



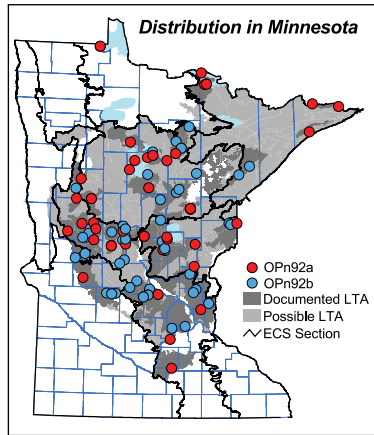
## Northern Rich Fen (Basin)

Open peatlands on deep, well-decomposed peat or floating peat mats in basins, often adjacent to lakes and ponds. Dominated by fine-leaved graminoids or shrubs.

### Vegetation Structure & Composition

Description is based on summary of vegetation data from 102 plots (relevés) and moss data from 9 bryophyte plots.

- **Moss** cover ranges from absent to continuous and frequently is dominated by *Sphagnum*, although brown mosses can also be dominant.
- **Graminoid** cover is > 50% and dominated by fine-leaved sedges, especially fen wiregrass sedge (*Carex lasiocarpa*), with creeping sedge (*C. chordorrhiza*) and bluejoint (*Calamagrostis canadensis*) occasionally present. Beaked sedge (*Carex utriculata*) is dominant on some sites.
- **Forb** cover is variable. Species commonly present include marsh cinquefoil (*Potentilla palustris*), northern marsh fern (*Thelypteris palustris*), marsh St. John's wort (*Triadenum fraseri*), tufted loosestrife (*Lysimachia thyrsiflora*), and marsh bellflower (*Campanula aparinoides*).
- **Shrub** cover is typically sparse but is occasionally > 25%. Bog willow (*Salix pedicularis*) is typically present, with other willow species and bog birch (*Betula pumila*) occasionally present.
- **Tree** cover is usually absent, although some sites have sparse cover of stunted tamarack.



### Landscape Setting & Soils

OPn92 typically occurs in peatland basins, often adjacent to lakes and ponds. The most common landforms are glacial moraines and till plains. Substrates consist of either deep (> 15in [40cm]), well-decomposed (hemic) peat or floating mats composed of peat held together by plant roots and rhizomes.

### Natural History

OPn92 develops in wetland basins where peat is deep enough to isolate plant roots from contact with nutrients, but where groundwater is sufficiently mineral-rich to maintain circumneutral pH (> 5.5). The groundwater is usually stagnant, with minimal lateral movement of subsurface water through the peat. OPn92 also develops on floating mats along the margins of lakes and ponds that have circumneutral water chemistry. (In more acidic lakes, floating mats along margins tend to support poor fen rather than rich fen communities.) The extent of water level fluctuations in OPn92 is unclear, but floristically OPn92 appears transitional between Northern Rich Fen (Water Track) (OPn91), which occurs in settings with very stable water levels, and Northern Wet Meadow/Carr (WMn82), which occurs in settings with highly variable water levels. This suggests that OPn92 may be subjected to moderate fluctuations in water level.

### Similar Native Plant Community Classes

#### • OPn91 Northern Rich Fen (Water Track)

OPn91 has fine-leaved sedges, bog birch (*Betula pumila*), minerotrophic indicator species, and a ground cover of *Sphagnum* and is similar to occurrences of OPn92 with significant cover of *Sphagnum* (OPn92b). OPn91, however, typically occurs in large



peatland water tracks rather than in peatland basins or on floating mats. OPn91 is more likely to have boreal peatland species such as lead-colored sedge (*Carex livida*), flattened spikerush (*Eleocharis compressa*), and seaside arrowgrass (*Triglochin maritima*), with minerotrophic *Sphagnum* species as dominant mosses on hummocks and aquatic brown mosses in hollows. OPn92 is more likely to have wet meadow species such as marsh St. John's wort, broad-leaved arrowhead (*Sagittaria latifolia*), beaked sedge (*Carex utriculata*), and lake sedge (*C. lacustris*). The dominant moss species in OPn92 include less minerotrophic brown mosses such as *Drepanocladus aduncus* or *Sphagnum* species in the section Subsecunda.

OPn92 Indicator Species	(freq%)		OPn91 Indicator Species	(freq%)	
	OPn92	OPn91		OPn92	OPn91
Broad-leaved arrowhead ( <i>Sagittaria latifolia</i> )	40	-	Lead-colored sedge ( <i>Carex livida</i> )	-	79
Beaked sedge ( <i>Carex utriculata</i> )	36	-	Kalm's lobelia ( <i>Lobelia kalmii</i> )	-	26
Large cranberry ( <i>Vaccinium macrocarpon</i> )	34	-	Shrubby cinquefoil ( <i>Potentilla fruticosa</i> )	-	21
Lake sedge ( <i>Carex lacustris</i> )	34	-	English sundew ( <i>Drosera anglica</i> )	-	21
Three-way sedge ( <i>Dulichium arundinaceum</i> )	28	-	Tufted bulrush ( <i>Scirpus cespitosus</i> )	-	21
Steeplebush ( <i>Spiraea tomentosa</i> )	24	-	Flattened spikerush ( <i>Eleocharis compressa</i> )	2	50
Speckled alder ( <i>Alnus incana</i> )	3	2	Hudson Bay bulrush ( <i>Scirpus hudsonianus</i> )	2	26
Marsh St. John's wort ( <i>Triadenum fraseri</i> )	68	6	Seaside arrowgrass ( <i>Triglochin maritima</i> )	4	48

### • OPn81 Northern Shrub Shore Fen

OPn81, like OPn92, can occur in peatland basins and on floating mats adjacent to ponds and streams, but unlike OPn92, the vegetation in OPn81 is subjected to periodic inundation, either because of oscillations in lake- or stream-water levels or from surface runoff channeled through peatlands. In OPn81, the shrub layer is dominated by leatherleaf (*Chamaedaphne calyculata*), bog birch, speckled alder (*Alnus incana*), and sweet gale (*Myrica gale*), the graminoid layer is usually dominated by broad-leaved sedges such as lake sedge (*Carex lacustris*)—although fine-leaved sedges may be dominant in OPn81 in areas where sweet gale is abundant—and moss cover is dominated by minerotrophic *Sphagnum*. In OPn92, the shrub layer is dominated by willows, the graminoid layer is usually dominated by fine-leaved sedges such as fen wiregrass sedge (*Carex lasiocarpa*), and moss cover is dominated by either minerotrophic *Sphagnum* or minerotrophic brown mosses.

OPn92 Indicator Species	(freq%)		OPn81 Indicator Species	(freq%)	
	OPn92	OPn81		OPn92	OPn81
Intermediate bladderwort ( <i>Utricularia intermedia</i> )	25	-	Balsam fir (U)	1	21
Broad-leaved arrowhead ( <i>Sagittaria latifolia</i> )	25	-	White Pine (U)	3	21
Labrador bedstraw ( <i>Galium labradoricum</i> )	28	2	Black spruce (C,U)	7	40
Prairie sedge ( <i>Carex prairea</i> )	18	2	Labrador tea ( <i>Ledum groenlandicum</i> )	9	35
Clustered muhly grass ( <i>Muhlenbergia glomerata</i> )	18	2	Three-leaved false Solomon's seal ( <i>Smilacina trifolia</i> )	7	26
Slender cottongrass ( <i>Eriophorum gracile</i> )	22	5	Speckled alder ( <i>Alnus incana</i> )	23	81
Creeping sedge ( <i>Carex chordorrhiza</i> )	42	14	Leatherleaf ( <i>Chamaedaphne calyculata</i> )	28	88
Fen wiregrass sedge ( <i>Carex lasiocarpa</i> )	91	35	Balsam willow ( <i>Salix pyrifolia</i> )	17	49

## Native Plant Community Types in Class

### • OPn92a Graminoid Rich Fen (Basin)

Graminoid- or shrub-dominated fens with *Sphagnum* cover typically < 25% and often absent. Forb species that help to differentiate OPn92a from OPn92b include linear-leaved, marsh, or downy willow-herb (*Epilobium leptophyllum*, *E. palustre*, or *E. strictum*), marsh skullcap (*Scutellaria galericulata*), and three-cleft bedstraw (*Galium trifidum*). Description is based on summary of vegetation data from 52 plots.

### • OPn92b Graminoid - Sphagnum Rich Fen (Basin)

Graminoid or shrub-dominated fens with *Sphagnum* cover > 50% and often nearly continuous. Ericaceous shrubs are usually present, including bog rosemary (*Andromeda glaucophylla*), Labrador tea (*Ledum groenlandicum*), small cranberry (*Vaccinium oxycoccos*), and leatherleaf, along with red-osier dogwood (*Cornus sericea*) and speckled alder. Forb species that differentiate OPn92b from OPn92a include bog goldenrod (*Solidago uliginosa*), three-leaved false Solomon's seal (*Smilacina trifolia*), poor sedge (*Carex paupercula*), and pitcher plant (*Sarracenia purpurea*). Description is based on summary of vegetation data from 50 plots.



photo by T.J. Whitfield MN DNR

Pope County, MN



### OPn92 Northern Rich Fen (Basin) – Species Frequency & Cover

	freq %	cover		freq %	cover
<b>Forbs, Ferns &amp; Fern Allies</b>					
Marsh cinquefoil ( <i>Potentilla palustris</i> )	70	•	Slender cottongrass ( <i>Eriophorum gracile</i> )	22	•
Northern marsh fern ( <i>Thelypteris palustris</i> )	65	•••	Prairie sedge ( <i>Carex prairea</i> )	18	•••
Tufted loosestrife ( <i>Lythrum alba</i> / <i>hyssiflora</i> )	59	•	Clustered mully grass ( <i>Muhlenbergia glomerata</i> )	17	••
Marsh St. John's wort ( <i>Triadenum fraseri</i> )	59	•	Three-way sedge ( <i>Bulichium arundinaceum</i> )	18	••
Northern blueweed ( <i>Lycopus uniflorus</i> )	48	•	Silvery sedge ( <i>Carex canescens</i> )	16	••
Marsh bellflower ( <i>Campanula aparinoides</i> )	44	•	Candle-lantern sedge ( <i>Carex limosa</i> )	15	••
Linear-leaved, Marsh, or Downy willow-herb*	42	•	Woodgrass ( <i>Scirpus cyperinus</i> )	14	•
Bog aster ( <i>Aster borealis</i> )	35	•	Slender sedge ( <i>Carex echinata</i> )	13	••
Round-leaved sundew ( <i>Drosera rotundifolia</i> )	35	•	Twin bentgrass ( <i>Agrostis hyemalis</i> )	11	•
Water horsetail ( <i>Equisetum fluviatile</i> )	32	••	Tall cottongrass ( <i>Eriophorum polystachion</i> )	11	••
Bulb-bearing water hemlock ( <i>Cicuta bulbifera</i> )	31	•	Poor sedge ( <i>Carex paupercula</i> )	10	•
Labrador bedstraw ( <i>Galium labradoricum</i> )	28	•	<b>Low Shrubs</b>		
Intermediate bladderwort ( <i>Utricularia intermedia</i> )	25	•	Leatherleaf ( <i>Chamaedaphne calyculata</i> )	28	•••
Marsh skullcap ( <i>Scutellaria galericulata</i> )	25	•	Large cranberry ( <i>Vaccinium macrocarpon</i> )	18	•••
Broad-leaved arrowhead ( <i>Sagittaria latifolia</i> )	25	••	Bog rosemary ( <i>Andromeda glaucophylla</i> )	14	••
Great water dock ( <i>Rumex orbiculatus</i> )	24	••	Small cranberry ( <i>Vaccinium oxycoccos</i> )	12	•••
Northern blue flag ( <i>Iris versicolor</i> )	18	•	Labrador tea ( <i>Ledum groenlandicum</i> )	9	•
Crested fern ( <i>Dryopteris cristata</i> )	18	•	<b>Tall Shrubs</b>		
Buckbean ( <i>Menyanthes trifoliata</i> )	17	••	Bog willow ( <i>Salix pedicellaris</i> )	50	•
Dwarf raspberry ( <i>Rubus pubescens</i> )	14	•	Bog birch ( <i>Betula pumila</i> )	40	•••
Spotted Joe pye weed ( <i>Eupatorium maculatum</i> )	13	•	Slender willow ( <i>Salix petiolaris</i> )	39	•
Wild calla ( <i>Calla palustris</i> )	12	••	Speckled alder ( <i>Alnus incana</i> )	23	•••
Bog goldenrod ( <i>Solidago uliginosa</i> )	12	•	Sage-leaved willow ( <i>Salix candida</i> )	18	•
Arrow-leaved toothwort ( <i>Polygonum sagittatum</i> )	11	•	Meadowsweet ( <i>Spiraea alba</i> )	18	•
Big-leaf white violet or Northern white violet**	11	•	Pussy willow ( <i>Salix discolor</i> )	17	•
Common marsh marigold ( <i>Callitha palustris</i> )	10	•	Balsam willow ( <i>Salix pyrifolia</i> )	17	•
Pitcher plant ( <i>Sarracenia purpurea</i> )	10	•	Red-osier dogwood ( <i>Cornus sericea</i> )	15	•
<b>Grasses &amp; Sedges</b>					
Fen wiregrass sedge ( <i>Carex lasiocarpa</i> )	91	••••	Sleepbush ( <i>Spiraea tomentosa</i> )	13	•••
Creeping sedge ( <i>Carex chordeorrhiza</i> )	42	••	Autumn willow ( <i>Salix serotina</i> )	10	•
Bluejoint ( <i>Calamagrostis canadensis</i> )	35	••	<b>Tree Seedlings or Saplings (&lt; 6ft)</b>		
Beaked sedge ( <i>Carex utriculata</i> )	32	•••	Tamarack	26	••
Lake sedge ( <i>Carex lasustris</i> )	31	•••	Paper birch	15	•
Interior sedge ( <i>Carex interior</i> )	25	••	Red maple	12	•
			<b>Canopy Trees (&gt; 6ft)</b>		
			Tamarack	11	••

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