

Forest-Upland Deciduous (Hardwood) (i.e., maple-basswood)

Ecological Systems

Mesic Hardwood Forest (MH)

Native Plant Community Types (NPC)

Paper Birch-Sugar Maple Forest (North Shore)
 Sugar Maple Forest (North Shore)
 Sugar Maple Basswood (Bluebead Lily) Forest
 Sugar Maple Basswood (Horsetail) Forest
 Red Oak-Basswood Forest (Calcareous Till)
 Sugar Maple-Basswood (Aspen) Forest
 White Pine-Sugar Maple-Basswood Forest (Cold Slope)
 Basswood-Black Ash Forest
 Sugar Maple-Basswood (Bitternut Hickory) Forest
 Sugar Maple-Basswood-Red Oak (Blue Beech) Forest
 Sugar Maple Forest (Big Woods)
 Elm-Basswood-Black Ash (Hackberry) Forest
 Elm-Basswood-Black Ash (Blue Beech) Forest

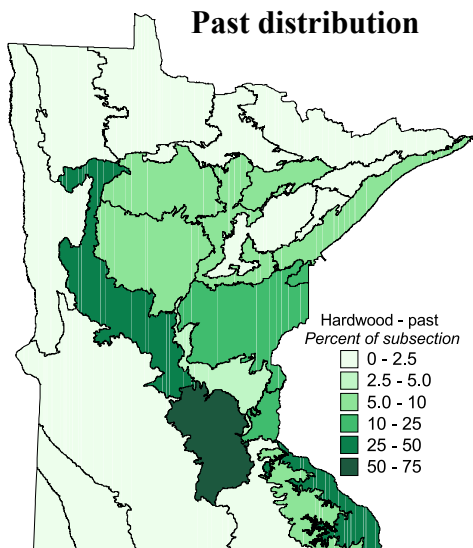
NPC Codes

MHn45a
 MHn45c
 MHn47a
 MHn47b
 MHc36b
 MHc37b
 MHc38a
 MHc47a
 MHs39a
 MHs39b
 MHs39c
 MHs49a
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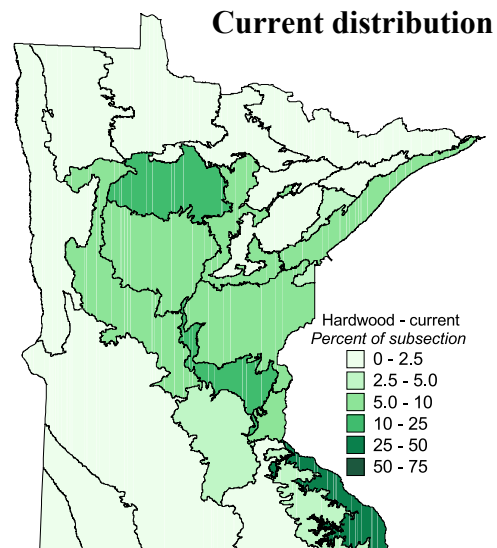


T.J. Whitfield MN DNR

Sugar Maple-Basswood (Aspen) Forest (MHC37b)



Source: Marschner 1930



Source: MN GAP 1993

General Description

Upland deciduous hardwood forest habitat occurs on upland sites with soils that retain water and in settings where wildfires are infrequent. A continuous, often dense, canopy of deciduous trees, especially sugar maple, basswood, and red oak, characterizes this habitat. Other canopy trees include American elm, red elm, black ash, green ash, bitternut hickory, and hackberry. Older forests commonly have several nearly closed layers of woody plants, including a well-defined forest canopy, subcanopy, and shrub layer. These layers combine to produce continuous cover. Thus, most sunlight is filtered and attenuated before it reaches herbaceous plants and seedlings on the forest floor. The plants found in this habitat are adapted to the low intensity of light in these forests.

Natural disturbance in this habitat is characterized by the death of individual trees, which occurs at a rather constant rate in older forests. Stand-regenerating disturbances such as wildfires and catastrophic windthrow were rare historically in this mesic habitat, having average frequencies of once every 360 to more than 1,000 years. Disturbances that resulted in the partial loss of canopy trees, such as light surface fires and moderate windthrow, were far more frequent. Historically, surface fire was more important in the north, and wind was more important in central and southern Minnesota.

Typical sites are buffered from seasonal drought by fine-textured soils with impermeable soil horizons capable of retaining rainfall or snowmelt below the surface. Usually these soils are well drained and are waterlogged or saturated only after spring snowmelt or heavy, prolonged rains.

Essential nutrients, especially nitrogen, are mineralized from decaying organic matter at relatively high rates and quickly become available again for uptake by plants during the spring and early summer months. As a result, nutrients and organic matter accumulate at the soil surface in leaf litter and humus.

Upland deciduous hardwood forest habitats in the Eastern Broadleaf Forest Province occur most often where rugged terrain, water bodies such as lakes and rivers, and moist soil provide protection from wildfires, whereas in the Laurentian Mixed Forest Province this habitat often occurs on level to rolling landscapes with fine-textured soils that retain water.

The extent of upland deciduous hardwood forests has been greatly reduced in southern and west-central Minnesota since settlement by people of European descent. The extensive mesic hardwood forests of the Big Woods Subsection have been reduced by a factor of more than 100. However, in the northern parts of the Laurentian Mixed Forest Province, the extent of maple-basswood forests has increased as a result of fire suppression. Like other forest habitats, most maple-basswood habitats in the Eastern Broadleaf Forest Province and southern and western portions of the Laurentian Mixed Forest Province have been fragmented by agriculture and development. In many locations, the remaining forests typically lack the ecological complexity of pre-European settlement forests because of a number of factors (for example, grazing, invasive plants and animals, edge effects, changes in native animal populations, and consumptive uses).

Examples of Features Important for Species in Greatest Conservation Need

Acadian flycatchers, cerulean warblers, hooded warblers, and red-shouldered hawks generally require large areas of contiguous mature to old-growth hardwood forest. Acadian flycatchers favor relatively undisturbed forests and experience high rates of brood parasitism and nest depredation in fragmented landscapes. Cerulean warblers need large, tall trees with horizontal heterogeneity in the canopy, and hooded warblers need mature forests with significant treefall gaps that provide shrubby undergrowth for nesting.

Woodland voles require moist, light soil or humus in forests to construct burrows. Grazing by cattle, which compacts the soil, and the presence of invasive non-native earthworms, which destroy the humus, may make forests within its limited range in southeastern Minnesota unsuitable for this species.

Hardwood forests also provide the same important habitat features for **wood thrushes, ovenbirds, and least flycatchers** statewide, and for **black-throated blue warblers, northern goshawks, four-toed salamanders, and red-backed salamanders**, which are described in the Upland Forest general description section.

Management Options to Support Species in Greatest Conservation Need

Unfragmented older mesic hardwood forests are a key habitat requirement for several SCGN found in the hardwood forest habitat. In addition to practicing sustainable forestry at the site level, collaborative management across ownerships can also create larger forest patches and reduce forest fragmentation.

Explore opportunities to implement forest management practices that:

- Use natural disturbance return intervals to guide rotation periods.
- Manage to maintain and create large patches of upland forest.
- Manage stands to retain biological legacies (at site level).
- Manage invasive plants and animals.
- Work with Minnesota DNR Division of Fish and Wildlife to determine ecologically and socially desirable deer population levels across the state.
- Collaborate management across ownerships to increase patch size.