

Forest Types of Michigan

Mixed Upland Hardwoods

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The mixed upland hardwoods forest type is a combination of 17 U.S. Forest Service forest types. It's a diverse forest type group, a bit of a catch-all, with many variations and management opportunities. For the most part, these types are recovering from significant disturbance and often have a history of mismanagement. The mixed upland hardwood forest type excludes northern hardwoods (sugar maple-beech-basswood-yellow birch) because of the size and importance of the northern hardwood types. (Northern hardwoods are described in E3202 Bulletin 2).

The Trees

Red maple is the most common tree among mixed upland hardwoods (34 percent of volume), followed by white pine, black cherry, paper birch and red pine (each making up 5 percent to 10 percent of volume), and more than 50 other tree species. Forest type composition varies widely across Michigan. The fewest species occur in the Upper Peninsula; the greatest number, in the southern Lower Peninsula. The mixed upland hardwood stands in the southern Lower Peninsula, dominated by red maple and black cherry, have twice the number of tree species as those farther north. In the southern L.P. mixed upland hardwoods, a combination of 29 minor species represent less than 4 percent of the volume.¹



In some stands, red maple is an aggressive species that might be discriminated against if a landowner is managing for oak, pine or northern hardwoods. In the southern L.P., several tree species that are more common to the central hardwood region extend their ranges into Michigan, such as black walnut, sassafras, black locust, yellow poplar and black gum.

Distribution

Mixed upland hardwoods cover 2.1 million acres of Michigan's forest, or about 10 percent of the area.² Nearly 70 percent of mixed upland hardwood area occurs in the Lower Peninsula, with the largest portion in the northern half of the L.P. Some sites may be more likely to support other forest types.

Ecology

Historically, many of these stands once produced high quality timber — white pine, oaks or northern hardwoods. After the historic logging era, most of these stands regenerated to types different from

¹ Relative volumes of species are derived from the USDA Forest Service Forest Inventory and Analysis Data, available at www.fia.fs.fed.us/tools-data.

² Acreages and volumes of species and forest types are derived from the USDA Forest Service Forest Inventory and Analysis Data, at www.fia.fs.fed.us/tools-data.



Regeneration under a shelterwood harvest

those that existed previously.³ Over the decades, only the highest quality trees in the second-growth forest have been taken, leaving behind trees of lower quality and, often, inferior species. Within the forest type, the lowest stocking levels are in the northern Lower Peninsula, and the highest are in the southern L.P.

Many of these mixed upland hardwood stands grow on productive soils that are capable of supporting high quality forests. Some sites in the southern counties have the highest forest capability in the state. Warmer, moister climates with longer growing seasons allow for more rapid growth and quicker recovery than occur farther north. On the other hand, some stands grow on sandy soils with less productivity potential. Commonly, sites with mesic⁴ soil conditions have the most forest potential. In the northern parts of Michigan, unconsolidated glacial till and morainal deposits, when well-drained, can support productive forests.

³ Dickmann, D.I., and L.A. Leefers. 2003. *The Forests of Michigan*. University of Michigan Press.

⁴ “Mesic” refers to midrange soil moisture conditions on a spectrum from dry (xeric) to wet (hydric).

Management and Silviculture

Well-managed stands are among Michigan’s most valuable and impressive in tree form, monetary value and ecological services. Because many of these stands have histories of mismanagement, recovery can take many years. In some cases, it may be best to clearcut and initiate a new stand. In other stands, careful thinning can produce healthier, higher quality trees and fully stocked conditions. In some stands, a shelterwood system where a partial canopy is retained, can be used to establish desired regeneration. Species composition, shade tolerance and soil characteristics will be important deciding factors.

Stand recovery needs several thinning cycles that remove smaller sized and low quality forest products. Unfortunately, markets for low quality products are few in the southern L.P., and this lack of markets for harvested trees makes management difficult. In other regions of Michigan, markets for lower quality and smaller diameter products include pulp mills, pallet mills, oriented strand board mills, energy utilities and others.

Tree Health Issues

Specific pests in this group are difficult to highlight because of the diversity of the forest type group. Red maple is the most common tree species, so issues such as its propensity to rots, storm and ice damage, and certain cankers are important. Red maples are easily damaged by fire. Low quality



Red maple seedling



Harvester working a selectively marked stand

site conditions contribute to reduced tree vigor. Red maple often has high proportions of defect, especially in dense clumps that grew from stump sprouts. Smooth-barked red maple stems are subject to frost cracking and subsequent invasion by disease-causing organisms (pathogens).

White pine, black cherry, paper birch and red pine are the next most common species in this mixed upland hardwood group. Therefore, damaging agents common to these species will be important, such as white pine blister rust, black knot of cherry, bronze birch borer and Diplodia leaf blight, respectively. In some areas, deer depredation may be a serious problem for most species.

Wildlife Habitat

Mixed upland hardwoods have broad diversity, and wildlife populations will follow accordingly. Many of these stands have brushy understories and multilayered vertical structure, which provides considerable habitat opportunities for many wildlife species. Stands with an overstory of hard-

mast-producing trees (oaks, beech, etc.) with dense understories, have good game-producing potential. Migrating songbirds will often nest in these stands, finding adequate shelter from predators and bad weather. Planting conifers in the understory will provide a degree of shelter in stands where they are absent. Younger stands will host a wide variety of wildlife species, including many that are listed as threatened or endangered. Older stands will be preferred by cavity nesters and associated wildlife species, such as pileated woodpeckers, barred owls and squirrels.



Black-capped chickadee

Landowner Tips

- Develop a management plan.
- Highly variable stand and site conditions make a single management system prescription inappropriate.
- Consider the merits of clearcutting versus thinning and restoration.
- Consider conversion to other forest types.
- Red maple may be undesirable.
- Identify desirable species and long-term desired conditions.

See the Michigan Society of American Foresters' publication, *Forest Management Guidelines for Michigan*, on their website: <http://michigansaf.org>.