



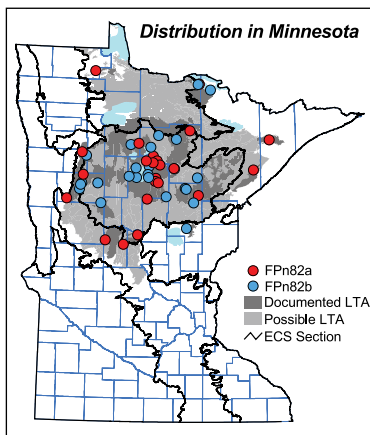
Northern Rich Tamarack Swamp (Western Basin)

Tamarack-dominated swamps on moderately deep to deep peat in basins on glacial till or outwash deposits, or occasionally along the margins of large peatlands on glacial lake plains or on floating mats along lake or river shores.

Vegetation Structure & Composition

Description is based on summary of vascular plant data from 52 plots (relevés) and bryophyte data from 12 plots.

- **Moss layer** typically has > 50% cover and is characterized by hummocks and, often, water filled-hollows. Typically dominated by *Sphagnum* and mat-forming feathermosses on hummocks and brown mosses in wet hollows.
- **Forb layer** has variable cover. Typical species include three-leaved false Solomon's seal (*Smilacina trifolia*), dwarf raspberry (*Rubus pubescens*), marsh cinquefoil (*Potentilla palustris*), and tufted loosestrife (*Lysimachia thyrsiflora*). Common marsh marigold (*Caltha palustris*), crested fern (*Dryopteris cristata*), Canada mayflower (*Maianthemum canadense*), starflower (*Trientalis borealis*), northern marsh fern (*Thelypteris palustris*) and great water dock (*Rumex orbiculatus*) are also common.
- **Graminoid layer** is variable but typically has between 5–50% cover. Soft-leaved sedge (*Carex disperma*), bluejoint (*Calamagrostis canadensis*), and bristle-stalked sedge (*C. leptalea*) are usually present.
- **Low-shrub layer** is characterized by ericaceous shrubs, usually with > 5% cover. Labrador tea (*Ledum groenlandicum*) is most important along with small cranberry (*Vaccinium oxycoccos*). Leatherleaf (*Chamaedaphne calyculata*) and bog rosemary (*Andromeda glaucophylla*) are common.
- **Tall-shrub layer** usually has > 25% cover and is dominated by bog birch (*Betula pumila*) and speckled alder (*Alnus incana*). Willows, especially bog willow (*Salix pedicellaris*), and red-osier dogwood (*Cornus sericea*), although less abundant, are common.
- **Understory trees** are sparse and commonly include black spruce and tamarack. Red maple, paper birch, white cedar, and balsam fir are occasionally present.
- **Canopy** is patchy to interrupted (25–75% cover) and dominated by tamarack, commonly with black spruce and occasionally with white cedar.



Landscape Setting & Soils

FPn82 typically occurs in peat-filled basins on glacial till and outwash deposits, and less commonly on the outer margins of larger peatlands on glacial lake plains. FPn82 also occurs on floating mats along shores of lakes and rivers that are not affected by flooding. Soils are well-decomposed, saturated peat, typically > 15in (40cm) deep. Surface water pH ranges from 5.5 to 7.8. FPn82 is often associated with Northern Rich Spruce Swamp (Basin) (FPn62), Northern Very Wet Ash Swamp (WFn64), and Northern Rich Alder Swamp (FPn73).

Natural History

In FPn82, plants root in peat that is low in nutrients but remains in contact with mineral-influenced groundwater and surface runoff from adjacent uplands. The pH of surface waters is circumneutral, and groundwater is stagnant, without significant lateral flow. The water table is usually below the surface but subject to oscillations throughout the year. The sites



where FPn82 occurs—small peat-filled basins and the margins of large peatlands—burned occasionally in the past during periods of severe drought, most likely from spread of fire from fire-dependent forests or woodlands on surrounding uplands. An analysis of Public Land Survey records indicates the historic rotation of catastrophic fires in FPn82 was about 360 years. Because of structurally weak soils and shallow root systems, trees in the community are somewhat susceptible to windthrow, with a historic rotation for catastrophic windthrow of about 430 years. Small-scale disturbances resulting in partial mortality of the canopy were occasional, with a rotation of about 80 years, and are presumed to have involved both patchy windthrow of individual trees or small groups of trees and surface fires.

Similar Native Plant Community Classes

• FPn81 Northern Rich Tamarack Swamp (Water Track)

FPn81 is similar to FPn82, with a patchy to interrupted (25–75% cover) canopy usually dominated by tamarack. FPn81 is wetter, however, and is associated with rich fen water tracks in large glacial lake peatlands. In FPn81, speckled alder and bluejoint (*Calamagrostis canadensis*) are rare and have < 5% cover, while FPn82 is likely to have at least 5% cover of speckled alder or bluejoint.

FPn82 Indicator Species	(freq%)		FPn81 Indicator Species	(freq%)	
	FPn82	FPn81		FPn82	FPn81
Red maple (U)	48	-	Flattened spikerush (<i>Eleocharis compressa</i>)	-	20
Meadow horsetail (<i>Equisetum pratense</i>)	29	-	Sweet gale (<i>Myrica gale</i>)	2	25
Common strawberry (<i>Fragaria virginiana</i>)	21	-	Fringed brome (<i>Bromus ciliatus</i>)	2	25
Paper birch (C,U)	44	5	Lesser-panicked sedge (<i>Carex diandra</i>)	2	25
Speckled alder (<i>Alnus incana</i>)	69	10	Sparse-fruited sedge (<i>Carex tenuiflora</i>)	12	75
Spinulose shield fern or Glandular wood fern*	33	5	Round-leaved sundew (<i>Drosera rotundifolia</i>)	8	45
Lake sedge (<i>Carex lacustris</i>)	48	10	Arctic raspberry (<i>Rubus acaulis</i>)	12	55
Lowbush blueberry (<i>Vaccinium angustifolium</i>)	40	10	Labrador bedstraw (<i>Galium labradoricum</i>)	13	55

* Spinulose shield fern or Glandular wood fern (*Dryopteris carthusiana* or *D. intermedia*)

• FPn72 Northern Rich Tamarack Swamp (Eastern Basin)

FPn72 occurs in peat-filled basins and is dominated by tamarack but appears to be restricted to areas south and east of FPn82 in the WSU. Because of geography, FPn72 has more species characteristic of peatlands east of Minnesota in Wisconsin and Michigan, such as winterberry (*Ilex verticillata*) and swamp holly (*Nemopanthus mucronatus*), while FPn82 has more species characteristic of peatlands in northern Minnesota and Canada.

FPn82 Indicator Species	(freq%)		FPn72 Indicator Species	(freq%)	
	FPn82	FPn72		FPn82	FPn72
White cedar (C,U)	40	-	Swamp holly (<i>Nemopanthus mucronatus</i>)	-	43
Meadow horsetail (<i>Equisetum pratense</i>)	29	-	Yellow birch (C,U)	2	36
Candle-lantern sedge (<i>Carex limosa</i>)	23	-	American elm (C,U)	2	36
Fen wiregrass sedge (<i>Carex lasiocarpa</i>)	21	-	Royal fern (<i>Osmunda regalis</i>)	2	36
Fowl manna grass (<i>Glyceria striata</i>)	21	-	Winterberry (<i>Ilex verticillata</i>)	8	79
Marsh bellflower (<i>Campanula aparinoides</i>)	46	7	Virginia creeper (<i>Parthenocissus</i> spp.)	8	43
Long-leaved chickweed (<i>Stellaria longifolia</i>)	37	7	Juneberries (<i>Amelanchier</i> spp.)	19	64
Bog rosemary (<i>Andromeda glaucophylla</i>)	60	14	Fly honeysuckle (<i>Lonicera canadensis</i>)	12	36

Native Plant Community Types in Class

• FPn82a Rich Tamarack - (Alder) Swamp

Tamarack-dominated swamps commonly with black spruce. Low, ericaceous shrubs usually have > 25% cover, especially leatherleaf and Labrador tea. Species that help to differentiate FPn82a from FPn82b include leatherleaf, creeping sedge (*Carex chordorrhiza*), bog laurel (*Kalmia polifolia*), northern red oak, bog willow, and silvery sedge (*C. canescens*). Vascular species diversity is moderate (< 45 species per 400m² plot). Surface water is moderately mineral-rich, with pH ranging from 5.5 to 7.1. Description is based on summary of vegetation data from 26 plots.

• FPn82b Extremely Rich Tamarack Swamp

Tamarack-dominated swamps, often with black spruce, white cedar, and deciduous trees such as paper birch, red maple, or black ash. Species that help to differentiate FPn82b from FPn82a include red-osier dogwood, twinflower (*Linnaea borealis*), sweet-



scented bedstraw (*Galium triflorum*), common marsh marigold, naked miterwort (*Mitella nuda*), marsh skullcap (*Scutellaria galericulata*), tall northern bog orchid (*Platanthera hyperborea*), and showy lady's slipper (*Cypripedium reginae*). Vascular species diversity is high (> 45 species per 400m² plot). The pH of surface water ranges from 7.1 to 7.6. FPn82b is typically associated with discharge areas at bases of slopes or adjacent to Northern Cedar Swamps (FPn63). Description is based on summary of vegetation data from 26 plots.



photo by E.R. Rowe MN DNR

Becker County, MN



FPn82 Northern Rich Tamarack Swamp (Western Basin) — Species Frequency & Cover

	freq% cover	freq% cover
Forbs, Ferns & Fern Allies		
Three-leaved false Solomon's seal (<i>Smilacina trifolia</i>)	87	60
Dwarf raspberry (<i>Rubus pubescens</i>)	81	50
Tufted loosestrife (<i>Lysimachia thysiflora</i>)	75	48
Marsh cinquefoil (<i>Potentilla palustris</i>)	73	46
Common marsh mangold (<i>Caltha palustris</i>)	62	44
Canada mayflower (<i>Maianthemum canadense</i>)	62	38
Crested fern (<i>Dryopteris cristata</i>)	60	31
Northern marsh fern (<i>Thelypteris palustris</i>)	60	92
Starflower (<i>Trientalis borealis</i>)	58	73
Great water dock (<i>Rumex orbiculatus</i>)	56	63
Bulb-bearing water hemlock (<i>Cicuta bulbifera</i>)	50	60
Bunchberry (<i>Cornus canadensis</i>)	50	40
Marsh bellflower (<i>Campanula aparinoides</i>)	46	33
Water horsetail (<i>Equisetum fluviatile</i>)	44	23
Red-stemmed aster (<i>Aster puniceus</i>)	44	
Wild calla (<i>Calla palustris</i>)	42	
One-sided pyrola (<i>Pyrola secunda</i>)	42	90
Northern bugleweed (<i>Lycopus uniflorus</i>)	40	69
Big-leaf white violet or Northern white violet*	37	58
Stemless lady's slipper (<i>Cypripedium acaule</i>)	37	50
Long-leaved chickweed (<i>Stellaria longifolia</i>)	37	40
Buckbean (<i>Menyanthes trifoliata</i>)	35	37
Linear-leaved, Marsh, or Downy willow-herb**	33	25
Spinulose shield fern (<i>Dryopteris carthusiana</i>)	33	25
Sweet-scented bedstraw (<i>Galium triflorum</i>)	33	23
Twinflower (<i>Linnaea borealis</i>)	33	
Arrow-leaved toothumb (<i>Polygonum sagittatum</i>)	31	
Goldthread (<i>Coptis trifolia</i>)	29	
Pink shinleaf (<i>Pyrola asarifolia</i>)	29	
Meadow horsetail (<i>Equisetum pratense</i>)	29	
Cinnamon fern (<i>Osmunda cinnamomea</i>)	27	
Marsh skullcap (<i>Scutellaria galericulata</i>)	27	
Grasses & Sedges		
Soft-leaved sedge (<i>Carex disperma</i>)	62	
Bluejoint (<i>Calamagrostis canadensis</i>)		60
Bristle-stalked sedge (<i>Carex leptalea</i>)		50
Lake sedge (<i>Carex lacustris</i>)		48
Poor sedge (<i>Carex paupercula</i>)		46
Interior sedge (<i>Carex interior</i>)		44
Three-fruited bog sedge (<i>Carex trisperma</i>)		38
Creeping sedge (<i>Carex chordorrhiza</i>)		31
Low Shrubs		
Labrador tea (<i>Ledum groenlandicum</i>)		92
Small cranberry (<i>Vaccinium oxycoccos</i>)		73
Leatherleaf (<i>Chamaedaphne calyculata</i>)		63
Bog rosemary (<i>Andromeda glaucophylla</i>)		60
Lowbush blueberry (<i>Vaccinium angustifolium</i>)		40
Creeping snowberry (<i>Gaultheria hispida</i>)		33
Bog laurel (<i>Kalmia polifolia</i>)		23
Tall Shrubs		
Bog birch (<i>Betula pumila</i>)		90
Speckled alder (<i>Alnus incana</i>)		69
Red-osier dogwood (<i>Cornus sericea</i>)		58
Bog willow (<i>Salix pedicellaris</i>)		50
Dwarf alder (<i>Rhamnus alnifolia</i>)		40
Mountain fly honeysuckle (<i>Lonicera villosa</i>)		37
Pussy willow (<i>Salix discolor</i>)		25
Swamp gooseberry (<i>Ribes hirtellum</i>)		25
Sage-leaved willow (<i>Salix candida</i>)		23
Trees		
	Canopy freq% cover	Understory freq% cover
Tamarack	100	71
Black spruce	52	69
White cedar	31	40
Paper birch	19	44
Red maple	10	48
Balsam fir	10	38
Black ash	10	25

*Big-leaf white violet or Northern white violet (*Viola blanda* or *V. macloskeyi*) **Linear-leaved, Marsh, or Downy willow-herb (*Epilobium leptophyllum*, *E. palustre*, or *E. strictum*)