



Forest: Lowland conifer

Description

Lowland conifer forests have seasonally or permanently saturated soils and are dominated by moisture-tolerant conifers such as black spruce (*Picea mariana*), tamarack (*Larix laricina*), white cedar (*Thuja occidentalis*), balsam fir (*Abies balsamea*), and jack pine (*Pinus banksiana*). These areas are often adjacent to open wetlands, lakes, rivers, or streams. They are characterized by diverse microtopography and ground cover (especially in systems dominated by cedar or tamarack). Natural disturbances in lowland conifer forests include seasonal and beaver-induced flooding, windthrow, and fire.

General Condition of Feature

Much of the lowland conifer in the Southern Lower Peninsula is considered degraded or very degraded (~65%). About 35% is considered to be in fair or good condition in the region. Lowland conifer was an extremely rare feature historically in the Southern Lower Peninsula and much that was present was lost with land conversion in the late 1800s. Some lowland conifer natural communities are classified as rare or uncommon in the State, and sometimes globally.

Associated Natural Communities

Hardwood-Conifer Swamp
Poor Conifer Swamp
Relict Conifer Swamp

Rich Conifer Swamp
Wooded Dune and Swale Complex

Associated Species of Greatest Conservation Need

INSECTS

grey petaltail (*Tachopteryx thoreyi*)
sedge darner (*Aeshna juncea*)
ringed boghaunter (*Williamsonia lintneri*)
tamarack tree cricket (*Oecanthus laricis*)
pine tree cricket (*Oecanthus pini*)
swamp metalmark (*Calephelis mutica*)
Mitchell's satyr (*Neonympha mitchellii mitchellii*)
golden borer (*Papaipema cerina*)

AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)
spotted salamander (*Ambystoma maculatum*)
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*)
black rat snake (*Elaphe obsoleta obsoleta*)
eastern hognose snake (*Heterodon platirhinos*)
smooth green snake (*Liochlorophis vernalis*)
queen snake (*Regina septemvittata*)

REPTILES cont.

eastern massasauga (*Sistrurus catenatus catenatus*)
spotted turtle (*Clemmys guttata*)
eastern box turtle (*Terrapene carolina carolina*)

BIRDS

Osprey (*Pandion haliaetus*)
Bald Eagle (*Haliaeetus leucocephalus*)
Northern Goshawk (*Accipiter gentilis*)
Red-shouldered Hawk (*Buteo lineatus*)
American Woodcock (*Scolopax minor*)
Long-eared Owl (*Asio otus*)
Northern Flicker (*Colaptes auratus*)
Northern Shrike (*Lanius excubitor*)
Ruby-crowned Kinglet (*Regulus calendula*)
Northern Parula (*Parula americana*)
Blackburnian Warbler (*Dendroica fusca*)
Connecticut Warbler (*Oporornis agilis*)
Canada Warbler (*Wilsonia canadensis*)
White-winged Crossbill (*Loxia leucoptera*)
Evening Grosbeak (*Coccothraustes vespertinus*)

MAMMALS

silver-haired bat (*Lasiorycteris noctivagans*)
red bat (*Lasiurus borealis*)
hoary bat (*Lasiurus cinereus*)
northern bat or northern myotis (*Myotis septentrionalis*)
woodland vole (*Microtus pinetorum*)
southern bog lemming (*Synaptomys cooperi*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Grazing and mowing patterns
- Altered fire regime
- Altered hydrologic regimes: Changes in the hydrologic regime may alter the incidence and magnitude of flooding events and influence species composition.
- Fragmentation

HABITAT CONVERSION

- Industrial, residential, and recreational development: Development for residential or recreational use, such as homes and golf courses, is common.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Plants such as phragmites (*Phragmites australis*), reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*) and glossy buckthorn (*Rhamnus frangula*) may alter community composition. Emerald ash borer (*Agilus planipennis*) may affect lowland conifers.
- Disease, pathogens, and parasites
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration.

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 managed grazing and mowing, prescribed fire, and the restoration of natural water flow patterns. [Grazing and mowing patterns; Altered fire regime; Altered hydrologic regimes]
- 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]
- Promote the closure of non-essential resource management roads and seek other road closure opportunities that do not conflict with other appropriate uses. [Fragmentation]
- Avoid motorized trail construction in cedar swamps and hardwood-conifer swamps [Industrial, residential, and recreational development]
- 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 conifer 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 lowland conifers 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 lowland conifer features.
- A better understanding is needed of the temporal and spatial distribution of disturbance and its influence. What factors provide disturbance within lowland conifer communities?
- Identify the characteristics of lowland conifer 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 lowland conifer sites for wildlife. Develop techniques to control invasive species. Develop treatments for diseases that threaten lowland conifers.
- Document the historic and current range of variation between lowland conifer 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.
- Examine climate change in the Southern Lower Peninsula and determine its effect on lowland conifer community composition and abundance.
- Develop techniques to aid cedar regeneration in lowland conifer systems.

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 conifers.
- Track hydrology patterns and water quality.
- Track cedar regeneration.