



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

Most of the mesic conifer in the Eastern Upper Peninsula is considered to be in fair or good condition (~80%). Much of the remaining areas are considered degraded (~15%). Mesic conifer natural communities are considered rare or uncommon in Michigan.

Associated Natural Communities

Boreal Forest

Dry-mesic Northern Forest

Mesic Northern Forest

Wooded Dune and Swale Complex

Associated Species of Greatest Conservation Need

SNAILS

widespread column (*Pupilla muscorum*)

delicate vertigo (*Vertigo bollesiana*)

a land snail (*Vertigo paradoxa*)

a land snail (*Guppya sterkii*)

INSECTS

ringed boghaunter (*Williamsonia lintneri*)

frigga fritillary (*Boloria frigga*)

freiija fritillary (*Boloria freiija*)

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*)

western fox snake (*Elaphe vulpina*)

smooth green snake (*Liochlorophis vernalis*)

eastern massasauga (*Sistrurus catenatus catenatus*)

BIRDS

Spruce Grouse (*Falcapennis canadensis*)

Northern Bobwhite (*Colinus virginianus*)

Bald Eagle (*Haliaeetus leucocephalus*)

Cooper's Hawk (*Accipiter cooperii*)

Northern Goshawk (*Accipiter gentilis*)

Red-shouldered Hawk (*Buteo lineatus*)

BIRDS cont.

Merlin (*Falco columbarius*)

Black-billed Cuckoo (*Coccyzus erythrophthalmus*)

Long-eared Owl (*Asio otus*)

Common Nighthawk (*Chordeiles minor*)

Northern Flicker (*Colaptes auratus*)

Olive-sided Flycatcher (*Contopus cooperi*)

Least Flycatcher (*Empidonax minimus*)

Gray Jay (*Perisoreus canadensis*)

Boreal Chickadee (*Poecile hudsonica*)

Blackburnian Warbler (*Dendroica fusca*)

Connecticut Warbler (*Oporornis agilis*)

Canada Warbler (*Wilsonia canadensis*)

Red Crossbill (*Loxia curvirostra*)

White-winged Crossbill (*Loxia leucoptera*)

Evening Grosbeak (*Coccothraustes vespertinus*)

MAMMALS

smoky shrew (*Sorex fumeus*)

pygmy shrew (*Sorex hoyi*)

red bat (*Lasiurus borealis*)

hoary bat (*Lasiurus cinereus*)

lynx (*Lynx canadensis*)

American marten (*Martes americana*)

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*)

deer mouse (*Peromyscus maniculatus gracilis*)

snowshoe hare (*Lepus americanus*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered hydrologic regimes: Residential and road development may contribute to flooding.

HABITAT CONVERSION

- Industrial, residential, and recreational development

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Inappropriate forestry practices may lead to vertical simplification.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Invasive species such as emerald ash borer (*Agrilus planipennis*) may alter species composition.

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]
- Work with land managers to develop priorities for mesic conifer retention and management. [Forestry practices]
- Develop and implement forestry best management practices which address the value of mesic conifers for wildlife. [Forestry practices]
- 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 mesic conifer systems. [Industrial, residential and recreational development]

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 mesic conifer 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.
- Develop techniques to aid hemlock regeneration in mesic conifer systems.
- Determine whether differences exist in the 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 mesic conifers.
- Track hydrologic patterns.
- Track hemlock regeneration.