WMs83

Southern Seepage Meadow/Carr

Open wetlands dominated by a dense cover of hummock-forming broadleaved sedges or tall shrubs. Present in areas of groundwater seepage along streams and drainage ways, on sloping terraces, and at bases of slopes.

Vegetation Structure & Composition

Description is based on summary of vegetation data from 63 plots (relevés).

• **Moss** cover is typically absent, although brown mosses may be present.

• Graminoid cover is interrupted to continuous (50–100%); typically dominated by tussock sedge (*Carex stricta*) or aquatic sedge (*C. aquatilis*) with bluejoint (*Calamagrostis canadensis*), lake sedge (*C. lacustris*), prairie sedge (*C. prairea*), woolly sedge (*C. pellita*), and fowl manna grass (*Glyceria striata*) common. Hairy-fruited sedge (*Carex trichocarpa*) is dominant on some sites.

• Forb cover is variable (5–75%); common species include spotted Joe pye weed (Eupatorium maculatum), great water dock (Rumex orbiculatus), common boneset (Eupatorium perfoliatum), marsh bellflower



(Campanula aparinoides), red-stemmed aster (Aster puniceus), swamp milkweed (Asclepias incarnata), northern and cut-leaved bugleweeds (Lycopus uniflorus and L. americanus), common marsh marigold (Caltha palustris), giant sunflower (Helianthus giganteus), and touch-me-nots (Impatiens spp.)

• Shrub cover is variable. Tall shrubs, if present, include red-osier dogwood (*Cornus sericea*), pussy willow (*Salix discolor*), slender willow (*S. petiolaris*), and Bebb's willow (*S. bebbiana*).

Landscape Setting & Soils

WMs83 is typically associated with groundwater seepage areas at bases of river terraces or beach ridges, on gentle slopes, or on bottomlands between steep bluffs. It also can occur in level wetlands dissected by streams and rivers that may be fed by groundwater discharge. Surface water is derived primarily from groundwater sources and has neutral to basic pH, reflecting the surrounding calcareous till and bedrock substrate. Soils range from mineral or muck soil to sapric peat. Organic sediments range from very shallow to greater than 36in (100cm) in depth.

Natural History

WMs83 is associated with wetlands influenced by lateral groundwater flow, in contrast to the gravitational water of basins of other wet meadow communities. WMs83 may experience moderate inundation following spring runoff and heavy rains, and periodic drawdowns during summer or as a result of fluctuations in groundwater seepage related to precipitation trends. Water levels are high and persistent enough to prevent trees (and often shrubs) from becoming established, although standing water may be absent by the end of the growing season. Because of water-level fluctuations, surface substrates alternate between aerobic and anaerobic conditions. Organic matter that accumulates over time on the substrate surface is usually oxidized during drought-influenced drawdowns or is removed by fire during periods of severe drought. In basins where water flow becomes stabilized, accumulation of peat may cause succession of WMs83 to rich fen; otherwise, the constant inputs of minerals from groundwater flow that typically influence the community, along with warm climatic conditions and frequent drawdown, prevent succession of WMs83 to rich fen.



Frequent fires in the surrounding landscape may be an important factor in reducing the presence of shrubs or accumulation of peat in the community. The lack of a distinct shade-tolerant flora in occurrences of WMs83 dominated by shrubs may be due to historically high fire frequency, which prevents shrubs from becoming established in any one place for very long. It is possible that shrub-dominated areas are more frequent now than in the past because of fire suppression over the past 100–150 years.

Similar Native Plant Community Classes WMs92 Southern Basin Wet Meadow/Carr

WMs92 occurs in small, shallow basins in far western and southern Minnesota and can be similar to WMs83. WMs92 is more likely to have slough sedge (*Carex atherodes*) as a dominant graminoid and tends to occur in basins isolated from lateral groundwater flow. WMs83 is more likely to have abundant willows and other shrubs and is present in basins influenced by lateral groundwater flow.

WMs83 Indicator Species	(fre) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	q%) WMcQ2	WMs92 Indicator Species	(fred) WMc83	1%) WMc92
Prairie sedge (Carex prairea)	33		Slough sedge (Carex atherodes)	-	93
Flat-topped aster (Aster umbellatus)	32		Whiteton (Scolochlog festucacea)		41
Virginia mountain mint (Reananthamum virginianum	1 20	-	Biver bulruch (Seirnus fluviatilia)		14
Northern march forn (Theluptoria polyotria)	20		Large vellow water growfact. (Depuneulus flabellari	-	10
Dworf reaphorne (Pubuo puboocono)	30	-	Cient bur rood (Sporgonium ourvoorpum)	<i>y</i> -	14
Dwain aspberry (Rubus pubescens)	21		Water emertured (Sparganium eurycarpum)	00	70
Porcupine sedge (Carex hystericina)	25	-	water smartweed (Polygonum amphibium)	22	79
Common boneset (Eupatorium perfoliatum)	51	3	Water parsnip (Sium suave)	10	31
Northern bugleweed (Lycopus uniflorus)	44	3	Germander (Teucrium canadense)	6	21

WMp73 Prairie Wet Meadow/Carr

WMp73 occurs in small basins in the far western and southern parts of the state and can be similar to WMs83. WMp73, unlike WMs83, tends to occur in basins isolated from lateral water flow from streams or groundwater and generally has few if any shrubs.

WMs83 Indicator Species	(fre) WMs83	q%) WMp73	WMp73 Indicator Species	(free WMs83	а%) WMp73
Great water dock (Rumex orbiculatus)	59	-	Silverweed (Potentilla anserina)	-	33
Broad-leaved cattail (Typha latifolia)	36	-	Flattened spikerush (Eleocharis compressa)	2	25
Lake sedge (Carex lacustris)	33	-	Foxtail barley (Hordeum jubatum)	2	25
Northern marsh fern (Thelypteris palustris)	30	-	Baltic rush (Juncus arcticus)	5	63
Marsh skullcap (Scutellaria galericulata)	27	-	Clasping dogbane (Apocynum sibiricum)	5	38
Swamp thistle (Cirsium muticum)	25	-	Prairie loosestrife (Lysimachia quadriflora)	6	42
Touch-me-not (Impatiens spp.)	42	4	Narrow reedgrass (Calamagrostis stricta)	16	88
Common boneset (Eupatorium perfoliatum)	50	8	Prairie cordgrass (Spartina pectinata)	17	83

WMn82 Northern Wet Meadow/Carr

WMn82 and WMs83 can be similar when dominated by tussock sedge (WMn82b2 vs. WMs83a1) and their ranges overlap in the MIM, southern MDL, western WSU, northern CGP, and LAP. Unlike WMs83a1, WMn82b2 has not been recorded on sloping terraces or at bases of slopes where groundwater seepage is present.

WMs83 Indicator Species	(fre WMs83	q%) WMn82	WMn82 Indicator Species	(free WMs83	4%) WMn82
Fowl manna grass (Glyceria striata)	38	-	Marsh cinquefoil (Potentilla palustris)	-	58
Virginia mountain mint (Pycnanthemum virginianur	n) 36	-	Marsh St. John's wort (Triadenum fraseri)	-	29
Stemless blue violets*	34	-	Bog willow (Salix pedicellaris)	-	19
Woolly sedge (Carex pellita)	30	-	Speckled alder (Alnus incana)	2	26
American, Purple-leaved, or Northern willow-herb**	23	-	Rough cinquefoil (Potentilla norvegica)	2	19
Porcupine sedge (Carex hystericina)	32	3	Fen wiregrass sedge (Carex lasiocarpa)	6	39
Spotted water hemlock (Cicuta maculata)	26	3	Bulb-bearing water hemlock (Cicuta bulbifera)	9	52
Tall meadow-rue (Thalictrum dasycarpum)	45	6	Crested fern (Dryopteris cristata)	6	35

Stemless blue violets (Viola nephrophylla and similar Viola spp.) **American, Purple-leaved, or Northern willow-herb (Epilobium ciliatum, E. coloratum, or E. glandulosum)

OPp91 Prairie Rich Fen

OPp91 is somewhat similar to WMs83 but is strongly dominated by narrow-leaved sedges that do not form tall hummocks and is more likely to have small shrubs such as sage-leaved willow (*Salix candida*) rather than tall shrubs.



WET MEADOW/CARR SYSTEM Southern Floristic Region

WMs83 Indicator Species	(fre) 0.083	q%) OPp91	OPp91 Indicator Species	(free WMs83	1%) OPp91
Virginia mountain mint (Pycnanthemum virginianun	1) 30	1	Lead-colored sedge (Carex livida)	-	39
Touch-me-not (Impatiens spp.)	42	2	Marsh St. John's wort (Triadenum fraseri)	-	31
Common boneset (Eupatorium perfoliatum)	50	2	Kalm's lobelia (Lobelia kalmii)	-	30
Dwarf raspberry (Rubus pubescens)	27	2	Marsh cinquefoil (Potentilla palustris)	-	27
Great water dock (Rumex orbiculatus)	59	4	Bog willow (Salix pedicellaris)	-	23
Tussock sedge (Carex stricta)	58	5	Flattened spikerush (Eleocharis compressa)	2	41
Tall meadow-rue (Thalictrum dasycarpum)	33	3	Shrubby cinquefoil (Potentilla fruticosa)	2	29
Prairie sedge (Carex prairea)	33	3	Fen wiregrass sedge (Carex lasiocarpa)	6	90

OPp93 Prairie Extremely Rich Fen

OPp93 also occurs on sloping terraces and at bases of slopes with obvious, concentrated areas of seepage and can appear similar to WMs83. OPp93 is more likely to have visible areas of upwelling water and small shallow pools with marl deposits. WMs83 is often present on the outer margins of OPp93. OPp93 is more likely to have small shrubs such as such as sage-leaved willow and bog birch (*Betula pumila*) rather than tall shrubs, and generally lacks sedge species that form tall hummocks.

WMs83 Indicator Species	(fre WMs83	q%) OPn93	OPp93 Indicator Species	(frec	1%) OPn93
· ·	1111300	01 000	•	*****	01 000
Common mint (Mentha arvensis)	28	-	Sterile sedge (Carex sterilis)	-	76
Fowl bluegrass (Poa palustris)	36	1	Kalm's lobelia (Lobelia kalmii)	-	58
Lake sedge (Carex lacustris)	33	1	American grass-of-Parnassus (Parnassia glauca)	-	58
Tufted loosestrife (Lysimachia thyrsiflora)	31	1	Marsh arrowgrass (Triglochin palustris)	-	38
Water smartweed (Polygonum amphibium)	22	1	Hair-like beak rush (Rhynchospora capillacea)	-	28
Great water dock (Rumex orbiculatus)	59	5	Mat muhly grass (Muhlenbergia richardsonis)	2	69
Touch-me-not (Impatiens spp.)	42	6	Riddell's goldenrod (Solidago riddellii)	2	45
Bluejoint (Calamagrostis canadensis)	45	9	Seaside arrowgrass (Triglochin maritima)	3	49

WFs57 Southern Wet Ash Swamp

WFs57 can be similar to occurrences of WMs38 in groundwater seepage areas in forested settings (WFs57a vs. WMs83a3). In these settings, the two classes typically grade into one another and share many common wetland species, including common marsh marigold, fowl manna grass, and interior sedge (*Carex interior*). WFs57 is generally present where seepage zones are small and the tree canopy is dense enough to favor shade-tolerant species in the understory such as jack-in-the-pulpit (*Arisaema triphyllum*), wood nettle (*Laportea canadensis*), and wild geranium (*Geranium maculatum*). WMs83 is present where seepage zones create large enough openings in the canopy to favor shade-intolerant species in the understory such as tussock sedge (*Carex stricta*), spotted Joe pye weed, and white turtlehead (*Chelone glabra*). WFs57 and WMs83 are most difficult to differentiate in seepage areas characterized by sparse cover of black ash trees.

Native Plant Community Types in Class

WMs83a Seepage Meadow/Carr

WMs83a is the only community type recognized in this class at present; it is divided into three subtypes, based on dominant species. WMs83a1 is the most abundant of the three subtypes; WMs83a3 is not well documented and appears to be uncommon. WMs83a has been documented in the PPL, MIM, LAP, CGP, RRV, and WSU.

O WMs83a1 Tussock Sedge Subtype

Open, graminoid-dominated meadows. WMs83a1 differs from the other subtypes in WMs83a by the dominance of tussock sedge (*Carex stricta*) or, rarely, hairy-fruited sedge (*C. trichocarpa*). WMs83a1 is present throughout the EBF Province, although uncommon in some areas. Description is based on summary of vegetation data from 48 plots.

O WMs83a2 Aquatic Sedge Subtype

Open, graminoid-dominated meadows, often associated with calcareous fens (OPp93). WMs83a2 differs from the other subtypes in WMs83a by the dominance of aquatic sedge (*Carex aquatilis*), with interior sedge (*C. interior*), Sartwell's sedge (*C. sartwellii*), and hardstem bulrush (*Scirpus acutus*) also typical in the graminoid layer. Shrub cover is low with pussy willow and red-osier dogwood common, and sage-leaved willow and bog birch occasional. Common forbs include bog aster (*Aster borealis*), common marsh marigold, and bulb-bearing water hemlock (*Cicuta bulbifera*). WMs83a2b is present throughout the MIM and also present in the CGP, RRV, and



very locally in the PPL. Description is based on summary of vegetation data from 13 plots. O WMs83a3 Impatiens Subtype

Small, open, forb-dominated meadows in forested settings. WMs83a3 often differs from the other subtypes in WMs83a by being dominated by forbs and having low cover of sedges and other graminoids. WMs83a3 is often associated with Southern Wet Ash Swamps (WFs57), developing where areas of strong groundwater seepage create large gaps in the tree canopy and favor the presence of shade-intolerant species. WMs83a3 has been documented in seepage areas on terraces along streams and rivers in the MIM and PPL. Description is based on summary of vegetation data from 2 plots.



Lincoln County, MN

ŝ
۰ð
Frequency
- Species
5
w/Cari
Meado
Seepage
Southern
WMs83

ē

	freq% cover		freq%	cover
Grasses & Sedges		Linear-leaved, Marsh, or Downy willow-herb*	34	•
Tussock sedge (Carex stricta)	58 •••	Northern bog violet (Viola nephrophylla)	33	•
Bluejoint (Calamagrostis canadensis)	45 •••	Tall meadow-rue (Thalictrum dasycarpum)	33	•
Fowl bluegrass (Poa palustris)	36	Canada goldenrod (Solidago canadensis)	33	•
Lake sedge (Carex lacustris)	33	Tufted loosestrife (Lysimachia thyrsiflora)	31	•
Prairie sedge (Carex prairea)	33	Bog aster (Aster borealis)	31	•
Fowl manna grass (Glyceria striata)	31	Flat-topped aster (Aster umbellatus)	31	•
Woolly sedge (Carex pellita)	28	Virginia mountain mint (Pycnanthemum virginianum)	30	•
Aquatic sedge (Carex aquatilis)	25 ••••	Northern marsh fern (Thelypteris palustris)	30	:
Porcupine sedge (Carex hystericina)	25	Common mint (Mentha arvensis)	28	•
Redtop (Agrostis stolonifera)	23	Marsh skullcap (Scutellaria galericulata)	27	•
Fringed brome (Bromus ciliatus)	23	Dwarf raspberry (Rubus pubescens)	27	:
Red-stalked spikerush (Eleocharis palustris)	22	Swamp thistle (Cirsium muticum)	25	•
Interior sedge (Carex interior)	22	Eastern panicled aster (Aster lanceolatus)	23	•
Dark green or Pale bulrush (Scirpus atrovirens or S. pallidus)	•	Water smartweed (Polygonum amphibium)	22	:
Sartwell's sedge (Carex sartwellii)	17 •••	Spotted water hemlock (Cicuta maculata)	20	•
Prairie cordgrass (Spartina pectinata)	17 •••	American, Purple-leaved, or Northern willow-herb**	20	•
Clustered muhly grass (Muhlenbergia glomerata)	16	Labrador bedstraw (Galium labradoricum)	20	•
Awl-fruited sedge (Carex stipata)	16	Clearweed (Pilea spp.)	20	:
Narrow reedgrass (Calamagrostis stricta)	16 •••	Swamp lousewort (Pedicularis lanceolata)	20	•
Forbs, Ferns & Fern Allies		White turtlehead (Chelone glabra)	19	•
Spotted Joe pye weed (Eupatorium maculatum)	83	Woundwort (Stachys palustris)	19	•
Great water dock (Rumex orbiculatus)	59 •	Rough bugleweed (Lycopus asper)	17	:
Marsh bellflower (Campanula aparinoides)	56 •	Bulb-bearing water hemlock (Cicuta bulbifera)	16	•
Red-stemmed aster (Aster puniceus)	50	Blue vervain (Verbena hastata)	14	•
Common boneset (Eupatorium perfoliatum)	50	Starry false Solomon's seal (Smilacina stellata)	14	•
Swamp milkweed (Asclepias incarnata)	48	Sensitive fern (Onoclea sensibilis)	14	:
Giant goldenrod (Solidago gigantea)	47 •	Shrubs		
Northem bugleweed (Lycopus uniflorus)	44 •	Red-osier dogwood (Cornus sericea)	48	:
Touch-me-not (Impatiens spp.)	42 •••	Pussy willow (Salix discolor)	39	:
Common marsh marigold (Caltha palustris)	41 ••	Slender willow (Salix petiolaris)	27	:
Sunflower (Helianthus giganteus, H. grosseserratus, or H. nuttallii)	39	Bebb's willow (Salix bebbiana)	19	•
Cut-leaved bugleweed (Lycopus americanus)	9	Sage-leaved willow (Salix candida)	17	•
Marsh vetchling (Lathyrus palustris)	3 8	Bog birch (Betula pumila)	16	:
Broad-leaved cattail (Typha latifolia)	36 •••	Heart-leaved willow (Salix eriocephala)	14	:
				L

