



Forest: Mesic conifer

Description

Mesic conifer forests have moist soils and are generally dominated by hemlock (*Tsuga canadensis*), balsam fir (*Abies balsamea*), or white pine (*Pinus strobus*). 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 dryer upland areas and wet lowland areas. Mature mesic conifer forests are characterized by shade-tolerant species, especially hemlock, but also sugar maple and American beech. Natural disturbances in mesic conifer forests include windthrow and fire. These forests generally have a relatively low density of herbaceous vegetation due to high canopy cover, low light infiltration, and nutrient poor needle litter. However, when mesic hardwoods are prevalent in the canopy, these systems can have very high spring wildflower densities. The soil moisture, thick layers of humus, and down woody debris within these forests can lead to very favorable habitat for fungal species, lichens, and other epiphytic flora.

General Condition of Feature

Much of the mesic conifer in the Southern Lower Peninsula is considered degraded or very degraded (~55%). Much of the remaining areas are considered to be in good condition (~35%). Mesic conifer was historically rare in the Southern Lower Peninsula. Mesic conifer natural communities are each classified as rare or uncommon in Michigan.

Associated Natural Communities

Dry-mesic Northern Forest
Mesic Northern Forest
Wooded Dune and Swale Complex

Associated Species of Greatest Conservation Need

INSECTS

ringed boghaunter (*Williamsonia lintneri*)
pine katydid (*Scudderia fasciata*)
pine tree cricket (*Oecanthus pini*)
six-banded longhorn beetle (*Dryobius sexnotatus*)

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*)
black rat snake (*Elaphe obsoleta obsoleta*)
eastern hognose snake (*Heterodon platirhinos*)
smooth green snake (*Liochlorophis vernalis*)
eastern massasauga (*Sistrurus catenatus catenatus*)
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*)
Black-billed Cuckoo (*Coccyzus erythrophthalmus*)
Long-eared Owl (*Asio otus*)
Common Nighthawk (*Chordeiles minor*)
Northern Flicker (*Colaptes auratus*)
Least Flycatcher (*Empidonax minimus*)
Blackburnian Warbler (*Dendroica fusca*)
Connecticut Warbler (*Oporornis agilis*)
Canada Warbler (*Wilsonia canadensis*)
White-winged Crossbill (*Loxia leucoptera*)

MAMMALS

red bat (*Lasiurus borealis*)
hoary bat (*Lasiurus cinereus*)
evening bat (*Nycticeius humeralis*)
woodland vole (*Microtus pinetorum*)
southern bog lemming (*Synaptomys cooperi*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Fragmentation

HABITAT CONVERSION

- Industrial, residential, and recreational development
- Conversion to agriculture
- Incompatible natural resource management

BIOLOGICAL INTERACTIONS

- Invasive plants and animals
- Disease, pathogens and parasites: Hemlock woolly adelgid (*Adelges tsugae*) may impact mesic conifers.
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration.

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

OTHER

- Historic status/current abundance: Most mesic conifer in the Southern Lower Peninsula is remnant and is less common than historically which makes it highly vulnerable to incursion from surrounding forest types.

Conservation Actions Needed [Threats addressed]

LAND & WATER PROTECTION

- Acquire mesic conifer remnants, either by State or Federal agencies or private land conservancies, to prevent their destruction. [Fragmentation; Industrial, residential, and recreational development; Conversion to agriculture; Other biological interactions; Historic status/current abundance]

LAND, WATER & SPECIES MANAGEMENT

- Assess management goals to ensure that they provide for a diversity of communities across the landscape. [Fragmentation; Incompatible natural resource management]
- 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]
- 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]
- Manage for representation of all successional stages. [Incompatible natural resource management]
- 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]
- 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 conifer systems. [Fragmentation; Conversion to agriculture]

Research and Survey Needs

- An inventory needs to be conducted to determine the location, condition, and classification of mesic 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 mesic conifer features.
- A better understanding is needed of the temporal and spatial distribution of disturbance and its influence. What factors provide disturbance within mesic conifer communities?
- Identify the characteristics of mesic 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 mesic conifer sites for wildlife. Develop techniques to control invasive species. Develop treatments for diseases that threaten mesic conifers.
- Document the historic and current range of variation between mesic conifer sites. This includes variables such as species composition, age or size class, and stand size.
- Assess the potential effects of climate change on mesic conifer community composition and abundance.
- Develop techniques to aid hemlock regeneration in mesic conifer systems.
- Determine whether differences exist in value to wildlife of natural stands and forest plantations. Quantify the structural differences between these communities.

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.