



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 Western Upper Peninsula is considered to be in fair or good condition (~70%) and some areas are considered in excellent condition (~10%). Most of the remaining areas are considered degraded (~20%). Mesic northern forest natural communities are considered rare or uncommon in the State.

Associated Natural Communities

Mesic Northern Forest

Associated Species of Greatest Conservation Need

SNAILS

delicate vertigo (*Vertigo bollesiana*)
a land snail (*Vertigo paradoxa*)

INSECTS

ringed boghaunter (*Williamsonia lintneri*)
early hairstreak (*Erora laeta*)

AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)
spotted salamander (*Ambystoma maculatum*)
four-toed salamander (*Hemidactylium scutatum*)

REPTILES

northern ringneck snake (*Diadophis punctatus edwardsii*)
western fox snake (*Elaphe vulpina*)
smooth green snake (*Liochlorophis vernalis*)
wood turtle (*Glyptemys insculpta*)

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*)
American Woodcock (*Scolopax minor*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
Red-headed Woodpecker (*Melanerpes erythrocephalus*)
Northern Flicker (*Colaptes auratus*)

BIRDS cont.

Least Flycatcher (*Empidonax minimus*)
Boreal Chickadee (*Poecile hudsonica*)
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*)
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*)
eastern pipistrelle (*Pipistrellus subflavus*)
gray wolf (*Canis lupus*)
least weasel (*Mustela nivalis*)
least chipmunk (*Tamias minimus*)
northern flying squirrel (*Glaucomys sabrinus*)
woodland jumping mouse (*Napaeozapus insignis*)
southern red-backed vole (*Clethrionomys gapperi*)
southern bog lemming (*Synaptomys cooperi*)
snowshoe hare (*Lepus americanus*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered fire regime: Lack of fire may lead to vertical simplification.
- Fragmentation

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Inappropriate forestry practices may lead to vertical simplification and decreased species diversity. These practices discriminate against yellow birch (*Betula alleghaniensis*), basswood (*Tilia americana*), and hemlock (*Tsuga canadensis*).

MICHIGAN'S WILDLIFE ACTION PLAN

TERRESTRIAL SYSTEMS: WESTERN UPPER PENINSULA

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive plants such as garlic mustard (*Alliaria petiolata*), Japanese barberry (*Berberis thunbergii*), and glossy buckthorn (*Rhamnus frangula*) may alter species composition.
- Disease, pathogens and parasites: Oak wilt and other diseases may alter species composition.
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration, especially of oaks (*Quercus spp.*) and hemlocks (*Tsuga canadensis*).

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]
- Develop and implement plans for invasive species control and prevention. [Invasive plants and animals]
- Identify and implement disease control measures. [Disease, pathogens and parasites]
- Manage deer densities to allow for natural regeneration within mesic hardwoods. [Other biological interactions]
- Develop and enforce best management practices which address the needs and values of wildlife. [Forestry practices]
- Manage for representation of all successional stages. [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]
- Support Landowner Incentive Programs to foster conservation on private land [variety of threats]

LAW & POLICY

- Work with municipalities to promote planning and zoning insuring the retention of larger parcel sizes in mesic hardwoods. [Fragmentation]

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 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.
- Evaluate the use of silvicultural treatments, such as periodic selection and improvement harvests, in accelerating the process of restoring northern hardwood forests to a resilient, more complex, mature forest.

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.