



## Forest: Mesic hardwood

### Description

Mesic hardwood forests have moist soils and are generally dominated by American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), red oak (*Quercus rubra*), and basswood (*Tilia americana*). High soil moisture in mesic forests is often maintained by high canopy cover and a dense leaf litter. Mesic forests also commonly occur in transitional areas between dry upland areas and wet lowland areas. Mature mesic forests are characterized by shade-tolerant species, especially sugar maple and American beech. The natural disturbance regime is characterized by gap phase dynamics: frequent, small windthrow gaps allow for the regeneration of shade-tolerant canopy dominants. These areas are characterized by a rich diversity of spring wildflowers and relatively high numbers of berry-producing herb and shrub species.

### General Condition of Feature

Much of the mesic hardwood in the Southern Lower Peninsula is considered to be in fair or good condition (~55%). Most of the remaining areas are considered degraded. Mesic hardwoods include natural communities that are classified as rare or uncommon in the State.

### Associated Natural Communities

Dry-mesic Southern Forest  
Mesic Northern Forest  
Mesic Southern Forest

### Associated Species of Greatest Conservation Need

#### INSECTS

ringed boghaunter (*Williamsonia lintneri*)  
post-oak grasshopper (*Dendrotettix quercus*)  
woodland camel cricket (*Ceuthophilus uhleri*)  
American burying beetle (*Nicrophorus americanus*)  
black lordithon rove beetle (*Lordithon niger*)  
pipevine swallowtail (*Battus philenor*)  
corylus dagger moth (*Acronicta falcata*)  
quiet underwing (*Catocala dulciosa*)  
golden borer (*Papaipema cerina*)

#### AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)  
spotted salamander (*Ambystoma maculatum*)  
marbled salamander (*Ambystoma opacum*)  
smallmouth salamander (*Ambystoma texanum*)  
eastern tiger salamander (*Ambystoma tigrinum tigrinum*)  
four-toed salamander (*Hemidactylium scutatum*)

#### REPTILES

northern ringneck snake (*Diadophis punctatus edwardsii*)  
eastern fox snake (*Elaphe gloydi*)  
black rat snake (*Elaphe obsoleta obsoleta*)  
eastern hognose snake (*Heterodon platirhinos*)  
smooth green snake (*Liochlorophis vernalis*)  
copperbelly water snake (*Nerodia erythrogaster neglecta*)  
eastern massasauga (*Sistrurus catenatus catenatus*)  
wood turtle (*Glyptemys insculpta*)  
eastern box turtle (*Terrapene carolina carolina*)

#### BIRDS

Northern Bobwhite (*Colinus virginianus*)  
Bald Eagle (*Haliaeetus leucocephalus*)

#### BIRDS cont.

Cooper's Hawk (*Accipiter cooperii*)  
Northern Goshawk (*Accipiter gentilis*)  
Red-shouldered Hawk (*Buteo lineatus*)  
American Woodcock (*Scolopax minor*)  
Yellow-billed Cuckoo (*Coccyzus americanus*)  
Chuck-will's-widow (*Caprimulgus carolinensis*)  
Red-headed Woodpecker (*Melanerpes erythrocephalus*)  
Northern Flicker (*Colaptes auratus*)  
Acadian Flycatcher (*Empidonax vireescens*)  
Least Flycatcher (*Empidonax minimus*)  
Migrant Loggerhead Shrike (*Lanius ludovicianus migrans*)  
Wood Thrush (*Hylocichla mustelina*)  
Golden-winged Warbler (*Vermivora chrysoptera*)  
Black-throated Blue Warbler (*Dendroica caerulescens*)  
Blackburnian Warbler (*Dendroica fusca*)  
Cerulean Warbler (*Dendroica cerulea*)  
Connecticut Warbler (*Oporornis agilis*)  
Hooded Warbler (*Wilsonia citrina*)  
Canada Warbler (*Wilsonia canadensis*)

#### MAMMALS

red bat (*Lasiurus borealis*)  
hoary bat (*Lasiurus cinereus*)  
northern bat or northern myotis (*Myotis septentrionalis*)  
Indiana bat or Indiana myotis (*Myotis sodalis*)  
eastern pipistrelle (*Pipistrellus subflavus*)  
least weasel (*Mustela nivalis*)  
woodland vole (*Microtus pinetorum*)  
southern bog lemming (*Synaptomys cooperi*)

### Associated Threats

#### MODIFICATION OF NATURAL PROCESSES

- Climate change

- Fragmentation: Fragmentation results from conversion to agricultural land or urban/suburban development.

#### HABITAT CONVERSION

- Industrial, residential, and recreational development
- Conversion to agriculture
- Incompatible natural resource management: Management goals on some sites may favor aspen (*Populus* spp.) over late successional mesic hardwood.

#### CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Inappropriate forestry practices may lead to vertical simplification.

#### BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive plants such as garlic mustard (*Alliaria petiolata*) may alter species composition.
- Disease, pathogens and parasites: Beech bark disease and other diseases may alter species composition.
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration, especially of oaks.

#### OTHER

- Historic status/current abundance: Very little mesic hardwood remains in the Southern Lower Peninsula. That which exists consists of small woodlots. Most of the existing beech-maple forest in the Southern Lower Peninsula is not on traditional sites.

### Conservation Actions Needed [Threats addressed]

#### LAND & WATER PROTECTION

- Expand conservation easement programs [variety of threats]
- Acquire mesic hardwood remnants, either by State or Federal agencies or private land conservancies, to prevent their destruction. [Industrial, residential, and recreational development; Conversion to agriculture; Fragmentation; Incompatible natural resource management; Historic status/current abundance]

#### LAND, WATER & SPECIES MANAGEMENT

- Manage suitable sites under other landscape features for the restoration of mesic hardwood stands. Develop alternate management goals and prescriptions for sites that currently support mesic hardwood but are unsuitable. [Incompatible natural resource management; Other biological interactions]
- Support Landowner Incentive Programs to foster conservation on private land [variety of threats]
- Assess management goals to ensure that they provide for a diversity of communities across the landscape. [Fragmentation; Incompatible natural resource management; Other biological interactions]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- Implement disease monitoring and control programs. [Disease, pathogens, and parasites]
- Manage white-tailed deer densities to allow for regeneration. [Other biological interactions]
- Consider wildlife values, timber values, and natural landcover and conditions when selecting vegetative species composition as part of management of these areas [Incompatible natural resource management]
- Work with municipalities to promote planning and zoning insuring adequate protection for mesic hardwood systems. [Conversion to agriculture; Industrial, residential, and recreational development; Fragmentation; Historic status/current abundance]
- Develop timber best management practices to address wildlife needs including vegetation species composition and vertical stratification. [Forestry practices]
- Manage for representation of all successional stages. [Incompatible natural resource management; Forestry practices]
- Promote the closure of non-essential resource management roads and seek other road closure opportunities that do not conflict with other appropriate uses. [Fragmentation]
- Where large diameter tree snags and coarse woody debris are occasional or rare, seek to increase their volume. [Forestry practices]

### Research and Survey Needs

- An inventory needs to be conducted to determine the location, condition, and classification of mesic hardwoods and of the opportunities for restoration.
- Test the assumption that remnants are widely dispersed and becoming more fragmented resulting in a loss of species diversity.
- A better understanding is needed of the management needs and appropriate management techniques to maintain and improve mesic hardwood features.
- A better understanding is needed of the temporal and spatial distribution of disturbance and its influence. What factors provide disturbance within mesic hardwood communities?
- Identify the characteristics of mesic hardwood systems that contribute to their value to wildlife and which species may be affected by changes in these characteristics.
- Identify invasive species and diseases that may degrade the value of mesic hardwood sites for wildlife. Develop techniques to control invasive species. Develop treatments for diseases that threaten mesic hardwoods. Common

**MICHIGAN'S WILDLIFE ACTION PLAN**  
**TERRESTRIAL SYSTEMS: SOUTHERN LOWER PENINSULA**

invasive species and diseases include emerald ash borer (*Agrilus planipennis*), oak wilt, ash decline, and beech bark disease.

- Evaluate whether mesic hardwood communities act as corridors. These systems are common along river floodplains and may provide a linear forested feature on the landscape. Are these riparian systems sinks to some species?
- Document the historic and current range of variation between mesic hardwood sites. This includes variables such as species composition, age or size class, and stand size.

Monitoring

- Track woody species composition and diversity, with attention to structure and age class.
- Track the presence and abundance of invasive species.
- Track acreage and distribution of lowland hardwoods.
- Track hydrology patterns and water quality.