



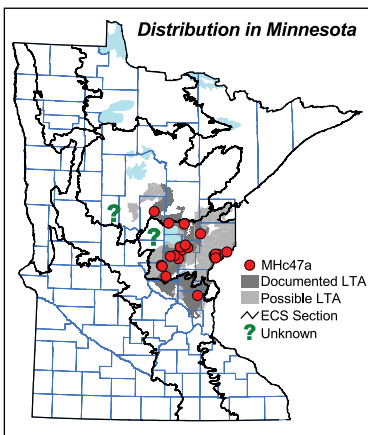
## Central Wet-Mesic Hardwood Forest

Wet-mesic hardwood forests on somewhat poorly drained sandy loam soils on till plains and stream terraces, often on broad flats and gentle slopes adjacent to wetlands and in ecotones between upland forests and wetlands. Soils are saturated for prolonged periods, either because of clayey subsoil horizons that impede drainage or because of high local water tables.

### Vegetation Structure & Composition

Description is based on summary of vegetation data from 23 plots (relevés).

- **Ground layer** typically is continuous (> 75% cover), with lady fern (*Athyrium filix-femina*) the most abundant species, and Clayton's sweet cicely (*Osmorhiza claytonii*) and early meadow-rue (*Thalictrum dioicum*) usually present. Large-leaved aster (*Aster macrophyllus*), sweet-scented bedstraw (*Galium triflorum*), and hog peanut (*Amphicarpaea bracteata*) are commonly present. Many grass and sedge species occur in the community, including nodding fescue (*Festuca subverticillata*), bearded shorthusk (*Brachyelytrum erectum*), stary sedge (*Carex rosea*), graceful sedge (*C. gracillima*), long-stalked sedge (*C. pedunculata*), Pennsylvania sedge (*C. pennsylvanica*), bladder sedge (*C. intumescens*), bottlebrush grass (*Elymus hystrix*), woodland millet grass (*Milium effusum*), and bland sedge (*C. blanda*).
- **Shrub layer** ranges from sparse to interrupted (25–75% cover). Beaked hazelnut (*Corylus cornuta*) is present in about 50% of sites and when present, is the most abundant shrub species. Other frequent species include chokecherry (*Prunus virginiana*), prickly gooseberry (*Ribes cynosbati*), and nannyberry (*Viburnum lentago*), along with black ash, basswood, northern red oak, sugar maple, red maple, and blue beech seedlings.
- **Subcanopy** is interrupted (50–75% cover), with sugar maple, basswood, and black ash the most abundant species. Other frequent subcanopy species include ironwood, blue beech, and bur oak.
- **Canopy** usually is interrupted (50–75% cover). Basswood, black ash, and bur oak are the most important canopy trees, often occurring with northern red oak, sugar maple, green ash, and red maple. When present, white pine may be an important canopy species.



### Landscape Setting & Soils

- **Till plains**—Common. Landscape is undulating with broad flats and long, gentle slopes. Parent material is noncalcareous sandy loam till with some gravel. Soils have dense, gray, well-cemented subsoil horizons that perch snowmelt and rainfall. Gray and bright soil colors are present above and below the dense subsoil horizons, indicating periodic saturation in these layers. Soils are somewhat poorly drained. Soil-moisture regime is moist. (WSU)
- **Stream terraces and wave-cut benches around lakes**—Common. Topography is level. Parent material is noncalcareous alluvium or water-washed till. These sites do not flood, but the water table is near the soil surface in the spring and then falls steadily through the growing season. Gray and bright soil colors, indicating periodic saturation, begin at about 6in (15cm) and continue to depths > 60in (150cm). Soils are somewhat poorly drained. Soil-moisture regime is moist. (WSU; MDL; Anoka Sand Plain in MIM)



## Natural History

In the past, catastrophic disturbances were rare in MHc47. An analysis of Public Land Survey records indicates that the rotations of catastrophic fires and windthrow were both in excess of 1,000 years. Events that result in partial loss of the tree canopy, especially light surface fires, were much more common, with an estimated rotation of about 140 years. In the historic records, MHc47 shows almost no compositional change among age classes. Young, mature, and old forests were all dominated by a mixture of basswood, bur oak, and sugar maple, with black ash and American elm present at lower abundance. Quaking aspen tended to be more abundant in forests younger than 75 years, paper birch was more abundant in forests under about 105 years, and white pine had greater presence in forests older than about 155 years.

## Similar Native Plant Community Classes

### • MHc36 Central Mesic Hardwood Forest (Eastern)

MHc36 is similar to MHc47 but occurs on drier sites. MHc36 is more likely to have species with affinity for well-drained soils, while MHc47 is more likely to have species with affinity for WF communities.

MHc47 Indicator Species	(freq%)	
	MHc47	MHc36
Giant goldenrod ( <i>Solidago gigantea</i> )	39	2
Hawthorn ( <i>Crataegus</i> spp.)	57	4
Nannyberry ( <i>Viburnum lentago</i> )	57	4
Tall coneflower ( <i>Rudbeckia laciniata</i> )	43	4
Sensitive fern ( <i>Onoclea sensibilis</i> )	48	5
Ostrich fern ( <i>Matteuccia struthiopteris</i> )	39	5
Michigan lily ( <i>Lilium michiganense</i> )	39	5
Black ash (C)	74	11

MHc36 Indicator Species	(freq%)	
	MHc47	MHc36
White oak (C)	-	11
Red-berried elder ( <i>Sambucus racemosa</i> )	-	11
Leatherwood ( <i>Dirca palustris</i> )	9	38
Big-toothed aspen (C,U)	4	17
Paper birch (U)	4	15
American spikenard ( <i>Aralia racemosa</i> )	22	60
Hairy Solomon's seal ( <i>Polygonatum pubescens</i> )	26	67
Pagoda dogwood ( <i>Cornus alternifolia</i> )	30	76

### • MHs38 Southern Mesic Oak-Basswood Forest

MHs38 can be similar to MHc47 but occurs on drier sites. MHs38 is present mainly to the south of MHc47. The ranges of the two communities may overlap where the MIM borders the WSU and MDL.

MHc47 Indicator Species	(freq%)	
	MHc47	MHs38
Spotted water hemlock ( <i>Cicuta maculata</i> )	43	-
Red maple (C,U)	61	1
Rose twistedstalk ( <i>Streptopus roseus</i> )	57	2
Sensitive fern ( <i>Onoclea sensibilis</i> )	48	2
Side-flowering aster ( <i>Aster lateriflorus</i> )	70	4
Pale bellwort ( <i>Uvularia sessilifolia</i> )	78	5
Large-leaved aster ( <i>Aster macrophyllus</i> )	83	7
Round-lobed hepatica ( <i>Anemone americana</i> )	48	5

MHs38 Indicator Species	(freq%)	
	MHc47	MHs38
Cleavers ( <i>Galium aparine</i> )	-	37
Box elder (U)	-	35
White oak (C)	-	27
Shining bedstraw ( <i>Galium concinnum</i> )	-	26
Canada moonseed ( <i>Menispermum canadense</i> )	-	24
Spreading Jacob's ladder ( <i>Polemonium reptans</i> )	-	22
Missouri gooseberry ( <i>Ribes missouriense</i> )	4	28
Columbine ( <i>Aquilegia canadensis</i> )	4	27

## Native Plant Community Types in Class

### • MHc47a Basswood - Black Ash Forest

MHc47a is the only plant community type recognized in this class.



photo by D.S. Wovcha MN DNR

St. Croix State Forest, Pine County, MN



### MHC47 Central Wet-Mesic Hardwood Forest – Species Frequency & Cover

	freq%	cover	freq%	cover
<b>Forbs, Ferns &amp; Fern Allies</b>				
Clayton's sweet cicely ( <i>Osmorhiza claytonii</i> )	100	•••••		
Lady fern ( <i>Athyrium filix-femina</i> )	91	•••••		
Early meadow-rue ( <i>Thalictrum dioicum</i> )	91	•••••		
Sweet-scented bedstraw ( <i>Galium triflorum</i> )	83	•••••		
Large-leaved aster ( <i>Aster macrophyllus</i> )	83	•••••		
Hog peanut ( <i>Amphicarpaea bracteata</i> )	83	•••••		
Erect, Smooth, or Illinois carrion-flower *	78	•••••		
Large-flowered bellwort ( <i>Uvularia grandiflora</i> )	78	•••••		
Pale bellwort ( <i>Uvularia sessilifolia</i> )	78	•••••		
Rugulose or Yellow violet ( <i>Viola canadensis</i> or <i>V. pubescens</i> )	78	•••••		
Canada mayflower ( <i>Maianthemum canadense</i> )	78	•••••		
Two-leaved miterwort ( <i>Mitella diphylla</i> )	78	•••••		
Jack-in-the-pulpit ( <i>Arisaema triphyllum</i> )	74	•••••		
Pointed-leaved tick trefoil ( <i>Desmodium glutinosum</i> )	70	•••••		
Wild sarsaparilla ( <i>Aralia nudicaulis</i> )	70	•••••		
Side-flowering aster ( <i>Aster lateriflorus</i> )	70	•••••		
Common enchanter's nightshade ( <i>Circaea luteiflora</i> )	65	•••••		
Maryland black snakeroot ( <i>Sanicula marilandica</i> )	65	•••••		
Wild ginger ( <i>Asarum canadense</i> )	65	•••••		
Dwarf raspberry ( <i>Rubus pubescens</i> )	61	•••••		
Large-flowered trillium ( <i>Trillium grandiflorum</i> )	61	•••••		
Wild geranium ( <i>Geranium maculatum</i> )	61	•••••		
Rose twistedstalk ( <i>Streptopus roseus</i> )	57	•••••		
Bloodroot ( <i>Sanguinaria canadensis</i> )	57	•••••		
Lopseed ( <i>Phytolacca leptostachya</i> )	52	•••••		
Honewort ( <i>Cryptotaenia canadensis</i> )	52	•••••		
Red banberry ( <i>Actaea rubra</i> )	52	•••••		
Wood anemone ( <i>Anemone quinquefolia</i> )	52	•••••		
Common strawberry ( <i>Fragaria virginiana</i> )	48	•••••		
Sensitive fern ( <i>Onoclea sensibilis</i> )	48	•••••		
Common false Solomon's seal ( <i>Smilacina racemosa</i> )	48	•••••		
Interrupted fern ( <i>Osmunda claytoniana</i> )	48	•••••		
Round-lobed hepatica ( <i>Anemone americana</i> )	43	•••••		
Touch-me-not ( <i>Impatiens</i> spp.)	43	•••••		
<b>Trees</b>				
Tall coneflower ( <i>Rudbeckia laciniata</i> )				
Spotted water hemlock ( <i>Cicuta maculata</i> )				
Ostrich fern ( <i>Matteuccia struthiopteris</i> )				
Maidenhair fern ( <i>Adiantum pedatum</i> )				
Virginia waterleaf ( <i>Hydrophyllum virginianum</i> )				
<b>Grasses &amp; Sedges</b>				
Nodding fescue ( <i>Festuca subverticillata</i> )				
Pennsylvania sedge ( <i>Carex pensylvanica</i> )				
Bearded shorttusk ( <i>Brachelytrium erectum</i> )				
Long-stalked sedge ( <i>Carex pedunculata</i> )				
Slary sedge ( <i>Carex rosea</i> )				
Graceful sedge ( <i>Carex gracillima</i> )				
Bottlebrush grass ( <i>Elymus hystrix</i> )				
<b>Climbing Plants</b>				
Virginia creeper ( <i>Parthenocissus</i> spp.)				
<b>Shrubs</b>				
Chokecherry ( <i>Prunus virginiana</i> )				
Prickly gooseberry ( <i>Ribes cynosbati</i> )				
Hawthorn ( <i>Crataegus</i> spp.)				
Beaked hazelnut ( <i>Corylus cornuta</i> )				
Nannyberry ( <i>Viburnum lentago</i> )				
Poison ivy ( <i>Toxicodendron rydbergii</i> )				
Downy arrowwood ( <i>Viburnum rafinesquianum</i> )				
<b>Shrub Layer</b>				
Basswood	91	•••••	70	•••••
Black ash	74	•••••	52	•••••
Bur oak	65	•••••	43	•••••
Northern red oak	57	•••••	13	•••••
Green ash	43	•••••	9	•••••
Sugar maple	43	•••••	52	•••••
Red maple	39	•••••	13	•••••
Ironwood	-	-	74	•••••
Blue beech	-	-	61	•••••

\* Erect, Smooth, or Illinois carrion-flower (*Smilax ecirrata*, *S. herbacea*, or *S. illinoensis*)