



Forest: Dry hardwood

Description

Dry hardwood forests have dry soils and are generally dominated by such trees as white oak (*Quercus alba*), black oak (*Quercus velutina*), northern pin oak (*Quercus ellipsoidalis*), black cherry (*Prunus serotina*), bigtooth aspen (*Populus grandidentata*), and quaking aspen (*Populus tremuloides*). Dry hardwood forests generally have relatively open canopies that allow for the regeneration of shade-intolerant species, especially oaks. Fire is an important natural disturbance in many dry hardwood forests, where the frequency and magnitude of fires play a major role in determining species composition, successional stage, forest structural characteristics, and configuration. Dry forest openings are also created by high winds or disease (e.g., oak wilt). These gaps are often colonized by less vigorous species such as aspen (aspen also colonize disturbed dry conifer gaps). Dry hardwood forests have a high diversity of shrub and woody vine species. These shrub species are represented in early successional stages as well as within the understory of more advanced stages. With fire suppression, many dry hardwood forests are colonized by shade-tolerant maples and thus succeed to mesic forests.

General Condition of Feature

Much of the dry hardwood in the Northern Lower Peninsula is considered to be in fair to good condition (~60%). Most of the remaining areas are considered degraded or very degraded (~35%).

Associated Natural Communities

N/A – no native natural communities

Associated Species of Greatest Conservation Need

INSECTS

post-oak grasshopper (*Dendrotettix quercus*)
Davis's shield-bearer (*Atlantiscus davisii*)
Henry's elfin (*Callophrys henrici*)
gorgone checkerspot (*Chlosyne gorgone carlota*)
barrens buckmoth (*Hemileuca maia*)
Sprague's pygarcia (*Pygarcia spraguei*)
boreal fan moth (*Brachionycha borealis*)

AMPHIBIANS

blue-spotted salamander (*Ambystoma laterale*)

REPTILES

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

Bald Eagle (*Haliaeetus leucocephalus*)
Cooper's Hawk (*Accipiter cooperii*)
Northern Goshawk (*Accipiter gentilis*)
Red-shouldered Hawk (*Buteo lineatus*)
Merlin (*Falco columbarius*)
American Woodcock (*Scolopax minor*)

BIRDS cont.

Whip-poor-will (*Caprimulgus vociferus*)
Red-headed Woodpecker (*Melanerpes*
erythrocephalus)
Acadian Flycatcher (*Empidonax vireescens*)
Least Flycatcher (*Empidonax minimus*)
Wood Thrush (*Hylocichla mustelina*)
Brown Thrasher (*Toxostoma rufum*)
Cerulean Warbler (*Dendroica cerulea*)
Worm-eating Warbler (*Helmitheros vermivorus*)
Connecticut Warbler (*Oporornis agilis*)
Eastern Towhee (*Pipilo erythrophthalmus*)
Evening Grosbeak (*Coccothraustes vespertinus*)

MAMMALS

red bat (*Lasiurus borealis*)
hoary bat (*Lasiurus cinereus*)
northern bat or northern myotis (*Myotis*
septentrionalis)
Indiana bat or Indiana myotis (*Myotis sodalis*)
eastern pipistrelle (*Pipistrellus subflavus*)
least weasel (*Mustela nivalis*)
northern flying squirrel (*Glaucomys sabrinus*)
woodland vole (*Microtus pinetorum*)
southern bog lemming (*Synaptomys cooperi*)
deer mouse (*Peromyscus maniculatus gracilis*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Grazing and mowing patterns
- Altered fire regime: Lack of fire may lead to vertical simplification and a lack of oak regeneration.
- Altered hydrologic regimes: Drought conditions impact dry hardwoods in the Northern Lower Peninsula.
- Fragmentation

HABITAT CONVERSION

- Industrial, residential, and recreational development
- Incompatible natural resource management: An emphasis on aspen (*Populus* spp.) retention may alter species composition.

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices: Inappropriate forestry practices may lead to an overabundance of a single age class. Hardwood stands may convert to conifer after harvest due to the difficulty of regeneration of oak.
- Mining practices: Oil and gas development may impact dry hardwoods in the Northern Lower Peninsula.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Species like gypsy moth (*Lymantria dispar*) may affect species composition.
- Disease, pathogens, and parasites: Oak wilt and other diseases may alter species composition.
- Other biological interactions: White-tailed deer (*Odocoileus virginianus*) browse may hinder regeneration, especially of oaks.

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 prescribed fire. [Altered fire regime; Fragmentation]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- Manage white-tailed deer densities to allow for regeneration in dry hardwoods. [Other biological interactions; Incompatible natural resource management]
- Institute disease monitoring and control programs. [Disease, pathogens, and parasites]
- 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]
- Develop and implement forestry best management practices that address the wildlife value of dry hardwoods. [Forestry practices]
- Manage for representation of all successional stages. [Incompatible natural resource management; Forestry practices]
- Promote the closure of non-essential resource management roads and seek other road closure opportunities that do not conflict with other appropriate uses. [Fragmentation]
- Temporary roads or clearings for oil and gas extraction should be planned and constructed to be revegetated. [Mining practices]
- Where large diameter tree snags and coarse woody debris are occasional or rare, seek to increase their volume. [Incompatible natural resource management; 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 dry hardwood systems. [Fragmentation; Industrial, residential and recreational development]
- Develop new and enforce existing regulations for mitigation of oil and gas extraction facilities. [Mining practices]

EDUCATION & AWARENESS

Research and Survey Needs

- An inventory needs to be conducted to determine the location, condition, and classification of dry hardwoods and of the opportunities for restoration.
- Test the assumption that dry 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 dry hardwood features.
- A better understanding is needed of the temporal and spatial distribution of disturbance and its influence on dry hardwood communities. What factors provide disturbance within dry hardwood communities?
- Identify the characteristics of dry hardwood 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 dry hardwood sites for wildlife. Develop techniques to control invasive species. Develop treatments for diseases that threaten dry hardwoods. Common invasive species and diseases include emerald ash borer (*Agilus planipennis*), oak wilt, and beech bark disease.
- Document the historic and current range of variation between dry hardwood sites. This includes variables such as species composition, age or size class, and stand size.
- Evaluate the influence of mast in dry hardwoods on wildlife population size and health. Can high or low mast crops have a significant impact on species abundance? Are there regional differences either in mast crops or the wildlife response to changes in the mast crop?

Monitoring

- Track woody species composition and diversity, with attention to structure and age class.

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

- Track the presence and abundance of invasive species.
- Track acreage and distribution of dry hardwoods.
- Track mast production and oak regeneration.