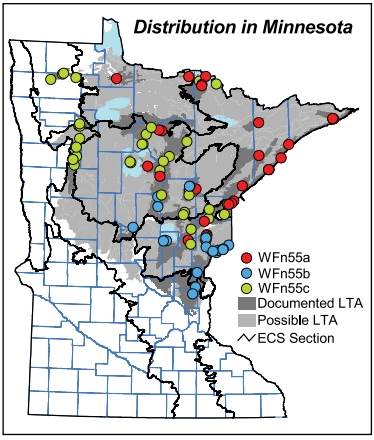
Northern Wet Ash Swamp

Wet hardwood forests on mucky mineral soils in shallow basins and groundwater seepage areas and on low, level terrain near rivers, lakes, or wetlands. Typically with standing water in the spring but draining by late summer.

Vegetation Structure & Composition

Description is based on summary of vegetation data from 90 plots (relevés)



- **Ground-layer** cover is continuous, with upland forest herbs on hummocks and decaying logs and around tree bases, and wetland forest species in pools and mucky hollows. Lady fern *(Athyrium filix-femina)*, dwarf raspberry *(Rubus pubescens)*, and alpine enchanter's nightshade *(Circaea alpina)* are common and often abundant in the ground layer. Moss cover is highly variable; brown mosses can be abundant in the ground layer where not shaded out by herbaceous plants.
- **Shrub-layer** cover is variable, ranging from patchy to interrupted (25–75%). Black ash is common, along with mountain maple *(Acer spicatum)* and sometimes with beaked hazelnut *(Corylus cornuta)*, chokecherry *(Prunus virginiana)*, or swamp red currant *(Ribes triste).*
- **Subcanopy** is patchy (25–50% cover), composed mainly of black ash. Other occasional tree species include American elm, balsam fir, basswood, red maple, yellow birch, quaking aspen, paper birch, sugar maple, and green ash.
- **Canopy** is interrupted to continuous (50–100% cover) and consists solely of black ash or black ash mixed with other hardwood species (especially red maple, quaking aspen, green ash, balsam poplar and, in some parts of the range of the class, yellow birch) or with white cedar.

Landscape Setting & Soils

WFn55 occurs in many types of landforms, most often in local drains; in groundwater seepage areas at toes of slopes and in association with beach and shoreline deposits of glacial lakes; and in narrow transition zones between peatlands and uplands. Parent material can be of almost any texture. Soils typically consist of 3–10in (8–25cm) of sapric peat over mineral soil, usually with a thin layer of muck at the soil surface. The underlying mineral soil is gray with bright mottles, indicating prolonged soil saturation with episodes of drying. Mucky hollows and saturated logs are common substrates for ground-layer plants; trees and tall shrubs are rooted in mineral soil. Soils are very poorly drained to poorly drained. Soil-moisture regime is moderately wet to very moist. (MOP, NSU, MDL, WSU, SSU, LAP, Hardwood Hills and Anoka Sand Plain in MIM)

Natural History

In the past, catastrophic disturbances were infrequent in WFn55. An analysis of Public Land Survey records indicates that the rotation of catastrophic fires was in excess of 1,000 years, and the rotation of catastrophic windthrow was about 370 years. Events that result in partial loss of trees, such as selective windthrow, were occasional, with a rotation of about 140 years. Based on the historic composition and age structure of these forests, WFn55 had three growth stages.

- **0–75 years**—Young forests recovering from wind, strongly dominated by black ash. Yellow birch, paper birch, quaking aspen, and balsam fir are occasional and peak during this stage.
- **75–195 years**—Mature forests dominated by black ash, mixed with some white

cedar, tamarack, and white spruce and less yellow and paper birch. Quaking aspen and balsam fir are rare.

- **> 195 years**—Very old forests similar to mature forests but with more tamarack, white spruce, and white cedar. Young balsam fir are occasional in the understory.

Similar Native Plant Community Classes

- **WFn64 Northern Very Wet Ash Swamp**

WFn64, like WFn55, usually is dominated by black ash. WFn64, however, is more likely to have conifers such as white cedar, balsam fir, or tamarack in the canopy or understory and abundant wetland grasses and sedges in the ground layer. WFn55 is more likely to have mesic forest trees such as sugar maple, basswood, green ash, quaking aspen, and balsam poplar in the canopy or understory, and mesic forest herbs in the ground layer. Pools and standing water are common and persistent over the summer in WFn64 but are usually absent by late summer in WFn55.

WFn55 Indicator Species	(freq%) ***WFn55***	(freq%) WFn64
Large-flowered bellwort *(Uvularia grandiflora)*	**18**	1
Rugulose or Yellow violet*	**27**	2
Clayton's sweet cicely *(Osmorhiza claytonii)*	**51**	6
Maryland black snakeroot *(Sanicula marilandica)*	**32**	7
Rose twistedstalk *(Streptopus roseus)*	**43**	10
Red baneberry *(Actaea rubra)*	**39**	9
Wild ginger *(Asarum canadense)*	**56**	13
Zigzag goldenrod *(Solidago flexicaulis)*	**20**	5

WFn64 Indicator Species	(freq%) WFn55	(freq%) ***WFn64***
Three-leaved false Solomon's seal**	1	**19**
Clearweed *(Pilea* spp.)	3	**21**
Water horsetail *(Equisetum fluviatile)*	3	**20**
Bristle-stalked sedge *(Carex leptalea)*	9	**48**
White turtlehead *(Chelone glabra)*	4	**23**
Northern marsh fern *(Thelypteris palustris)*	7	**33**
Tufted loosestrife *(Lysimachia thyrsiflora)*	8	**31**
Spotted Joe pye weed *(Eupatorium maculatum)*	13	**40**

*Rugolose or Yellow violet *(Viola canadensis* or *V. pubescens)* **Three-leaved false Solomon's seal *(Smilacina trifolia)*

- **MHn46 Northern Wet-Mesic Hardwood Forest**

MHn46 is similar to WFn55 mainly when MHn46 has abundant black ash in the tree canopy or has embedded slight, shallow depressions. MHn46 and WFn55 often grade into one another or occur within one another as inclusions on level, gently-sloping landforms. Pools and standing water are uncommon in MHn46, although soils are often saturated in the spring. Pools and standing water are typically present in WFn55 in spring, and WFn55 is more likely to support wetland species in the ground layer.

WFn55 Indicator Species	(freq%) ***WFn55***	(freq%) MHn46
Rough bedstraw *(Galium asprellum)*	**28**	1
Red-stemmed aster *(Aster puniceus)*	**34**	3
Fowl manna grass *(Glyceria striata)*	**51**	6
Mad dog skullcap *(Scutellaria lateriflora)*	**32**	4
Swamp thistle *(Cirsium muticum)*	**27**	4
Northern bugleweed *(Lycopus uniflorus)*	**37**	7
Common marsh marigold *(Caltha palustris)*	**37**	10
Speckled alder *(Alnus incana)*	**34**	10

MHn46 Indicator Species	(freq%) WFn55	(freq%) ***MHn46***
Round-lobed hepatica *(Anemone americana)*	2	**39**
Pennsylvania sedge *(Carex pensylvanica)*	9	**67**
Bracken *(Pteridium aquilinum)*	6	**38**
Mountain rice grass *(Oryzopsis asperifolia)*	8	**47**
Sugar maple (C)	4	**25**
Bur oak (C)	8	**35**
Ironwood (U)	9	**36**
Downy arrowwood *(Viburnum rafinesquianum)*	10	**40**

Native Plant Community Types in Class

- **WFn55a Black Ash - Aspen - Balsam Poplar Swamp (Northeastern)**

Wet-mesic to wet forests. Typically with black ash and other hardwood species as canopy dominants, occasionally with minor amounts of white spruce or white cedar. WFn55a includes some poorly drained quaking aspen forests, and most (if not all) occurrences of WFn55 in which balsam poplar is dominant in the canopy. Grasses and sedges are relatively important in the ground layer. Speckled alder *(Alnus incana)*, red raspberry *(Rubus strigosus)*, and bluejoint *(Calamagrostis canadensis)* are more common and abundant in WFn55a than in other community types in this class. When present, quaking aspen, balsam poplar, round-leaved dogwood *(Cornus rugosa)*, prickly or smooth wild rose *(Rosa acicularis* or *R. blanda)*, fringed loosestrife *(Lysimachia ciliata)*, panicled bluebells *(Mertensia paniculata)*, rugulose or yellow violet *(Viola canadensis* or *V. pubescens)*, and cow parsnip *(Heracleum lanatum)* are useful in differentiating WFn55a from the other community types in this class. WFn55a occurs in shallow basins and level to gently sloping groundwater seepage areas. WFn55a has been documented in the NSU, WSU, MDL, and MOP. Description is based on summary of vegetation data from 30 plots.

- **WFn55b Black Ash - Yellow Birch - Red Maple - Basswood Swamp (East-central)**

Wet forests. Canopy is typically dominated by black ash, usually with yellow birch and often with red maple as canopy codominants. WFn55b also includes swamps strongly dominated by red maple and a few swamps with relatively abundant white cedar, balsam fir, or white pine. WFn55b is distinguished from other community types in the class by the presence of yellow birch. White pine, black spruce seedlings, cinnamon fern *(Osmunda cinnamomea)*, goldthread (*Coptis trifolia)*, two-leaved miterwort *(Mitella diphylla)*, and bristle-stalked sedge *(Carex leptalea)* are also highly diagnostic when present. The distribution of WFn55b is limited to central and east-central Minnesota and is centered in the WSU; it has also been documented on the Anoka Sand Plain in the MIM and in the southern part of the MDL. Description is based on summary of vegetation data from 21 plots.

- **WFn55c Black Ash - Mountain Maple Swamp (Northern)**

Wet forests. Canopy is dominated by black ash, occasionally with small amounts of American elm, paper birch, basswood, quaking aspen, or green ash and occasionally with abundant white cedar. When present, tall coneflower *(Rudbeckia laciniata)*, interior sedge *(Carex interior)*, Philadelphia fleabane *(Erigeron philadelphicus)*, northern bedstraw *(Galium boreale)*, and northern marsh fern *(Thelypteris palustris)* help to distinguish WFn55c from other types in the class. WFn55c has been documented in the MDL, LAP, SSU, WSU, the northern part of the MIM, and the western part of the NSU; it is also likely to occur in the MOP. Description is based on summary of vegetation data from 39 plots.

photo by Tim Whitfeld, MN DNR

Ottertail County, MN

WFn55 Northern Wet Ash Swamp — Species Frequency & Cover

	freq%	cover
Forbs, Ferns & Fern Allies		
Lady fern *(Athyrium filix-femina)*	90	●●●
Dwarf raspberry *(Rubus pubescens)*	90	●●●
Sweet-scented bedstraw *(Galium triflorum)*	76	●
Touch-me-not *(Impatiens* spp.)	71	●●
Common strawberry *(Fragaria virginiana)*	70	●
Wild sarsaparilla *(Aralia nudicaulis)*	70	●
Spinulose shield fern or Glandular wood fern*	67	●
Canada mayflower *(Maianthemum canadense)*	62	●
Alpine enchanter's nightshade *(Circaea alpina)*	61	●●
Jack-in-the-pulpit *(Arisaema triphyllum)*	61	●
Naked miterwort *(Mitella nuda)*	56	●
Wild ginger *(Asarum canadense)*	56	●
Woodland horsetail *(Equisetum sylvaticum)*	52	●
Clayton's sweet cicely *(Osmorhiza claytonii)*	51	●
Side-flowering aster *(Aster lateriflorus)*	48	●
Common oak fern *(Gymnocarpium dryopteris)*	44	●
Rose twistedstalk *(Streptopus roseus)*	43	●
Starflower *(Trientalis borealis)*	42	●
Early meadow-rue *(Thalictrum dioicum)*	41	●
Bluebead lily *(Clintonia borealis)*	40	●
Sensitive fern *(Onoclea sensibilis)*	40	●●
Red baneberry *(Actaea rubra)*	39	●
Ostrich fern *(Matteuccia struthiopteris)*	38	●●●
Large-leaved aster *(Aster macrophyllus)*	38	●●
Nodding trillium *(Trillium cernuum)*	38	●
Common marsh marigold *(Caltha palustris)*	37	●
Wood anemone *(Anemone quinquefolia)*	37	●
Northern bugleweed *(Lycopus uniflorus)*	37	●
Red-stemmed aster *(Aster puniceus)*	34	●
Spotted water hemlock *(Cicuta maculata)*	34	●
Flat-topped aster *(Aster umbellatus)*	33	●
Meadow horsetail *(Equisetum pratense)*	29	●
Grasses & Sedges		
Graceful sedge *(Carex gracillima)*	63	●●
Bladder sedge *(Carex intumescens)*	57	●●
Fowl manna grass *(Glyceria striata)*	51	●
Long-stalked sedge *(Carex pedunculata)*	37	●●
Bluejoint *(Calamagrostis canadensis)*	37	●●
Awl-fruited sedge *(Carex stipata)*	29	●●
Starry sedge *(Carex rosea* or *C. radiata)*	29	●
Drooping woodreed *(Cinna latifolia)*	28	●
Woody Vines		
Virginia creeper (*Parthenocissus* spp.)	50	●
Low Shrubs		
Red raspberry *(Rubus idaeus)*	57	●●
Tall Shrubs		
Mountain maple *(Acer spicatum)*	68	●●●
Beaked hazelnut *(Corylus cornuta)*	67	●●
Chokecherry *(Prunus virginiana)*	52	●
Swamp red currant *(Ribes triste)*	52	●
Poison ivy *(Toxicodendron rydbergii)*	37	●
Speckled alder *(Alnus incana)*	34	●●
Swamp gooseberry *(Ribes hirtellum)*	32	●

Trees	Canopy		Subcanopy		Shrub Layer	
	freq%	cover	freq%	cover	freq%	cover
Black ash	91	●●●●	87	●●●	87	●●
Yellow birch	28	●●●	24	●●	21	●
Quaking aspen	26	●●●	21	●●	23	●
Paper birch	26	●●	20	●	13	●
Green ash	22	●●●	18	●●●	24	●●
Basswood	22	●●	28	●	34	●
Red maple	20	●●●	27	●●●	48	●
White cedar	18	●●●	9	●●	12	●
Balsam poplar	16	●●●	13	●●	19	●
American elm	16	●●	39	●●	58	●●
Balsam fir	14	●●●	31	●●	47	●
Bur oak	8	●●	12	●●	36	●
Sugar maple	-	-	20	●	23	●

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