FPn63

Northern Cedar Swamp

White cedar-dominated swamps on wet peat soils. Often present in areas influenced by mineral-rich subsurface flow or groundwater seepage along the margins of uplands and peatlands.

Vegetation Structure & Composition

Description is based on summary of vascular plant data from 76 plots (relevés), and bryophyte data from 16 plots.

• Moss layer has > 50% cover and is characterized by hummocks and water-filled hollows. On hummocks, the dominant mosses are usually a mix of *Sphagnum* species and mat-forming brown mosses. Wet hollows are often colonized by brown mosses. Liverworts are common.

• Forb layer is variable but usually includes orchids such as small northern bog orchid (*Platanthera obtusata*), lesser rattlesnake plantain (*Goodyera repens*), and yellow lady's slipper (*Cypripedium calceolus*); species common in adjacent upland forests such as goldthread (*Coptis trifolia*), twinflower (*Linnaea borealis*), starflower (*Trientalis bo*-



realis), and naked miterwort (*Mitella nuda*); and dwarf raspberry (*Rubus pubescens*). • **Graminoid layer** is variable but commonly includes bristle-stalked sedge (*Carex leptalea*) and soft-leaved sedge (*C. disperma*).

• Low-shrub layer is dominated by ericaceous species, especially Labrador tea (Ledum groenlandicum), with creeping snowberry (Gaultheria hispidula) usually present.

• **Tall-shrub layer** is variable but commonly dominated by dwarf alder (*Rhamnus alnifolia*), red-osier dogwood (*Cornus sericea*), speckled alder (*Alnus incana*), and fly honeysuckle (*Lonicera canadensis*).

• **Understory trees** typically include white cedar and balsam fir, and occasionally black spruce and paper birch.

• **Canopy** cover is variable, ranging from interrupted to continuous (50–100%). Canopy is typically dominated by white cedar, with balsam fir and black spruce frequently present. Balsam fir and black spruce are occasionally dominant in the canopy and sometimes form patches within large white cedar–dominated swamps.

Landscape Setting & Soils

FPn63 develops on sites in or adjacent to peatland basins that are influenced by mineral-rich subsurface water flow. Typical settings include margins of stream and river channels and lake basins, bases of beach ridges, and margins of large peatlands. FPn63 is frequently transected by streams or is present at the heads of small streams. Soils range from shallow or deep peat to organic sediment. Surface water pH is typically close to neutral (> 6.0). Soils are saturated, and the water table is at the surface, except on higher hummocks and mounds over coarse woody debris. Water-filled hollows are present but frequently become dry during drought.

Natural History

FPn63 occurs where peat accumulation has started to limit direct access of shallowly rooted plants to nutrients in mineral soil. Because of proximity to uplands, however, the community receives groundwater (commonly in the form of seeps and subsurface flow) that has not been depleted of minerals by passing laterally for long distances through peat. As a result, the pH of surface water is close to neutral. The lateral flow also maintains high oxygen concentrations, causing organic-soil decomposition and formation of sapric peat banks, which are a significant microhabitat in the community



for liverworts. The ground surface is hummocky, with hummocks consisting of welldecomposed peat and coarse woody debris from windthrown trees. The tops of the hummocks are elevated above the water table, creating suitable habitat for white cedar, non-peat-forming *Sphagnum* species, and species otherwise sensitive to saturated conditions. The presence of varied microtopography and habitats—from well-aerated upper hummocks to moist hummock sides and wet hollows—contributes to relatively high species diversity in the community.

An analysis of Public Land Survey records indicates that catastrophic disturbances were rare in FPn63. Catastrophic fires rarely occurred in the community, with an estimated rotation of about 920 years. Because of structurally weak peaty soils and shallow root systems, trees in FPn63 are susceptible to windthrow, resulting in somewhat shorter rotations for both stand-regenerating catastrophic windthrow (about 600 years) and windthrow of small patches of canopy trees (about 380 years). In FPn63, individual cedar trees often have upward-curving boles, a result of being tipped (but not uprooted) by wind. Curved trees are less common in cedar-dominated communities on firmer substrates, such as Northern Wet Cedar Forests (WFn53) and Upland White Cedar Forests (FDn43c).

Similar Native Plant Community Classes • FPn62 Northern Rich Spruce Swamp (Basin)

FPn62 can be similar to FPn63 in northeastern Minnesota (see FPn63a below) on the rare occasion when black spruce is dominant in the canopy in FPn63.

EDn62 Indicator Encoico	(fre	q%)	EDn62 Indicator Spacios	(frec	1%)
renos inuicator species	FPn63	FPn62	renoz indicator species	FPn63	FPn62
Dwarf alder (Rhamnus alnifolia)	45	-	Tamarack (C,U)	10	57
Shining firmoss (Huperzia lucidula)	40	-	Bog laurel (Kalma polifolia)	5	23
Lesser rattlesnake plantain (Goodyera repens)	30	-	Stemless lady's slipper (Cyprepedium acaule)	5	23
Rattlesnake fern (Botrychium virginianum)	25	-	Red raspberry (Rubus idaeus)	10	33
Small northern bog orchid (Platanthera obtusata)	25	-	Cinnamon fern (Osmunda cinnamomea)	10	30
Naked miterwort (Mitella nuda)	90	7	Lowbush blueberry (Vaccinium angustifolia)	15	40
One-sided pyrola (Pyrola secunda)	60	7	Red maple (U)	20	50
Bristle-stalked sedge (Carex leptalea)	55	7	Black spruce (C)	60	100

WFn53 Northern Wet Cedar Forest

WFn53, like FPn63, has a tree canopy dominated by white cedar but WFn53 is drier and typically occurs on mucky mineral soil or shallow peat over mineral soil rather than on deep peat. WFn53 is more likely to have deciduous tree species in the canopy, especially black ash and paper birch. *Sphagnum* generally is not abundant in WFn53, and mosses, when present, are restricted to hummocks and logs. In comparison, deciduous tree species are uncommon in FPn63, occurring only in the understory when present, and FPn63 usually has a continuous or nearly continuous ground layer of *Sphagnum* or feathermoss.

EDm62 Indicator Encoico	(fre	q%)	WEnE2 Indicator Encoico	(free	q%)
renos indicator species	FPn63	WFn53	wrn53 indicator Species	FPn63	WFn53
Poor sedge (Carex paupercula)	47	2	Nodding trillium (Trillium cernuum)	-	40
Small cranberry (Vaccinium oxycoccos)	50	4	Jack-in-the-pulpit (Arisaema triphyllum)	-	23
Tamarack (U)	20	2	White spruce (C,U)	4	38
Labrador bedstraw (Galium labradoricum)	28	4	Black ash (C)	8	61
Pussy willow (Salix discolor)	25	4	Long beech fern (Phegopteris connectilis)	5	40
Pink shinleaf (Pyrola asarifolia)	33	6	Long-stalked sedge (Carex pedunculata)	9	47
Heart-leaved twayblade (Listera cordata)	28	5	Alpine enchanter's nightshade (Circaea alpina)	14	71
Mountain fly honeysuckle (Lonicera villosa)	29	8	Rose twistedstalk (Streptopus roseus)	14	43

Native Plant Community Types in Class • FPn63a White Cedar Swamp (Northeastern)

White cedar-dominated swamps on wet peat in small, often linear peat basins along streams and drainageways on shallow till plains and on scoured bedrock terrain. On rare occasions, the canopy can be dominated by black spruce. Paper birch is often present in the canopy; other deciduous tree species are occasionally present. Species that help to distinguish FPn63a from other community types in the class include bristly clubmoss



(Lycopodium annotinum) and white turtlehead (Chelone glabra), which are commonly present, and shining firmoss (Huperzia lucidula), bladder sedge (Carex intumescens), and Canada vew (Taxus canadensis), which are infrequent but more likely to occur in FPn63a than in other types in the class. FPn63a has been documented mainly in the eastern part of the NSU. Description is based on summary of vegetation data from 19 plots.

FPn63b White Cedar Swamp (Northcentral)

White cedar- or, occasionally, black spruce-dominated swamps on wet peat in small basins, typically associated with stream channels or adjacent to lakes. Species that help to distinguish FPn63b from other community types in the class include tufted loosestrife (Lysimachia thyrsiflora), wild calla (Calla palustris), long-leaved chickweed (Stellaria longifolia), and Labrador bedstraw (Galium labradoricum). FPn63b has been documented in small peatlands in the MDL, the southeastern MOP, and the Voyageurs National Park area of the NSU. Description is based on summary of vegetation data from 42 plots.

FPn63c White Cedar Swamp (Northwestern)

White cedar- or, occasionally, black spruce-dominated swamps on wet peat, most commonly in seepage areas at the bases of beach ridges. Species that help to distinguish FPn63c from other community types in the class include lingonberry (Vaccinium vitisidaea), gaywings (Polygala paucifolia), red baneberry (Actaea rubra), and northern comandra (Geocaulon lividum). FPn63c is restricted to the large peatlands of the Agassiz Lake Plains in the MOP and the easternmost portion of the LAP in northwestern Minnesota. Description is based on summary of vegetation data from 15 plots.



Roseau County, MN



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	freq% c	over				free	1% CC	over
orbs, Ferns & Fern Allies			arasses & Sedges					
Goldthread (Coptis trifolia)	97	٠	Soft-leaved sedge (Carex dis	sperma)		72	-	i
Dwarf raspberry (Rubus pubescens)	93	:	Bristle-stalked sedge (Carex	leptalea)		22	~	:
Twinflower (Linnaea borealis)	63	•	Three-fruited bog sedge (Car	'ex trisperma)		47	~	i
Bunchberry (Cornus canadensis)	93	:	Poor sedge (Carex paupercu	ila)		4		•
Naked miterwort (Mitella nuda)	92	:	Bluejoint (Calamagrostis can	adensis)		4		:
Starflower (Trientalis borealis)	92	•	Fowl manna grass (Glyceria	striata)		Ř	~	•
Three-leaved false Solomon's seal (Smilacina trifolia)	87	:	Interior sedge (Carex interior)			56	<i>(</i> 0	:
Sweet-scented bedstraw (Galium triflorum)	78	•	Drooping woodreed (Cinna la	atifolia)		S		•
Bluebead lily (Clintonia borealis)	62	•	ow Shrubs					
Canada mayflower (Maianthemum canadense)	59	•	Labrador tea (Ledum groenla	andicum)		æ	~	:
Common marsh marigold (Caltha palustris)	59	٠	Creeping snowberry (Gaulthe	eria hispidula)		52	~	•
Wild sarsaparilla (Aralia nudicaulis)	47	•	Small cranberry (Vaccinium c	oxycoccos)		20	~	•
Common strawberry (Fragaria virginiana)	45	٠	Velvet-leaved blueberry (Vac	cinium myrtilloides)		ĕ	•	•
One-sided pyrola (Pyrola secunda)	45	•	Lowbush blueberry (Vacciniu	m angustifolium)		3	~	•
One-flowered pyrola (Moneses uniflora)	42	•	all Shrubs					
Crested fem (Dryopteris cristata)	37	٠	Speckled alder (Alnus incana	(8		89	~	i
Red-stemmed aster (Aster puniceus)	37	٠	Dwarf alder (Rhamnus alnifol	lia)		89	~	•
Rattlesnake fern (Botrychium virginianum)	37	•	Red-osier dogwood (Cornus	sericea)		89	~	•
Common oak fern (Gymnocarpium dryopteris)	37	٠	Fly honeysuckle (Lonicera ca	anadensis)		46	<i>(</i> 0	•
Showy lady's slipper (Cypripedium reginae)	36	•	Swamp fly honeysuckle (Loni	icera oblongifolia)		ÿ	~	•
Northern marsh fern (Thelypteris palustris)	34	•	Juneberries (Amelanchier spi	p.)		ĕ	~	•
Pink shinleaf (Pyrola asarifolia)	33	•	Mountain fly honeysuckle (Lo	nicera villosa)		3	•	•
Lesser rattlesnake plantain (Goodyera repens)	33	٠	Swamp red currant (Ribes tri	ste)		5	<i>(</i> 0	•
Small northern bog orchid (Platanthera obtusata)	32	•	Pussy willow (Salix discolor)			32		•
Kidney-leaved violet (Viola renifolia)	30	•						
Big-leaf white violet or Northern white violet*	29	•	rees C	anopy	Unders	tory		
Heart-leaved twayblade (Listera cordata)	28	٠	freq	% cover	freq%	cover		
Labrador bedstraw (Galium labradoricum)	28	•	White cedar 92	:	83	:		
Tall northem bog orchid (Platanthera hyperborea)	26	٠	Balsam fir 67	:	89	•		
Lady fem (Athyrium filix-femina)	26	•	Black spruce 59	:	45	:		
Large-leaved aster (Aster macrophyllus)	26	•	Paper birch 22	•	46	•		
Spotted Joe pye weed (Eupatorium maculatum)	25	•	Tamarack 14	:	20	•		
Yellow lady's slipper (Cypripedium calceolus)	25	•	Black ash 8	:	37	•		
Northem bualeweed (Lycopus uniflorus)	24	•	Red maple 4	•	26	•		

*Big-leaf white violet or Northern white violet (Viola blanda or V. macloskeyi)



FORESTED RICH PEATLAND SYSTEM Northern Floristic Region