



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

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 Southern Lower Peninsula is considered to be in fair to good condition (~65%). Most of the remaining areas are considered degraded or very degraded (~30%). Several of these natural communities are classified as rare or uncommon in the State.

Associated Natural Communities

Hardwood-Conifer Swamp
Southern Floodplain Forest
Southern Swamp

Associated Species of Greatest Conservation Need

INSECTS

grey petaltail (*Tachopteryx thoreyi*)
spatterdock damper (*Aeshna mutata*)
arrowhead spiketail (*Cordulegaster obliqua*)
ringed boghaunter (*Williamsonia lintneri*)
a spur-throat grasshopper (*Melanoplus eurycerus*)
Hebard's green-legged locust (*Melanoplus viridipes*)
post-oak grasshopper (*Dendrotettix quercus*)
woodland camel cricket (*Ceuthophilus uhleri*)
American burying beetle (*Nicrophorus americanus*)
black lordithon rove beetle (*Lordithon niger*)
six-banded longhorn beetle (*Dryobius sexnotatus*)
northern hairstreak (*Fixsenia favonius ontario*)
barrens buckmoth (*Hemileuca maia*)
corylus dagger moth (*Acronicta falcula*)
gold moth (*Basilodes pepita*)
quiet underwing (*Catocala dulciola*)
magdalen underwing (*Catocala illecta*)
regal fern borer (*Papaipema speciosissima*)
Riley's lappet moth (*Heteropacha rileyana*)
small heterocampa (*Heterocampa subrotata*)

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*)
Fowler's toad (*Bufo fowleri*)
western chorus frog (*Pseudacris triseriata triseriata*)

REPTILES

Kirtland's snake (*Clonophis kirtlandii*)
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*)

REPTILES cont.

queen snake (*Regina septemvittata*)
eastern massasauga (*Sistrurus catenatus catenatus*)
spotted turtle (*Clemmys guttata*)
wood turtle (*Glyptemys insculpta*)
eastern box turtle (*Terrapene carolina carolina*)

BIRDS

Great Blue Heron (*Ardea herodias*)
Green Heron (*Butorides virescens*)
Bald Eagle (*Haliaeetus leucocephalus*)
Northern Goshawk (*Accipiter gentilis*)
Red-shouldered Hawk (*Buteo lineatus*)
American Woodcock (*Scolopax minor*)
Yellow-billed Cuckoo (*Coccyzus americanus*)
Red-headed Woodpecker (*Melanerpes erythrocephalus*)
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*)
Black-throated Blue Warbler (*Dendroica caerulescens*)
Yellow-throated Warbler (*Dendroica dominica*)
Cerulean Warbler (*Dendroica cerulea*)
Prothonotary Warbler (*Protonotaria citrea*)
Louisiana Waterthrush (*Seiurus motacilla*)
Kentucky Warbler (*Oporornis formosus*)
Hooded Warbler (*Wilsonia citrina*)
Canada Warbler (*Wilsonia canadensis*)

MAMMALS

silver-haired bat (*Lasionycteris noctivagans*)
red bat (*Lasiurus borealis*)
hoary bat (*Lasiurus cinereus*)
northern bat or northern myotis (*Myotis septentrionalis*)
Indiana bat or Indiana myotis (*Myotis sodalis*)
evening bat (*Nycticeius humeralis*)
eastern pipistrelle (*Pipistrellus subflavus*)

MAMMALS cont.
least weasel (*Mustela nivalis*)

woodland vole (*Microtus pinetorum*)
southern bog lemming (*Synaptomys cooperi*)

Associated Threats

LAND & WATER PROTECTION

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

MODIFICATION OF NATURAL PROCESSES

- Grazing and mowing patterns: Pasturing of livestock in lowland systems may degrade them.
- Altered hydrologic regimes: Drainage pattern changes may affect lowland hardwoods and alter the frequency, timing, or extent of flooding.
- Fragmentation

HABITAT CONVERSION

- Industrial, residential, and recreational development
- Conversion to agriculture
- Dams
- Dredging and channelization: Channelization is performed to reduce the water content of surrounding soils and amount of standing water.

POLLUTION

- Pesticides and herbicides: Fertilizer use on surrounding uplands increases nutrient loading.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive insects such as the Emerald Ash Borer (*Agrilus planipennis*) may alter species composition.
- Disease, pathogens, and parasites: Diseases like Dutch elm disease may alter species composition.
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration. Beavers (*Castor canadensis*) may directly impact water levels and flooding events.

EDUCATION

- Social attitudes

Conservation Actions Needed [Threats addressed]

LAND, WATER & SPECIES MANAGEMENT

- Manage to approximate natural disturbance regimes through the dispersal of drainage into lowland hardwood systems to minimize the impact of flash flooding. [Altered hydrologic regimes; Dams; Dredging and channelization; 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]
- Promote cultivation and pest control measures which are less chemical dependent. [Pesticides and herbicides]
- Protect existing natural wetlands and restore degraded wetland systems and correct drainage problems resulting from channelization. [Altered hydrologic regimes; Fragmentation; Dredging and channelization]
- Remove dams or reduce water levels behind dams where increased water depth results in die-off of woody vegetation. Monitor beaver dams to determine whether they need to be managed. [Altered hydrologic regimes; Dams; Other biological interactions]
- Manage white-tailed deer densities to allow for regeneration. [Other biological interactions]
- Promote the closure of non-essential resource management roads and seek other road closure opportunities that do not conflict with other appropriate uses. [Fragmentation]
- 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; Conversion to agriculture; Fragmentation]

EDUCATION & AWARENESS

- Educate private landowners on the value of lowland hardwoods to wildlife and people. [Social attitudes]
- Promote the use of existing best management practices to minimize the impacts of grazing and farming in lowland areas. [Grazing and mowing patterns; Pesticides and herbicides; Dredging and channelization]

Research and Survey Needs

- An inventory needs to be conducted to determine the location, condition, and classification of remnants 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.

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- 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.