



MIXED UPLAND HARDWOODS

Number 4, May 2013

Mixed upland hardwoods is a collection 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, often with 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 a separate bulletin.

The Trees

Red maple is the most common tree among mixed upland hardwoods (34% of volume), followed by white pine, black cherry, paper birch, and red pine (each with 5-10% of volume), and over 50 other tree species. Forest type composition varies widely across Michigan. The fewest species occur in the Upper Peninsula and 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 further north. Combined, 29 minor species represent less than 4 percent of the volume in the southern LP mixed upland hardwoods.¹

In some stands, red maple is an aggressive species that might be discriminated against if managing for oak, pine, or northern hardwoods. In the southern LP, 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% of the area.² Nearly 70% of mixed upland hardwood area occurs in the Lower Peninsula, with the largest portion in the northern LP. Some sites may better support other forest types.



Red Maple Seedling



Regeneration Under A Shelterwood Harvest

Ecology

Historically, many of these stands once produced high quality timber, ranging from white pine to oaks to northern hardwoods. Since the historic logging era, most of these stands regenerated to types different from what existed previously.³ Over the decades, the second growth forest has been high-graded, 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 highest in the southern LP.

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 many stands further north. Alternatively, 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.

Management & Silviculture

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. Alternatively, well-managed stands are among Michigan's most valuable and impressive in terms of tree form, monetary value, and ecological services. In other stands, careful thinning can produce healthier, higher-quality, and fully-stocked conditions. In some stands, a shelterwood system 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 where smaller sized and low quality forest products are removed. Unfortunately, markets in the southern LP for low quality products are few, making 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 the forest type group. Red maple is the most common tree species, so issues such as propensity to rots, storm and ice damage, and certain cankers are important. Red maples are easily damaged by fire. Low quality site conditions contribute to lower tree vigor. Red maple often has high proportions of defect, especially in dense clumps of stump sprout origin. Smooth-barked red maple stems are subject to frost-cracking and subsequent pathogen invasion.

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,



Harvester Working A Selectively Marked Stand

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 multi-layered vertical structure, which provides considerable habitat opportunities for many wildlife species. Stands with an overstory of hard-mast producing trees (oaks, beech, nuts), with dense understories, have good game producing potential. Migrating songbirds will often nest in these stands, finding adequate shelter from predators and bad weather. Underplanting with conifers will provide a degree of shelter in stands where conifers are absent. Younger stands will host earlier successional suites of wildlife. Older stands will be preferred by cavity nesters and associated wildlife species.



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
- Assess status of invasive plants

See <http://michigansaf.org> for *Forest Management Guidelines from the Michigan Society of American Foresters*.

¹ Relative volumes of species are derived from the USDA Forest Service, Forest Inventory and Analysis Data [<http://www.fia.fs.fed.us/tools-data>].

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

⁴ Mesic refers to mid-range soil moisture conditions on a spectrum from dry (xeric) to wet (hydric).