



Source: Lowland Deciduous Forest/Lowland Mixed Forest - IFMAP Michigan Land Cover dataset. Lowland deciduous forest includes areas where the proportion of deciduous trees exceeds 60% of the canopy; Lowland mixed forest includes areas where the proportion of conifers to deciduous trees ranges from 40% to 60%. Associated Natural Communities data - Michigan Natural Features Inventory Biotics database.

Forest: Lowland hardwood

Description

Lowland hardwood areas have seasonally or permanently saturated soils and are dominated by moisture-tolerant hardwood trees such as silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), black ash (*Fraxinus nigra*), American elm (*Ulmus americana*), yellow birch (*Betula alleghaniensis*), pin oak (*Quercus palustris*), swamp white oak (*Quercus bicolor*), and cottonwood (*Populus deltoides*). These areas are often adjacent to open wetlands, lakes, rivers, or streams. Natural disturbances in lowland hardwood forests include prolonged flooding, fluvial erosion or deposition, windthrow, and infrequent fire.

General Condition of Feature

Much of the lowland hardwood in the Eastern Upper Peninsula is considered to be in fair to good condition (~60%). Most of the remaining areas are considered degraded or very degraded (~40%). Each lowland hardwood natural communities is classified as rare or uncommon in the State.

Associated Natural Communities

Hardwood-Conifer Swamp
Northern Swamp
Southern Floodplain Forest

Associated Species of Greatest Conservation Need

SNAILS

widespread column (*Pupilla muscorum*)
delicate vertigo (*Vertigo bollesiana*)
a land snail (*Vertigo paradoxa*)

INSECTS

spatterdock darner (*Aeshna mutata*)
arrowhead spiketail (*Cordulegaster obliqua*)
ringed boghaunter (*Williamsonia lintneri*)

AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)
spotted salamander (*Ambystoma maculatum*)
eastern tiger salamander (*Ambystoma tigrinum tigrinum*)
four-toed salamander (*Hemidactylium scutatum*)
boreal chorus frog (*Pseudacris triseriata maculata*)
western chorus frog (*Pseudacris triseriata triseriata*)

REPTILES

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

BIRDS

Spruce Grouse (*Falci pennis canadensis*)
Green Heron (*Butorides virescens*)
Bald Eagle (*Haliaeetus leucocephalus*)
Northern Goshawk (*Accipiter gentilis*)
Red-shouldered Hawk (*Buteo lineatus*)

BIRDS cont.

Merlin (*Falco columbarius*)
American Woodcock (*Scolopax minor*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
Northern Flicker (*Colaptes auratus*)
Acadian Flycatcher (*Empidonax virescens*)
Northern Shrike (*Lanius excubitor*)
Wood Thrush (*Hylocichla mustelina*)
Golden-winged Warbler (*Vermivora chrysoptera*)
Northern Parula (*Parula americana*)
Cerulean Warbler (*Dendroica cerulea*)
Canada Warbler (*Wilsonia canadensis*)
Evening Grosbeak (*Coccothraustes vespertinus*)

MAMMALS

smoky shrew (*Sorex fumeus*)
pygmy shrew (*Sorex hoyi*)
silver-haired bat (*Lasiorycteris noctivagans*)
red bat (*Lasiurus borealis*)
hoary bat (*Lasiurus cinereus*)
northern bat or northern myotis (*Myotis septentrionalis*)
gray wolf (*Canis lupus*)
moose (*Alces alces*)
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 hydrologic regimes: Residential and road development may increase flooding.

HABITAT CONVERSION

- Industrial, residential, and recreational development

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Poor forestry planning may result in harvests at suboptimal intervals, runoff, compaction, changes in species composition, and other significant impacts. Clear-cutting may result in vertical simplification.

MICHIGAN'S WILDLIFE ACTION PLAN
TERRESTRIAL SYSTEMS: EASTERN UPPER PENINSULA

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive insects such as the emerald ash borer (*Agrilus planipennis*) may alter species composition.
- Other biological interactions: High wildlife concentrations, as at heron rookeries, may modify soil and water chemistry and contribute to nitrification.

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 by restoring water flow patterns. [Altered hydrologic regimes]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- Manage for representation of all successional stages. [Forestry practices]
- 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 adequate protection for lowland hardwood systems. [Industrial, residential and recreational development]

EDUCATION & AWARENESS

- Work with land managers to develop priorities for lowland hardwood retention and management. [Forestry practices]
- Develop and implement forestry best management practices which address the value of lowland hardwoods for wildlife. [Forestry practices]

ECONOMIC & OTHER INCENTIVES

- Promote protection of significant lowland forest patches through purchase, easement or other economic incentives. [Industrial, residential and recreational development]

Research and Survey Needs

- An inventory needs to be conducted to determine the location, condition, and classification of lowland hardwood remnants and of the opportunities for restoration.
- Test the assumption that lowland 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 lowland hardwood features.
- A better understanding is needed of the temporal and spatial distribution of disturbance and its influence. What factors provide disturbance within lowland hardwood communities? Historically, hydrology probably provided many disturbance events.
- Identify the characteristics of lowland hardwood systems that contribute to their value to wildlife and which species may be affected by changes in these characteristics.
- Identify invasive species that may degrade the value of lowland hardwood sites for wildlife. Develop techniques to control invasive species. Common invasive species include emerald ash borer (*Agrilus planipennis*), autumn olive (*Elaeagnus umbellata*) and glossy buckthorn (*Rhamnus frangula*).
- Evaluate whether lowland hardwood communities act as corridors. These systems are common along rivers and may provide a linear forested feature on the landscape. Are these riparian systems sinks to some species?
- Determine whether site characteristics exist which favor the establishment and retention of lowland hardwood communities over shrub or grassland communities.
- Document the historic and current range of variation between lowland hardwood sites. This includes variables such as species composition, age or size class, and stand size.
- Develop a classification system for lowland forest types (based on characteristics such as soil nutrients, moisture regimes, and successional pathways) similar to John Kotar's classification of upland forest types.

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.