SECTION 3

# Inland Fresh Meadows

# III. Inland Fresh Meadows

Inland fresh meadows are essentially closed wetland communities (nearly 100 percent vegetative cover) composed of perennial forb, grass and sedge mixtures growing on saturated soils. Woody plants are not dominant and standing water is usually only present during floods and snowmelt. Inland fresh meadows often form a transition zone between aquatic communities and uplands. Peat/muck soils indicate nearly permanent saturation and anaerobic conditions while communities occurring on hydric mineral soils are frequently saturated for long duration resulting in at least periodic anaerobic conditions.

Plants occurring in inland fresh meadows include species found in other communities such as the annuals of seasonally flooded basins, emergent aquatics of marshes, and invading shrubs or trees, which are present as scattered, small individuals. The forbs, grasses and sedges of inland fresh meadows can tolerate inundation to a greater degree than most woody species, but they are stressed if inundation during the growing season lasts for more than one or two weeks. Because these wetlands lack standing water during most of the growing season, they are often called "dry marshes."

Inland fresh meadows are particularly important for their water quality functions including trapping sediments and assimilating nutrients. Inland fresh meadows are also important for stormwater and floodwater retention. Wildlife habitat is provided for many species including sandhill crane, ring-necked pheasant, common snipe, sedge wren, small mammals and white-tailed deer. The abundance of small mammals supports mink, fox and raptors such as the northern harrier. The composites found in these meadows are an important autumn and winter food source for songbirds. Inland fresh meadows are often used for pasture or cut for "marsh hay."

Inland fresh meadows include two of the rarest wetland plant communities in our area – calcareous fen and wet/wet-mesic prairie – both of which support a disproportionate number of rare, threatened and endangered species.

**Inland fresh meadows provide habitat for many species of wildlife, including sandhill cranes.**

# III.A. Sedge Meadows

Sedge meadows are dominated by the sedges (Cyperaceae) growing on saturated soils. Most of the sedges present are in the genus *Carex*, but also present are those of the genera *Eleocharis* (spike-rushes), *Scirpus* (bulrushes) and *Cyperus* (nut-grasses). Grasses (Gramineae), especially Canada blue-joint grass (*Calamagrostis canadensis*), and true rushes (*Juncus* spp.), can also be important components. Forb species can be sparse to diverse.

Soils are usually composed of peat or muck, but can also be composed of shallow muck over mineral soils, or entirely mineral soils. Some sedges, especially *Carex stricta*, form hummocks—also called tussocks—that are accentuated by grazing and frost action. Hummocks are composed of undecayed fibrous roots and rhizomes. Sedge meadows often grade into shallow marshes, calcareous fens, wet prairies and bogs.

Sedges of the genus *Carex* are mostly long-lived and competitive grass-like plants that have three-ranked leaves and triangular, solid stems. These traits are also shared with some species of bulrushes (e.g., *Schoenoplectus*) and other genera of the sedge family. This is opposed to the two-ranked leaves and cylindrical, hollow stems of grasses, or the apparently "leafless," cylindrical, solid stems of rushes (*Juncus*). The diagnostic character of *Carex* that distinguishes them from all other plants is the **perigynium**, a papery flask- or sac-like structure that encloses the pistil, which at maturity develops into a nutlet. Mature perigynia are usually required for positive identification of the species.

There are over 150 species of *Carex* in Minnesota and Wisconsin, many of which are found in wetland habitats. Because they have specific habitat requirements, *Carex* species are good indicators of environmental conditions such as soil and water chemistry, water levels, shading, silt deposition and floating mats.

The fertile organic soils associated with sedge meadows have traditionally been used for muck farming. Lowering of water tables through artificial drainage is suspected of causing shrub invasion in some of our remaining sedge meadows.

Curtis (1971) described floristic differences between sedge meadows located north of the tension zone compared to those south of the tension zone. He refers to these communities as northern sedge meadows and southern sedge meadows, respectively. See pages 580-583 in Curtis for a comparison of species.

In this third edition, we have added "sedge mats" to the key to wetland plant communities. This was in response to field practitioners who asked where floating mats composed of sedges (e.g., *Carex lasiocarpa*, *C. oligosperma*) would best fit given the plant communities of this guide.

# Sedge Meadows

**VEGETATION**: The opposing page illustrates two seasonal views of the same sedge meadow community. Hummock sedge (*Carex stricta*) is dominant while Canada blue-joint grass (*Calamagrostis canadensis*) and lake sedge (*Carex lacustris*) are sub-dominant. Non-dominant species include fowl bluegrass (*Poa palustris*), fringed brome grass (*Bromus ciliatus*), woolly sedge (*Carex pellita*), marsh fern (*Thelypteris palustris*), joe-pye weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), sawtooth sunflower (*Helianthus grosseserratus*), swamp thistle (*Cirsium muticum*), giant goldenrod (*Solidago gigantea*), flat-top aster (*Doellingeria umbellata*), swamp aster (*Symphyotrichum firmum*), New England aster (*Symphyotrichum novae-angliae)*, ironweed (*Vernonia fasciculata*), Michigan lily (*Lilium michiganense*), swamp milkweed (*Asclepias incarnata*), blue vervain (*Verbena hastata*), turtlehead (*Chelone glabra*), cowbane (*Oxypolis rigidior*), angelica (*Angelica atropurpurea*), wild mint (*Mentha arvensis*), common bugleweed (*Lycopus americanus*), northern bugleweed (*Lycopus uniflorus*), hairy hedge-nettle (*Stachys pilosa*), marsh skullcap (*Scutellaria galericulata*), jewelweed (*Impatiens capensis*), marsh marigold (*Caltha palustris*), tall meadowrue (*Thalictrum dasycarpum*) and broad-leaf cattail (*Typha latifolia*). Small, scattered individuals of beaked willow (*Salix bebbiana*) and red-osier dogwood (*Cornus alba*) are present.

**SOILS:** Seelyeville muck (Typic Haplosaprists) with a muck layer greater than 51 inches in thickness. Seelyeville soils are typically saturated to the surface. Landscape position is the toe of the bluff of the Minnesota River Valley.

**HYDROLOGY:** Groundwater seepages. Seelyeville muck soils are saturated at or near the surface throughout the growing season.

**LOCATION:** Fort Snelling State Park, Dakota County, Minnesota.

**May**



**August**

# Sedge Meadows

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**VEGETATION:** This sedge meadow is dominated by common yellow lake sedge (*Carex utriculata*). Also present are tussock sedge (*Carex stricta*), Buxbaum's sedge (*Carex buxbaumii*), marsh fern (*Thelypteris palustris*), crested shield-fern (*Dryopteris cristata*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), joe-pye weed (*Eutrochium maculatum*), boneset (*Eupatorium perfoliatum*), arrow-leaf tearthumb (*Persicaria sagittata*), linear-leaf willow-herb (*Epilobium leptophyllum*), green bulrush (*Scirpus atrovirens*), bulblet-bearing water hemlock (*Cicuta bulbifera*), Canada blue-joint grass (*Calamagrostis canadensis*), rattlesnake manna grass (*Glyceria canadensis*), steeplebush (*Spiraea tomentosa*), meadowsweet (*Spiraea alba*), Kalm's St. John's wort (*Hypericum kalmianum*), swamp candles (*Lysimachia terrestris*), grass-leaf goldenrod (*Euthamia graminifolia*), giant goldenrod (*Solidago gigantea*), northern bugleweed (*Lycopus uniflorus*), marsh St. John's wort (*Triadenum fraseri*) and slender willow (*Salix petiolaris*).

**SOILS:** Dawsil mucky peat (Terric Haplosaprists), very-poorly drained soils with 16 to 51 inches of mucky peat over sand.

**HYDROLOGY:** Dawsil soils have a seasonal high water table at the surface to 12 inches below the surface during September to June of most years.

**LOCATION:** Black River State Forest, South Unit, Jackson County, Wisconsin.



**VEGETATION:** This sedge meadow is dominated by hummock sedge (*Carex stricta*). Other species include lake sedge (*Carex lacustris*), Canada blue-joint grass (*Calamagrostis canadensis*), fowl blue-grass (*Poa palustris*), redtop (*Agrostis gigantea*), woolgrass (*Scirpus cyperinus*), marsh milkweed (*Asclepias incarnata*), arrow-leaf tearthumb *(Persicaria sagittata*), water pepper (*Persicaria hydropiper*), common bugleweed (*Lycopus americanus*), blue vervain (*Verbena hastata*), redstem aster (*Symphyotrichum puniceum*), sawtooth sunflower (*Helianthus grosseserratus*), giant goldenrod (*Solidago gigantea*), boneset (*Eupatorium perfoliatum*), beggarticks (*Bidens* sp.) and joe-pye weed (*Eutrochium maculatum*).

**SOILS:** Clyde silty clay loam (Typic Endoaquolls*)*, a poorly-drained mineral soil found in shallow depressions and drainageways on till plains. Landscape position is a depressional area in a gently rolling till plain.

**HYDROLOGY:** This sedge meadow is supported by groundwater and surface water runoff. Clyde soils are frequently saturated at the soil surface to 12 inches below the surface during the wettest part of the growing season.

**LOCATION:** Cartney Wildlife Management Area, Mower County, Minnesota.



## HUMMOCK SEDGE

(*Carex stricta* Lam.)

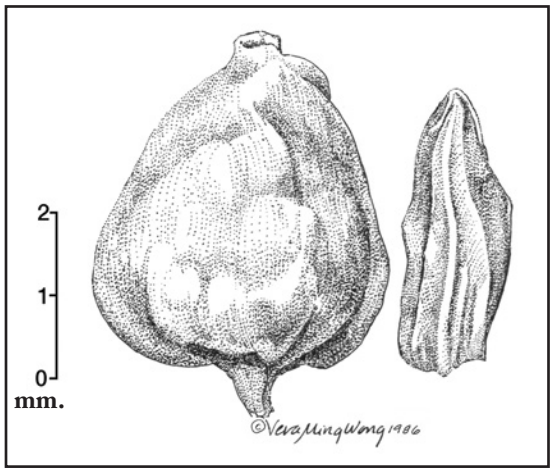
**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (5 MN)(7 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial, clonal sedge with triangular stems about 40-100 cm. tall and which usually exceed the leaves. Mature leaves are 2-6 mm. wide, slender, green and M-shaped. Leaves and stems are extremely rough on the edges. Forms large tufts or hummocks to 30 cm. tall and as wide, although the authors have seen hummocks as tall as 75 cm. Flowering stems arise laterally. Lowest leaves are reduced to bladeless sheaths. Basal sheaths disintegrate into two rows of fibers on each side of a central fiber (pinnate)[see photo on page 112] and tend to be reddish-brown in color. The beakless perigynia are 2-3 mm. long, flat to flattened-convex, widest below the middle section of the body, and taper to the tip. Two stigmas are present and nutlets are lens-shaped. Pincushion-like young shoots erupt in late summer, persist through the winter and grow quickly in early spring into a tuft of bright green leaves.

Aquatic sedge (*Carex aquatilis*)[page 115] is very similar to hummock sedge. However, *C. aquatilis* lacks basal sheaths with two rows of fibers on each side of a central fiber; the flowering stems arise centrally; lowest leaves have blades; mature leaves tend to be blue-green; and stems do not form pincushion-like young shoots that persist through the winter.

**ECOLOGICAL NOTES:** Hummock, or tussock, sedge is the characteristic sedge of Minnesota and Wisconsin sedge meadows. It is also common in shrub-carrs and calcareous fens. The hummocks may persist for decades even when pastured. Stands of hummock sedge provide excellent habitat for rails and snipe.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).




**Perigynium and scale**

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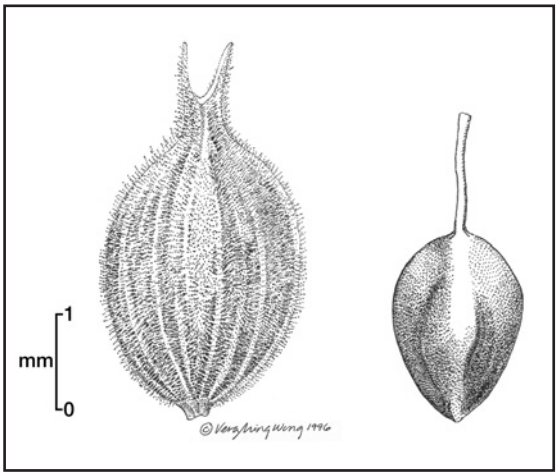
## Hummock Sedge
(*Carex stricta*)




**Perigynium and nutlet**

© Steve D. Eggers

## WOOLLY SEDGE

(*Carex pellita* Muhl. ex Willd.)

**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (4) **IND. STATUS:** OBL

**SYNONYM:** *Carex lanuginosa* Michx.

**FIELD CHARACTERISTICS:** A perennial, mat-forming (colonial) sedge with triangular stems about 50-100 cm. tall. Leaves are glabrous and folded along the midrib. Leaf blades have revolute margins and are 2.5-4.5 mm. wide. Perigynia are 2.8-4.3 mm. long and densely pubescent. Beak of the perigynia is less than half of the body length with bidentate teeth up to 0.5(0.7) mm. long.

Woolly sedge resembles wiregrass sedge (*C. lasiocarpa*)[page 257], but the latter has inrolled, wire-like leaves that are less than 2 mm. wide.

**ECOLOGICAL NOTES:** Woolly sedge is characteristic of minerotrophic sedge meadows, sandy to marly flats, and shorelines. It also occurs in disturbed sites including abandoned agricultural lands and wetland restoration sites.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).






## BEBB'S SEDGE

(*Carex bebbii* Olney ex Fern.)

**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (5 MN)(4 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A loose to densely clumped, perennial sedge with stems up to about 70 cm. tall. Triangular stems usually exceed the leaf blades in height. Mature leaves are up to about 4 mm. wide. Ascending to slightly spreading, tan perigynia are crowded into stiff and dense spikelets. Oval, scale-like perigynia are less than 3.6 mm. long and under 2 mm. wide. They are lightly convex and nerveless (except at the base) on one side, thin winged, and taper to a shallow, toothed beak.

**ECOLOGICAL NOTES:** Bebb's sedge is a common sedge that prefers the wet, calcareous soils of all types of inland fresh meadows as well as kettle hole marsh edges.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).



## CANADA BLUE-JOINT GRASS

(*Calamagrostis canadensis* (Michx.) Beauv.)

**GRASS FAMILY** (Gramineae or Poaceae) **C of C:** Native (4 MN)(5 WI) **IND. STATUS:** OBL (NC/NE, MW);FACW(GP)

**FIELD CHARACTERISTICS:** A perennial grass 50-150 cm. high. Many very slender stems arise from small rhizomes. Sheaths are usually hairless. Slender leaves (4-8 mm. wide) tend to be flat. A distinct, thin, dry, papery structure extends beyond the summit of the sheath (the ligule). Nodes often have a blue to reddish-purple color. Inflorescence is somewhat nodding, open or fairly dense, and branched with stalked spikelets. Branches are often bent in one direction giving the inflorescence a flag-like appearance. Membrane-like lemmas range from three-quarters to as long as the glumes. A single, short, delicate and straight awn arises from or near the middle of the lemma. Also, a tuft of hair (use a 10-15x lens) is present at the base of each lemma, making the spikelets look slightly fuzzy (see drawing on following page).

**ECOLOGICAL NOTES:** Canada blue-joint grass is the most common native, wetland grass in Minnesota and Wisconsin. Often a sub-dominant in sedge meadows, it is the most frequent grass associate of the sedges. It can be dominant in wet to wet-mesic prairies and fresh (wet) meadows and occurs in shallow marshes as well. In and north of the vegetation tension zone, Canada blue-joint grass is a characteristic dominant in the groundlayer of hardwood swamps and alder thickets. This grass stands up well in winter making it important for wildlife habitat.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).


**Canada Blue-Joint Grass**

(*Calamagrostis canadensis*)

Illustration from Hitchcock (1950)


## FRINGED BROME GRASS
(*Bromus ciliatus* L.)

**GRASS FAMILY** (Gramineae or Poaceae) **IND. STATUS:** FACW(NC/NE, MW); FAC(GP)

**C of C:** Native (6 MN)(7 WI)

**FIELD CHARACTERISTICS:** A perennial grass 60-120 cm. high. Stems are solitary or few, smooth (lack hairs), although the nodes may be hairy. Yellowish-green leaf blades are 4-10 mm. wide. Ligules are 0.3-1.0 mm. long, slightly shorter than the similar *Bromus kalmii* (0.5-2.0 mm. long). Inflorescence is an open panicle 10-20 cm. long with drooping or spreading branches generally to one side of the stem. Several spikelets arise from compound branches. Glumes are smooth and hairless. The first glume is single nerved (3-nerved in *B. kalmii*). Lemmas are 10-13 mm. long and short-awned with a dense, long-hairy "fringe" near the margin, especially toward the base. Remainder of the lemma is smooth and hairless or nearly so. The slightly shorter lemmas (8-10 mm. long) of the similar *B. kalmii* have silky hairs up to 1 mm. or more covering the entire surface.

**ECOLOGICAL NOTES:** Fringed brome grass is frequently seen in sedge meadows and calcareous fens, but the authors have not observed this grass as a major dominant species. It also occurs in wet prairies, along the edges of bogs, on wet shores, and openings in hardwood swamps.

**SOURCE:** Crow and Hellquist (2000); Fassett (1951); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).



## WOOLGRASS

(*Scirpus cyperinus* (L.) Kunth)

**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (3 MN)(4 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial, densely tufted sedge with stems up to 2 m. high. Sturdy stems are smooth and more or less round with about 10 stem leaves above a fountain of large, slender, basal leaves. Sheaths are brownish or green and not tinged with red. The terminal inflorescence is subtended by two or more unequally spreading, modified leaves. Several to many rays of the inflorescence ascend from a fountain-like base and contain one to many tiny spikelets in small, compact clusters at the apex of the stem. Spikelets are ovate, 3-8 mm. long and 2-3 mm. wide. Many brown, woolly bristles surround the nutlets, giving the cluster of spikelets a woolly appearance. Nutlets are a flattened three-angled shape and 0.5-1 mm. long with a short beak.

**ECOLOGICAL NOTES:** Woolgrass is actually a member of the sedge family and is common in sedge meadows, particularly in and north of the vegetation tension zone where it can be a dominant species. It is also frequent in bogs, alder thickets, shallow marshes and roadside ditches.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).


## GREEN BULRUSH

(*Scirpus atrovirens* Willd.)

**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (4 MN)(3 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial sedge with stems up to 1.5 m. high. The sturdy stems are roundly triangular with up to 10 stem leaves. Leaves are broad (1-2 cm.), green and M-shaped. Sheaths are brownish or green and not tinged with red. A terminal inflorescence is subtended by two or more conspicuous, spreading, modified leaves with flat blades. Inflorescence contains numerous spikelets crowded into a dense, nearly spherical head on rays that angle out in different directions. Spikelets are 2-8 mm. long and 1-3 mm. wide. Nutlets are a compressed three-angled shape and 1 mm. long with a short beak of 0.2 mm.

**ECOLOGICAL NOTES:** Green bulrush is a common, short-lived pioneer typically found in sedge meadows, but is also present in shrub-carrs, alder thickets and fresh (wet) meadows. It seems to increase with disturbance to peat/muck soils and often invades dredged material sites. It is a frequent colonizer of wetland restoration sites. Seeds have been known to remain viable for at least 40 years.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## MARSH MILKWEED

(*Asclepias incarnata* L.)

**MILKWEED FAMILY** (Asclepiadaceae) **C of C:** Native (4 MN)(5 WI) **IND. STATUS:** OBL (NC/NE, MW); FACW(GP)

**FIELD CHARACTERISTICS:** A perennial herb usually up to 1.4 m. high. Stems are erect and have opposite, lance-shaped to linear to oblong leaves on short leaf stalks. Leaves are 6-15 cm. long and 1-5 cm. wide. Base of the leaf abruptly narrows to a pointed, rounded, or nearly heart-shaped base. Cut stems and leaves exude a milky juice. Inflorescence occurs as several flat umbels 2-3 cm. in diameter with rose-pink to purple-red flowers that are 4-6 mm. long. Fruit is a long, narrow, smooth pod. In flower June-August.

**ECOLOGICAL NOTES:** Marsh or swamp milkweed is common in several wetland communities in addition to sedge meadows, including shallow marshes. Curtis (1971) notes a higher presence in southern sedge meadows than in northern sedge meadows. Many birds use the fibers from old stems for nest building. Monarch butterfly larvae feed on the leaves.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## JOE-PYE WEED

(*Eutrochium maculatum* (L.) E. Lamont)

**ASTER FAMILY** (Compositae or Asteraceae) **C of C:** Native (4) **IND. STATUS:** OBL

**SNYNONYM:** *Eupatorium maculatum* L.

**FIELD CHARACTERISTICS:** A tall, perennial herb 60-200 cm. high with one to several stems. Leaves are in whorls of 4's and 5's around a purple-spotted stem. Lance-shaped leaves are 5-20 cm. long and 2-7 cm. wide, narrowed to the leaf stalk, serrate and seldom triple-nerved. Stems usually lack a white waxy bloom. The flattish inflorescence consists solely of disc flowers (lacks ray flowers). Between 9-22 pink to purple flowers occur in each head. Fruit is a black achene 2-4 mm. long with long bristles (pappus). In bloom July-September.

**ECOLOGICAL NOTES:** Joe-pye weed is a very common composite of sedge meadows and shrub-carrs, particularly on calcareous soils. It is also present in fresh (wet) meadows, calcareous fens and shallow marshes. Joe-pye weed often occurs with an equally common species, boneset (*Eupatorium perfoliatum*), which has white flowers and opposite leaves joined around the stem.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



**Stem appears to pierce the leaves (perfoliate).**

## BONESET

(*Eupatorium perfoliatum* L.)

**ASTER FAMILY** (Compositae or Asteraceae)

**IND. STATUS:** FACW(NC/NE, GP); OBL(MW)

**C of C:** Native (4 MN)(6 WI)

**FIELD CHARACTERISTICS:** A perennial herb 40-150 cm. high. Stem leaves are opposite and grown together around the stem. Stems and leaves are coarsely hairy. Leaves are broadly lance-like and 6-20 cm. long by 1.5-5 cm. wide. The flattish inflorescence consists solely of disc flowers (lacks ray flowers). Between 9-23 white flowers occur in each head. Fruit is a black nutlet 1-2 mm. long with slender bristles (pappus). In bloom July-September.

**ECOLOGICAL NOTES:** Boneset occurs in sedge meadows, fresh (wet) meadows, calcareous fens and marshes. It is often associated with groundwater seepages and tends to be a pioneer species.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## WILD MINT

(*Mentha arvensis* L.)

**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (3) **IND. STATUS:** FACW

**FIELD CHARACTERISTICS:** A rhizome-producing, perennial, clonal, strongly aromatic (minty fragrance), herb usually 29-89 cm. high. Square stems are erect or ascending with opposite leaves. Leaves are 2-7 cm. long and 0.5-3 cm. wide, serrate, on short stalks (but greater than 2 mm.) and taper to a slender tip. Both the stems and leaves are variably hairy or fuzzy. Flowers occur in dense, axillary clusters. Petals are white to light purple or pink. Flowers have four stamens and are in bloom from July through September. Calyx is completely hairy; calyx lobes are broadly triangular to awl shaped. Mints (*Mentha* spp.) in general are strongly aromatic.

**ECOLOGICAL NOTES:** This common mint occurs in sedge meadows, calcareous fens, shrub-carrs, alder thickets, shallow marshes, and along streams and shores.

**SOURCE:** Fassett (1957); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).


## COMMON BUGLEWEED

(*Lycopus americanus* Muhl. ex W. Bart.)

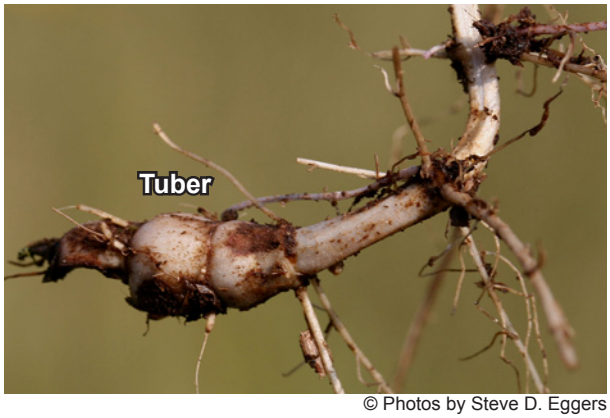
**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (4) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A rhizome-producing, perennial herb, usually only 5-15 cm. high (rarely to 80 cm.). Square stems are erect with opposite leaves. Leaves are 3-8 cm. long and 1-4 cm. wide, stalked or nearly so and are hairless above; at least the lower leaves are pinnately toothed at least halfway to the midrib. The small, white flowers form dense clusters in leaf axils. Flowers lack stalks, have two stamens, and are in bloom from July through September. Petals extend beyond the calyx-lobes. Calyx-lobes are at least 1-2 mm. long and extend beyond the nutlets at maturity; are narrowly triangular with the width at the base less than half the length; and have a prominent midvein. Bugleweeds (*Lycopus* spp.) are not strongly aromatic.

*L. americanus* is similar to *L. uniflorus* and *L. virginicus,* both of which have blunt, triangular calyx-lobes that lack a prominent midvein. The calyx-lobes of the latter two species are equal to or shorter than the nutlets at maturity. *L. uniflorus* also produces a conspicuous tuber. All three species can occur together.

**ECOLOGICAL NOTES:** Common bugleweed is one of our most common wetland herbs. In addition to sedge meadows, it occurs in marshes, calcareous fens, fresh (wet) meadows, wet to wet-mesic prairies, floodplains, poorly-drained fields and ditches. It is also called cut-leaf water horehound.

**SOURCE:** Fassett (1957); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).






## NORTHERN BUGLEWEED

(*Lycopus uniflorus* Michx.)

**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (5 MN)(4 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A stolon-producing, perennial herb, up to about 1 m. tall. Stolons end in a shallow tuber from which a single stem will arise. The square stems are erect with opposite leaves. Mature leaves are long and narrow, usually less than 3 cm. wide, with a few shallow teeth along the margins. Leaf blades taper to a short stalk. Small, white flowers form dense clusters in the leaf axils. Calyx-lobes are less than 1 mm. long and are shorter than the nutlets at maturity, are bluntly triangular, and lack a prominent midvein. Bugleweeds (*Lycopus* spp.) are not strongly aromatic.

*L. uniflorus* may be confused with *L. virginicus.* But, *L. uniflorus* has a 5-lobed calyx and corolla while *L. virginicus* is only 4-lobed.

**ECOLOGICAL NOTES:** Northern bugleweed, also called northern water horehound, is frequently found growing in sedge meadows, wet prairies, calcareous fens, bog laggs, and at marsh edges. It also occurs in openings of wooded swamps.

**SOURCE:** Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).

Stipule



## MARSH PEA

(*Lathyrus palustris* L.)

**BEAN FAMILY** (Fabaceae or Leguminosae) **IND. STATUS:** FACW

**C of C:** Native (6 MN)(5 WI)

**FIELD CHARACTERISTICS:** A perennial herbaceous (non-woody) vine growing to about 1 m. in length. Stems are frequently winged at the angles with 4-8(10) alternate, pinnately compound leaves. Leaves are terminated by tendrils. The 2-4(6) pairs of opposite leaflets are elliptic to lance-ovate. Stipules are less than 5(7) mm. wide and semi-sagittate (inset photo). Inflorescence is a 2-8 flowered raceme. Calyxes are usually smooth, but may be sparsely pubescent. Flowers are violet-purple (white), 12-20 mm. long, and loosely arranged on slender pedicels 3-6 mm. long. Flowers from June through late August.

**ECOLOGICAL NOTES:** Curtis (1971) notes that marsh pea reaches its highest presence in southern sedge meadows. It also occurs in marshes, wet prairies and calcareous fens.

**SOURCE:** Crow and Hellquist (2000); Fassett (1976); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).



## MARSH SKULLCAP

(*Scutellaria galericulata* L.)

**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (5) **IND. STATUS:** OBL

**SYNONYM:** *Scutellaria epilobiifolia* A. Hamilton

**FIELD CHARACTERISTICS:** A rhizome-producing, perennial herb 20-80 cm. high. Square stems are weak but erect, with opposite, simple leaves. Leaves have stalks and are 2-4 times longer than wide. Leaves lack aroma and have a bitter after-taste. Flowers are solitary and occur in the leaf axils. Calyx is 2-lipped with a distinct, shield-like crest or projection on the upper side. Petals are arching and 1.5-2 cm. long. Flowers are 15-20 mm. long, blue, marked with white, and in bloom June-September.

**ECOLOGICAL NOTES:** Marsh skullcap is a common wetland species occurring primarily on the peat/muck soils of sedge meadows, shrub-carrs and bogs, as well as marshes that have essentially stable water levels.

**SOURCE:** Fassett (1978); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).


## SIDE-FLOWERED SKULLCAP

(*Scutellaria lateriflora* L.)

**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (5) **IND. STATUS:** OBL (NC/NE, MW); FACW(GP)

**FIELD CHARACTERISTICS:** A perennial herb 20-60 cm. high. Square stems are usually branched. Leaves are simple, opposite, coarsely-toothed, ovate to lanceolate, 3-8 cm. long and 1.5-5 cm. wide. Blue flowers marked with white are two-lipped, to 8 mm. long, in elongate racemes from leaf axils. Fruit is a nutlet. In bloom July-September.

Side-flowered skullcap is very similar to marsh skullcap (*S. galericulata*) which has solitary flowers in leaf axils whereas side-flowered skullcap has multiple flowered branches (racemes) from leaf axils. Also, the flowers are larger in marsh skullcap (15-20 mm. long) compared to side-flowered skullcap (to 8 mm.).

**ECOLOGICAL NOTES:** Side-flowered skullcap is a common species occurring primarily on the peat/muck soils of sedge meadows, shrub-carrs and marshes.

**SOURCE:** Chadde (2002); Fassett (1978); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## ANGELICA

(*Angelica atropurpurea* L.)

**CARROT FAMILY** (Umbelliferae or Apiaceae) **C of C:** Native (6) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A very coarse, tall, perennial herb, usually up to 3 m. high. The stout, round stems are purplish, aromatic and hollow. Basal leaves are pinnately more than once divided, and upper leaves are progressively reduced with broadly sheathing leaf stalks and serrate, pointed leaflets. Inflorescence is a large (10-20 cm. wide), spherical compound umbel with 20-45 rays. Flowers are white or greenish-white and in bloom around the first week in June. Thin, flat lateral wings occur on the hairless fruit, which fall by mid-summer.

**ECOLOGICAL NOTES:** Angelica is common in sedge meadows and calcareous fens and is a good indicator of groundwater springs and seepages. It also occurs in forested wetlands, and along streambanks and shores.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1985).



## BLUE FLAG IRIS

(*Iris versicolor* L.)

**IRIS FAMILY** (Iridaceae) **C of C:** Native (4 MN)(5 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial herb usually 10-80 cm. high. This iris tends to form large clumps from thick, creeping rhizomes. The unwinged, erect stems generally have basal leaves that are more than 1 cm. wide. Leaves are folded on the midribs so that they form an overlapping flat fan. The well developed flower petals and sepals spread out nearly flat and have two forms. Longer sepals are hairless and have a greenish-yellow blotch at their base. The inferior ovary is bluntly angled. Flowers are usually light to deep blue and in bloom May-July. Fruit is a 3-celled, bluntly angled capsule. The large seeds can be observed floating in the fall.

A similar species, *I. virginica*, can be distinguished by its cauline (stem) leaves that often exceed the inflorescence whereas the cauline leaves of *I. versicolor* are usually shorter than or equal to the height of the inflorescence.

**ECOLOGICAL NOTES:** Blue flag iris is common in sedge meadows, marshes, and along streambanks and shores. *Iris versicolor* tends to be more northern in its regional distribution, while *I. virginica* is more southern. There is some debate concerning the taxonomic status of *I. versicolor.* See Swink and Wilhelm (1994) for a brief discussion.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).



## TURTLEHEAD

(*Chelone glabra* L.)

**FIGWORT FAMILY** (Scrophulariaceae) **C of C:** Native (7) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial herb with stems 50-100 cm. tall that are 4-angled but rounded on the corners. Leaves are opposite, lanceolate, to 15 cm. long and 1-3 cm. wide, with margins of sharp teeth. Flowers are in dense spikes 3-8 cm. long at the end of stems. Flowers are white or light pink and 2.5-3.5 long. Fruit is an ovate capsule. In flower August-September.

**ECOLOGICAL NOTES:** Turtlehead primarily occurs in sedge meadows and calcareous fens, typically in those that have not been degraded by disturbances. It also occurs in openings of wooded swamps and along streambanks and shores.

**SOURCE:** Gleason and Cronquist (1991); Chadde (2002); Voss (1996); and Black and Judziewicz (2009).



## GRASS-LEAF GOLDENROD

(*Euthamia graminifolia* (L.) Nutt.)

**ASTER FAMILY** (Compositae or Asteraceae) **C of C:** Native (4) **IND. STATUS:** FACW (MW, GP); FAC(NC/NE)

**SYNONYM:** *Solidago graminifolia* (L.) Salisb.

**FIELD CHARACTERISTICS:** A perennial herb 50-150 cm. in height. Stems are smooth or hairy, and much branched towards the top of the plant. Leaves are alternate, linear to narrowly lanceolate, 3-15 cm. long and 3-10 mm. wide, with 3 veins. Leaf margins are entire. Inflorescence consists of small, flat-topped clusters at the end of stems. Disc and ray flowers are yellow. Ray flowers are small, only to 1 mm. long. The involucre is 3-5 mm. long. Fruit is a hairy nutlet (achene) 1 mm. long with a pappus of many white bristles. In flower August-September. See Appendix A for a key to wetland goldenrods.

**ECOLOGICAL NOTES:** Grass-leaf goldenrod is a frequent wildflower of wet meadows, sedge meadows, wet prairies and calcareous fens.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## GREAT BLUE LOBELIA

(*Lobelia siphilitica* L.)

**BELLFLOWER FAMILY** (Campanulaceae) **C of C:** Native (5) **IND. STATUS:** OBL (GP, MW); FACW(NC/NE)

**FIELD CHARACTERISTICS:** A short-lived, perennial herb 50-150 cm. high. Stem leaves are alternate, simple, elliptic to lanceolate, 8-12 cm. long, and narrow to a sessile base. Flowers are blue (rarely white), 15-33 mm. long and arranged on a terminal raceme. The two-lipped corolla has a split on each side near its base. Seed capsules are two-celled with many seeds and have ear-like lobes (auriculate) at the base. In flower August-September.

**ECOLOGICAL NOTES:** Great blue lobelia occurs in sedge meadows, fresh (wet) meadows, swamps, and the borders ponds and streams, and occasionally in calcareous fens.

**SOURCE:** Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).


## MICHIGAN LILY

(*Lilium michiganense* Farw.)

**LILY FAMILY** (Liliaceae) **C of C:** Native (7 MN)(6 WI) **IND. STATUS:** FACW

**FIELD CHARACTERISTICS:** A perennial herb 1-2 m. in height. Leaves are lanceolate and rough at the edges and veins. Main leaves are whorled while upper leaves are alternate. Largest leaves are 8-15 cm. by 8-20 mm. Orange flowers, marked with purple spots, are nodding from long pedicels and measure 5-8 cm. wide. The petal-like sepals are bent backwards (like a Turk's cap). Fruit is an elongated, 3-parted capsule. In flower June-August.

**ECOLOGICAL NOTES:** Michigan lily occurs in sedge meadows, along streams, and in floodplain forests.

**SOURCE:** Gleason and Cronquist (1991); Chadde (2002); and Black and Judziewicz (2009).



## KALM'S ST. JOHN'S-WORT

(*Hypericum kalmianum* L.)

**ST. JOHN'S-WORT FAMILY** (Clusiaceae) **C of C:** Native (9 WI) **IND. STATUS:** FACW

**FIELD CHARACTERISTICS:** A small, branching shrub growing to 1 m. in height. Branches are 4-angled. Leaves are firm, often revolute, linear to oblong, 2-4 cm. long by 3-8 mm. wide. Leaves are often waxy on the underside. Yellow flowers are 2-3.5 cm. wide and located in small cymes of 3-7 at the tips of branches. Stamens are many while styles number 5. Fruit is a narrowly ovoid, 7-10 mm. long pod with a slender beak. In flower June-August.

**ECOLOGICAL NOTES:** Curtis (1971) notes that Kalm's St. John's-wort reaches its highest presence in northern sedge meadows. In Wisconsin, it is found in the central and northeastern portions of the state, while in Minnesota it has only been recorded in one northeastern county.

**SOURCE:** Curtis (1971); Gleason and Cronquist (1991); and Chadde (2002).

# III.B. Fresh (Wet) Meadows

Fresh (wet) meadows are dominated by grasses, such as redtop grass and reed canary grass, and by forbs such as giant goldenrod, growing on saturated soils. The grass family (Gramineae) and aster family (Compositae) are well represented in fresh (wet) meadows. The forbs and grasses of these meadows tend to be less competitive, more nutrient demanding, and often shorter-lived species than the sedges of the sedge meadow community. Therefore, fresh (wet) meadows may represent younger communities that indicate recent disturbances of other inland fresh meadows by drainage, siltation, cultivation, pasturing, peat fires and/or temporary flooding. Once established, the forbs and grasses of the fresh (wet) meadow community may persist for extended periods of time.

Many fresh (wet) meadows in Minnesota and Wisconsin are dominated by reed canary grass (*Phalaris arundinacea*), a very aggressive, invasive species that can form near monotypes persisting for decades. Disturbances such as artificial drainage, plowing, mechanized land-clearing, road construction, and excessive sediment and/or nutrient inputs, allow reed canary grass to outcompete the diverse, native plant assemblages of sedge meadows, wet prairies, calcareous fens, etc.


**A fresh (wet) meadow dominated by reed canary grass (*Phalaris arundinacea*).**

Not all fresh (wet) meadows in Minnesota and Wisconsin are dominated by non-native and/or invasive species. For example, the native Canada blue-joint grass (*Calamagrostis canadensis*) can dominate fresh (wet) meadow communities that may include a diversity of native forbs.

# Fresh (Wet) Meadows


**VEGETATION:** The dominants of this fresh (wet) meadow are reed canary grass (*Phalaris arundinacea*), cup-plant (*Silphium perfoliatum*), giant goldenrod (*Solidago gigantea*) and Canada goldenrod (*Solidago canadensis*). Other species include sawtooth sunflower (*Helianthus grosseserratus*), giant sunflower (*Helianthus giganteus*), cut-leaf coneflower (*Rudbeckia laciniata*), hairy hedge-nettle (*Stachys pilosa*), redstem aster (*Symphyotrichum puniceum*), marsh aster (*S. lanceolatum*), tall meadowrue (*Thalictrum dasycarpum*), Indian hemp (*Apocynum cannabinum*), redtop (*Agrostis gigantea*) and muhly grass (*Muhlenbergia* sp.). Canada thistle (*Cirsium arvense*), an introduced, invasive species, has become established as well.

**SOILS:** Faxon silty clay loam (Typic Endoaquolls), a poorly-drained to very poorly-drained soil on terraces of floodplains. These soils are formed in silty to clayey alluvium underlain by dolomite bedrock. Landscape position is a terrace within the broad valley of the Minnesota River.

**HYDROLOGY:** Faxon soils have a seasonal high water table at the surface to 12 inches below the surface during November through May of most years.

**LOCATION:** Black Dog Preserve, Minnesota Valley National Wildlife Refuge, Dakota County, Minnesota.


## REED CANARY GRASS

(*Phalaris arundinacea* L.)

**GRASS FAMILY** (Gramineae or Poaceae) **IND. STATUS:** FACW

**C of C:** A native genotype has been essentially assimilated by European genotypes. The highly invasive, robust stands currently observed are indicative of the introduced genotypes. (0)

**FIELD CHARACTERISTICS:** A colonial, perennial grass with stout, branched stems 1-2 m. in height. The ligule is large (3-8 mm. long), dry and papery. Leaves are flat and usually 1-2 cm. wide. Panicles are branched or lobed and 5-25 cm. long, initially purple-tinged then becoming straw colored with age. Spikelets are 1-flowered, 4-6 mm. long, with one fertile floret and two reduced, appressed, sterile lemmas. Lemmas are awnless and shorter than the glumes. Lance-like glumes are compressed and wingless.

**ECOLOGICAL NOTES:** Reed canary grass is an extremely aggressive species that often forms persistent, near monotypic stands on sites disturbed by agricultural use, drainage, filling, siltation and other factors. It is found in a variety of disturbed wetlands including inland fresh meadows, shrub swamps, wooded swamps and floodplain forests. Although typically associated with disturbed wetlands, this species can occasionally colonize disturbed upland sites. Reed canary grass has been planted for erosion control on upland and wetland sites, and for lowland pasture.

**SOURCE:** Fassett (1951); and Gleason and Cronquist (1991).



**Reed Canary Grass**
(*Phalaris arundinacea*)




## REDTOP

(*Agrostis gigantea* Roth)

**GRASS FAMILY** (Gramineae or Poaceae) **C of C:** Introduced (0) **IND. STATUS:** FACW

**SYNONYM:** *Agrostis stolonifera* var. *major* (Gaudin) Farw.

**FIELD CHARACTERISTICS:** A perennial, sod-forming grass from rhizomes, not stoloniferous. Culms (stems) can be straight or curved at the very base; otherwise, plants are erect and straight to 30-100 cm. or more in height. Larger leaf blades are mostly 3-7(10) mm. wide. Larger ligules are 2.5-6 mm. long. Panicles are 10-20 cm. long with widely spreading, unequal branches. Panicles usually tinged with purple-red, although plants growing in shade may be more greenish. Spikelets are one-flowered and 2-3.5 mm. long.

**ECOLOGICAL NOTES:** A common grass that occurs in a wide variety of moist to saturated soils of inland fresh meadows, pastures, abandoned agricultural lands, vacant urban lands and wetland restoration sites. It is often encountered in the wetland/upland transition zone. A native of Europe, redtop has become so well established in our flora as to appear indigenous.

**SOURCE:** Voss (1972); and Gleason and Cronquist (1991).



**Redtop** (*Agrostis gigantea*)

**The conspicuous red patches in this wetland hay meadow consist of redtop.**

Illustration from Hitchcock (1950)

**Spikelets**

## Redtop
(*Agrostis gigantea*)



## KENTUCKY BLUEGRASS

(*Poa pratensis* L. )

**GRASS FAMILY** (Gramineae or Poaceae)

**IND. STATUS:** FACU(NC/NE, GP)
FAC(MW)

**C of C:** Predominately introduced (0)

**FIELD CHARACTERISTICS:** A perennial, sod-forming grass 10-100 cm. in height. Its characteristic of forming many rhizomes (i.e., sod-forming) helps distinguish it from some other grass species. Stems are erect and nearly round or slightly flattened. Leaf blades are flat to folded, 1-15 cm. long, 2-5 mm. wide, ending in a boat-shaped tip. Ligules are shorter than wide and less than 2 mm. in length. Inflorescence is a panicle that is open to somewhat contracted. Spikelets are 2-5 flowered and laterally compressed (flattened). Lemmas have abundant cottony hairs at the base easily visible with a hand lens. Lemmas are 5-nerved, the keel hairy on about the basal two-thirds, and only scabrous to smooth on the upper third.

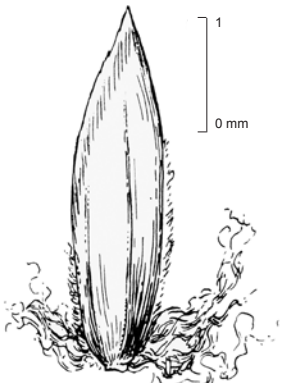
Fowl bluegrass (*Poa palustris*)[pages 172-173] is similar, and can be distinguished from Kentucky bluegrass by its lack of rhizomes, more open/loose panicle, and conspicuous ligules 2.5-5 mm. in length.

**ECOLOGICAL NOTES:** Kentucky bluegrass is ubiquitous in all but the wettest habitats (Voss 1972). Vacant urban lands, pastured areas and abandoned agricultural lands are prime habitats for this species. In urban and agricultural regions of Minnesota and Wisconsin, Kentucky bluegrass is one of the most common species encountered in the wetland/upland transition zone.

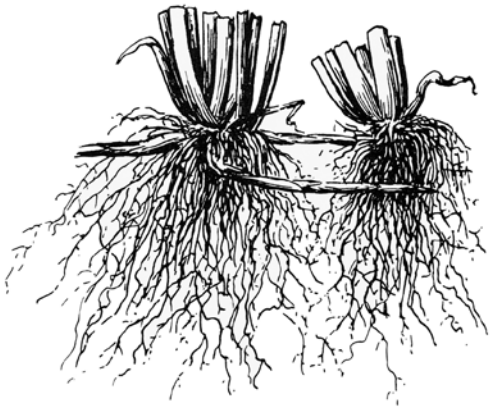
**SOURCE:** Voss (1972); Gleason and Cronquist (1991); Great Plains Flora Association (1991); and Swink and Wilhelm (1994).

Inflorescence


Spikelet




Floret



Rhizomes

## Kentucky Bluegrass
(*Poa pratensis*)

Illustrations by Elsie Froeschner (Pohl 1966)



**Ligule (fleshy white structure)**

# FOWL BLUEGRASS

(*Poa palustris* L.)

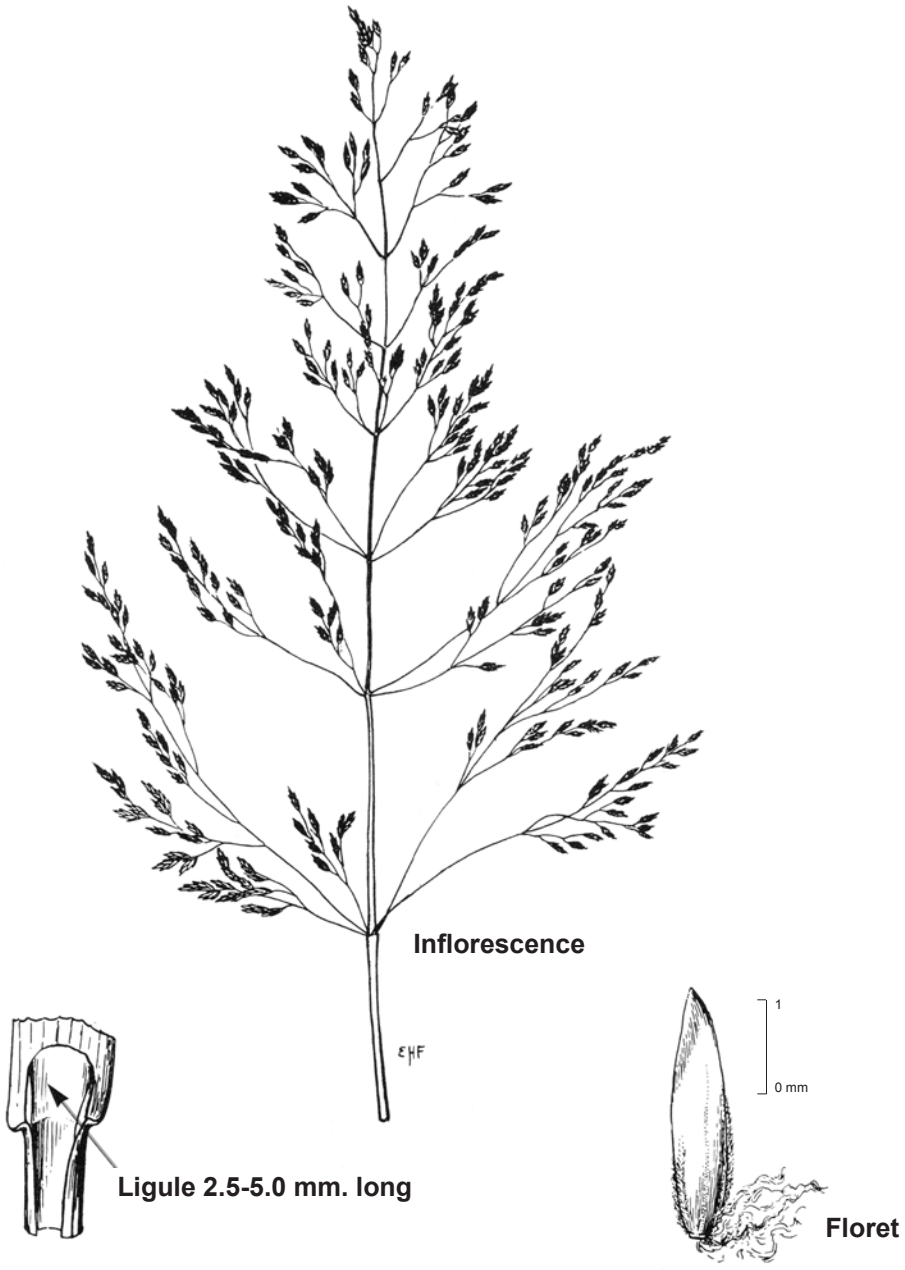
**GRASS FAMILY** (Gramineae or Poaceae) **C of C:** Native (5) **IND. STATUS:** FACW

**FIELD CHARACTERISTICS:** A perennial, tufted grass 60-120 cm. in height. Unlike its relative *P. pratensis*, it lacks rhizomes and is not a sod-forming grass. Stems are round, weak and wiry, often leaning on adjacent vegetation. Often seen rooting from stem nodes in contact with the ground. Leaf blades are flat to folded, 1-3.1(3.8) mm. wide, ending in a boat-shaped tip. Ligules are a conspicuous 2.5-5 mm. in length. Inflorescence is an open/loose panicle with 3-5 branches per cluster (fascicle). Spikelets have 2-4 narrow florets, often with golden tips. Lemmas are 3-nerved and have abundant cottony hairs at the base easily visible with a hand lens.

A similar, ubiquitous grass species, Kentucky bluegrass (*Poa pratensis* L.), can be distinguished from fowl bluegrass by its sod-forming rhizomes, more contracted panicle, and shorter ligules (less than 2 mm. in length).

**ECOLOGICAL NOTES:** Fowl bluegrass, also called marsh bluegrass, is an often misidentified but common grass of fresh (wet) meadows, sedge meadows and openings in wooded swamps as well as along shores, ponds and streambanks. It frequently occurs in prairie marshes and is used in wet meadow seed mixes.

**SOURCE:** Crow and Hellquist (2000); Fassett (1951); Gleason and Cronquist (1991); Great Plains Flora Association (1991); Swink and Wilhelm (1994); and Voss (1972).




## Fowl Bluegrass

(*Poa palustris*)

Illustrations by Elsie Froeschner (Pohl 1966)




## QUACK GRASS

(*Elymus repens* (L.) Gould)

**GRASS FAMILY** (Gramineae or Poaceae) **C of C:** Introduced (0) **IND. STATUS:** FACU

**SYNONYMS:** *Agropyron repens* (L.) P. Beauv.; *Elytrigia repens* (L.) Desv. ex B.D. Jacks.

**FIELD CHARACTERISTICS:** A strongly rhizomatous, perennial grass 50-110 cm. tall. The erect to reclining hollow, green to glaucous stems are smooth. Stems may arise from buds located along the rhizome nodes. Rhizome tips tend to be pale yellow and sharp pointed. Lower stem sheaths are hairy, while the upper such sheaths tend to be smooth. Leaf blades are broad and flat, 3-10+ mm. wide with conspicuous, claw-like auricles clasping the stem. Ligules are short: 0.1-0.8 mm. in length. Inflorescence is a solitary bilateral spike 4-19 cm. long with two long rows of persistent spikelets laying flat wise to the stem. Glumes and lemmas are glabrous, acute, and may end with short awns. Lemmas are 7-10 mm. long.

**ECOLOGICAL NOTES:** An abundant, introduced, weedy grass invasive in fields, clearings and roadsides, often spreading onto shores, ditch banks, lake dunes and seasonally wet agricultural soils.

**SOURCE:** Fassett (1951); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).

Illustrations from Hitchcock (1950)

**Quack Grass**
(*Elymus repens*)


## MEADOW FOXTAIL

(*Alopecurus pratensis* L.)

**GRASS FAMILY** (Gramineae or Poaceae) **C of C:** Introduced (0) **IND. STATUS:** FAC(NC/NE) FACW(MW, GP)

**FIELD CHARACTERISTICS:** A perennial grass with stems 40-80 cm. long, erect or decumbent at base. Spikelets are 1-flowered and 4-6.5 mm. long excluding the awn. Awns mostly extended 3.5-6 mm. beyond the glumes. Glumes with conspicuous hairs. Inflorescence is very long and narrow – 2-8 cm. by 5-10 mm. – similar to timothy (*Phleum pratense*). However, the glumes are acute (football-shaped) as opposed to the U-shaped tip of the glumes of timothy (see photograph on next page).

**ECOLOGICAL NOTES:** Meadow foxtail is a native of Eurasia that has become naturalized in our wet meadows, especially those used for pasture or hay. Roadside ditches are another common habitat.

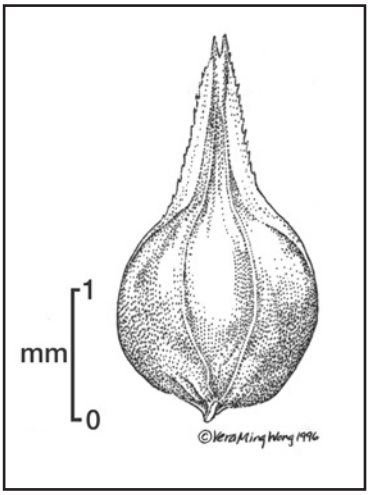
**SOURCE:** Gleason and Cronquist (1991); and Voss (1972).

Illustration by Elsie Froeschner (Pohl 1966)

## Meadow Foxtail
(*Alopecurus pratensis* L.)



**Comparison of the inflorescence of meadow foxtail (*Alopecurus pratensis*) [right] and timothy (*Phleum pratense*) [left]. The glumes of timothy have U-shaped tips as opposed to the football-shaped glumes of meadow foxtail.**




**Perigynium**




# FOX SEDGE

(*Carex vulpinoidea* Michx.)

**SEDGE FAMILY** (Cyperaceae) **C of C:** Native (3 MN)(2 WI) **IND. STATUS:** OBL(NC/NE) FACW(MW, GP)

**FIELD CHARACTERISTICS:** A perennial, clump-forming sedge with stems about 30-100 cm. tall. Leaves are generally longer than the stem. The lowest leaves on the stem, however, are reduced to scales (aphyllopodic). Stems are slender and firm with whitish, thin sheaths that are conspicuously cross-wrinkled (see photograph). Perigynia are 2-3 mm. long and 1-2 mm. wide, ovate and abruptly taper into a beak, which is usually more than 0.7 mm. long. Each spikelet is typically subtended by a long, linear bract.

Fox sedge can be confused with *Carex annectens* which has leaves that are generally shorter than the stems and the perigynia tend to be yellowish with red-tinged scales.

**ECOLOGICAL NOTES:** One of our most common sedges, fox sedge is a pioneer species tending to colonize wet, sunny sites soon after disturbance. Fox sedge is an excellent colonizer of wetland restoration sites.

**SOURCE:** Fassett (1976); Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## GIANT GOLDENROD

(*Solidago gigantea* Ait.)

**ASTER FAMILY** (Compositae or Asteraceae) **C of C:** Native (3) **IND. STATUS:** FAC(GP) FACW(NC/NE, MW)

**FIELD CHARACTERISTICS:** A clonal, perennial herb 25-200 cm. high. Leaves of the lower and upper stem tend to be similar, triple-nerved and not rough. Stems are perfectly smooth below the inflorescence, often glaucous, and reddish (may be green in shaded habitats). Stem is not angled. Inflorescence is usually a one-sided, arching panicle. Flowers are yellow. In flower August-October. This species hybridizes with Canada goldenrod (*Solidago canadensis*), a FACU species. These hybrids are often sparsely hairy on the stem below the inflorescence. Refer to Appendix A for a key to wetland goldenrods.

**ECOLOGICAL NOTES:** Giant goldenrod is our most common goldenrod in fresh (wet) meadows and sedge meadows and is one of the most common forbs encountered in the wetland/upland transition zone. It also occurs in shaded floodplains, shrub-carrs, wet to wet-mesic prairies, calcareous fens and abandoned agricultural lands. In winter, goldenrods are noteworthy for their conspicuous round insect galls on the stem.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



**Comparison of Goldenrod Stems**

**Left is giant goldenrod (*Solidago gigantea*) collected from a sunny habitat; center is giant goldenrod collected from a shaded habitat; and right is Canada goldenrod (*Solidago canadensis*). Giant goldenrod stems are always perfectly smooth, sometimes with a white, waxy bloom. In contrast, Canada goldenrod stems are densely hairy.**



## SWAMP ASTER

(*Symphyotrichum firmum* (Nees) Nesom)

**ASTER FAMILY** (Compositae or Asteraceae) **C of C:** Native (6) **IND. STATUS:** [FACW]

**SYNONYMS:** *Aster firmus* Nees, *Aster lucidulus* (Gray) Wieg., or lumped entirely with *Symphyotrichum puniceum* (L.) A. & D. Love

**FIELD CHARACTERISTICS:** A colonial, perennial herb 40-260 cm. high that can form dense, monotypic stands. Stem leaves are lobed-clasping at their bases and are conspicuously crowded, particularly towards the inflorescence. Stems are green with mahogany marks at the nodes, or streaked. In addition, the stems are smooth, to sparingly covered with stiff, straight hairs along the angles (see photograph above). Inflorescence is hairy or smooth, but does not have glands. Ray flowers are usually white to pale blue or lavender. Nutlets are hairy. In flower August-October. Refer to Appendix B for a key to wetland asters.

**ECOLOGICAL NOTES:** Swamp aster, also called shining aster, is one of the more common wetland asters, primarily of inland fresh meadows. This species seems to increase in response to disturbances such as grazing and drainage.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); Great Plains Flora Association (1991); and Ownbey and Morley (1991).



**Leaves 10x as long as wide and taper to a narrow base. Scale is in inches.**

## MARSH ASTER

(*Symphyotrichum lanceolatum* (Willd.) Nesom)

**ASTER FAMILY** (Compositae/Asteraceae) **C of C:** Native (5 MN)(4 WI) **IND. STATUS:** FACW (NC/NE, GP); FAC(MW)

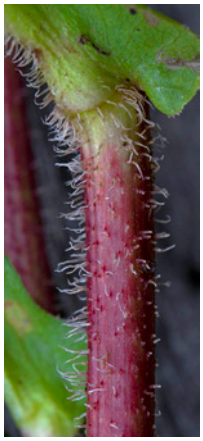
**SYNONYMS:** *Aster simplex* Willd.; *Aster lanceolatus* Willd.

**FIELD CHARACTERISTICS:** A perennial herb 60-150 cm. high that can form dense, monotypic clones. Leaf undersides are smooth except for occasional small hairs located along the margins. Leaves are mostly serrate, but can be entire, the larger leaves usually about 10 times as long as wide and taper to a narrow base (see photo), or may be slightly clasping. Axial branching is distinct. Inflorescence is leafy and forms a panicle. Ray flowers are always white and smaller than those of the redstem and swamp asters (*S. puniceum* and *S. firmum*). In flower July-November. Refer to Appendix B for a key to wetland asters.

**ECOLOGICAL NOTES:** Marsh aster is one of our more common wetland asters. It occurs in fresh (wet) meadows, sedge meadows, wet to wet-mesic prairies, calcareous fens and old fields.

**SOURCE:** Gleason and Cronquist (1991); Swink and Wilhelm (1994); Great Plains Flora Association (1991); and Ownbey and Morley (1991).

**Stems are red with coarse, stiff, white hairs. Leaves clasp the stem.**





## REDSTEM ASTER

(*Symphyotrichum puniceum* (L.) A. & D. Love)

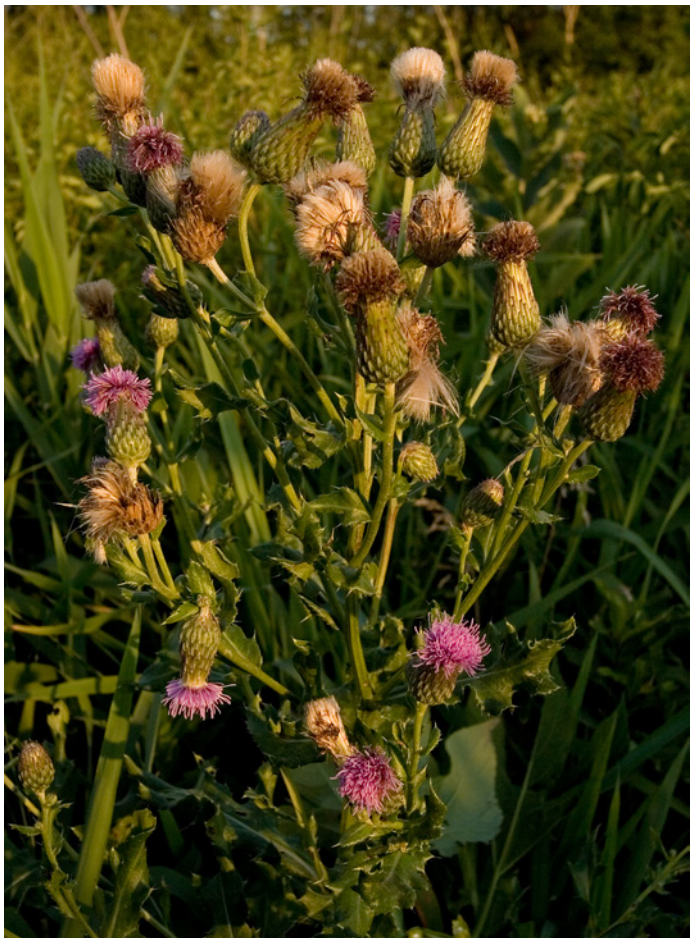
**ASTER FAMILY** (Compositae or Asteraceae) **IND. STATUS:** OBL

**SYNONYM:** *Aster puniceus* L. **C of C:** Native (6 MN)(5 WI)

**FIELD CHARACTERISTICS:** A perennial herb 40-150 cm. high. Stem leaves are lobed-clasping at their bases and are not conspicuously crowded. Stems are reddish with coarse, stiff, white hairs. The inflorescence is hairy or smooth, but does not have glands. Ray flowers are usually pale blue to deep lavender or violet. Disc flowers are yellow and nutlets are smooth. In flower August-October. Refer to Appendix B for a key to wetland asters.

**ECOLOGICAL NOTES:** Redstem aster is a frequently encountered species of fresh (wet) meadows, sedge meadows, shrub-carrs, alder thickets, hardwood swamps, calcareous fens and on shores. It typically occurs as widely spaced individuals.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).





## CANADA THISTLE

(*Cirsium arvense* (L.) Scop.)

**ASTER FAMILY** (Compositae or Asteraceae) **IND. STATUS:** FACU

**C of C:** Introduced, invasive, a state-designated noxious weed in Minnesota and Wisconsin (0)

**FIELD CHARACTERISTICS:** A colonial, perennial herb 30-150(200) cm. in height. Leaves are pinnately divided, white beneath, with spiny margins. Flower heads are numerous in an often flat-topped inflorescence. Flower heads are nearly unisexual, the involucre 1-2 cm. tall. Flowers are pink-purple and nutlets (achenes) are 2.5-4 mm. long. In flower June-October.

**ECOLOGICAL NOTES:** Canada thistle is a native of Eurasia that has become widely established in disturbed habitats in our area, including sedge meadows and wet prairies where disturbance has been limited to grazing. The FACU status is accurate but note that Canada thistle occasionally occurs in habitats as wet as the edges of shallow marshes.

**SOURCE:** Gleason and Cronquist (1991).



## BLUE VERVAIN

(*Verbena hastata* L.)

**VERVAIN FAMILY** (Verbenaceae) **C of C:** Native (6 MN)(3 WI) **IND. STATUS:** FACW

**FIELD CHARACTERISTICS:** A perennial herb 40-120 cm. tall. Leaves are opposite, lance-shaped to narrowly ovate, and coarsely serrated. Leaves are 4-12 cm. long and 1-5 cm. wide. Bright blue to purple flowers are overlapped and packed into a number of dense spikes that form a panicle at the end of the 4-sided, erect stem. Flowers are 5-lobed, trumpet-shaped and 2-4 mm. wide. In bloom July-August.

**ECOLOGICAL NOTES:** Blue vervain is common in sedge meadows, wet to wet-mesic prairies and fresh (wet) meadows. It is a colonizer of exposed, moist to saturated soils.

**SOURCE:** Gleason and Cronquist (1991); and Swink and Wilhelm (1994).



## MARSH HEDGE-NETTLE

(*Stachys palustris* L.)

**MINT FAMILY** (Labiatae or Lamiaceae) **C of C:** Native (4 MN)(5 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A rhizome-producing, perennial herb usually 30-100 cm. high. Square stems are erect with opposite leaves and are hairy on the sides as well as the angles. Leaves are sessile to short-petioled (less than 5 mm. long), lanceolate to narrowly ovate, toothed and hairy. The axillary flowers are borne in whorls of six forming a terminal spike. Lower flower whorls are usually subtended by foliage leaves. But, the leaves are progressively reduced to bracts up the spike. The hooded, two-lipped corolla is pink to purplish with white dots, 5-parted, the lower lip having 3 lobes. The calyx is a bell-shaped tube with 4-5 acute, deltoid teeth (lobes). Fruit is a single seeded nutlet. In flower July-August.

**ECOLOGICAL NOTES:** Marsh hedge-nettle frequently occurs in fresh (wet) meadows, wet prairies, along open wet shorelines and marsh edges and, to a lesser extent, openings in hardwood swamps.

**SOURCE:** Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).



## TALL MEADOWRUE

(*Thalictrum dasycarpum* Fisch. & Ave-Lall.)

**BUTTERCUP FAMILY** (Ranunculaceae) **C of C:** Native (4) **IND. STATUS:** FACW(NC/NE, MW) FAC(GP)

**FIELD CHARACTERISTICS:** A robust, perennial herb from a short rhizome. Stems are purple-tinged and grow to 1-2 m. in height. Leaves are divided into 3-4 groups of leaflets. Each leaflet is 15 mm. or more long and most have a three-lobed tip. Leaflets are distinctly hairy beneath but not glandular. Flowers are in large panicles. Flowers are unisexual with male and female flowers occurring on separate plants. Sepals are 3-5 mm. long. Green to white flowers are 4- to 5-parted with petal-like sepals falling early leaving fringe-like filaments. Fruit is a ribbed nutlet 4-6 mm. long. In flower June-July.

**ECOLOGICAL NOTES:** Tall meadowrue is common in sedge meadows, fresh (wet) meadows, wet to wet-mesic prairies, openings in shrub swamps, and along streambanks.

**SOURCE:** Chadde (2002); Black and Judziewicz (2009); and Gleason and Cronquist (1991).




# DUDLEY'S RUSH

(*Juncus dudleyi* Wieg.)

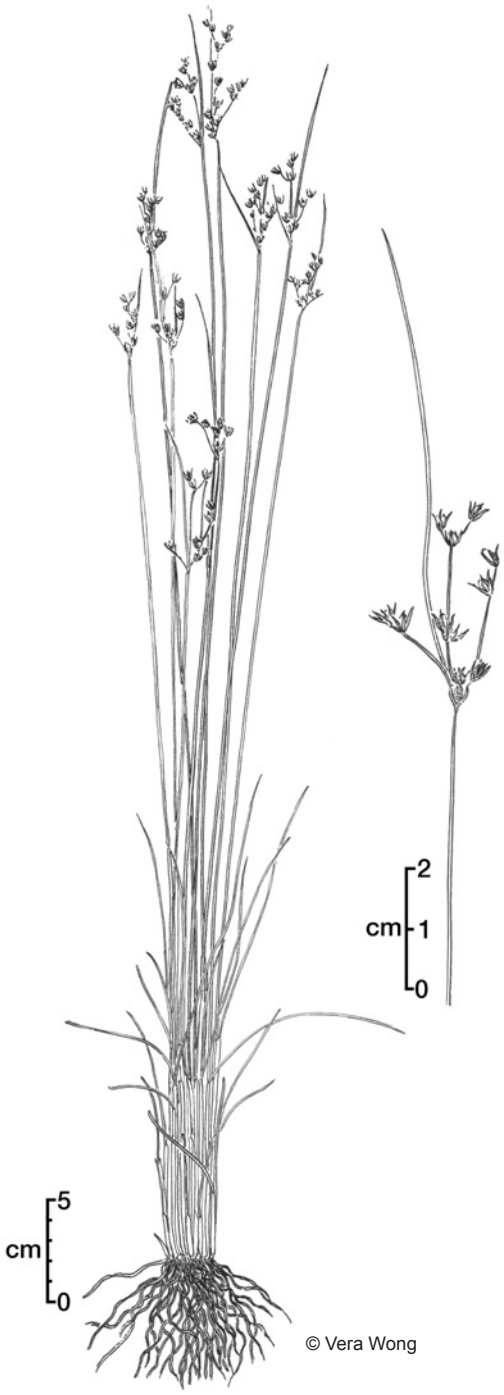
**RUSH FAMILY** (Juncaceae) **C of C:** Native (3 MN)(4 WI) **IND. STATUS:** FACW

**SYNONYM:** *Juncus tenuis* var. *dudleyi* (Wieg.) F. J. Herm.

**FIELD CHARACTERISTICS:** A perennial rush with stems more or less cespitose and 30-80 cm. in height. Leaves are all basal, 10-30 cm. long, flat and 1-1.5 mm. wide, becoming involute or merely narrowly channeled on the upper side. Leaves are a third to half the height of the stems. Leaf sheaths terminate in 0.5-1 mm. long, rounded lobes (auricles) that are leathery and usually yellow or brown when dry. Inflorescence is terminal, with modified leaves 5-10 cm. long subtending and often surpassing the inflorescence, but not appearing as a continuation of the stem. Flowers are composed of a star-like pattern of 6 tepals (3.4-5.4 mm. long) surrounding an ovoid capsule 2.9-4.2 mm. long. Capsule is many-seeded with tiny seeds 0.3-0.5 mm. long.

**ECOLOGICAL NOTES:** A very common rush of inland fresh meadows and all sorts of exposed moist soils including farmed wetlands and wetland restoration sites. Gleason and Cronquist (1991) lump *J. dudleyi* and *J. interior* under *J. tenuis*.

**SOURCE:** Gleason and Cronquist (1963, 1991); Swink and Wilhelm (1994); Voss (1972); and Great Plains Flora Association (1991).




**Dudley's Rush**
(*Juncus dudleyi*)


## CANADA RUSH

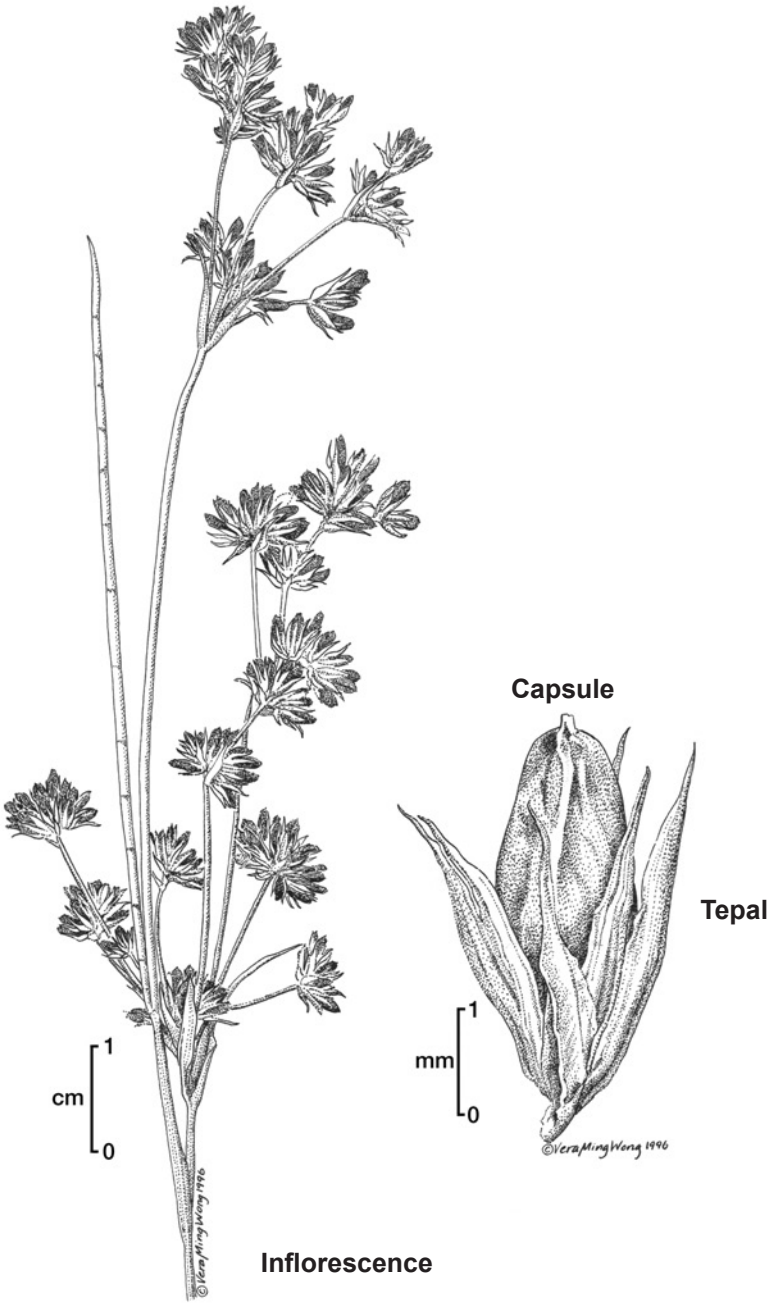
(*Juncus canadensis* J. Gay ex Laharpe)

**RUSH FAMILY** (Juncaceae) **C of C:** Native (7) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial, cespitose (tufted) rush with stout, rigid stems 40-100 cm. in height. Leaves number 2-4 and are round in cross section with hard cross partitions (visible on accompanying ink drawing). Leaves are 1.5-2.5 mm. thick. Heads are hemispherical and 5-10 flowered to spherical and 40-(or more) flowered. The 6 tepals (term used for *Juncus* because sepals and petals are similar) are 2.7-3.8 mm. long. Fruit is a capsule 3.3-4.5 mm. long. Capsules with a multitude of elongate seeds 1.2-1.9 mm. long with a tail on each end that accounts for more than half the length of the seed.

**ECOLOGICAL NOTES:** Canada rush is a common species of shallow marshes, inland fresh meadows, lakeshores and a variety of sandy, wet soils.

**SOURCE:** Gleason and Cronquist (1991); Voss (1972); Great Plains Flora Association (1991); Swink and Wilhelm (1994); and Britton and Brown (1970).




## Canada Rush
(*Juncus canadensis*)



## JOINTED RUSH

(*Juncus nodosus* L.)

**RUSH FAMILY** (Juncaceae) **C of C:** Native (5 MN)(6 WI) **IND. STATUS:** OBL

**FIELD CHARACTERISTICS:** A perennial rush with erect, slender stems 15-40 cm. in height. The singular stems arise from nodes along a slender rhizome. Stem leaves number 2-3 and are round in cross section with hard cross partitions. Leaves are 0.7-1.5 mm. thick. Membranous sheaths are yellowish and terminate in 0.5-1 mm. long lobes (auricles). Inflorescence is composed of 2-15 spherical heads each with up to 25 reddish brown flowers radiating in all directions. Each flower has 6 stamens. The 6 tepals are 2.5-3.5 mm. long and shorter than the capsule. Fruit is a slender capsule 3.5-4.5 mm. long containing seeds about 0.5 mm. long.

**ECOLOGICAL NOTES:** Jointed rush is a common species of wet sandy to marly shores, marshes and calcareous fens. Occasionally it can be found growing along the edges of bog laggs.

**SOURCE:** Crow and Hellquist (2000); Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1972).