

SECTION 3
WOODED SWAMPS

VI. Wooded Swamps

Wooded swamps are forested wetlands dominated by mature conifers and/or lowland hardwoods. They are usually associated with ancient lake basins and retired riverine oxbows. Wooded swamps include the northern wet-mesic forest and the southern wet and wet-mesic forest associations described by Curtis (1971).

Wooded swamps provide a multitude of important functions. Multiple strata (tree, sapling, shrub, vine, herbaceous) provide a high diversity of habitats for a wide range of wildlife species including white-tailed deer, furbearers, songbirds, ruffed grouse, barred owl and amphibians. The flora is also diverse and reflects the water regime, soil/water chemistry and microtopography present. Habitat for threatened or endangered species is provided by some wooded swamps. Water quality and floodwater storage functions are provided as well. Large, relatively intact wooded swamps still remain in northern Minnesota and Wisconsin. They often exist within complexes of other wetland types and forested uplands that provide these functions on a watershed scale.

Wooded swamps of Minnesota and Wisconsin are divided into two types depending on whether the dominant trees are conifers or hardwoods.

VI.A. Hardwood Swamps

Hardwood swamps are dominated by deciduous hardwood trees with soils that are saturated during much of the growing season, and may be temporarily inundated by as much as a foot of standing water, which usually occurs in microdepressions (Shaw and Fredine 1971). Hummocky microtopography is a frequent trait. Dominant trees include black ash, red maple, yellow birch, balsam poplar, quaking aspen and, south of the vegetation tension zone, silver maple. Northern white cedar can be a sub-dominant species in stands within and north of the vegetation tension zone. American elm is still an important component of this community, although its numbers have been drastically reduced by Dutch elm disease. Soils are often peats or mucks, but also include hydric mineral soils. The key for this Third Edition was revised to include a “vernal pool subtype” of hardwood swamps. These consist of depressions within upland forests that are ponded early in the growing season, and then dry down for the majority of the growing season. The herb layer may be sparse to absent given the alternating periods of ponding and drawdown.

The shrub layer of hardwood swamps is often composed of shrub-sized individuals of the dominant tree species, as well as the dogwoods, willows, viburnums and alder species of shrub swamps. Groundlayer species include some of the ferns, sedges, grasses and forbs of sedge meadows and fresh (wet) meadows.

HARDWOOD SWAMPS



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VEGETATION: This hardwood swamp is dominated by black ash (*Fraxinus nigra*). Scattered tree size yellow birch (*Betula alleghaniensis*) and red maple (*Acer rubrum*) are present. The shrub layer is sparse and consists of the aforementioned tree species as well as speckled alder (*Alnus incana* ssp. *rugosa*) and American black currant (*Ribes americanum*). Groundlayer species include common hop sedge (*Carex lupulina*), Tuckerman's sedge (*Carex tuckermanii*), stalk-grain sedge (*Carex stipata*), lake sedge (*Carex lacustris*), drooping wood-reed (*Cinna latifolia*), fowl manna grass (*Glyceria striata*), sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), jack-in-the-pulpit (*Arisaema triphyllum*), giant goldenrod (*Solidago gigantea*), redstem aster (*Symphotrichum puniceum*), water parsnip (*Sium suave*), bristly buttercup (*Ranunculus pennsylvanicus*) and jewelweed (*Impatiens capensis*).

SOILS: Seelyeville and Palms mucks (Typic Haplosaprists and Terric Haplosaprists, respectively), very poorly-drained mucks with an organic layer 16 to 51 inches in depth (Palms) or greater than 51 inches in depth (Seelyeville) over mineral soils.

HYDROLOGY: Seelyeville and Palms mucks are typically saturated to the surface and may have up to 12 inches of standing water. Microtopography in the form of hummocks and depressions (visible in the photograph) is typical of many black ash swamps. During dry years, and the late growing season of normal years, standing water in the microdepressions is usually absent. The above photograph was taken in early August after a period of wetter than normal precipitation. Microdepressional areas had water depths up to 12 inches.

LOCATION: Mille Lacs Kathio State Park, Aitkin County, Minnesota.

HARDWOOD SWAMPS



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BLACK ASH

(*Fraxinus nigra* Marsh.)

OLIVE FAMILY (Oleaceae)

C of C: Native (8 WI)(6 MN)

IND. STATUS: FACW

FIELD CHARACTERISTICS: A deciduous tree growing to 33 m. in height and 84 cm. dbh. Leaves are opposite and compound. Leaflets number 7-11 and are 5-5.4 cm. long, toothed and sessile. Leaf scars are nearly circular. Branches are circular, or nearly so, and smooth. The bark is furrowed to scaly. Fruit is a flat samara, winged to the base and blunt on both ends. In flower during May.

The circular (or nearly so) branches distinguish *F. nigra* from the 4-sided branches of blue ash (*F. quadrangulata*). The nearly circular leaf scars, sessile leaflets, and flat samaras winged to the base of *F. nigra* distinguish it from the half circle leaf scars, slightly petioled leaflets, and wedge-shaped samaras with a flat wing, of green ash (*F. pennsylvanica*).

ECOLOGICAL NOTES: Black ash is a dominant species of hardwood swamps and also occurs as a non-dominant in coniferous swamps.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Swink and Wilhelm (1994).

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RED MAPLE

(*Acer rubrum* L.)

MAPLE FAMILY (Aceraceae)

C of C: Native (3)

IND. STATUS: FAC

FIELD CHARACTERISTICS: A deciduous tree growing to 29 m. in height and 64 cm. dbh. Leaves are opposite and shallowly 3-(to 5-) lobed with the lobes cut less than halfway to the base of the blade. Leaves are 0.8-3.2 cm. broad, green above and whitened below, turning bright red to yellow in autumn. Petioles are usually red, at least on one side. Bark is smooth and gray in young trees, becoming broken and darker with age. Twigs and buds are reddish, and flowers and young samaras are bright red. The fruit is a winged samara 1.5-2.5 cm. long. In flower April-May.

Red maple (*Acer rubrum*) can be distinguished from silver maple (*A. saccharinum*) by its shallowly lobed leaves, wide base of the leaves, and smoother bark, versus the deeply lobed leaves with narrow leaf bases and flaking bark of *A. saccharinum*.

ECOLOGICAL NOTES: Red maple is commonly found in wooded swamps and can be a dominant in logged or burned swamps. However, it is a facultative species found growing on poor soils of both upland and wetland habitats.

SOURCE: Fernald (1970); Smith (2008); and Swink and Wilhelm (1994).

HARDWOOD SWAMPS



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YELLOW BIRCH

(*Betula alleghaniensis* Britt.)

BIRCH FAMILY (Betulaceae) **C of C:** Native (7) **IND. STATUS:** FAC_(NC/NE, MW); FACU_(GP)

SYNONYM: *B. lutea* Michx.

FIELD CHARACTERISTICS: A deciduous tree growing to 28 m. in height and 120 cm. dbh. Mature trees have peeling bark that ranges from yellow to dark brown to black. The crushed bark of young twigs has a characteristic odor and flavor of wintergreen. Leaves are alternate, serrate, 6-10 cm. long, and range from lance-ovate to somewhat obovate. Leaves have 6-12 pairs of lateral veins and are rounded or somewhat heart-shaped at the base. Catkins are 2-3 cm. long. Pistillate catkins are cone-like and disintegrate when ripe. Staminate catkins form in summer and open the following spring. In flower during April and May.

This birch can be distinguished from river birch (*B. nigra*) [page 401] because the latter lacks the wintergreen flavor, and has leaves that are paler beneath and are both doubly serrate and shallowly lobed.

ECOLOGICAL NOTES: Yellow birch is found in wooded swamps, as well as upland forests, primarily north of the vegetation tension zone.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Voss (1985).

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BALSAM POPLAR

(*Populus balsamifera* L.)

WILLOW FAMILY (Salicaceae)

C of C: Native (4)

IND. STATUS: FACW

FIELD CHARACTERISTICS: A deciduous tree growing to 25 m. in height and 64 cm. dbh. Young bark is smooth then becomes dark gray and furrowed with age. Leaves are ovate, 8-13 cm. long and 4-7 cm. wide, tapering to a long tip while rounded to heart-shaped at the base. Leaf color is dark green above and white-green below with many brownish resin stains. Leaf buds have a fragrant balsam scent and are extremely sticky due to resin. Catkins appear in April-May. Pistillate catkins are 10-13 cm. long. Mature capsules are 6-8 mm. long.

ECOLOGICAL NOTES: Balsam poplar is common in hardwood swamps and shrub-carrs, particularly north of the vegetation tension zone. It occasionally occurs in mesic (upland) forests.

SOURCE: Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); Chadde (2002); and Voss (1996).

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Pistillate catkin

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QUAKING ASPEN (*Populus tremuloides* Michx.)

WILLOW FAMILY (Salicaceae)

C of C: Native (2)

IND. STATUS: FAC

FIELD CHARACTERISTICS: A deciduous tree growing to a height of 32 m. and 67 cm. dbh. The ovate to nearly cordate leaves are alternate, simple, darker green above and paler below with small regular teeth. Leaves are attached by a long (2.5-6.0 cm.) flattened petiole. Bark is smooth and whitish-gray to greenish-white becoming darker and furrowed with age. Sexes are separate. Pistillate catkins are up to 10 cm. long.

ECOLOGICAL NOTES: Quaking aspen, also known as popple, has the widest distribution of any tree in North America. It prefers wet to moist, calcareous soils where it can form large colonies from an extensive rhizome system. Quaking aspen is a fast growing, pioneering species of sites disturbed by logging, fire or drainage and often invades abandoned agricultural lands and vacant urban lands. It is a critical food source for beaver and ruffed grouse.

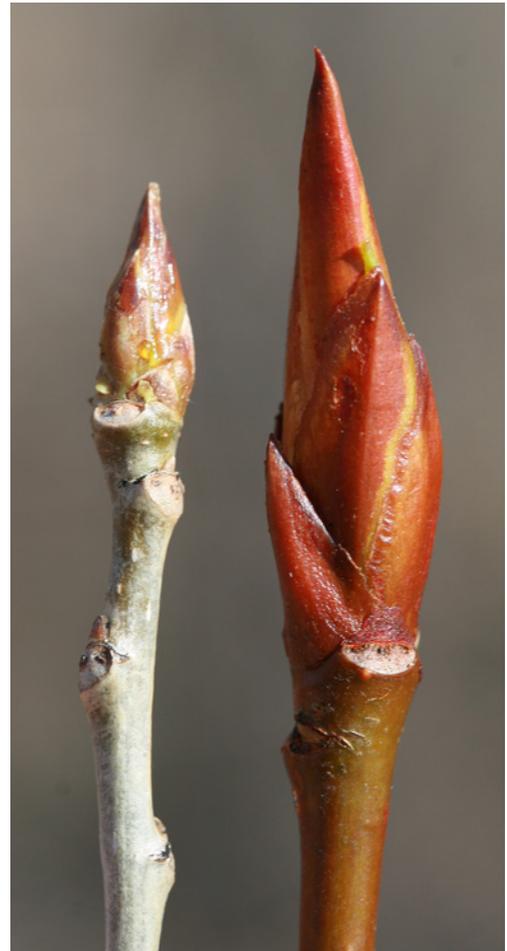
SOURCE: Gleason and Cronquist (1991); Fassett (1976); and Elias (1980).

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Quaking aspen is a facultative species that can thrive in wet to dry habitats. Here quaking aspen is growing in the very wet conditions of a hardwood swamp following logging of black ash trees.



A comparison of the terminal buds of quaking aspen (left) and balsam poplar (right).

HARDWOOD SWAMPS



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NANNYBERRY

(*Viburnum lentago* L.)

HONEYSUCKLE FAMILY (Caprifoliaceae) **C of C:** Native (4) **IND. STATUS:** FACU (GP)
FAC(NC/NE, MW)

FIELD CHARACTERISTICS: A tall, deciduous shrub with erect stems to 10 m. Leaves are opposite, unlobed, oval to oblong and 5-10 cm. long by 3.5-6 cm. wide. The upper leaf surface is dark green and glabrous, while the lower surface is a pale green. Leaves taper to a long slender tip and the margins are finely serrated. Petioles are 1-3 cm. long, with irregularly winged margins. The many flowers are arranged in sessile cymes 5-10 cm. wide. Flowers are typically white. Berry-like fruits (drupes) are blue-black and hang in clusters. The stone is flat. In flower in June.

ECOLOGICAL NOTES: Nannyberry is common in shrub-carrs and hardwood swamps, floodplains, streambanks and pond margins. It also occurs in mesic (upland) deciduous forests.

SOURCE: Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); and Voss (1996).



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Fruit matures in late August to late September, often persisting through winter.

Nannyberry
(*Viburnum lentago*)



Characteristic elongated terminal bud

HARDWOOD SWAMPS



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COMMON WINTERBERRY

(Ilex verticillata (L.) Gray)

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

FIELD CHARACTERISTICS: An erect shrub with multiple stems to 5 m. The thin, deciduous leaves are alternate; broadly egg-shaped, with an abrupt, acute point; and 5-10 cm. long by 2-4.5 cm. wide. Upper leaf surface are dull, dark green with sunken veins while lower leaf surfaces are pale green with protruding veins giving it a quilted appearance. Flowers occur in axillary (angle where the leaf joins the stem) clusters and have pale, whitish petals that are united at their base. Pedicels are 1- 2 mm. long. The conspicuous bright red berries (actually drupes) are persistent, 5-8 mm. in diameter, and have thick, bony nutlets that are smooth on their backs. In flower mid-June to early July.

ECOLOGICAL NOTES: Common winterberry is typically found in hardwood swamps, coniferous swamps and coniferous bogs. It is also found growing along the margins of marshes and ponds, and on lakeshores.

SOURCE: Crow and Hellquist (2000); Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); and Voss (1985).

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AMERICAN BLACK CURRANT

(Ribes americanum P. Mill.)

GOOSEBERRY FAMILY (Grossulariaceae)

C of C: Native (4)

IND. STATUS: FACW

FIELD CHARACTERISTICS: An erect shrub with unarmed stems to 2.5 m. in length. Leaves are palmately 3-5 lobed, alternate, and 2.5-5 cm. long with conspicuous yellow, dot-like glands. Leaf bottoms are sparsely pubescent with minute hairs. Leaf margins are sharply serrated. Flowers are many and arranged in drooping racemes. Sepals are greenish and petals are white to yellowish. The bracts (a specialized leaf subtending the flower at the base of each flower) are longer than their pedicels. Fruits are a black, glabrous (not prickly) berry 6-10 mm. in diameter, maturing by early July to late August. In flower in early May to mid-June.

ECOLOGICAL NOTES: American black currant is a common species of hardwood swamps and also occurs in floodplain forests, cedar swamps and calcareous, springy sites. It is the most common and widespread currant in Minnesota.

SOURCE: Fassett (1976); Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); and Voss (1985).



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MOUNTAIN MAPLE

(*Acer spicatum* Lam.)

MAPLE FAMILY (Aceraceae)

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

IND. STATUS: FACU

FIELD CHARACTERISTICS: A tall, deciduous shrub or clumped small tree growing to a height of 7 m. and a dbh of 8 cm. Leaves are opposite with essentially three shallow lobes, 8-12 cm. long, yellowish-green above and paler with soft hairs below. Leaf margins are coarsely and irregularly serrated. Petioles are 3-11 cm. long and have minute hairs. Distinctive five-parted flowers occur in slender upright clusters of 2-4. Flowers are long-stalked panicles, 3-8 cm. long. Petals are greenish to pale yellow. Seeds are dry, winged, conspicuously veined in a net-like pattern, and 1.2-2.8 cm. long.

Mountain maple retains its hanging seeds into late summer or autumn.

ECOLOGICAL NOTES: Mountain maple is a northern species of cool habitats, often growing in shade. It is occasionally found in conifer swamps and hardwood swamps and is common in mesic upland forests and shrub communities.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Voss (1985).

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AMERICAN HIGH-BUSH CRANBERRY

(*Viburnum opulus* L. var. *americanum* Ait.)

HONEYSUCKLE FAMILY (Caprifoliaceae)

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

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

SYNONYM: *Viburnum trilobum* Marsh.

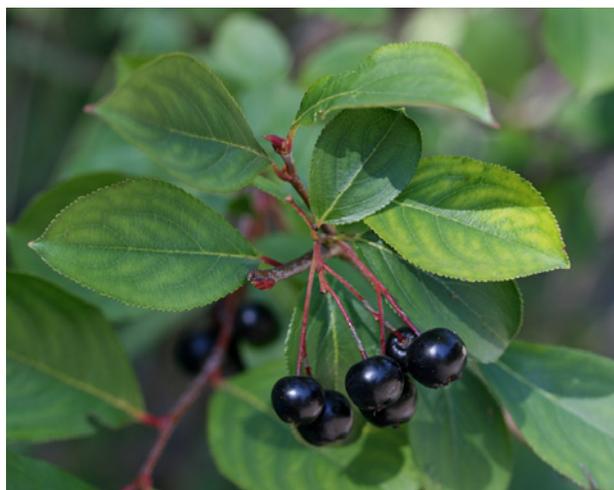
FIELD CHARACTERISTICS: A tall, deciduous shrub with erect stems to 5 m. Leaves are opposite, palmately three-lobed and 5-12 cm. long by 5-11 cm. wide. Upper leaf surfaces are distinctly hairy with coarsely toothed margins. Leaf petioles are 1-3.5 cm. long with prominent, large glands. These stalked glands are higher than wide and club-shaped with an essentially convex surface. Flowers are white and arranged in cymes 5-10 cm. wide. The larger, sterile flowers encircle a set of smaller, fertile flowers. The fruit is a red (orange) berry (drupe) with a flat stone. Blooms in June.

Our native variety is readily distinguished from the non-native European variety (*V. opulus* L. var. *opulus*) which has glands on the petioles that are wider than high, saucer-shaped (concave) structures. The upper leaf surfaces of the European variety are also glabrous.

ECOLOGICAL NOTES: American high-bush cranberry occurs in shrub-carrs, tamarack swamps, wet shores and streambanks. The fruits are sweeter than the more bitter European variety.

SOURCE: Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); and Voss (1996).

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BLACK CHOKEBERRY

(*Aronia melanocarpa* (Michx.) Ell.)

ROSE FAMILY (Rosaceae)

C of C: Native (7)

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

FIELD CHARACTERISTICS: A deciduous shrub 1-2.5 m. in height with twigs initially greenish but becoming brown to reddish brown after the first year. Leaves are alternate, oval or obovate, 3-8 cm. long and 1-4 cm. wide, the upper surface dark green and smooth with a row of dark glands along the midvein. Lower surface is paler, smooth or hairy. Leaf margins are serrate with black glands at the tip. White flowers are 5-10 mm. wide in clusters of 5-15. Fruit is a dark purple, berry-like pome 5-10 mm. wide. In flower May-June.

ECOLOGICAL NOTES: Black chokeberry prefers acidic peaty or sandy soils of hardwood swamps, tamarack swamps, shrub swamps and open bogs. Smith (2008) advises that if one is tempted to eat the berries, consider the common name.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Smith (2008).

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SWAMP ROSE (*Rosa palustris* Marsh.)

ROSE FAMILY (Rosaceae)

C of C: Native (7)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A much branched shrub to 2 m. in height with a pair of stout, curved prickles 3-6 mm. long located below each leaf node. Leaflets usually number 7 and are 2-6 cm. long and 1-2 cm. wide, finely serrate, the teeth typically less than 2 mm. wide. Flowers are pink, 2-3 cm. wide, solitary or in small corymbs. Pedicels and hypanthium have stalked glands (stipitate-glandular) (visible in photograph). Hips are red and 7-12 mm. thick with gland-tipped hairs. In flower June-July.

ECOLOGICAL NOTES: True to its name, swamp rose is found in hardwood swamps and conifer swamps as well as bogs, marshes and along streambanks. Its range includes Wisconsin east to the East Coast and south to Florida. It has not been recorded in Minnesota.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Smith (2008).

HARDWOOD SWAMPS



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JEWELWEED

(*Impatiens capensis* Meerb.)

TOUCH-ME-NOT FAMILY (Balsaminaceae)

C of C: Native (2)

IND. STATUS: FACW

SYNONYM: *Impatiens biflora* Willd.

FIELD CHARACTERISTICS: An annual herb with a succulent, smooth stem that grows to a height of 50-150 cm. Leaves are alternate, finely toothed, and 3-10 cm. long on petioles about 2.5 cm. in length. Flowers are pendent, conical, 2-3 cm. long, with a spur 8 mm. long and curved forward. Flowers are usually orange-yellow with brown or reddish spots. The mouth of the flower is half as wide as the flower is long. Fruit is a capsule that, when mature, pops open at the slightest touch (which gives this plant another common name, touch-me-not). In flower June-September.

ECOLOGICAL NOTES: Jewelweed is found in a wide variety of wetland habitats including floodplain forests, shrub-carrs, fresh (wet) meadows, wooded swamps, and along streambanks and springs. It occasionally occurs in upland woods. Crushing the stem and rubbing the juice on the skin is said to alleviate the symptoms of poison ivy (*Toxicodendron* spp.) and nettle (Urticaceae) stings.

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

HARDWOOD SWAMPS



YELLOW TOUCH-ME-NOT

(*Impatiens pallida* Nutt.)

TOUCH-ME-NOT FAMILY (Balsaminaceae)

IND. STATUS: FACW

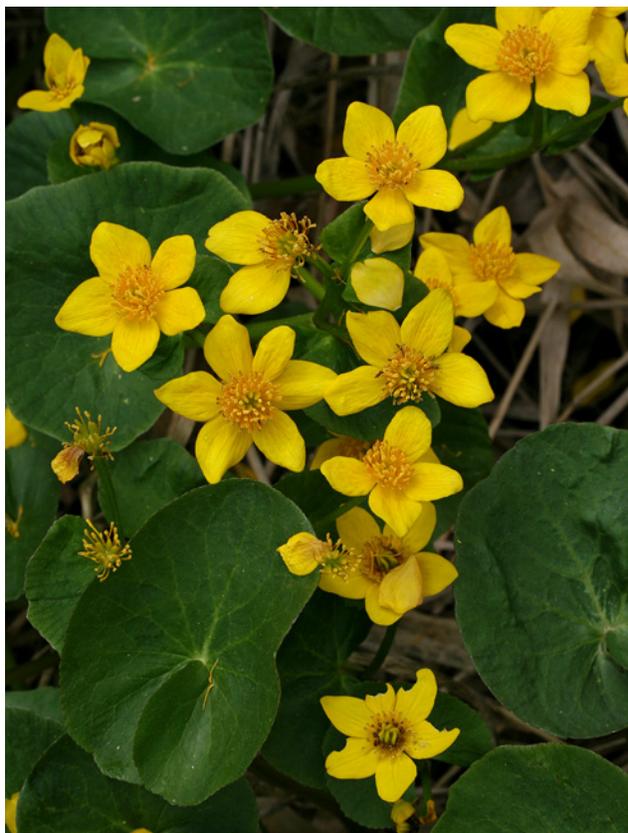
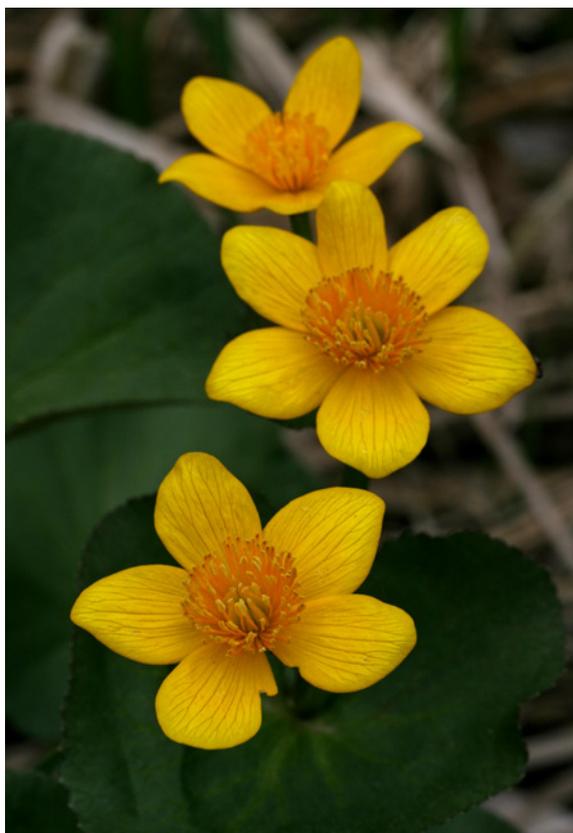
C of C: Native (5 MN)(6 WI)

FIELD CHARACTERISTICS: An annual herb very similar to jewelweed (*I. capensis*) except larger with pale yellow flowers 2.5-4 cm. long with reddish-brown dots. The spur is curved at a right angle to the sac and is one-fourth the length of the sac. Stems are succulent and smooth. Leaves are alternate, up to 12 cm. long and 8 cm. wide., and more finely serrated than those of jewelweed. In flower July-September.

ECOLOGICAL NOTES: Yellow touch-me-not is not nearly as common as jewelweed. It is found in floodplain forests, shrub-carrs, wooded swamps, and along streambanks and springs.

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

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MARSH MARIGOLD

(Caltha palustris L.)

BUTTERCUP FAMILY (Ranunculaceae)

C of C: Native (6)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A perennial herb with hollow stems 20-60 cm. long. Flowers are 1.5-4 cm. wide, golden yellow, with 5-9 petal-like sepals, and 4 to many pistils surrounded by many stamens. Leaves are heart-shaped or kidney-shaped, entire or toothed, and 3-20 cm. in diameter. Fruit is a follicle 1-1.5 cm. long with a pronounced beak. In flower April-May.

ECOLOGICAL NOTES: Marsh marigold, also known as cowslip, is found in sedge meadows, fresh (wet) meadows, hardwood swamps, shrub swamps, shallow marshes and along streambanks, especially in areas of groundwater discharge (springy areas). It is one of our first wildflowers to bloom in spring.

SOURCE: Fernald (1970); and Gleason and Cronquist (1991).

HARDWOOD SWAMPS

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SKUNK CABBAGE

(*Symplocarpus foetidus* (L.) Salisb. ex Nutt.)

ARUM FAMILY (*Araceae*)

C of C: Native (8)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A low, coarse, perennial herb with a thick rhizome. The spathe is 8-15 cm. high, sessile, egg-shaped, and mottled with purple and green. The spadix is spherical or football-shaped with many densely-packed flowers. Basal leaves are huge (to 30-60 cm.), ovate, and heart-shaped at the base, emerging after the spathe. In flower March-May.

ECOLOGICAL NOTES: Skunk cabbage is found in wooded swamps and shrub swamps and is good indicator of groundwater discharge (springy areas). As the name implies, skunk cabbage has a strong skunk- or garlic-like odor. It is our earliest herbaceous “wildflower” to bloom in spring, sometimes emerging through snow.

SOURCE: Fernald (1970); Gleason and Cronquist (1991); and Voss (1972).

HARDWOOD SWAMPS



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JACK-IN-THE-PULPIT

(*Arisaema triphyllum* (L.) Schott)

ARUM FAMILY (Araceae)

C of C: Native (4 MN)(5 WI)

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

FIELD CHARACTERISTICS: A perennial herb with stems 30-100 cm. in height. Usually 2 leaves are produced each divided into 3 leaflets, the terminal leaflet oval to ovate while lateral leaflets are often asymmetrical. Leaves are on long petioles that are 30-60 cm. long at flowering time, later to as much as 150 cm. in length. Flowers are unisexual and usually borne on separate plants on a peduncle 3-20 cm. long. Flowers are located at the base of a cylindrical spadix subtended by a green, purple-striped spathe that arches over the spadix (spathe was folded back by photographer to show both spathe and spadix). Fruit is a cluster of bright red berries. In flower April-July.

ECOLOGICAL NOTES: Jack-in-the-pulpit is a common herb of floodplain forests, hardwood swamps, coniferous swamps, shrub-carrs and rich, mesic (upland) forests.

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

HARDWOOD SWAMPS



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LAKE HURON GREEN ORCHID

(*Platanthera huronensis* (Nutt.) Lindl.)

ORCHID FAMILY (Orchidaceae) **C of C:** Native (5 MN)(7 WI) **IND. STATUS:** OBL(GP)
FACW(NC/NE, MW)

SYNONYMS: *Habenaria hyperborea* (L.) R. Br.; *Platanthera hyperborea* (L.)

FIELD CHARACTERISTICS: A perennial herb 20-100 cm. in height. The 2-7 principal leaves are oblong to linear to narrowly elliptical, and are 5-30 cm. long and 1-7 cm. wide. Inflorescence is a raceme 4-25 cm. long consisting of tightly packed, whitish-greenish flowers. The lip is 5-12 mm. long x 2-4 mm. wide while the spur is 4-12 mm. long. In flower mid-June to mid-August.

ECOLOGICAL NOTES: Lake Huron green orchid is a common species found in a variety of habitats including coniferous bogs, coniferous swamps, hardwood swamps, shrub swamps, sedge meadows and fens.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Smith (1993).

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PURPLE-FRINGED ORCHIS

(*Platanthera psycodes* (L.) Lindl.)

ORCHID FAMILY (Orchidaceae)

C of C: Native (7)

IND. STATUS: FACW

SYNONYM: *Habenaria psycodes* (L.) Sprengel

FIELD CHARACTERISTICS: A perennial herb with stout stems 30-100 cm. high. Inflorescence is a cylindrical raceme 5-25 cm. long and 2.5-4.5 cm. thick with many small flowers. Flowers are rose-purple (rarely white) with a deeply three-parted, fringed lip 6-16 mm. broad. Leaves are oval to lanceolate, the largest 2-7 cm. broad. Upper leaves are reduced and narrow. In flower June-August.

ECOLOGICAL NOTES: Purple-fringed orchis occurs in wooded swamps, shrub-carrs, fresh (wet) meadows, sedge meadows and along streambanks. It tends to be more common north of the vegetation tension zone. It can be frequent to common and can even be spotted in road ditches when in bloom. There are similar orchids (*Platanthera* spp.) that have yellow, white, or green flowers.

SOURCE: Smith (1993); Ownbey and Morley (1991); Fernald (1970); Gleason and Cronquist (1991); and Voss (1972).

HARDWOOD SWAMPS



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OSTRICH FERN

(*Matteuccia struthiopteris* (L.) Todaro)

WOOD FERN FAMILY (Dryopteridaceae) **C of C:** Native (5) **IND. STATUS:** FACW(MW, GP)
FAC(NC/NE)

FIELD CHARACTERISTICS: A clonal, perennial fern with erect, coarse, stout, leafy crowns growing to a height of 0.5-2(3)m. from black rhizomes that are large and stoloniferous. Fronds are of two types. Sterile fronds are green and pinnate-pinnatifid with a fine pubescence along the rachis, particularly in spring. The alternate pinnae are gradually reduced toward the base of the frond. Fertile fronds are shorter than sterile fronds, brown at maturity, with inrolled pinnae enclosing the sporangia. Fertile fronds are produced between midsummer and early fall and persist through the winter.

ECOLOGICAL NOTES: Ostrich fern is a circumboreal species of hardwood swamps, floodplain forests, and mesic upland forests and thickets. It is often found growing on alluvial deposits. This species typically occurs north of the vegetation tension zone.

SOURCE: Gleason and Cronquist (1991) and Tryon (1980).

HARDWOOD SWAMPS

A portion of a fertile frond



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CINNAMON FERN

(*Osmundastrum cinnamomeum* (L.) K. Presl)

ROYAL FERN FAMILY (Osmundaceae)

C of C: Native (7)

IND. STATUS: FACW

SYNONYM: *Osmunda cinnamomea* L.

FIELD CHARACTERISTICS: A clump-forming, perennial fern with a stout rhizome, growing to a height of 60-120(160) cm. Fronds are of two types. Sterile fronds are green, pinnate-pinnatifid, with a tuft of cinnamon-colored hair at the base of the pinnae, and a few hairs along the margins of the segments. Fertile (spore-bearing) fronds are cinnamon-colored and hairy.

Osmundastrum cinnamomeum can be distinguished from the related royal fern (*Osmunda spectabilis*) and interrupted fern (*Osmunda claytoniana*) by the following:

- 1.A. Fronds bipinnate, fertile portion of fronds, if present, located at the apex.....*O. spectabilis*
- 1.B. Fronds pinnate-pinnatifid; fertile fronds entirely fertile or fertile portion located in the middle of the frond..... 2
 - 2.A. Fertile fronds entirely fertile, soon disappearing; margins of the segments of sterile fronds with a few hairs.....*O. cinnamomeum*
 - 2.B. All fronds green and leafy; fertile brown portion, when present, confined to the middle of the frond, soon dropping off.....*O. claytoniana*

ECOLOGICAL NOTES: Cinnamon fern is common in wooded swamps, shrub swamps, bogs and along streambanks. Fertile fronds die back by mid-summer and are not readily apparent.

SOURCE: Gleason and Cronquist (1991); and Tryon (1980).

HARDWOOD SWAMPS



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Cinnamon Fern
(*Osmundastrum cinnamomeum*)

HARDWOOD SWAMPS



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Undersides of pinnae illustrating the hook-shaped sori and indusia.

LADY FERN

(*Athyrium angustum* (Willd.) K. Presl)

WOOD FERN FAMILY (Dryopteridaceae) **C of C:** Native (4 MN)(5 WI) **IND. STATUS:** FAC

SYNONYM: *Athyrium filix-femina* (L.) Roth

FIELD CHARACTERISTICS: A perennial, clumped, rhizome-producing fern with mostly bipinnate or bipinnate-pinnatifid blades 40-100 cm. tall and 10-35 cm. wide. Pinnae consist of 20-30 pairs below the pinnatifid tip, the pinnules mostly serrate to deeply parted. Indusia and sori are dark brown and hooked in shape, or less often straight.

ECOLOGICAL NOTES: A very common fern preferring the shaded habitats of hardwood swamps, coniferous swamps, floodplain forests and mesic (upland) forests. For example, lady fern had 90 percent occurrence in “northern wet ash swamps” inventoried in Minnesota (MnDNR 2005).

SOURCE: Gleason and Cronquist (1991) and Tryon (1980).

HARDWOOD SWAMPS



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WOOD HORSETAIL (*Equisetum sylvaticum* L.)

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

FIELD CHARACTERISTICS: Stems are annual and of two types. Fertile stems are initially unbranched and pale, later producing green branches. Sterile stems are 30-70 cm. tall and 1.5-3 mm. wide with a central cavity that is both larger than the outer ring and more than half the diameter of the stem. Stems are branched, the branches commonly branched themselves. Teeth of the sheaths of the main stem are reddish brown.

ECOLOGICAL NOTES: Wood horsetail is a common species typically preferring the shaded habitats of hardwood swamps and shrub swamps.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Tryon (1980).

HARDWOOD SWAMPS



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COMMON WOOD-REED

(*Cinna arundinacea* L.)

GRASS FAMILY (Gramineae or Poaceae)

C of C: Native (5)

IND. STATUS: FACW

FIELD CHARACTERISTICS: A perennial grass 60-150 cm. tall with weak rhizomes or none. Leaves are 4-12 mm. wide with scabrous margins and a red-brown ligule 3-10 mm. long. Inflorescence is a loose panicle 10-30 cm. long with panicle branches ascending, at least at the base. The one-flowered spikelets are 4.5-7 mm. long.

The very similar drooping wood-reed (*Cinna latifolia*) has shorter spikelets (2.5-4 mm. long) and a more open, spreading to drooping panicle.

ECOLOGICAL NOTES: Common wood-reed is frequent in hardwood swamps, usually scattered, not forming dense stands.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); Chadde (2002); and Voss (1972).

HARDWOOD SWAMPS



Illustration from Hitchcock (1950)

Common Wood- Reed
(*Cinna arundinacea*)

HARDWOOD SWAMPS



FRINGED SEDGE (*Carex crinita* Lam.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (6)

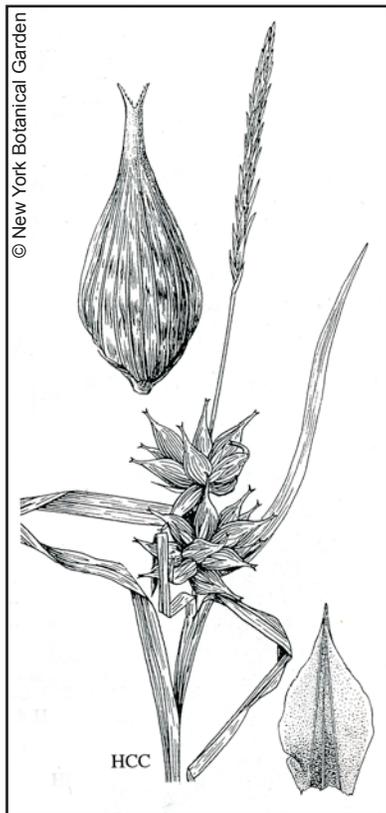
IND. STATUS: OBL

FIELD CHARACTERISTICS: A perennial, cespitose (clumped) sedge growing to 40-120 cm. in height. Basal leaf sheaths are red and pinnate-fibrillose. Main leaves are 7-13 mm. wide with glabrous sheaths. Spikelets are loosely spreading to drooping on long peduncles. Staminate spikelets number 1-3 and are 4-9 cm. long while pistillate spikelets number 2-5 and are 4-11 cm. long. Pistillate spikelets are linear-cylindric. Pistillate scales have long awns to 10 mm. that greatly exceed the perigynia giving the spikelets a fringed or bristly appearance. Perigynia are 2-3.5 mm. long, strongly 2-ribbed, with a minute beak. The achene is 2-sided.

ECOLOGICAL NOTES: Fringed sedge is a common species of hardwood swamps, shrub-carrs, and vernal pools within mesic (upland) forests. The long-drooping pistillate spikelets with a bristly appearance make this species easy to recognize.

SOURCE: Gleason and Cronquist (1991); Voss (1972); and Hipp (2008).

HARDWOOD SWAMPS



SHINING BUR (BLADDER) SEDGE

(*Carex intumescens* Rudge)

SEDGE FAMILY (Cyperaceae)

C of C: Native (5)

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

FIELD CHARACTERISTICS: A perennial sedge with stems arising singly or in small clumps 30-90 cm. tall. Sheaths are tinged reddish-purple toward the base. Bracts and evergreen leaves have flat blades more than 3 mm. wide. Staminate flowers are pedunculate and form in terminal spikes. Perigynia form 1-3 subglobose spikelets with 2-8(12) loosely spaced, inflated, ascending or spreading, ovoid perigynia about 9-17.5 mm. long and 4-5 mm. wide. Conspicuously veined perigynia are rounded at the base, glabrous, shiny, with beaks that are much shorter than the body. A persistent style is contorted at or just below the middle and arises from a 3-angled nutlet.

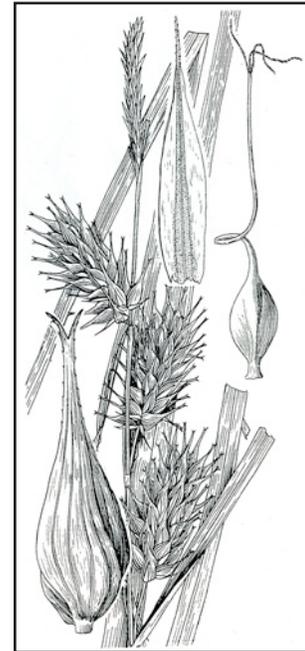
ECOLOGICAL NOTES: Shining bur sedge is characteristic of hardwood swamps. It occasionally occurs in coniferous swamps and northern sedge meadows.

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

HARDWOOD SWAMPS



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COMMON HOP SEDGE

(*Carex lupulina* Muhl. ex Willd.)

SEDGE FAMILY (Cyperaceae)

C of C: Native (6)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A perennial sedge with stems 20-130 cm. in height arising singly or a few together from long, scaly rhizomes. Persistent basal sheaths are tinged reddish brown. Mature leaves are 4-15 mm. wide. Usually a single terminal staminate spikelet arises from a 0.5-6 cm. peduncle. Between 1-6 pistillate spikes with 8-80 ascending perigynia are present. Pistillate spikelets are longer than wide and often persist into the fall. Ovoid perigynia are inflated, strongly nerved, and 1 cm. or more long. They have a conical beak with bidentate teeth. Acute, slender scales subtend the perigynia. The rhomboid nutlets are longer than wide, 3-angled, and have a persistent style, which is contorted at or near the base.

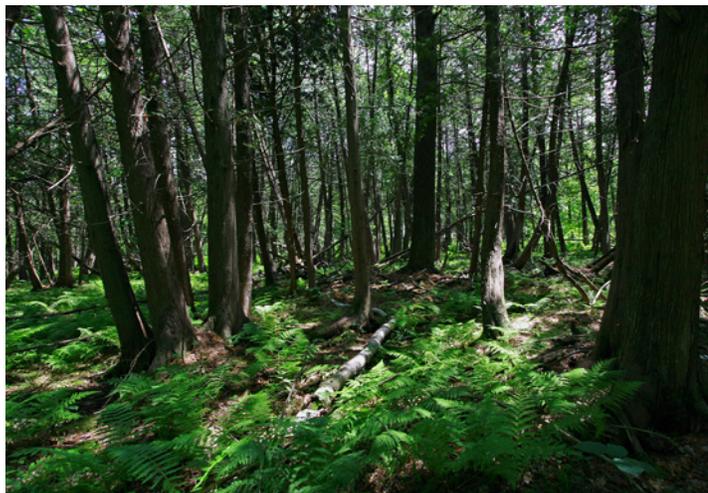
Care must be taken not to confuse this sedge with the State of Wisconsin endangered *Carex lupuliformis*. The nutlets of *C. lupuliformis* are as long as wide and have conspicuous nipple-like knobs on the angle summits.

ECOLOGICAL NOTES: Common hop sedge is characteristic of hardwood swamps. It is often the dominant sedge along the edges of vernal pools.

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

VI.B. Coniferous Swamps

Coniferous swamps are forested wetlands dominated by lowland conifers, primarily northern white cedar and tamarack, growing on soils that are saturated during much of the growing season, and that may be temporarily inundated by as much as a foot of standing water in microdepressions. Balsam fir is a component in some stands. Soils are usually organic (peat/muck) but not as acidic and nutrient-poor as those of coniferous bogs. Instead, soils vary from somewhat nutrient-poor and acidic, to mineral-rich and alkaline. Tamarack typically dominates on the former soils, and northern white cedar on the latter. A continuous *Sphagnum* moss mat is not present. Coniferous swamps occur primarily in and north of the vegetation tension zone. However, several large tamarack swamps occur south of the tension zone.



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VEGETATION: The tree layer of this coniferous swamp is dominated by northern white cedar (*Thuja occidentalis*). Scattered, tree size black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*) and white pine (*Pinus strobus*) are also present. The groundlayer is dominated by cinnamon fern (*Osmundastrum cinnamomeum*), marsh fern (*Thelypteris palustris*) and lady fern (*Athyrium angustum*). Other species include speckled alder (*Alnus incana* ssp. *rugosa*), poison sumac (*Toxicodendron vernix*), royal fern (*Osmunda spectabilis*), fowl manna grass (*Glyceria striata*), long-stalk sedge (*Carex pedunculata*), graceful sedge (*Carex gracillima*), northern white violet (*Viola macloskeyi*), wood anemone (*Anemone quinquefolia*), naked miterwort (*Mitella nuda*), starflower (*Trientalis borealis*), blue-bead lily (*Clintonia borealis*), dwarf red raspberry (*Rubus pubescens*), sensitive fern (*Onoclea sensibilis*), wild lily-of-the-valley (*Maianthemum canadense*), sweet-scented bedstraw (*Galium triflorum*), bunchberry (*Cornus canadensis*), wild sarsaparilla (*Aralia nudicaulis*), hog peanut (*Amphicarpaea bracteata*) and jack-in-the-pulpit (*Arisaema triphyllum*). Ram's-head lady's-slipper (*Cypripedium arietinum*), a species listed as threatened by the State of Minnesota, was recorded in this habitat.

SOILS: Lupton muck (Typic Haplosaprists), a very poorly-drained, calcareous soil with an organic layer greater than 51 inches in depth (and can be many feet in depth). Landscape position is an ancient lakebed in the nearly level, sandy outwash of the Anoka Sandplain.

HYDROLOGY: Lupton muck is typically saturated to the surface. During September through May, the seasonal high water table can vary from 12 inches of standing water to a water table 12 inches below the surface.

LOCATION: Cedar Bog Lake, Cedar Creek Ecosystem Science Reserve, Anoka County, Minnesota.

CONIFEROUS SWAMPS

VEGETATION: The opposing page illustrates two views of a coniferous swamp dominated by tamarack (*Larix laricina*). In addition to tamarack, the shrub layer consists of scattered speckled alder (*Alnus incana* ssp. *rugosa*), meadowsweet (*Spiraea alba*), bog willow (*Salix pedicellaris*), meadow willow (*Salix petiolaris*), shining willow (*Salix lucida*), red-osier dogwood (*Cornus alba*) and balsam willow (*Salix pyrifolia*). Marsh fern (*Thelypteris palustris*) and Canada blue-joint grass (*Calamagrostis canadensis*) dominate the diverse groundlayer that also includes: tussock sedge (*Carex stricta*), stalk-grained sedge (*Carex stipata*), buxbaum's sedge (*Carex buxbaumii*), lake sedge (*Carex lacustris*), yellow lake sedge (*Carex utriculata*), interior sedge (*Carex interior*), wild timothy (*Muhlenbergia glomerata*), fringed brome grass (*Bromus ciliatus*), fowl mana grass (*Glyceria striata*), joe-pye weed (*Eutrochium maculatum*), marsh milkweed (*Asclepias incarnata*), northern bog goldenrod (*Solidago uliginosa*), turtlehead (*Chelone glabra*), flat-top aster (*Doellingeria umbellata*), giant goldenrod (*Solidago gigantea*), marsh cinquefoil (*Comarum palustre*), marsh bellflower (*Campanula aparinoides*) and crested shield fern (*Dryopteris cristata*).

SOILS: Markey muck (Terric Haplosaprists), very poorly-drained soils with up to 51 inches of organic materials overlying sandy materials.

HYDROLOGY: The seasonal high water table for Markey soils ranges from ponded to a water table within 6 inches of the surface during November to June of most years. This is a minerotrophic (mineral rich) peatland due to groundwater inflows.

LOCATION: Rice Lake National Wildlife Refuge, Aitkin County, Minnesota.

CONIFEROUS SWAMPS



CONIFEROUS SWAMPS



© Photos by Steve D. Eggers

NORTHERN WHITE CEDAR

(*Thuja occidentalis* L.)

CYPRESS FAMILY (Cupressaceae) **C of C:** Native (9 WI)(7 MN) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An evergreen, conifer tree to 25 m. in height and 123 cm. dbh. Branches are spreading with flattened, leafy twigs. Scale-like, opposite leaves are 2-4 mm. long and overlap like shingles. The small, woody, oblong cones are paired, 8-15 mm. long, and yellowish brown in color.

ECOLOGICAL NOTES: Northern white cedar is a dominant tree in coniferous swamps along with tamarack (*Larix laricina*). It is also a subdominant in some hardwood swamps. Northern white cedar typically occurs north of the vegetation tension zone on neutral to alkaline, springy soils due to groundwater seepages. It is common near the Great Lakes on soils subtended by dolomite. During winter months, northern white cedar swamps provide both food and shelter for white-tailed deer. Another common name is arbor vitae.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); Voss (1972); and Smith (2008).

CONIFEROUS SWAMPS



© Photos by Steve D. Eggers

BALSAM FIR

(*Abies balsamea* (L.) P. Mill.)

PINE FAMILY (Pinaceae) **C of C:** Native (5 WI)(4 MN) **IND. STATUS:** FAC(NC/NE, GP)
FACW(MW)

FIELD CHARACTERISTICS: An evergreen, conifer tree to 26 m. height and 48 cm. dbh. Bark is smooth and gray but eventually becomes scaly. Young trunks are covered with raised resin-bearing pockets. Spreading branches have twigs with minute hairs. Leaves are flattened, 12-25 mm. in length, blunt or minutely notched, sessile, and tend to align in one plane. The narrow, cylinder-shaped cones are erect and 5-10 cm. long with broadly rounded scales. Papery bracts are generally hidden by the scales and may be spreading, but not reflexed.

ECOLOGICAL NOTES: Balsam fir is a shade tolerant conifer that is common in northern white cedar swamps, coniferous bogs, mixed hardwood/conifer swamps, and mesic (upland) forests.

SOURCE: Elias (1980); Gleason and Cronquist (1991); Smith (2008); and Voss (1972).

CONIFEROUS SWAMPS



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POISON SUMAC

(*Toxicodendron vernix* (L.) Kuntze)

CASHEW FAMILY (Anacardiaceae)

C of C: Native (7)

IND. STATUS: OBL

SYNONYM: *Rhus vernix* L.

FIELD CHARACTERISTICS: A tall, deciduous shrub 5(7) m. in height with a smooth to slightly rough bark. The bark is a patchy light gray, with numerous horizontally spreading lenticels. Branches are stout with thick, coarse twigs. Leaves are alternate and pinnately compound with 7 to 13 sessile, oval leaflets along a red rachis. Mature leaflets are dark green and shiny above with entire margins. Unisexual greenish flowers form on drooping raceme-like panicles. Fruits are a yellowish to grayish white berry-like drupe. The resin, called urushiol and which occurs throughout the plant, can cause a severe allergic contact dermatitis.

ECOLOGICAL NOTES: Poison sumac primarily occurs in coniferous swamps and bogs. It also occurs in ash-dominated hardwood swamps, alder thickets, bogs and fens. Seeds are dispersed by birds.

SOURCE: Crow and Hellquist (2000); Gleason and Cronquist (1991); Smith (2008); Swink and Wilhelm (1994); and Voss (1985).

CONIFEROUS SWAMPS

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Staminate catkins



Pistillate catkins and leaves

BALSAM WILLOW

(*Salix pyrifolia* Anderss.)

WILLOW FAMILY (Salicaceae)

C of C: Native (8 MN)(7 WI)

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

FIELD CHARACTERISTICS: A tall, deciduous shrub to 5 m. in height. Twigs are glabrous, at first yellowish then becoming red and shining. Petioles are red. Leaves are reddish when unfolding then becoming dark green and glossy above while lower leaf surfaces are glaucous, glabrous and reticulate. Leaves are ovate to lanceolate or lanceolate-oblong, 4-10(13) cm. by 2-4(5) cm., with a tip that is acute to acuminate. Leaf margins often have glandular teeth. Leaves are rounded to cordate at the base and have the fragrance of balsam. Catkins 2-6(8) cm. long appear with or after the leaves. Capsules are glabrous and 4-8 mm. long. In flower May-June.

ECOLOGICAL NOTES: Balsam willow is most common in coniferous swamps and bogs with tamarack or black spruce. To a lesser extent, it occurs in shrub swamps, on floating sedge mats, and along lakeshores and riverbanks. Balsam willow is easy to identify with its bright red, shiny petioles and branches, as well as leaves that are glossy green above and gray beneath with cordate bases.

SOURCE: Gleason and Cronquist (1991); and Smith (2008).

CONIFEROUS SWAMPS



© Photos by Gary B. Walton



SWAMP RED CURRANT

(*Ribes triste* Pallas)

GOOSEBERRY FAMILY (Grossulariaceae) **C of C:** Native (8 WI)(7 MN) **IND. STATUS:** OBL

FIELD CHARACTERISTICS: A small shrub 40-100 cm. tall with 1 or a few ascending, spreading or trailing stems. Stems lack the spines or bristles of some other *Ribes*. Young stems are hairy then become smooth by the second year. Leaves are 4-9 cm. long and 5-10 cm. wide with 3-5 broad lobes and no glandular dots (unlike some other *Ribes*, e.g., *R. americanum*). Flowers are green-purple, 4-5 mm. wide and arranged in long, drooping clusters of 5-12. Fruit is a smooth, red berry 6-9 mm. wide. In flower May-June.

ECOLOGICAL NOTES: Swamp red currant prefers coniferous swamps and bogs, especially those with tamarack, as well as hardwood swamps. This currant prefers soils that are moderately acidic and seems to be absent in the most highly acidic bogs. Of the *Ribes* in our range, swamp red currant is the only one with fruits that are both smooth and red.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Chadde (2002).

CONIFEROUS SWAMPS



© Photos by Steve D. Eggers

SKUNK CURRANT (*Ribes glandulosum* Grauer)

GOOSEBERRY FAMILY (Grossulariaceae)

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

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

FIELD CHARACTERISTICS: A small shrub with 1 or a few ascending, arching or trailing stems to 2 m. long. Spines or bristles are absent. First and second year branches are glabrous. Leaves are 2.5-5 cm. long and 3.5-7 cm. wide with 3-5 palmate lobes. Leaf bases are deeply cordate while leaf margins have pointed serrations. Upper leaf surfaces are dark green, glabrous and lack glands. Lower leaf surfaces are pale green, glabrous or with scattered hairs, and have stalked glands along the main veins. Ascending racemes 3-6 cm. long have 6-15 flowers with pinkish to purplish petals 0.8-1.2 mm. long. Pedicels and ovaries have red, gland-tipped hairs. Fruit is a translucent red berry, 6-10 mm. in diameter, with stiff, gland-tipped hairs. In flower early May to mid-June.

ECOLOGICAL NOTES: Skunk currant is common in a variety of habitats north of the vegetation tension zone. A favored habitat is coniferous swamps dominated by northern white cedar and/or tamarack. True to its name, the leaves and inner bark have a skunk-like odor when crushed.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Chadde (2002).

CONIFEROUS SWAMPS



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ALDER-LEAF BUCKTHORN

(*Rhamnus alnifolia* L'Her.)

BUCKTHORN FAMILY (Rhamnaceae)

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

C of C: Native (7 MN)(8 WI)

FIELD CHARACTERISTICS: A mid-size shrub with multiple upright or decumbent stems to 2.3 m. long (but usually only 1 m. in height). Leaves are alternate, lanceolate-oblong to lanceolate-ovate to elliptical, with a tip that is obtuse to acuminate. Petioles are 5-15 mm. long. Greenish flowers are in sessile umbels with 1-3 flowers each. Flowers are functionally unisexual, 5-merous with sepals 1.5-2 mm. long (petals are absent). In flower mid-May to mid-June. Fruit is a black drupe 6-8 mm. in diameter with 3 stones. Fruit matures in mid-July to late August.

ECOLOGICAL NOTES: Alder-leaf buckthorn is found in northern coniferous swamps, hardwood swamps, shrub swamps and sedge meadows, usually in shade but also full sunlight. It prefers peat or mineral soils that are weakly to moderately acidic.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Voss (1985).

CONIFEROUS SWAMPS



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BRISTLE-BERRY

(*Rubus wheeleri* (Bailey) Bailey)

ROSE FAMILY (Roseaceae)

C of C: Native

IND. STATUS: FAC

SYNONYMS: *Rubus setosus* Bigelow; *Rubus semisetosus* Blanch. var. *wheeleri* Bailey

FIELD CHARACTERISTICS: A perennial, mid-size shrub with erect or arching biennial canes to 1 m. long. Prickles are usually sparse and weak, 3-5 mm. long, and number 2.5-5 per cm. of cane. Primocane leaves are palmately compound with 5(3) leaflets. The central leaflet is elliptical to obovate, 7-10 cm. long by 4.5-7 cm. wide, the base tapered to subcordate or rounded, while the tip is short and abrupt. Petioles have sparse, non-glandular hairs and often a few weak prickles. Inflorescence is corymb or cyme with 4-12 white flowers. Pedicels and peduncle usually have stiff bristles or weak prickles. Flowers are bisexual, 5-merous, 2.3-3.8 cm. wide, sepals usually with gland-tipped hairs. In flower mid- to late June. Fruit is an aggregate of black drupelets, more or less round and 8-15 mm. in diameter.

ECOLOGICAL NOTES: Bristle-berry occurs at the edges of swamps and marshes, and in wet meadows and sedge meadows, as well as in uplands. Its range includes most of Wisconsin but only a small portion of central Minnesota where it is considered rare. No C of C for this species has been assigned by either state.

SOURCE: Gleason and Cronquist (1991); Smith (2008); and Voss (1985).

CONIFEROUS SWAMPS



SWAMP FLY HONEYSUCKLE

(*Lonicera oblongifolia* (Goldie) Hook.)

HONEYSUCKLE FAMILY (Caprifoliaceae) **C of C:** Native (8 MN)(9 WI) **IND. STATUS:** OBL

FIELD CHARACTERISTICS: A mid-size to tall, deciduous shrub with single or multiple stems to 2 m. in height and 2 cm. basal diameter. Bark is gray or brown and exfoliating in flakes or strips. Leaves are opposite, elliptical to obovate to oblong, the larger ones 3.5-8.5 cm. long and 1.5-3 cm. wide. Leaf margins are entire and finely hairy but not ciliate. Upper leaf surfaces are green and moderately covered with fine hairs while lower leaf surfaces are pale green and densely covered with fine, woolly hairs. Flowers are bisexual, 5-merous and arranged in sessile pairs that are erect or ascending. Corolla is tubular, pale yellow to whitish, and 0.8-1.4 cm. long, the lobes longer than the tube and reflexed. In flower early June to early July. Fruit is a spherical, reddish berry 7-11 mm. in diameter, shiny, maturing in early July to early August.

ECOLOGICAL NOTES: Swamp fly honeysuckle is fairly common in coniferous swamps, shrub swamps and sedge meadows. Occasionally it can be found on lakeshores and streambanks. This species prefers openings or thin canopies of tamarack and northern white cedar. Moderately acidic peats are preferred, although it does occur on loamy soils as well. Flowers are pollinated by insects and hummingbirds.

SOURCE: Smith (2008).

CONIFEROUS SWAMPS



GOLDTHREAD

(*Coptis trifolia* (L.) Salisb.)

BUTTERCUP FAMILY (Ranunculaceae) **C of C:** Native (8 WI)(7 MN) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: A perennial herb from bright yellow, slender rhizomes, hence the common name. Evergreen leaves have 3 leaflets and arise from the base of the plant on long petioles. Margins of the leaves are shallowly lobed with rounded tips, with broadly rounded teeth. The one-flowered peduncle grows to a height of 5-15 cm. Flowers are white with petal-like sepals 10-15 mm. wide. Fruit is a beaked follicle 8-13 mm. long. In flower April-June.

ECOLOGICAL NOTES: Goldthread is a characteristic herb of cedar swamps often growing on moss hummocks.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Voss (1985).

CONIFEROUS SWAMPS



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BLUE-BEAD LILY

(*Clintonia borealis* (Ait.) Raf.)

LILY FAMILY (Liliaceae)

C of C: Native (7)

IND. STATUS: FAC

FIELD CHARACTERISTICS: A perennial, rhizome producing herb to 40 cm. in height. The 2-5 glossy, green leaves are oblong to elliptic, up to 3 dm. in length, and have ciliate margins (becoming hairless with age). A scape (naked stem) produces 3-8 bright yellow, nodding flowers with 6 stamens and 6 tepals (15-18 mm. in length). Fruit is a bright blue berry 8 mm. in diameter. In flower May-June.

ECOLOGICAL NOTES: Blue-bead lily is a frequent herb of coniferous swamps and bogs in and north of the vegetation tension zone. It often grows on the tops of hummocks and around tree trunks with raised root systems, a drier microhabitat in these forested wetlands. It is equally common in mesic (upland) forested habitats.

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

CONIFEROUS SWAMPS



WILD LILY-OF-THE-VALLEY (*Maianthemum canadense* Desf.)

LILY FAMILY (Liliaceae) **C of C:** Native (5) **IND. STATUS:** FAC(MW); FACU(NC/NE, GP)

FIELD CHARACTERISTICS: A perennial herb 5-20 cm. in height. Leaves number (1)2(3), are short-petioled to sessile, 3-10 cm. long and ovate-oblong. Inflorescence is a raceme 2-5 cm. long with flowers that are 4-6 mm. wide. Fruit is a pale red berry 3-4 mm. thick. In flower May-June.

ECOLOGICAL NOTES: Wild lily-of-the-valley is an abundant herb that occurs in a diversity of plant communities from wet to dry. In coniferous swamps and bogs, it frequently occurs on the drier microhabitat of raised hummocks.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Voss (1972).

CONIFEROUS SWAMPS



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BUNCHBERRY

(*Cornus canadensis* L.)

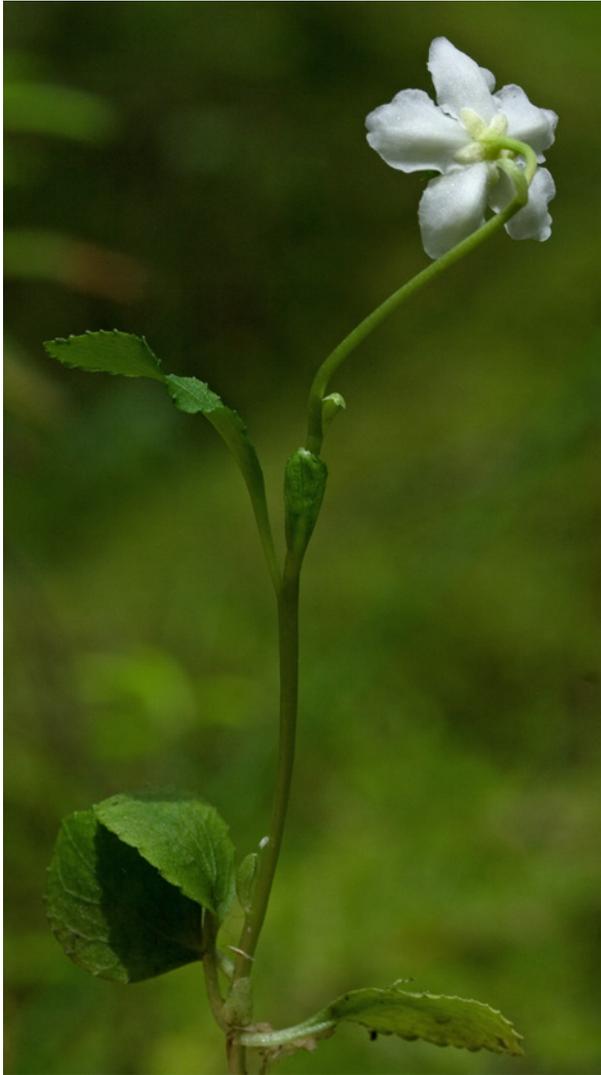
DOGWOOD FAMILY (Cornaceae) **C of C:** Native (7 WI)(6 MN) **IND. STATUS:** FACU(GP)
FAC(NC/NE, MW)

FIELD CHARACTERISTICS: A perennial herb with a woody rhizome. Stems are 10-20 cm. in height. Leaves are oval to obovate and 4-8 cm. long. Four to 6 leaves are apparently whorled at the summit. A single flower cluster arises on a peduncle 1-3 cm. high. Flowers are yellow-green or creamy-white surrounded by 4 white bracts 1-2 cm. long. Fruit is a cluster of round, bright red berry-like drupes 6-8 mm. wide. In flower June-July.

ECOLOGICAL NOTES: Bunchberry is a common herb of coniferous swamps and bogs frequently growing on raised hummocks. It is also common in upland forests consisting of mixed conifers/hardwoods.

SOURCE: Gleason and Cronquist (1991); Smith (2008); Chadde (2002); and Voss (1985).

CONIFEROUS SWAMPS



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ONE-FLOWERED PYROLA

(*Moneses uniflora* (L.) Gray)

WINTERGREEN FAMILY (Pyrolaceae) **C of C:** Native (9 WI)(8 MN) **IND. STATUS:** FAC

FIELD CHARACTERISTICS: A perennial herb 3-10 cm. in height. Finely-toothed leaves are opposite or in whorls of 3, orbicular in shape, and 1-2 cm. wide. The single flower is white, nodding, and 1-2 cm. wide. Fruit is a round capsule. In flower July-August.

ECOLOGICAL NOTES: One-flowered pyrola occurs in cedar swamps as well as mixed conifer/hardwood swamps.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Voss (1985).

CONIFEROUS SWAMPS



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ALPINE ENCHANTER'S NIGHTSHADE

(*Circaea alpina* L.)

EVENING PRIMROSE FAMILY (Onagraceae)

IND. STATUS: FACW

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

FIELD CHARACTERISTICS: A perennial herb with weak stems 10-30 cm. in height. Leaves are opposite, ovate, 2-5 cm. long and 1-3 cm. wide. White flowers, with sepals 1-2 mm. long and petals up to 2 mm. long, are in racemes of 10-15 flowers. Fruit is a 1-seeded capsule 2-3 mm. long. In flower June-August.

ECOLOGICAL NOTES: Alpine enchanter's nightshade is characteristic of cedar swamps where it is frequently found on rotting logs. Voss (1985) notes that this species also occurs in depressional areas of hardwood swamps.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); and Voss (1985).

CONIFEROUS SWAMPS



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FLAT-TOP ASTER

(*Doellingeria umbellata* (P. Mill.) Nees)

ASTER FAMILY (Compositae or Asteraceae)

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

SYNONYM: *Aster umbellatus* P. Mill.

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

FIELD CHARACTERISTICS: A perennial herb with 1-10(20) ascending to erect stems, 10-200 cm. high. May be colonial at times from creeping rhizomes. Narrowly lance-elliptic, entire leaves, all from smooth to sparsely hairy stems, are 4-16 cm. long by (7)10-35 mm. wide and sessile to nearly so. The numerous (22-54) heads form a distinctive, generally flat-topped (corymbiform) inflorescence. The 7-14 ray flowers are white and 5-8 mm. long, with 16-40 yellowish-white disc flowers. In flower July-September.

ECOLOGICAL NOTES: Flat-top aster is frequently found in calcareous fens, open bogs and openings in conifer swamps. It occasionally occurs in wet prairies and sedge meadows.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).

CONIFEROUS SWAMPS



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NORTHERN BOG ASTER

(*Symphotrichum boreale* (Torr. & Gray) A. & D. Love)

ASTER FAMILY (Compositae or Asteraceae)

IND. STATUS: OBL

SYNONYMS: *Aster junciformis* Rydb.; *Aster borealis* (Torr. & Gray) Prov.

C of C: Native (9 MN)(10 WI)

FIELD CHARACTERISTICS: A perennial herb 15-100 cm. high. Rhizomes and the slender stems are less than 2(2.2) mm. in diameter. Stems are often reddish, smooth below, but finely hairy in lines on the upper stem. Narrowly linear leaves are entire and 4-13 cm. long by 1.5-5 mm. wide. They are sessile and very slightly clasping along 1-3+ erect stems. The flowering heads are few—occasionally solitary—and terminal. The 20-50 white to pale lavender ray flowers are about 10 mm. (up to 15 mm.) long. In flower August-September. See Appendix B for a key to wetland asters.

ECOLOGICAL NOTES: Northern bog aster, also known as rush aster, primarily occurs in open conifer swamps, bogs and calcareous fens.

SOURCE: Gleason and Cronquist (1991); Swink and Wilhelm (1994); and Voss (1996).

CONIFEROUS SWAMPS



© Photos by Steve D. Eggers

NORTHERN BOG GOLDENROD

(*Solidago uliginosa* Nutt.)

ASTER FAMILY (Compositae or Asteraceae)

IND. STATUS: OBL

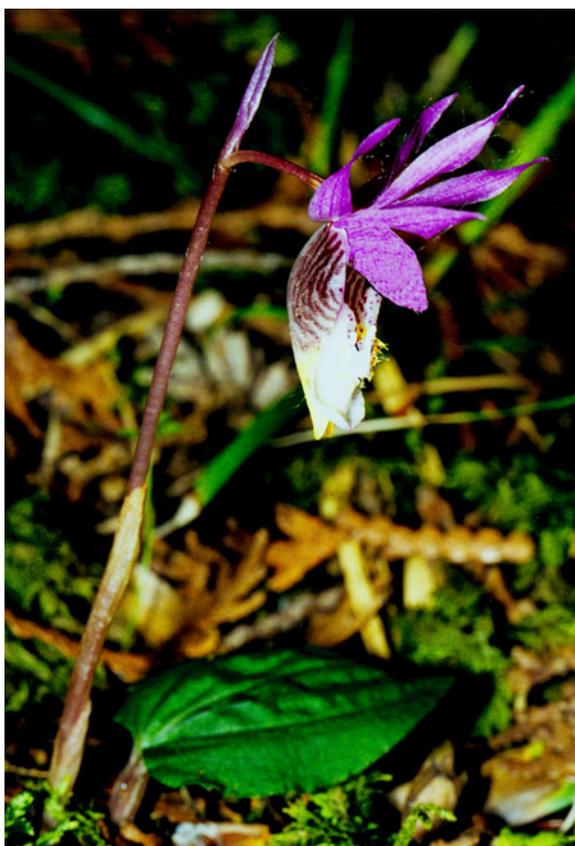
C of C: Native (8 WI)(9 MN)

FIELD CHARACTERISTICS: A perennial herb 50-150 cm. tall with smooth stems but finely hairy within the inflorescence. The alternate leaves are largest at the base of the plant, becoming smaller upward. Lower leaves taper to a long petiole while upper leaves are sessile. Larger leaves are 6-15 times as long as wide (6-35 cm. x 6-60 mm.). Flowers are clustered in an elongate, narrow raceme. Flowers are yellow with involucre 3-5 mm. long. In flower July-September. See Appendix A for a key to wetland goldenrods.

ECOLOGICAL NOTES: Northern bog goldenrod typically occurs in open bogs, coniferous bogs and coniferous swamps.

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

CONIFEROUS SWAMPS



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CALYPSO ORCHID

(*Calypso bulbosa* (L.) Oakes var. *americana* (R.Br.) Luer)

ORCHID FAMILY (Orchidaceae)

IND. STATUS: FACW

C of C: Native (9 MN)(10 WI); a threatened species in Wisconsin

FIELD CHARACTERISTICS: A perennial herb with a stem 6-21 cm. in height. A single, ovate leaf 3-5 cm. long and 2-3 cm. wide is produced in fall and remains green through the winter. The single, nodding flower emerges in mid-May to June and has pale purple sepals and lateral petals 1-2 cm. long. The lip, 1.5-2.3 cm. long, is white to pink and streaked with purple.

ECOLOGICAL NOTES: The calypso orchid is a rare species associated with northern forests in relatively pristine condition (e.g., old growth forests, or forests with 80 or more years post logging). In particular, it is found in older growth cedar swamps near the base of the largest cedars. Smith (1993) states that calypso orchids also occur to a lesser extent in upland coniferous forests. He notes its short-lived and somewhat ephemeral nature making it an "...elusive orchid that cannot be found on demand."

SOURCE: Gleason and Cronquist (1991); Chadde (2002); Voss (1972); and Smith (1993).

CONIFEROUS SWAMPS



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RAM'S-HEAD LADY'S-SLIPPER

(*Cypripedium arietinum* R. Br.)

ORCHID FAMILY (Orchidaceae)

IND. STATUS: FACW

C of C: Native (10 WI)(9 MN); a threatened species in both Minnesota and Wisconsin

FIELD CHARACTERISTICS: A perennial herb with a pubescent stem 15-32 cm. in height. Up to 12 stems can arise from a single rhizome. Leaves number 3-5 per stem and are elliptical, 5-10 cm. long and 1.4-3 cm. wide. Inflorescence consists of one, sometimes 2, flowers. Dorsal sepal is greenish to purplish and 1.2-2.6 cm. long. Lateral sepals are separate, greenish to purplish and 1.2-2.1 cm. long. Petals are similar to the lateral sepals. The lip is an inflated pouch 1-2 cm. long, whitish or pinkish with a conspicuous downward conical projection on the underside. In flower May-June.

ECOLOGICAL NOTES: Ram's-head lady's-slipper is the smallest and rarest of our lady's-slippers and with the distinct downward protruding lip, it cannot be confused with any other. Ram's-head lady's-slipper occurs in northern coniferous swamps under a canopy of northern white cedar, tamarack or spruce. Additionally, it has been found in upland habitats such as sandy, jack pine forests.

SOURCE: Smith (1993).

CONIFEROUS SWAMPS



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SMALL ROUND-LEAF ORCHIS

(*Platanthera rotundifolia* (Banks ex Pursh) Lindl.)

ORCHID FAMILY (Orchidaceae)

IND. STATUS: OBL

SYNONYM: *Amerorchis rotundifolia* (Banks) Hulten **C of C:** Native (10); a threatened species in Wisconsin

FIELD CHARACTERISTICS: A perennial herb with a stem 15-36 cm. in height (including the inflorescence). The single, essentially basal leaf is elliptic to ovate to obovate, and 5-15 cm. long and 2-8.5 cm. wide. Inflorescence is a terminal raceme 3-13 cm. long with 4-18 flowers. Sepals are white to pale pink and 5-8 mm. long. Petals are whitish to pink or purplish and 4.5-7 mm. long. The lip is white with purple spots, 3-lobed, and 6.5-10 mm. long and 4-7.5 mm. wide. In flower June-July.

ECOLOGICAL NOTES: Small round-leaf orchis typically occurs in northern coniferous swamps under a canopy of northern white cedar, tamarack or spruce. While rare in portions of its range in Minnesota and Wisconsin, substantial populations still exist in the large peatlands of northwestern and north central Minnesota (Smith 1993).

SOURCE: Gleason and Cronquist (1991); Chadde (2002); Voss (1972); and Smith (1993).

CONIFEROUS SWAMPS



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RAGGED-FRINGED ORCHID (*Platanthera lacera* (Michx.) G. Don)

ORCHID FAMILY (Orchidaceae)

C of C: Native (7)

IND. STATUS: FACW

SYNONYM: *Habenaria lacera* (Michx.) R. Br.

FIELD CHARACTERISTICS: A perennial herb with a stem 20-77 cm. in height (including inflorescence). Leaves number 3-7 per stem, lower ones lanceolate to elliptical, and 5-14 cm. long and 1-3.5 cm. wide. Upper leaves are greatly reduced in size becoming bract-like. Inflorescence is a terminal raceme 4-17 cm. long and 2-4.5 cm. wide with 15-60 white to greenish white flowers. Sepals are ovate to subobicular and 3-7 mm. long. Petals are linear-oblong and 2.8-6 mm. long. The lip is white, 0.5-1.9 cm. wide, and divided into three major segments. The lateral segments are deeply incised producing a fringe of thread-like divisions. Spur is curved and 1.1-1.7 cm. long. In flower in July.

ECOLOGICAL NOTES: Ragged-fringed orchid is usually found in full or partial sunlight, but sometimes in shade, on acidic peat or mineral soils. This includes open bogs, sedge meadows, coniferous bogs and coniferous swamps.

SOURCE: Gleason and Cronquist (1991); Chadde (2002); Voss (1972); and Smith (1993).

CONIFEROUS SWAMPS

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CRESTED SHIELD FERN

(*Dryopteris cristata* (L.) Gray)

WOOD FERN FAMILY (Dryopteridaceae)

C of C: Native (7)

IND. STATUS: OBL

FIELD CHARACTERISTICS: A perennial fern from short-creeping to somewhat ascending rhizomes. Fronds are once pinnate to nearly twice pinnate, narrow, primarily 35-80 cm. long and 7-15 cm. wide with about 10-25 pairs of pinnae. Fronds are somewhat dimorphic in that sterile fronds are half to three-fourths as long as fertile fronds. Sori are round and located midway between the midvein and the margin. The indusium is attached at the center of the sori and looks like a clear, plastic, miniature umbrella covering the sori (see photograph above).

ECOLOGICAL NOTES: Crested shield fern is a common species of bogs, coniferous swamps and alder thickets, typically on a moss substrate.

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

CONIFEROUS SWAMPS



© Photos by Steve D. Eggers

ROYAL FERN

(*Osmunda spectabilis* Willd.)

ROYAL FERN FAMILY (Osmundaceae)

C of C: Native (7)

IND. STATUS: OBL

SYNONYM: *Osmunda regalis* var. *spectabilis* (Willd.) Gray

FIELD CHARACTERISTICS: A perennial fern growing to 1 m. in height. Blades are bipinnate, broadly ovate, 4-8 dm. long and 3-5 dm. wide. Petioles are smooth, green to red-green, to three-quarters of the length of the blade. Fronds are dimorphic. The uppermost pinnae of fertile fronds are replaced by clusters of rusty-brown colored clusters of sporangia.

ECOLOGICAL NOTES: Royal fern is frequent in coniferous and hardwood swamps, alder thickets and bogs. It prefers acidic soils.

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

CONIFEROUS SWAMPS



INTERIOR SEDGE (*Carex interior* Bailey)

SEDGE FAMILY (Cyperaceae)

C of C: Native (7)

IND. STATUS: OBL

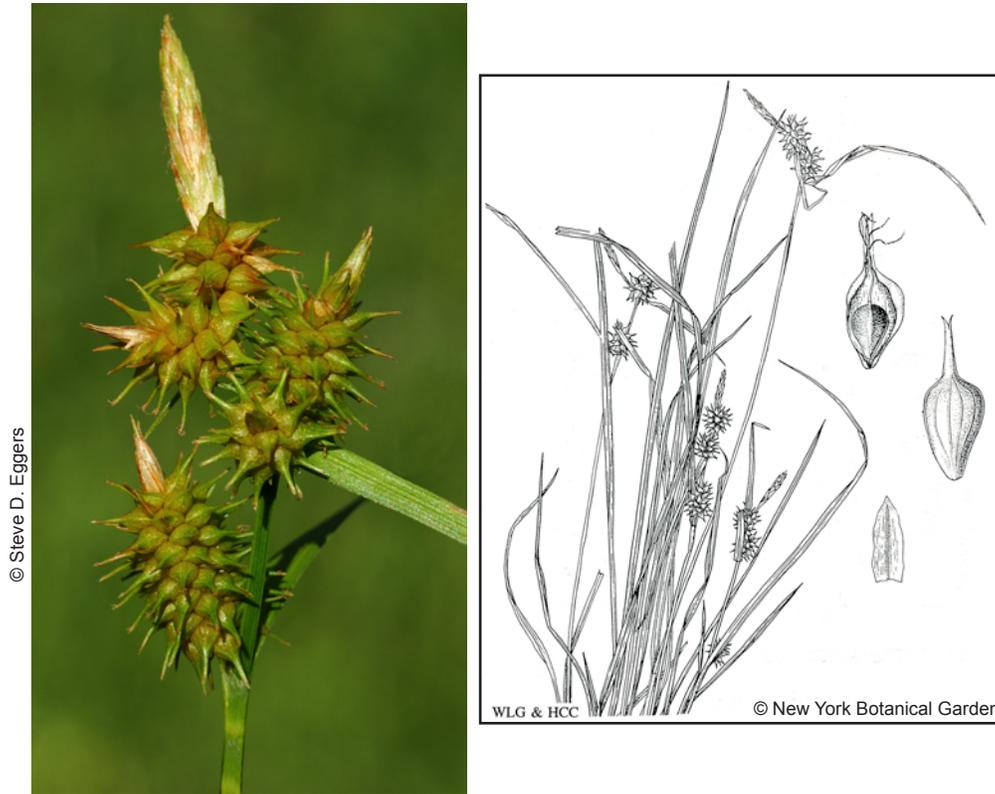
FIELD CHARACTERISTICS: A perennial sedge with stems forming dense tufts 20-70 cm. tall. Mature leaves are usually 1-2.1 mm. wide. Typically only 3(2-5) star-like, sessile spikelets per stem are present. The spikelets are monoecious (vs. dioecious in *C. sterilis*). Terminal spikelets are pistillate above and staminate below. Egg-shaped perigynia are 2.3-3.0 mm. long and 1-2 mm. wide, typically nerveless above the mid-section on the ventral surface, spreading or reflexed at maturity. Perigynium-beak teeth are obscure, rarely to 0.25 mm. Scales are rounded. Two stigmas are present and the nutlets are lens shaped.

This sedge is remarkably similar to *Carex sterilis* [pages 226-227].

ECOLOGICAL NOTES: Interior sedge occurs in bogs, coniferous swamps and calcareous fresh (wet) meadows. It also occurs on wet, calcareous soils, especially those with fluctuating water levels.

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

CONIFEROUS SWAMPS



SMALL YELLOW SEDGE

(*Carex cryptolepis* Mackenzie)

SEDGE FAMILY (Cyperaceae)

C of C: Native (7 MN)(8 WI)

IND. STATUS: OBL

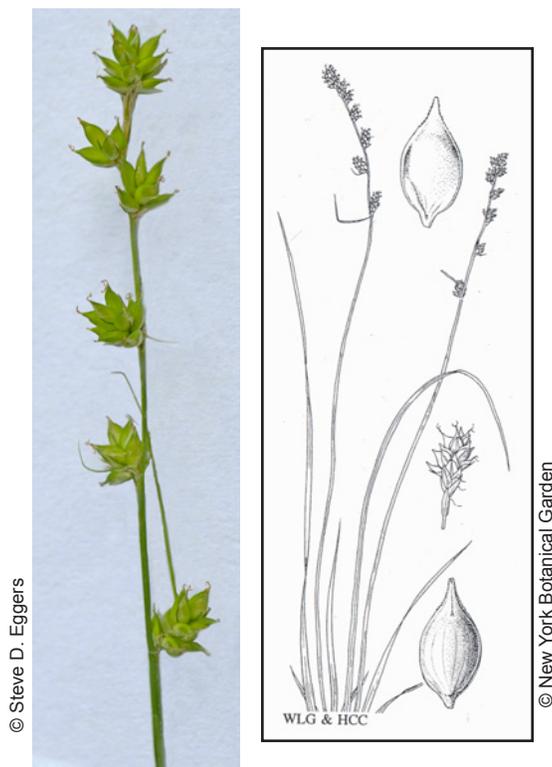
FIELD CHARACTERISTICS: A clumped, perennial sedge with stems 20-60 cm. tall, surpassing its leaves. Lower portion of stem sheaths are white. Mature leaf blades are 1.5-3.5(4) mm. wide. The distinctive short, thick, prickly looking spikelets have yellowish to golden brown perigynia. Spikelets have staminate and pistillate flowers arranged toward the tip and base, respectively. Perigynia are recurved along the stem axis with lower being reflexed and flattened. Perigynia are 3.2-4.8(5) mm. long and abruptly contract into smooth beaks, about one-half as long as the body. Pistillate scales are lance-oval shaped, inconspicuous, and the same color as the perigynia.

This sedge is considered by some to be a variety of *Carex flava* (pistillate scales are brown).

ECOLOGICAL NOTES: Small yellow sedge often holds its distinctive perigynia into September. It prefers cedar swamps, calcareous wet prairies, sedge meadows and interdunal swales.

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

CONIFEROUS SWAMPS



BROWN SEDGE

(*Carex brunnescens* (Pers.) Poir.)

SEDGE FAMILY (Cyperaceae)

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

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

FIELD CHARACTERISTICS: A clump-forming, perennial sedge with stems up to 90 cm. tall. Stems are sharply triangular and rough toward the top. Leaves are green, 1-2.5 mm. wide and shorter than the stems. A bristle-like lower bract usually does not exceed the flowering stem. Sessile spikelets number 5-10, are brownish in color, and 4-8 mm. in size. Both staminate and pistillate flowers are mixed in each spikelet with staminate flowers borne below pistillate flowers. Each spikelet consists of 3-10(15) loosely spreading and ascending perigynia. Perigynia are convex on one side, up to 3 mm. long and have rounded margins (lack wings). Nerves are subtle or indistinct. Perigynia are widest near the middle of the body and taper to a short, flattened beak. The beak has minute, sharp, forward pointed teeth along its margins as seen with a 10x hand lens. Perigynia are green when fresh then turning a rich brown color with age. Perigynia are subtended by oval scales with white hyaline edges surrounding a green center.

ECOLOGICAL NOTES: Brown sedge, also known as green bog sedge, prefers peaty soils along the borders of bogs, cedar swamps and hardwood swamps. It occasionally occurs in upland forests.

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