



Grassland: Savanna

Description

Savannas are native grasslands scattered with isolated trees or shrubs with 5-60% canopy cover. In Michigan, the primary trees in savanna communities are fire-adapted species such as white oak (*Quercus alba*), bur oak (*Quercus macrocarpa*), black oak (*Quercus velutina*), and jack pine (*Pinus banksiana*). These landscape features are largely maintained by fire, without which the canopy closes and succession to forest occurs. In some areas, sparse tree growth is maintained by droughty soil conditions.

General Condition of Feature

Most savanna in the Eastern Upper Peninsula is considered to be in fair to good condition (~65%) and some areas are considered in excellent condition (~10%). Most of the remainder is considered degraded (~25%). Specific savanna natural communities are classified as imperiled or critically imperiled within the State due to high or extreme rarity.

Associated Natural Communities

Great Lakes Barrens
Oak-pine barrens
Pine Barrens

Associated Species of Greatest Conservation Need

INSECTS

northern blue (*Lycaeides idas nabokovi*)
Henry's elfin (*Callophrys henrici*)
tawny crescent (*Phyciodes batesii*)

AMPHIBIANS

eastern tiger salamander (*Ambystoma tigrinum tigrinum*)
northern leopard frog (*Rana pipiens*)

REPTILES

blue racer (*Coluber constrictor foxii*)
western fox snake (*Elaphe vulpina*)
eastern hognose snake (*Heterodon platirhinos*)
smooth green snake (*Liochlorophis vernalis*)
Blanding's turtle (*Emydoidea blandingii*)

BIRDS

Sharp-tailed Grouse (*Tympanuchus phasianellus*)
Northern Bobwhite (*Colinus virginianus*)
Cooper's Hawk (*Accipiter cooperii*)
Northern Goshawk (*Accipiter gentilis*)
Merlin (*Falco columbarius*)
Upland Sandpiper (*Bartramia longicauda*)

BIRDS cont.

Yellow-billed Cuckoo (*Coccyzus americanus*)
Short-eared Owl (*Asio flammeus*)
Common Nighthawk (*Chordeiles minor*)
Black-backed Woodpecker (*Picoides arcticus*)
Northern Flicker (*Colaptes auratus*)
Eastern Kingbird (*Tyrannus tyrannus*)
Northern Shrike (*Lanius excubitor*)
Purple Martin (*Progne subis*)
Sedge Wren (*Cistothorus platensis*)
Northern Mockingbird (*Mimus polyglottos*)
Brown Thrasher (*Toxostoma rufum*)
Kirtland's Warbler (*Dendroica kirtlandii*)
Prairie Warbler (*Dendroica discolor*)
Eastern Towhee (*Pipilo erythrophthalmus*)
Field Sparrow (*Spizella pusilla*)
Dickcissel (*Spiza americana*)

MAMMALS

least chipmunk (*Tamias minimus*)
southern bog lemming (*Synaptomys cooperi*)
deer mouse (*Peromyscus maniculatus gracilis*)

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Altered fire regime: Lack of fire results in succession to forested landscape features.

HABITAT CONVERSION

- Industrial, residential, and recreational development
- Incompatible natural resource management: Planting of trees can alter the value of savanna to wildlife or result in the conversion of savanna to plantations, often of red pine (*Pinus resinosa*). Rapid regeneration of forest after harvesting eliminates savanna.

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Non-consumptive recreation: Uncontrolled ATV and ORV use may impact savannas.

BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Species like spotted knapweed (*Centaurea maculosa*) can alter community 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 using prescribed fire. [Altered fire regime]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- 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]
- 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 remnant savanna systems. [Industrial, residential and recreational development]
- Develop and enforce regulations to curtail recreational activities that cause significant damage. [Non-consumptive recreation]

EDUCATION & AWARENESS

- Work with land managers to develop priorities for savanna restoration and management. [Incompatible natural resource management]
- Educate local planning and zoning boards about the value of savanna and methods to conserve savanna systems. [Industrial, residential and recreational development]
- Create awareness in the general public of the value of savannas to wildlife. Educate the public on the use of controlled fire for prescribed burns. [Incompatible natural resource management]

RECREATION

- Promote responsible ATV and ORV use. [Non-consumptive recreation]

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.
- Study the groundwater recharge capacity of savanna systems. Higher infiltration rates decrease runoff, increase groundwater recharge, and reduce storm discharge in river systems. Determine the impacts on this dynamic and groundwater quality of the addition of pollution to savannas.
- A better understanding is needed of human-influenced impacts on savannas. Do structures like freeway corridors act as a substitute for savanna on the landscape?
- A better understanding is needed of the temporal distribution of fire and its influence on savanna.
- A better understanding is needed of the history of savanna sites. Many sites have been retained through human-influenced activities that foster maintenance of savanna features.
- Techniques need to be developed using remote sensing and physical inventorying to create digital data sources for use in research and planning.

Monitoring

- Track the acreage and distribution of savanna across the landscape.
- Track changes in the floristic composition of savanna in the region.
- Track fragmentation patterns in savanna.
- Develop and use lists of indicator species to monitor savanna condition. Insect and plant species may be especially useful as indicators.