IV.B. Coniferous Bogs

Coniferous bogs are similar to open bogs in plant community composition except that mature trees of black spruce and/or tamarack are the dominant canopy species growing on the sphagnum moss mat. Trees may be stunted due to the wet, nutrient- and mineral-poor conditions. *Sphagnum* moss is the dominant groundlayer species. Sedges, orchids and pitcher plants that have endured the shaded conditions are typically present, along with the heath family (Ericaceae) shrubs.

Black spruce and the heath family shrubs are characteristic only of acidic peats such as those associated with *Sphagnum* moss mats, whereas tamarack can grow in minerotrophic peats as well.

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VEGETATION: This coniferous bog is dominated by tamarack (*Larix laricina*), black spruce (*Picea mariana*), leatherleaf (*Chamaedaphne calyculata*), tussock cottongrass (*Eriophorum vaginatum*) and a carpet of sphagnum moss (*Sphagnum magellanicum*). Other species present include small cranberry (*Vaccinium oxycoccos*), bog rosemary (*Andromeda glaucophylla*), bog laurel (*Kalmia polifolia*), bog sedge (*Carex oligosperma*), tawny cottongrass (*Eriophorum virginicum*), sphagnum mosses (*Sphagnum* spp.) and woolgrass (*Scirpus cyperinus*). This photograph was taken in October when the tamarack had turned golden yellow in the process of shedding its needles.

SOILS: Loxley mucky peat (Typic Haplosaprists), very poorly-drained, acidic soils with an organic layer greater than 51 inches in depth. Landscape position is a kettle bog (ice block depression) located in rolling, glacial till.

HYDROLOGY: Direct precipitation (rainfall and snowmelt). Loxley soils are typically saturated at or near the surface throughout the growing season.

LOCATION: Washburn County, Wisconsin.

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BLACK SPRUCE

(*Picea mariana* (Miller) BSP)

PINE FAMILY (Pinaceae) **C of C:** Native (7) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: An evergreen conifer growing to a height of 10(25) m.; frequently stunted and scrubby. Like those of all spruces, the twigs have woody pegs for the quadrangular (4-sided) needles. The needles are 6-18 mm. long, blue-green and covered with a pale, waxy coating. The twigs and buds are hairy (see photograph). The cones are 1.5-3.5 cm. long (which is shorter than other spruces), dark purple when young, later turning gray-brown. The cones usually remain on the tree for several years.

ECOLOGICAL NOTES: In Minnesota and Wisconsin, black spruce is typically found in coniferous bogs and scattered in open bogs north of the vegetation tension zone. It often grows with tamarack (*Larix laricina*). Black spruce is parasitized by dwarf mistletoe (*Arceuthobium pusillum*) that causes the twigs to form dense clusters called "witches' brooms." Like tamarack, the shallow root systems of black spruce frequently results in "wind throw." Fire hastens opening of the cones. Given a mixed stand of black spruce and tamarack, fires would gradually promote dominance by black spruce while eliminating tamarack, which is very susceptible to fire.

SOURCE: Curtis (1971); Gleason and Cronquist (1991); and Voss (1972).

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TAMARACK

(*Larix laricina* (DuRoi) K. Koch)

PINE FAMILY (Pinaceae) **C of C:** Native (7) **IND. STATUS:** FACW

FIELD CHARACTERISTICS: A deciduous conifer to a height of 20 m.; frequently stunted and scrubby. It has a cone-shaped growth pattern like the spruces (*Picea* spp.). Dwarf, spur-like branches are produced that support clusters of soft, slender, needle-like leaves. The leaves are typically less than 2.5 cm. long. Young cones are purple; mature cones are pale brown with less than 20 scales and are 1-2 cm. long.

ECOLOGICAL NOTES: Tamarack is the dominant or codominant tree in many coniferous swamps and bogs. Both north and south of the vegetation tension zone, it occurs on circumneutral to alkaline soils (*Sphagnum* moss mat is lacking). North of the vegetation tension zone, it is also frequently associated with black spruce (*Picea mariana*) and sphagnum mosses (*Sphagnum* spp.) growing on acidic, peat soils. It is the only native deciduous conifer of Minnesota and Wisconsin; the needles turn golden yellow and are shed from late September to early November.

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

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BOG BIRCH

(*Betula pumila* L.)

BIRCH FAMILY (Betulaceae) **C of C:** Native (7) **IND. STATUS:** OBL

SYNONYMS: *B. pumila* L. var. *glandulifera* Regel

FIELD CHARACTERISTICS: A deciduous shrub 1-4 m. in height. The alternate leaves are simple, coarsely toothed and ovate. New leaves are pubescent, but lose their hairs as they age. The leaves have 3-6 pairs of lateral veins and are 2-3 cm. long. Twigs have woody, cone-like pistillate catkins, supported by a short, 5-10 mm. long peduncle. The pistillate catkins are conspicuous over the winter. Fruit is a small (ca 2 x 3 mm.) winged nutlet.

ECOLOGICAL NOTES: Bog birch is a distinctive shrub of bogs, the edges of conifer swamps and occasionally calcareous fens, sometimes forming large colonies. The birches readily form hybrids and bog birch is no exception. The hybrid *B. glandulifera* x *sandbergii* is common in our bogs.

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

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BOG WILLOW

(*Salix pedicellaris* Pursh.)

WILLOW FAMILY (Salicaceae) **C of C:** Native (8) **IND. STATUS:** OBL

FIELD CHARACTERISTICS: A small, erect, deciduous shrub usually 1-2 m. high. Branches are few to none. Leaves are oblong, elliptical-oblong or obovate, 2-6 cm. long by 0.6-2 cm. wide with an acute to rounded apex. Margins of the leaves are entire, sometimes revolute. Upper leaf surfaces are dark green and net-veined while lower surfaces are pale green or gray-green. Male catkins are 0.5-2 cm. long; female catkins are 1.3-3 cm. long. In flower May to early June.

ECOLOGICAL NOTES: Bog willow is found in moderately to weakly acidic peatlands including coniferous bogs, coniferous swamps, shrub swamps and sedge meadows. It does not tolerate shading or crowding by larger woody plants and tends to occur under openings in the canopy.

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

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DRAGON'S-MOUTH

(*Arethusa bulbosa* L.)

ORCHID FAMILY (Orchidaceae) **IND. STATUS:** OBL

C of C: Native (10); listed as a species of special concern in Wisconsin

FIELD CHARACTERISTICS: A perennial herb with a stem 7-36 cm. in height. The single leaf is linear-lanceolate and up to 18 cm. long and 3-8 mm. wide. A single flower is produced with rose-purple sepals that are linear oblong to narrowly elliptical and 2.5-4.5 cm. long by 4.5-8 mm. wide. Petals are similar but are shorter and wider. The lip is pink with rose-purple markings and a crest of yellow bristles. The lip is oblong, curves downward, and 2.6-3.8 cm. long. In flower late May-July.

ECOLOGICAL NOTES: Dragon's-mouth typically occurs in northern coniferous swamps and bogs particularly where there are gaps in the canopy. It also occurs on floating mats and in sedge meadows with acidic peat soils.

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

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PINK LADY'S-SLIPPER

(*Cypripedium acaule* Ait.)

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

FIELD CHARACTERISTICS: A perennial herb 14-44 cm. in height. Two basal leaves per stem are produced. Leaves are elliptical to obovate, 9-23 cm. long and 2.5-9 cm. wide. Flowers are solitary with sepals 2.5-4 cm. long and greenish to brown to purple in color. Petals are 2.8-4.5 cm. long and similar in color to the sepals. A large, inflated lip (pouch) is 3.3-6 cm. long and pink to purple in color. In flower late May to mid-July.

ECOLOGICAL NOTES: Pink, or stemless, lady's-slipper is found in shaded, acidic and nutrient-poor habitats. It is found in a wide variety of northern plant communities including bogs as well as upland forests of mixed oak, pine and aspen.

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