



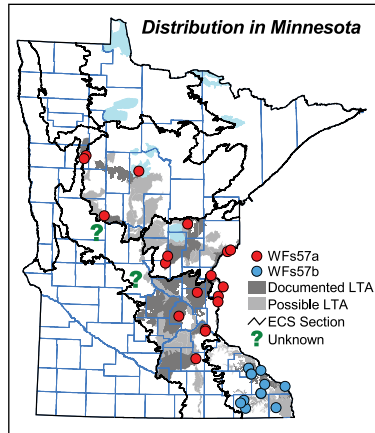
Southern Wet Ash Swamp

Wet hardwood forests on mucky or peaty soils in areas of groundwater seepage, most often on level stream or river terraces at bases of steep slopes. Community is uncommon and often present as small inclusions within larger forest areas.

Vegetation Structure & Composition

Description is based on summary of vegetation data from 32 plots (relevés)

- **Ground layer** is characterized by raised peaty hummocks, with open pools and rivulets in seepage areas. Wetland species such as common marsh marigold (*Caltha palustris*), touch-me-nots (*Impatiens* spp.), and fowl manna grass (*Glyceria striata*) are common in wet areas, with Virginia creeper (*Parthenocissus* spp.), jack-in-the-pulpit (*Arisaema triphyllum*), wood nettle (*Laportea canadensis*), wild geranium (*Geranium maculatum*), common enchanter's nightshade (*Circaea lutetiana*), tall coneflower (*Rudbeckia laciniata*), and other mesic or wet-mesic forest species present on hummocks. Skunk cabbage (*Symplocarpus foetidus*), false mermaid (*Floerkea proserpinacoides*), brome-like sedge (*Carex bromoides*), and smooth-sheathed sedge (*C. laevivaginata*) are sometimes abundant in seepage zones and in Minnesota are essentially restricted to this community.
- **Shrub layer** is sparse (5-25% cover). Black ash seedlings or saplings are almost always present, often with wild black currant (*Ribes americanum*), chokecherry (*Prunus virginiana*), and nannyberry (*Viburnum lentago*).
- **Subcanopy**, when present, is patchy to interrupted (25-75% cover) and generally not well differentiated from canopy.
- **Canopy** is patchy to interrupted, with trees often absent from localized areas of groundwater discharge and in some instances limited to margins of the community around open peaty upwelling zones. Tree canopy is strongly dominated by black ash, often with other hardwood species, especially basswood, sugar maple, and American elm. Yellow birch and bur oak are also sometimes present.



Landscape Setting & Soils

WFs57 occurs on strongly rolling to steeply dissected terrain where there is sufficient relief for groundwater to upwell or discharge laterally in springs or broad zones. Most often these seepage areas are present on level alluvial terraces below steep slopes with exposed bedrock aquifers; less often, they develop in regions of deep glacial drift where groundwater flows through highly permeable aquifers and emerges at the ground surface. In all settings, springheads and rivulets with continuously flowing cold groundwater are evident. Parent material is silty colluvium or alluvium capped by mucky peat. The organic cap is often thin and discontinuous in the southeastern blufflands and thicker to the north, where peat depths can exceed 40in (100cm). The underlying mineral soil is gray, indicating permanent saturation. Soils are poorly to very poorly drained. Soil-moisture regime is very moist to moderately wet. (WSU, MDL, MIM, PPL)

Natural History

In the past, catastrophic disturbances were rare in WFs57. The rotation of catastrophic windthrow is estimated to be about 630 years; there were no references to fire in the relevant Public Land Survey records. Events that result in partial loss of trees, especially



selective windthrow, were somewhat more common, with an estimated rotation of about 140 years. The historic records suggest there were only slight changes in tree dominance among age classes in the community, with succession consisting of minor changes in tree abundance around a constant base of black ash, which dominated all age classes. American elm and basswood were minor components in the 50-to-90-year age class, while small amounts of tamarack and white spruce were sometimes present in forests older than about 110 years in the northern part of the community's range. (Tamarack and white spruce are absent from most modern examples of the community.)

Similar Native Plant Community Classes

• FFn57 Northern Terrace Forest

Both communities commonly occur on stream terraces, where they can grade into one another. FFn57 often has abundant silver maple in the canopy with black ash and occurs in areas lacking evidence of groundwater seepage. WFS57 is strongly dominated by black ash and lacks silver maple in the canopy. On stream terraces, WFS57 is always associated with areas of groundwater seepage, as evidenced by the presence of rivulets and saturated peaty hummocks.

WFS57 Indicator Species	(freq%)		FFn57 Indicator Species	(freq%)	
	WFS57	FFn57		WFS57	FFn57
Fowl manna grass (<i>Glyceria striata</i>)	68	-	Prickly or Smooth wild rose*	-	27
Cleavers (<i>Galium aparine</i>)	45	-	Projecting sedge (<i>Carex projecta</i>)	-	27
Bulblet fern (<i>Cystopteris bulbifera</i>)	35	-	Canada anemone (<i>Anemone canadensis</i>)	-	25
Skunk cabbage (<i>Symplocarpus foetidus</i>)	35	-	Spinulose shield fern or Glandular wood fern**	-	25
Two-leaved miterwort (<i>Mitella diphylla</i>)	48	2	Silver maple (C,U)	3	50
Sugar maple (C,U)	61	4	Tall meadow-rue (<i>Thalictrum dasycarpum</i>)	13	67
Common marsh marigold (<i>Caltha palustris</i>)	68	6	Erect, Smooth, or Illinois carrion-flower***	16	75
Awl-fruited sedge (<i>Carex stipata</i>)	52	6	Nodding trillium (<i>Trillium cernuum</i>)	6	29

*Prickly or Smooth wild rose (*Rosa acicularis* or *R. blanda*) **Spinulose shield fern or Glandular wood fern (*Dryopteris carthusiana* or *D. intermedia*) ***Erect, Smooth, or Illinois carrion-flower (*Smilax ecirrata*, *S. herbacea*, or *S. illinoensis*)

• WFn55 Northern Wet Ash Swamp

WFn55, like WFS57, is most often dominated by black ash. WFn55 generally occurs to the north of WFS57, but the ranges of the two communities overlap in a broad zone along the boundary between the EBF and LMF provinces. WFn55 is most common in shallow basins and other sites where water ponds or pools; it is less commonly associated with groundwater discharge areas. WFS57 is always associated with groundwater discharge areas.

WFS57 Indicator Species	(freq%)		WFn55 Indicator Species	(freq%)	
	WFS57	WFn55		WFS57	WFn55
Crooked aster (<i>Aster prenanthoides</i>)	29	-	Spinulose shield fern or Glandular wood fern*	-	67
Wild geranium (<i>Geranium maculatum</i>)	65	1	Balsam fir (U)	3	54
Bulblet fern (<i>Cystopteris bulbifera</i>)	35	2	Common oak fern (<i>Gymnocarpium dryopteris</i>)	3	44
Cleavers (<i>Galium aparine</i>)	45	3	Bluebead lily (<i>Clintonia borealis</i>)	3	40
Virginia waterleaf (<i>Hydrophyllum virginianum</i>)	39	3	Mountain maple (<i>Acer spicatum</i>)	10	68
Clearweed (<i>Pilea</i> spp.)	29	3	Starflower (<i>Trientalis borealis</i>)	6	42
Skunk cabbage (<i>Symplocarpus foetidus</i>)	35	6	Naked miterwort (<i>Mitella nuda</i>)	10	56
Tall coneflower (<i>Rudbeckia laciniata</i>)	61	11	Woodland horsetail (<i>Equisetum sylvaticum</i>)	10	52

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

• FFs59 Southern Terrace Forest

FFs59 sometimes has abundant black ash in the canopy and can grade into WFS57 on stream terraces. FFs59 is more likely to have other tree species mixed with black ash in the canopy, including riparian species such as cottonwood and silver maple, and occurs on sites lacking evidence of groundwater seepage. WFS57 is always associated with groundwater seepage areas.

WFS57 Indicator Species	(freq%)		FFs59 Indicator Species	(freq%)	
	WFS57	FFs59		WFS57	FFs59
Fowl manna grass (<i>Glyceria striata</i>)	68	-	Cottonwood (C)	-	31
Awl-fruited sedge (<i>Carex stipata</i>)	52	-	Silver maple (C,U)	3	49
Sensitive fern (<i>Onoclea sensibilis</i>)	48	-	Greenbrier (<i>Smilax tamnoides</i>)	3	34
Michigan lily (<i>Lilium michiganense</i>)	39	-	Ontario aster (<i>Aster ontariensis</i>)	3	29
Skunk cabbage (<i>Symplocarpus foetidus</i>)	35	-	Aniseroot (<i>Osmorhiza longistylis</i>)	6	46
Common marsh marigold (<i>Caltha palustris</i>)	68	3	Box elder (C)	10	66
Lady fern (<i>Athyrium filix-femina</i>)	58	6	Hackberry (C,U)	10	60
Two-leaved miterwort (<i>Mitella diphylla</i>)	48	9	Woodmint (<i>Blephilia hirsuta</i>)	3	20



- **WMs83 Southern Seepage Meadow/Carr**

WMs83, like WFs57, develops in groundwater seepage areas, and the two classes share many common wetland species, including common marsh marigold, fowl manna grass, and interior sedge (*Carex interior*). WMs83, however, is typically an open wetland community with few trees and is dominated by large, often tussock-forming sedges such as lake sedge (*Carex lacustris*), tussock sedge (*C. stricta*), and aquatic sedge (*C. aquatilis*), with the latter two species absent from WFs57. WMs83 and WFs57 are most difficult to differentiate in seepage areas characterized by sparse or patchy cover of black ash trees or where trees are restricted to the margins of large upwelling zones.

- **WFs55 Southern Wet Aspen Forest**

The range of WFs55 overlaps with WFs57 in southern and western Minnesota. WFs55 is dominated by quaking aspen with only scattered black ash, while WFs57 is almost always dominated by black ash and has little if any quaking aspen. WFs55 is not as wet as WFs57 and is more likely to have species characteristic of dry-mesic to mesic woodlands and wet meadows such as gray dogwood (*Cornus racemosa*), false melic grass (*Schizachne purpurascens*), and Hayden's sedge (*Carex haydenii*). WFs57 is more likely to have shallow open pools and wetland plants such as marsh marigold, fowl manna grass, and brome-like sedge (*Carex bromoides*) in the ground layer.

Native Plant Community Types in Class

- **WFs57a Black Ash - (Red Maple) Seepage Swamp**

Canopy is dominated by black ash, often with basswood, especially in western Minnesota. Green ash, yellow birch, or paper birch are abundant in some stands. Species that can help to differentiate WFs57a from WFs57b include red maple and speckled alder (*Alnus incana*) in the understory, and sensitive fern (*Onoclea sensibilis*), Canada mayflower (*Maianthemum canadense*), dwarf raspberry (*Rubus pubescens*), pale bellwort (*Uvularia sessilifolia*), mad dog skullcap (*Scutellaria lateriflora*), starry false Solomon's seal (*Smilacina stellata*), northern bugleweed (*Lycopus uniflorus*), northern blue flag (*Iris versicolor*), white rattlesnakeroot (*Prenanthes alba*), lake sedge (*Carex lacustris*), and brome-like sedge (*Carex bromoides*) in the ground layer. In Minnesota, the rare species bog bluegrass (*Poa paludigena*) and American water pennywort (*Hydrocotyle americana*) are largely restricted to this community type. WFs57a occurs in seepage areas on alluvial terraces below steep slopes and on level sites and gradual slopes on rolling glacial moraines. WFs57a has been documented in the WSU, MDL, and MIM and likely also occurs in the CGP. Description is based on summary of vegetation data from 19 plots.

- **WFs57b Black Ash - Sugar Maple - Basswood - (Blue Beech) Seepage Swamp**

Canopy is dominated by black ash, often with sugar maple and basswood, and sometimes with American elm or yellow birch as codominants. Species that help to differentiate WFs57b from WFs57a include blue beech, pagoda dogwood (*Cornus alternifolia*), bulblet fern (*Cystopteris bulbifera*), crooked aster (*Aster prenanthoides*), hispid buttercup (*Ranunculus hispidus*), common false Solomon's seal (*Smilacina racemosa*), cut-leaved toothwort (*Cardamine concatenata*), agrimonies (*Agrimonia* spp.), false mermaid, false rue anemone (*Enemion biternatum*), hairy-leaved sedge (*Carex hirtifolia*), Virginia waterleaf (*Hydrophyllum virginianum*), appendaged waterleaf (*H. appendiculatum*), bottlebrush grass (*Elymus hystrix*), and smooth-sheathed sedge (*Carex laevivaginata*); in Minnesota, crooked aster, false mermaid, and smooth-sheathed sedge are largely restricted to this community type. WFs57b usually occurs on alluvial soils at the bases of steep bluffs, less commonly toward the middle of valley floors between bluffs, and rarely on bluff slopes. WFs57b is uncommon and is limited to the Blufflands Subsection of the PPL. Description is based on summary of vegetation data from 13 plots.



photo by M.D. Lee MN DNR

Wabasha County, MN



WFS57 Southern Wet Ash Swamp – Species Frequency & Cover

	freq% cover		freq% cover
Forbs, Ferns & Fern Allies			
Touch-me-not (<i>Impatiens</i> spp.)	97	•••	
Jack-in-the-pulpit (<i>Arisaema triphyllum</i>)	90	•••	
Wood nettle (<i>Laportea canadensis</i>)	81	•••	
Common marsh matrigold (<i>Galina palustris</i>)	68	•••	
Wild geranium (<i>Geranium maculatum</i>)	65	•••	
Common enchanter's nightshade (<i>Circaea luteolata</i>)	61	•••	
Tall coneflower (<i>Rudbeckia laciniata</i>)	61	•••	
Lady fern (<i>Athyrium filix-femina</i>)	58	•••	
White avens (<i>Gaum canadense</i>)	55	•••	
Sensitive fern (<i>Onoclea sensibilis</i>)	48	•••	
Clayton's sweet cicely (<i>Osmorhiza claytonii</i>)	48	•••	
Two-leaved miterwort (<i>Mitella diphylla</i>)	48	•••	
Wild ginger (<i>Asarum canadense</i>)	45	•••	
Sweet-scented bedstraw (<i>Galium triflorum</i>)	45	•••	
Cleavers (<i>Galium aparine</i>)	45	•••	
Hog peanut (<i>Amphicarpaea bracteata</i>)	45	•••	
Honewort (<i>Cryptotaenia canadensis</i>)	45	•••	
Early meadow-rue (<i>Thalictrum dioicum</i>)	42	•••	
Canada mayflower (<i>Maianthemum canadense</i>)	42	•••	
Ostrich fern (<i>Mattuccia struthiopteris</i>)	39	•••	
Zigzag goldenrod (<i>Solidago flexicaulis</i>)	39	•••	
Stinging nettle (<i>Urtica dioica</i>)	39	•••	
Michigan lily (<i>Lilium michiganense</i>)	39	•••	
Hispid buttercup (<i>Ranunculus hispidus</i>)	39	•••	
Virginia waterleaf (<i>Hydrophyllum virginianum</i>)	39	•••	
Dwarf raspberry (<i>Rubus pubescens</i>)	39	•••	
Hooked crowfoot (<i>Ranunculus recurvatus</i>)	35	•••	
Skunk cabbage (<i>Symplocarpus foetidus</i>)	35	•••	
Bulblet fern (<i>Cystopteris bulbifera</i>)	35	•••	
Field horsetail (<i>Equisetum arvense</i>)	32	•••	
Cleanweed (<i>Pilea</i> spp.)	29	•••	
Crooked aster (<i>Aster prenanthoides</i>)	29	•••	
Tall scouring rush (<i>Equisetum hyemale</i>)	23	•••	
False maidmaid (<i>Floerkea proserpinacoides</i>)	19	•••	
Grasses & Sedges			
Small-leaved water cross (<i>Rorippa nasturtium-aquaticum</i>)	10	•••	
Fowl mana grass (<i>Glyceria striata</i>)	69	•••	
Star-fruited sedge (<i>Carex stipata</i>)	52	•••	
Slurry sedge (<i>Carex rosea</i> or <i>C. radiata</i>)	39	•••	
Bland sedge (<i>Carex blanda</i>)	32	•••	
Gracelul sedge (<i>Carex gracillima</i>)	32	•••	
Lake sedge (<i>Carex lasustis</i>)	29	•••	
Brome-like sedge (<i>Carex bromoides</i>)	23	•••	
Smooth-sheathed sedge (<i>Carex laevivaginata</i>)	16	•••	
Interior sedge (<i>Carex interior</i>)	13	•••	
Climbing Plants			
Virginia creeper (<i>Parthenocissus</i> spp.)	94	•••	
Shrubs			
Wild black currant (<i>Ribes americanum</i>)	52	•••	
Chokecherry (<i>Prunus virginiana</i>)	45	•••	
Nannyberry (<i>Viburnum lentago</i>)	45	•••	
Pagoda dogwood (<i>Cornus alternifolia</i>)	35	•••	
Poison Ivy (<i>Toxicodendron rydbergii</i>)	32	•••	
Prickly gooseberry (<i>Ribes cynosbati</i>)	29	•••	
Speckled alder (<i>Alnus incana</i>)	26	•••	
Missouri gooseberry (<i>Ribes missouriense</i>)	23	•••	
Trees			
Black ash	97	•••	90
Basswood	58	•••	52
Sugar maple	39	•••	39
American elm	32	•••	45
Bur oak	23	•••	-
Yellow birch	19	•••	19
Paper birch	16	•••	-
Green ash	16	•••	13
Blue beech	13	•••	23
Northern red oak	-	•••	-