



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 Northern Lower Peninsula is considered to be in fair or good condition (~60%) and some areas are considered in excellent condition (~10%). Most of the remaining areas are considered degraded. Mesic northern forest natural communities are considered as rare or uncommon in the State.

Associated Natural Communities

Mesic Northern Forest

Associated Species of Greatest Conservation Need

SNAILS

widespread column (*Pupilla muscorum*)
spike-lip crater (*Appalachina sayana*)

INSECTS

ringed boghaunter (*Williamsonia lintneri*)
secretive locust (*Appalachia arcana*)
post-oak grasshopper (*Dendrotettix quercus*)
Davis's shield-bearer (*Atlantiscus davisii*)
early hairstreak (*Erora laeta*)
three-horned moth (*Pachypolia atricornis*)

AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)
spotted salamander (*Ambystoma maculatum*)
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*)
eastern massasauga (*Sistrurus catenatus catenatus*)
wood turtle (*Glyptemys insculpta*)
eastern box turtle (*Terrapene carolina carolina*)

BIRDS

Northern Bobwhite (*Colinus virginianus*)
Bald Eagle (*Haliaeetus leucocephalus*)
Cooper's Hawk (*Accipiter cooperii*)
Northern Goshawk (*Accipiter gentilis*)
Red-shouldered Hawk (*Buteo lineatus*)
Merlin (*Falco columbarius*)

BIRDS cont.

American Woodcock (*Scolopax minor*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
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*)
Northern Parula (*Parula americana*)
Black-throated Blue Warbler (*Dendroica caerulescens*)
Cerulean Warbler (*Dendroica cerulea*)
Connecticut Warbler (*Oporornis agilis*)
Hooded Warbler (*Wilsonia citrina*)
Canada Warbler (*Wilsonia canadensis*)
Evening Grosbeak (*Coccothraustes vespertinus*)

MAMMALS

pygmy shrew (*Sorex hoyi*)
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*)
northern flying squirrel (*Glaucomys sabrinus*)
woodland jumping mouse (*Napaeozapus insignis*)
southern red-backed vole (*Clethrionomys gapperi*)
woodland vole (*Microtus pinetorum*)
southern bog lemming (*Synaptomys cooperi*)
snowshoe hare (*Lepus americanus*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Fragmentation

HABITAT CONVERSION

- Industrial, residential, and recreational development: Residential and recreational (e.g., golf courses) development is a threat to mesic hardwoods in the Northern Lower Peninsula.
- Incompatible natural resource management: Species bias in selective management may alter community composition. Management priorities may result in the loss of the conifer component in these systems in the Northern Lower Peninsula.

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: High-grading may alter species composition and structure.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive species like emerald ash borer (*Agilus planipennis*) and gypsy moth (*Lymantria dispar*) 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.

Conservation Actions Needed [Threats addressed]

LAND & WATER PROTECTION

- Expand conservation easement programs [variety of threats]
- Support and expand conservation purchase of high quality occurrences [variety of threats]

LAND, WATER & SPECIES MANAGEMENT

- Manage to approximate natural disturbance regimes using prescribed fire. [Altered fire regime]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- Institute disease monitoring and control programs. [Disease, pathogens, and parasites]
- Manage white-tailed deer densities to allow for regeneration of mesic hardwoods. [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 land managers to develop priorities for mesic hardwood restoration and management. [Fragmentation; Incompatible natural resource management]
- Develop and implement forestry best management practices which address the value of mesic hardwoods to wildlife. [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. [Incompatible natural resource management; Forestry practices]
- Support Landowner Incentive Programs to foster conservation on private land [variety of threats]

LAW & POLICY

- Work with municipalities to promote planning and zoning insuring adequate protection for mesic hardwood systems. [Fragmentation; Industrial, residential and recreational development]

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 mesic hardwood 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 on mesic hardwood communities. 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 invasive species and diseases include emerald ash borer (*Agilus 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.

MICHIGAN'S WILDLIFE ACTION PLAN
TERRESTRIAL SYSTEMS: NORTHERN LOWER PENINSULA

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.