

Minnesota Forest Types

This handout describes the forest types found in Minnesota and shows the species included in each forest type.

Black ash forests are found in wet areas, occurring in narrow bands at wetland margins and along streams or as larger tracts in depressions or where groundwater seeps to the surface. The most abundant trees in black ash forests are, not surprisingly, black ash. These grow in almost pure stands or are mixed with **green ash**, **red maple**, and sometimes **bur oak**. In northern Minnesota black ash forest can include **white cedar** and **balsam fir**.



Black ash swamp, Pelican Lake Big Island SNA, St. Louis County

Lowland hardwood forests are found on stream and river floodplains and in swamp settings away from flowing water. The make-up of the trees that grow in this forest type varies moving from south to north. In the south, lowland hardwood forests consist of **silver maple**, **American or red (slippery) elm**, and **green ash**, together with a large variety of other tree species. In the north, the elms are being attacked by Dutch elm disease and many have recently died. Ash is the most common species there, often growing with **basswood** and **oak**.



Silver maple, green ash and silver maple in a lowland hardwood forest

Northern hardwood forests can be subdivided into **maple-basswood** forest and **northern hardwoods**, the latter being the most common in northern Minnesota. **Sugar maple** and **basswood** are most abundant, but **yellow birch** is common in the north, and **red oak** is common on the driest sites. **American elm** and **black ash** are found on the wettest sites. Northern hardwoods also support conifers—**white pine**, **balsam fir**, **white spruce**, and **white cedar**. Because it was so desirable, white pine has been largely removed from northern hardwood forests. Maple-basswood forests have a larger variety of tree species than northern hardwoods, including **red (or slippery) elm**, **bur oak**, **white oak**, **white ash**, **green ash**, **bitternut hickory**, and **walnut**. In forests that have not been grazed or suffered soil disturbance, a beautiful and diverse collection of wildflowers appears each spring. Because they bloom only briefly and many wither by midsummer, these wildflowers are called "spring ephemerals."



A lush ground flora is typical of northern hardwoods containing sugar maple and basswood.

Oak forests (in modern times) began as savannas and open woodlands have oaks with wide-spreading branches, even on their lower trunks. This indicates that they matured without other trees shading them. Seedlings and saplings of northern hardwood species can be found in moist oak forests. Without fire, savannas and open woodland locations will eventually become maple-basswood forest. Nearly all oak forests in the state were pastures at some point. If the number of cattle in a woods was not excessive, an oak forest will have few nonnative species and only small amounts of shrubs bearing prickles and thorns. It will also support a diverse group of wildflowers, grasses, sedges, and shrubs.



Photo © MN DNR
A red oak stand in Townsend's Woods SNA, Rice County

Red and white pine forests are largely restricted to northeastern and north-central Minnesota, with the white pine subtype also found along steep slopes and knobs of creek and river valleys in the southeast. Red and white pine form a canopy either together or separately. White pine tends to grow on moister sites than red pine. **Paper birch, red maple,** and other deciduous trees occur with white pine on the moistest soils. On the driest sites red pine is joined by **jack pine**, and where red pine grows on moister sites it is accompanied by **white spruce** or **balsam fir**. Historically frequent surface fires and rare canopy fires perpetuated this type for many centuries, but in the absence of fire, maple, balsam fir, or white cedar will eventually take over on many sites. Being somewhat tolerant of shade, white pine can grow beneath a pine canopy and its saplings will grow up to fill canopy gaps. Red pine, however, requires nearly direct sunlight in all its life stages.



Photo © MN DNR
200-year-old-plus red and white pine trees at Burntside Island SNA



Photo © MN DNR
White pine

White spruce forests are restricted to north-central and northeastern Minnesota. Along with white spruce, a varying combination of species is commonly found in white spruce forests, including **balsam fir** and **paper birch**.



Photo © MN DNR

Old-growth white spruce

White cedar forests often grow in pure stands over large areas of moist soils. Cedar trees growing in swamp settings are not considered part of the upland white cedar type. It also is found mixed in extensive tracts with **balsam fir**, **yellow birch**, **paper birch**, **white spruce**, and **black spruce**. Upland white cedar forest is most common on Lake Superior's north shore, but occurs throughout northeastern and north-central Minnesota. White cedar has been in high demand for shingles and other specialty wood products, and as a result the largest trees in most cedar forests are continuously removed.



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Old-growth white cedar