



## Northern Mesic Hardwood (Cedar) Forest

Mesic hardwood and hardwood-conifer forests on sandy-loam soils in fire-protected sites on rugged, scoured bedrock terrain.

### Vegetation Structure & Composition

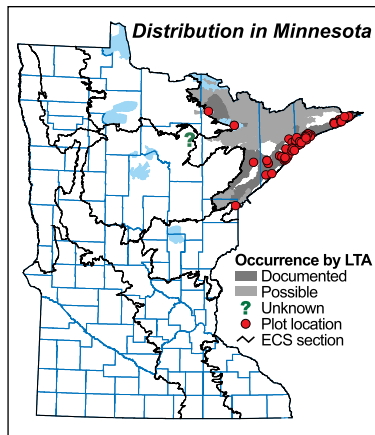
Description is based on summary of vegetation data from 88 plots (relevés).

- **Ground-layer** cover is usually <50%, with rose twistedstalk (*Streptopus roseus*), blue-bead lily (*Clintonia borealis*), wild sarsaparilla (*Aralia nudicaulis*), Canada mayflower (*Maianthemum canadense*), and starflower (*Trientalis borealis*) the most common species.

- **Shrub layer** usually has 50% to >75% cover. Sugar maple seedlings are common and abundant—especially where sugar maple is dominant in the canopy—with smaller amounts of mountain maple (*Acer spicatum*), beaked hazelnut (*Corylus cornuta*), choke-cherry (*Prunus virginiana*), and balsam fir.

- **Subcanopy** cover ranges from patchy (25-50%) to continuous (75-100%); sugar maple is the most frequent and abundant species.

- **Canopy** cover is variable, ranging from interrupted (50-75%) to continuous. Canopy is dominated by sugar maple, sometimes with yellow birch as a codominant; by paper birch and sugar maple; or by white cedar and yellow or heart-leaved birch, usually with some sugar maple. White spruce is often present, although seldom abundant.



### Landscape Setting & Soils

- **Scoured bedrock terrain**—Common. Present on moderate to steep slopes in rugged terrain. Parent material is a discontinuous mantle of non-calcareous, sandy-loam till, about 20-40in (50-100cm) thick, over bedrock. Lower soil horizons are dense and can perch snowmelt and rainfall but there is no indication of prolonged saturation. Soils are moderately well drained. Soil-moisture regime is moderately fresh. (North Shore Highlands in NSU)

### Natural History

In the past, catastrophic disturbances were exceedingly rare in MHn45. There is almost no evidence of catastrophic fire or windthrow in the Public Land Survey records relevant for this community. Events that result in partial loss of trees, such as light surface fires and patchy windthrow, were also uncommon and are estimated to have a rotation in excess of 1,000 years. Based on the historic composition and age structure of these forests, MHn45 had three growth stages separated by two periods of transition.

- **0-75 years**—Young forests recovering from fire or wind, composed of sugar maple mixed with yellow birch, paper birch, and balsam fir.

- **75-95 years**—A transition period marked by the decline of sugar maple, yellow birch, paper birch, and balsam fir, and an increase in white cedar and white spruce.

- **95-155 years**—Mature forests dominated by white cedar and white spruce. Sugar maple and yellow birch are co-dominant in the canopy and present in the understory.

- **155-195 years**—A transition period marked by the decline of paper birch and balsam fir to very low abundance. White cedar also declines and is replaced by white spruce.

- **>195 years**—Very old forests dominated by white spruce mixed with sugar maple, yellow birch, and white cedar.

### Similar Native Plant Community Classes

- **MHn35 Northern Mesic Hardwood Forest**

MHn35 can be similar to MHn45, especially when sugar maple is common in the canopy.



► **MHn35**—More likely to have basswood in the canopy and understory, northern red oak (especially in the understory), ironwood in the understory, and Pennsylvania sedge (*Carex pensylvanica*), large-flowered bellwort, pale bellwort (*Uvularia sessilifolia*), and round-lobed hepatica (*Anemone americana*) in the ground layer.

► **MHn45**—More likely to have mountain ash in the understory, red-berried elder (*Sambucus racemosa*) in the shrub layer, and spinulose shield fern or glandular wood fern (*Dryopteris carthusiana/intermedia* group), shining firmoss (*Huperzia lucidula*), nodding trillium (*Trillium cernuum*), thimbleberry (*Rubus parviflorus*), common oak fern (*Gymnocarpium dryopteris*), Carolina spring beauty (*Claytonia caroliniana*), and alpine enchanter's nightshade (*Circaea alpina*) in the ground layer.

#### ● **MHn47 Northern Rich Mesic Hardwood Forest**

MHn47 is similar to MHn45 when dominated by sugar maple, although the two classes have little geographical overlap, with MHn45 found primarily in the northeastern two-thirds of the North Shore Highlands Subsection in NSU, and MHn47 generally limited to the southwestern third.

► **MHn47**—More likely to have basswood and ironwood in the canopy and understory, and zigzag goldenrod (*Solidago flexicaulis*) in the ground layer.

► **MHn45**—More likely to have white spruce in the canopy, and Carolina spring beauty, thimbleberry, and panicked bluebells (*Mertensia paniculata*) in the ground layer.

### **Native Plant Community Types in Class**

#### ● **MHn45a Paper Birch - Sugar Maple Forest (North Shore)**

Canopy is dominated by sugar maple and paper birch (or sometimes quaking aspen), with occasional white spruce or balsam fir. When present, junberries (*Amelanchier* spp.), red maple in the understory, paper birch in the subcanopy, quaking aspen in the canopy, bristly clubmoss (*Lycopodium annotinum*), running clubmoss (*L. clavatum*), and velvet-leaved blueberry (*Vaccinium myrtilloides*) help to differentiate MHn45a from the other types in this class. Over time, MHn45a appears to succeed to MHn45c as paper birch senesces and sugar maple becomes more abundant in the canopy. MHn45a is concentrated in Lake and Cook Counties in the North Shore Highlands Subsection in NSU but also occurs in other parts of NSU on fire-protected sites. Description is based on summary of vegetation data from 19 plots.

#### ● **MHn45b White Cedar - Yellow Birch Forest**

Canopy is dominated by white cedar, typically with yellow birch, heart-leaved birch, or sugar maple as important components. Species that help to differentiate MHn45b from the other types in this class include white cedar in the canopy and understory, long beech fern (*Phegopteris connectilis*), Canada yew (*Taxus canadensis*), and interrupted fern (*Osmunda claytoniana*). Wet-mesic occurrences of MHn45b are often ecotonal between North Shore Lowland White Cedar Forests (WFN53a) and North Shore Sugar Maple Forests (MHn45c). MHn45b has been documented primarily in the North Shore Highlands Subsection but probably also occurs on scattered fire-protected sites in other parts of NSU. Description is based on summary of vegetation data from 16 plots.

#### ● **MHn45c Sugar Maple Forest (North Shore)**

Canopy is dominated by sugar maple, sometimes with yellow birch as a codominant. White spruce may be present in the canopy but is seldom abundant. Species that help to differentiate MHn45c from other community types in this class include Carolina spring beauty, yellow violet (*Viola pubescens*), pagoda dogwood (*Cornus alternifolia*), hairy Solomon's seal (*Polygonatum pubescens*), red-berried elder (*Sambucus racemosa*), and when present, Clayton's sweet cicely (*Osmorhiza claytonii*), rattlesnake fern (*Botrychium virginianum*), and big-leaf white or northern white violet (*Viola blanda/macloskeyi* group). MHn45c includes forests with high species diversity on nutrient-rich sites, as well as forests with fewer species on poorer sites. The richer forests tend to occur in drains and riparian areas along small streams and are more likely to have yellow birch in the canopy and lack conifer species. The poorer forests tend to occur on upper slopes and ridgetops. MHn45c has been documented only in the North Shore Highlands Subsection and adjacent portions of the Toimi Uplands Subsection in Lake and Cook Counties in NSU. Description is based on summary of vegetation data from 53 plots.





### MHn45 Northern Mesic Hardwood (Cedar) Forest – Species Frequency & Cover

	freq. % cover		freq. % cover	
<b>Forbs, Ferns &amp; Fern Allies</b>				
Bluebead lily ( <i>Dimorphia borealis</i> )	93	●●		
Rose twistedstalk ( <i>Streptopus roseus</i> )	92	●●		
Wild sarsaparilla ( <i>Aralia nudicaulis</i> )	90	●●		
Canada mayflower ( <i>Malianthemum canadense</i> )	85	●●		
Starflower ( <i>Trientalis borealis</i> )	83	●●		
Spirnolose shield fern or Glandular wood fern*	78	●●		
Large-leaved aster ( <i>Aster macrophyllus</i> )	71	●●		
Sweet-scented bedstraw ( <i>Galium triflorum</i> )	70	●●		
Lady fern ( <i>Athyrium filix-femina</i> )	60	●●		
Red or White haneberry ( <i>Actaea rubra</i> or <i>A. pachypoda</i> )	58	●●		
Hairy Solomon's seal ( <i>Polygonatum pubescens</i> )	54	●●		
Groundpine ( <i>Lycopodium dendroideum</i> or <i>L. hickeyi</i> )	53	●●		
Dwarf raspberry ( <i>Rubus pubescens</i> )	53	●●		
Nodding trillium ( <i>Trillium cernuum</i> )	49	●●		
Shining firmoss ( <i>Huperzia lucidula</i> )	47	●●		
Common oak fern ( <i>Gymnocarpium dryopteris</i> )	47	●●		
Rugulose or Yellow violet ( <i>Viola canadensis</i> or <i>V. pubescens</i> )	41	●●		
Wood anemone ( <i>Anemone quinquefolia</i> )	38	●●		
Long beech fern ( <i>Phegopteris connectilis</i> )	37	●●		
Alpine enchantler's nightshade ( <i>Circaea alpina</i> )	31	●●		
Carolina spring beauty ( <i>Claytonia caroliniana</i> )	30	●●		
Clayton's sweet cicely ( <i>Osmorhiza claytonii</i> )	30	●●		
Panicked bluebells ( <i>Mertensia paniculata</i> )	27	●●		
Rattlesnake fern ( <i>Botrychium virginianum</i> )	26	●●		
Big-leaf white violet or Northern white violet ( <i>Viola blanda</i> or <i>V. macloskeyi</i> )	24	●●		
Jack-in-the-pulpit ( <i>Arisaema triphyllum</i> )	22	●●		
Dutchman's breeches ( <i>Dicentra cucullaria</i> )	17	●●		
Bristly columbess ( <i>Lycopodium annotinum</i> )	17	●●		
Wild ginger ( <i>Asarum canadense</i> )	17	●●		
Stemless blue violets ( <i>Viola sororia</i> , <i>V. nephrophylla</i> , and similar <i>Viola</i> spp.)	17	●●		
Bunchberry ( <i>Cornus canadensis</i> )	16	●●		
Touch-me-not ( <i>Impatiens</i> spp.)	16	●●		
Common false Solomon's seal ( <i>Smilacina racemosa</i> )	15	●●		
<b>Grasses &amp; Sedges</b>				
Long-stalked sedge ( <i>Carex pedunculata</i> )	61	●●		
<b>Trees</b>				
Mountain rice grass ( <i>Oryzopsis asperifolia</i> )				55
Drooping wood sedge ( <i>Carex arctata</i> )				34
Bladder sedge ( <i>Carex intumescens</i> )				33
Dewey's sedge ( <i>Carex deweyana</i> )				32
Fine-nerved sedge ( <i>Carex leptoneura</i> )				20
Drooping woodreed ( <i>Cinna latifolia</i> )				19
Pennsylvania sedge ( <i>Carex pensylvanica</i> )				16
Bearded shortrush ( <i>Brachylepium erectum</i> )				13
<b>Low Shrubs</b>				
Thimbleberry ( <i>Rubus parviflorus</i> )				37
Red raspberry ( <i>Rubus idaeus</i> )				20
<b>Shrubs</b>				
Mountain maple ( <i>Acer spicatum</i> )				88
Beaked hazelnut ( <i>Corylus cornuta</i> )				75
Chokecherry ( <i>Prunus virginiana</i> )				59
Fly honeysuckle ( <i>Lonicera canadensis</i> )				56
Pagoda dogwood ( <i>Cornus alternifolia</i> )				36
Swamp red currant ( <i>Ribes frutie</i> )				35
Juneberry ( <i>Amenancher</i> spp.)				31
Red-berrid elder ( <i>Sambucus racemosa</i> )				30
Canada yew ( <i>Taxus canadensis</i> )				11
	<b>Canopy</b>	<b>Subcanopy</b>	<b>Shrub Layer</b>	
	freq. % cover	freq. % cover	freq. % cover	
Sugar maple	79	83	86	●●●●
Yellow birch	46	●●●●	●●●●	28
White spruce	41	●	31	●
Paper birch	38	●●●●	19	●●●
White cedar	35	●●●●	28	●●●●
Balsam fir	19	●●●●	34	●●●●
Red maple	16	●●●●	16	●●●●
Basswood	11	●●●●	7	●●●●
Black Ash	9	●	7	●
White pine	8	●●●●	2	●●
Quaking aspen	7	●●●●	4	●●
Mountain ashes	1	●	8	●

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