideus* Dry hill prairie. Blooms late Apr; YELLOW. Harvest late May. 4"; seed should be sown while fresh; germinates same season & blooms the next spring. Neighbors must be short.” (rs ma)

asexual propagation: Careful division.

cultivation: Space plants 0.25-0.5'. Calcareous soils. Sandy & gravelly soils. Not tolerant of competition. Individual plants may be short-lived. Dry, well-drained soils, full sun to partial shade. Weakly self sows. Scatter fresh seed.

Description: Native, erect perennial, 2-4(6)" tall, hairy throughout, stalks branched, stem leaves three- to five-cleft leaves, with a basal cluster of broader, undivided leaves, flowers in upper axils, glossy yellow, 5 petals waxy, often tinged with lavender below; $N 2n = 16$.

Comments: status: Threatened in Illinois & Michigan. phenology: Blooms 4,5. Occasional remontant blooms in October. In northern Illinois, collect seeds in May. Collect seeds in se Wisconsin in July (he99). Calcareous soils, short-lived, non-competitive. Good for xeriscaping & rock gardens. LBJ reports colonies of this hardy buttercup have been known to persist in quack sod.

“Resembles *R. fascicularis* & comes into flower nearly as soon. It is found on dry prairies, gravel hills, & limestone fields throughout the Co. The gravel hills east of Ill Rt No 173 & south of Roscoe, a prairie hillside south of Rock Cut, high prairies near Wempleton in Burritt Twp, & in Owen Twp 5 miles north of Rockford.” (ewf55)

VHFS: [*Ranunculus ovalis* Raf]



Ranunculus rhomboideus

***Ranunculus sceleratus* Linnaeus** CURSED BUTTERCUP, aka ACHE, ANNUAL BUTTERCUP, BITING CROWFOOT, BLISTER BUTTERCUP, BLISTERWORT [BLISTER-WORT], BRISTLY BUTTERCUP, CELERY CROWFOOT, CELERY-LEAF BUTTERCUP [CELERYLEAF BUTTERCUP], CELERY-LEAF CROWFOOT [CELERY-LEAVED CROWFOOT, CELERY-LEAVED CROWROOT], CURSED BUTTERCUP, CURSED CROWFOOT, DITCH BUTTERCUP, DITCH CROWFOOT, MARSH CROWFOOT, *RANONCOLO DI PALUDE*, *RANONCOLO TOSSICO*, *RANONCULE*, *SARDONIA*, *SCHARF HAHNENFUSS*, WATER CELERY, (*sceleratus -a -um* harmful, acrid, biting, blister-drawing, from Latin *scelero*, *scelerare*, to pollute with guilt, to defile; participle *sceleratus -a -um*, polluted with guilt, defiled; impious, wicked; tiresome, noxious.)

Habitat: In se USA, Marshes, ditches, & stream margins. distribution/range: The species is circumboreal, ranging south in North America

“On the bank & in shallow water of Rock River south of Rockford & Sugar River sloughs west of Shirland. If the water deepens the stems of the basal leaves elongate & the blades lie flat on the surface.” (ewf55)

30 days cold moist stratification (pm15).

Blooms June-September.
 Specific epithet is often misspelled as *scleratus*.



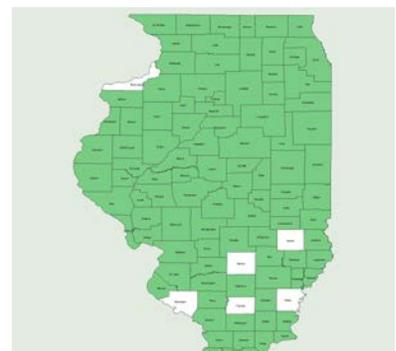
15. *Ranunculus sceleratus* L.
Celery-leaved Crowfoot; *Y.*



Ranunculus sceleratus

Seed photo by Steve Hurst USDA-NRCS PLANTS Database. - Not copyrighted image
 Photo Robert H Mohlenbrock USDA-NRCS PLANTS Database. - Not copyrighted image

Ranunculus septentrionalis Poiret *MD, NY SWAMP BUTTERCUP, aka BRISTLY BUTTERCUP, COMMON BUTTERCUP, CREEPING BUTTERCUP, EARLY BUTTERCUP, MARSH BUTTERCUP, NORTHERN BUTTERCUP, SWAMP BUTTERCUP, (*septentrionalis -is -e* Latin, northern, of or pertaining to the north, literally towards the direction of the Great Bear, (or the Plow, the Plough, or Plow Oxen), septentrional, from Middle English, from Latin *septentrionalis*, from *septentriones*, the northern regions, the north wind, the northern heavens & polar things in general, & *-alis -al*. *Septentrion* is also



from the Latin *septentrio*, singular of *septentriōnēs*, originally *septem triōnēs*, the seven stars of the constellation of the Great Bear, f *septem* seven, & *triōnes*, plural of *trio*, plough-ox. These were the ox that turned the celestial mill on its axis, *Polaris*.)

Habitat: Wet lowland woods, wet meadows, swamps & ditches. distribution/range:

Culture: ① Sow seeds immediately when ripe, or seeds germinate after about 60 days of cold moist stratification (he99).

Description: Creeping perennial, forms patches. key features: Stems occasionally rooting at the nodes, flowers with 5 sepals reflexed just above the base, basal and stem leaves much the same shape with basal the largest, all deeply lobed (fh).

Comments: status: Endangered & Extirpated in Maryland. Endangered in New York. phenology: Blooms 5-6. In northern Illinois, collect seeds in June. Collect seeds in se Wisconsin in June - July (he99). "Common in wet places, sloughs, low prairies, damp woods, etc." (ewf55)

VHFS: [*Ranunculus carolinianus* DC, *R carolinianus* DC var *villicaulis* Shinnery, *R nitidus* Muhl ex Ell, non Walt, *R palmatus* Ell, *R septentrionalis* Poir, *R septentrionalis* Poir var *nitidus* Chapman, *R septentrionalis* Poir var *pterocarpus* L Benson]

In new nomenclature, this may be *Ranunculus hispidus* Michx var *nitidus* (Chapman) T Duncan. *R hispidus* is a species complex with octoploid ($2n=64$) and tetraploid ($2n=32$) members.

The name *Ranunculus septentrionalis* Poiret has often been used for *R hispidus* var *caricetorum*. The type specimen, however, belongs to var *nitidus* (T Duncan 1980). (Whittemore in fna)



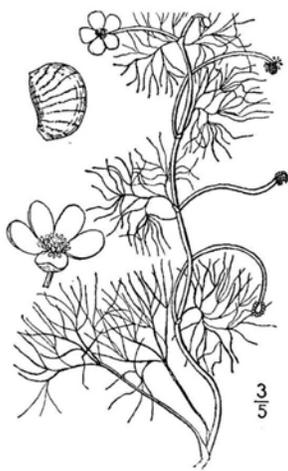
Ranunculus septentrionalis, aka *Ranunculus hispidus nitidus*

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

Ranunculus trichophyllus Chaix WHITE WATER-CROWFOOT, aka CIRCINATE WHITE WATER CROWFOOT (MISAPPLIED), COMMON WHITE WATER CROWFOOT, GREEN EEL-GRASS [GREEN EEL GRASS], PICKEREL-WEED [PICKEREL WEED], RANUNCOLO CAPILLARE, THREAD-LEAF CROWFOOT [THREADLEAF CROWFOOT], THREAD LEAVED WATER CROWFOOT, WATER CROWFOOT, WATER MILFOIL, WHITE WATER BUTTERCUP, WHITE WATER CROWFOOT, (*trichophyllus* -a -um hairy-leaved; or with finely cut hair-like leaves.)

In se USA, submerged in the water of acidic streams (w11). "Not uncommon in slow creeks & drainage ditches especially those in the Sugar River sand area." (ewf55) distribution/range: Circum boreal. VHFS: This is now known as *Ranunculus aquatilis* L var *diffusus* With. Weakley (2011) maintains *Ranunculus trichophyllus* Chaix var *trichophyllus*.

[*Batrachium divaricatum* (Schrank) Wimm, (*B trichophyllum* (Chaix ex Vill) Bosch), *B trichophyllum* (Chaix) Bossch, *B trichophyllum* (Chaix) F Schultz, *Ranunculus aquatilis* (L) var *capillaceus* (Thuill) DC, *R aquatilis* var *trichophyllus* Gray, *R trichophyllus* Chaix]



Ranunculus trichophyllus

THALICTRUM Linnaeus 1753 **MEADOW RUE, PIGAMON** *Ranunculaceae* *Thalictrum* New Latin, from Latin, *thalictrum*, (from Pliny) meadow rue, from Greek θάλικτρον, *thaliktron*, a name used by Dioscorides for another plant with divided leaves, from θάλλω, *thallo*, to grow green, to be green. Dioscorides was the Greek physician & pharmacologist wrote the *Materia Medica*, which remained a leading pharmacological text for 16 centuries. Genus of ca 330 (120-200) species of perennial herbs of Eurasia, North America, South America, & Africa. Fruits are achenes. $x = 7$. Several species are used as ornamentals. Excellent foliar effect similar to COLUMBINE or MAIDENHAIR FERN. Formerly known, at least in part, as *Anemonella* Spach, *Syndesmon* Hoffmgg, *Syndesmon* (Hoffmannsegg ex Endlicher) Britton, *Thalictrum* (Tourn) L, & *Thalictrum* Tourn. Additional genus names include ANEMONELLA, MAID-OF-THE-MIST [MAID OF THE MIST], MEADOW-RUE [MEADOW RUE, MEADOWRUE], & RUE-ANEMONE [RUE ANEMONE].

Seeds ripen in early to late summer, harvest when the seeds break away easily. A papery green husk makes it difficult to determine when the seeds are ripe. Sow seeds immediately outdoors, as seeds loose viability moderately fast in dry storage. Code B (*?) (cu00)

Several species have unisexual flowers. Some people mistake the drying male flowers as a sign that seed is ripe & shattering, & and they proceed to harvest immature seed.

Thalictrum dasycarpum Fisch. & Avé-Lallemant PURPLE MEADOW RUE, aka MEADOW RICE, MEADOW-RUE, MEADOW RUE, MEADOWRUE, PURPLE MEADOW-RUE, PURPLE MEADOWRUE, PURPLISH MEADOW-RUE [PURPLISH MEADOW RUE], TALL MEADOW-RUE, TALL MEADOW RUE, *Nisude-hi*, flute-plant, Omaha-Ponca, *Skadiks* or *skariks*, Pawnee, *Wazimna*, pine smell, Dakota, (*dasycarpus -a -um* thick-fruited in one source, having rough, woolly fruit, from Greek δασυς, *dasys*, hairy, bushy, thick grown & καρπός, *karpos*, fruit.) facw-
Habitat: Calcareous meadows, stream banks, sedge meadows, wet to mesic prairies; mesic woodland, moist wooded ravines. In se USA, forests, woodlands, & prairies (w11). distribution/range:

Culture: ① “Moist cold treatment or fall sow. Prefers cooler soils, sow early spring or late fall. (mfd93). ② 60 days cold moist stratification. Seeds germinate most successfully in cool soil. (pm09, 15). ③ Seeds germinate after about 60 days of cold moist stratification. Seeds germinate most successfully in cool soil. Sow in early winter through early spring. (he99) ④ “60 days moist stratification required for germination. Field sow fall.” (pnnd) ⑤ “Fall plant or cold stratify for 2 to 3 months for best results. Sow seeds just below the soil surface at 60°F & water.” (ew11) Sow at 20°C (68°F), if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). 176,000 (pm01), 196,800 (ew12), 208,000 (pn02), 214,353 (gna04), 216,000 (jfn04), 222,400 (sh94, aes10), 265,808 (gnh11), 348,928 (lhn91) seeds per pound.

asexual propagation: Division of mature plants.

cultivation: Space plants on 1.25-1.5' centers. Medium soils, full sun to partial shade. Calcareous soils.

bottom line: Dormant seed properly stored seed. Significantly to strongly dormant & recalcitrant.

Germ 10.7, 6.0, 12, sd 14, r1.0-57.5 (56.5)%. Dorm 66.2, 70, na, sd 17.3, r34.5-93 (58.5)%. Test 31, 33, 41, r14-41 days (#15)**d

greenhouse & garden: Easy from transplants or stratified seed. Moist cold stratify (60 days) or dormant sow refrigerated seed. Germination best in cool soils.

Description: Erect perennial, 4.0-5.0'; leaflets firm, pubescent, but eglandular beneath; mostly dioecious cream-white flowers;

Comments: status: phenology: Blooms 5,6,7. In northern Illinois, collect seeds in mid August through early October. Collect seeds in se Wisconsin in August - September (he99). Landscaping, specimen plantings, herbaceous borders, rain gardens, attractive aquamarine foliage contrasting with white flowers & purplish stems. Fruits are achenes, once used for perfume. Seed sources wet roadsides, Lee Center, Lee Co & Tampico Twp, Whiteside Co, nursery remnants & plantings.

“Low prairies, damp thickets & other moist places. Less common than *T. hypoglaucum*.” (ewf55)

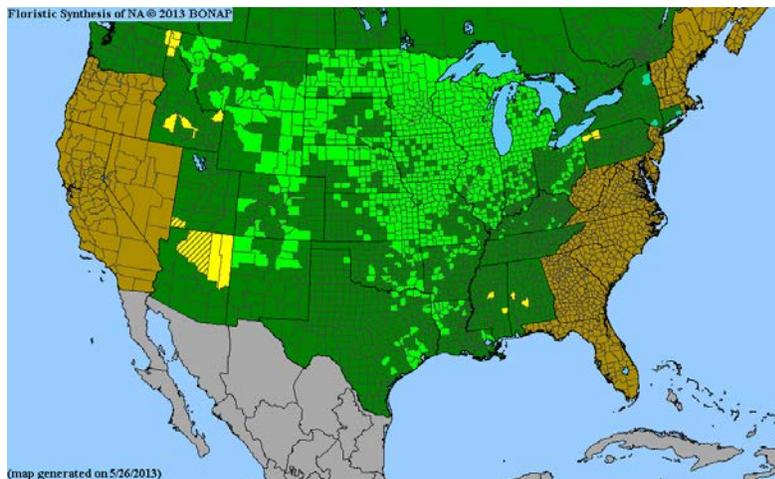
Associates: Pollinated by wind & *Diptera* & bees. Attracts butterflies & hummingbirds. Deer resistant. Tolerant of growing under black walnut trees.

ethnobotany: The root was used as medicinal plant by Ojibwa & Pottawatomie (sm32, 33).

VHFS: Var *hypoglaucum* (Rydb) Boivin, MEADOW RUE, leaflets thin, glabrous, & without glands beneath.

Expand variety discussion,

“*T hypoglaucum* Rydb. Our common late meadow-rue. (*T dasycarpum* var *hypoglaucum* (Rydb) Boivin)” (ewf55)



Thalictum dasycarpum

Thalictrum dioicum Linnaeus EARLY MEADOW-RUE, aka [EARLY MEADOW RUE, EARLY MEADOWRUE], FEATHERED COLUMBINE, MEADOW-RUE [MEADOW RUE, MEADOWRUE], *PIGAMON DIOÏQUE*, POOR MAN'S RHUBARB [POOR-MAN'S RHUBARB], QUICKSILVER WEED, [QUICKSILVER-WEED], SHINING-GRASS [SHINING GRASS], (*dioicus -a -um* (dee-o-EE-kus) of two houses, from Greek δις-οικος, *dis-oikos*, dioecious, indicating that the male & female flowers are found on different plants, having stamens & pistils on separate flowers on different plants.)

Habitat: Mesic savannahs & woods. “Not uncommon in woods & ravines.” (ewf55) In se USA, moist forests & seepages (w11). “Rocky woods, ravines, & alluvial terraces, mountains & piedmont” (fna).

distribution/range:

Culture: ①60 days cold moist stratification (pm09, 15). ②Seeds germinate after about 60 days of cold moist stratification (he99). 116,800 (pm01, jfn04, aes10), 182, 183 (gnhm14) seeds per pound. In the drought of 2012, the seed count was 431,970 seeds per pound.

cultivation: Plant on 1.5-2.0' centers. Clay soil tolerant (timber clay perhaps?).

bottom line: Hand plant fresh seed or dormant seed with seed that has been properly stored. Seed has a short shelf life (Feb test 31% viable). Recalcitrant. Germ 0.0-5.0%. Dorm 31-71%. Test 27-41 days.**

Description: Native, erect, perennial forb; stems 0.7-1.0'; flowers yellow-green (green/brown).

Comments: status: phenology: Blooms 4-5(6). Collect seeds in se Wisconsin in June - July (Heon et al 1999). Cultivated for the attractive light green, *Aquilegia*-like foliage. Plant 3-5 in a grouping for effect. Genetic source Bob Horlock, northeast Illinois.

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

Associates: Reported as deer tolerant, but spring 2011, deer ate the tops of our plants. Walnut tolerant.

ethnobotany:

VHFS: [*Thalictrum laevigatum* Michx]



Thalictrum dioicum

Thalictrum pubescens Pursh *IN KING OF THE MEADOW, aka COMMON TALL MEADOWRUE, KING-OF-THE-MEADOW, LATE MEADOW-RUE, MEADOW-WEED, MUSKRAT-WEED, *PIGAMON*, TALL MEADOWRUE, (*pubescens* becoming hairy, slightly hairy, downy, pubescent, with soft downy hair, from Latin *pubescens*, *pubescent*, from *pubesco*, *pubescere*, *pubui*, to reach physical maturity or reach puberty, become pubescent, from *pubes*, youth, men; hair that appears at puberty, & *-escens* (like *-ascens*) Latin adjectival suffix from *-escent*, -ish, -part of, -becoming.)

Habitat: Full sun to full shade, rich woods, thickets, swamps, stream banks & wet meadows. In se USA, bogs, marshes, & wet forests (w11). distribution/range: "Wet meadows, very rare; Hardin Co" (m14).

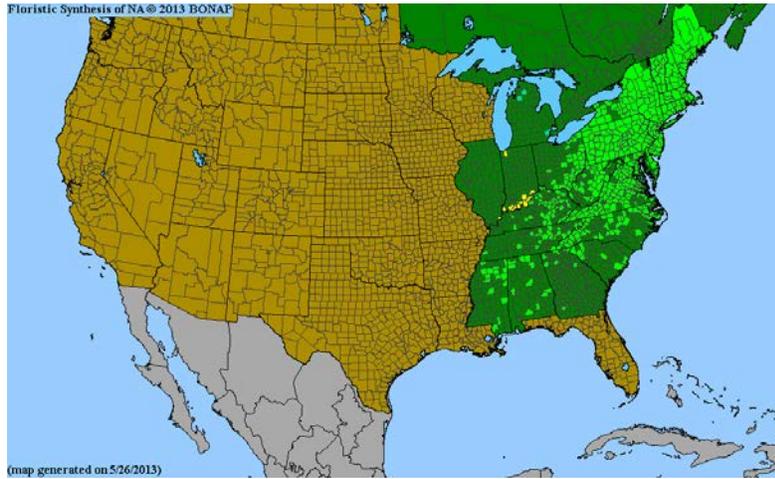
Culture: ①60 days cold moist stratification (pm09, 15). 192,000 (ecs) seeds per pound.

Description: N 2n = 126.

Comments: status: Threatened in Indiana. phenology: Blooms mid-June to early August. Often incorrectly listed as *T polygamum* Sprengel.

Associates:

VHFS: [*Thalictrum carolinianum* Bosc ex DC [var] *subpubescens* DC, *T perelegans* Greene, *T polygamum* Muhl ex Spreng, *T polygamum* Muhl ex Spreng var *hebecarpum* Fern, *T polygamum* Muhl ex Spreng var *intermedium* B Boivin, *T polygamum* var *pubescens* (Pursh) KC Davis, *T pubescens* Pursh var *hebecarpum* (Fern) B Boivin, *T pubescens* Pursh var *hepaticum* (Greene) Keener]

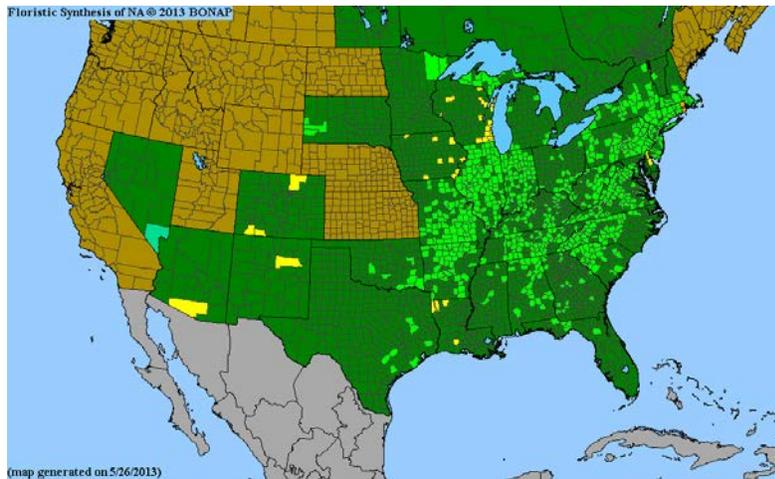


Thalictrum revolutum DC SKUNK MEADOWRUE, aka WAXY MEADOWRUE,

In se USA, “Mesic to dry forests, woodlands, & barrens, over hornblende, greenstone, dolostone, & serpentized olivine” (w11). “More likely to be found in the edge of woods than the two preceding & it is perhaps found less common.” (ewf55) distribution/range: Note the bio-geo-politico tension on the Illinois-Iowa border.

① Sow at 20°C (68°F), if no germination in 3-4 wks, move to +2 to +4°C (34-39°F) for 2-4 wks (tchn). 192,000 (aes10) seeds per pound. N 2n = 140. Blooms May-July. Wind pollinated.

[*Thalictrum amphibolum* Greene, *T hepaticum* Greene, *T moseleyi* Greene, *T revolutum* var *glandulosior* B Boivin]



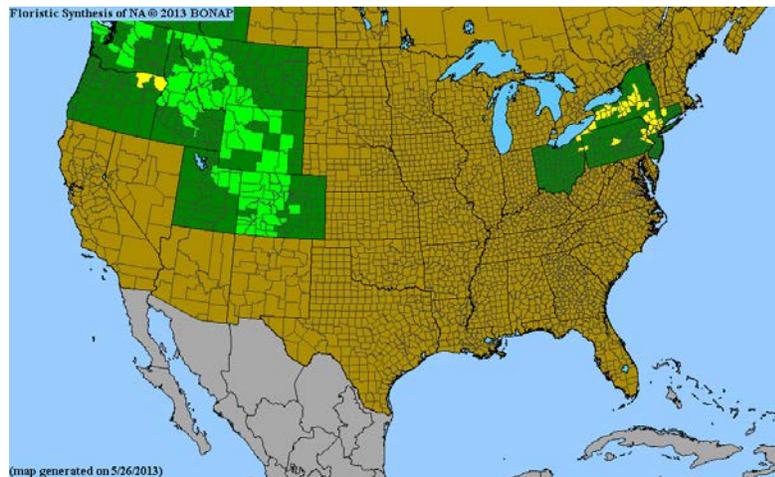
Thalictrum revolutum

TROLLIUS Linnaeus **GLOBEFLOWER, TROLLBLUME** *Ranunculaceae Trollius* German *Trollblume*, globe-flower, from German *troll* or *trollen*, globular, referring to the form of the flowers. Approximately 30 species in north temperate & arctic regions of North America, Europe & Asia. 3(2) native species in North America, one in ne USA, one on western North America (the two are sometimes treated as varieties of one species), & one in the Aleutian Islands, Alaskan peninsula, & east Asia. Flowers of North American species are shallowly bowl shaped with sepals more or less spreading. Fruits are many-seeded follicles. $x = 8$. Many European species are cultivated as ornamentals, some of which may persist near old homesites.

Trollius laxus Salisbury * CT, NJ, NY, OH, PA SPREADING GLOBE-FLOWER, aka AMERICAN GLOBE-FLOWER, SPREADING GLOBEFLOWER,

Calcareous soils (rarely not calcareous) in alkaline meadows, fens, & open swamps. Sphagnous swamps. ① The hydrophilic seeds ripen in late spring & should be sown immediately or stored in ziplocks & sown in the fall. Germination occurs 1st spring. (cu00) ② 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). Partial shade, wet soils. Native, erect perennial from short caudex; 1.0-3.0'; N 2n = 32. Endangered in Connecticut, New Jersey, Ohio, & Pennsylvania. Rare in New York. Blooms May-July. (fna). [*Trollius americanus* de Candolle]

“The diploid *Trollius albiflorus* is isolated from the tetraploid *T laxus* ecologically, geographically, & reproductively, although it often has been treated as a variety of the latter” (fna). The variety *albiflorus*, of the Rocky Mts & westward, differs only slightly from var *laxus* of e US, which has slightly narrower, more yellowish sepals. $N 2n = 16$.



Trollius laxus

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

End of the BUTTERCUP Section.



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

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

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

Reference abbreviations May 04 2014

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