



## 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 communities 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

Savannas are a fairly rare natural feature in the Western Upper Peninsula landscape. Most of the savannas in the region are considered degraded (~60%). Much of the remainder is considered to be in fair condition (~35%). Savannas include natural communities that are considered imperiled or critically imperiled within the State due to high or extreme rarity.

### Associated Natural Communities

Northern Bald (Krummholz ridgetop)  
Oak-Pine Barrens  
Pine Barrens

### Associated Species of Greatest Conservation Need

#### INSECTS

Henry's elfin (*Callophrys henrici*)  
gorgone checkerspot (*Chlosyne gorgone carlota*)  
tawny crescent (*Phyciodes batesii*)

#### AMPHIBIANS

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*)

#### BIRDS cont.

Upland Sandpiper (*Bartramia longicauda*)  
Yellow-billed Cuckoo (*Coccyzus americanus*)  
Common Nighthawk (*Chordeiles minor*)  
Northern Flicker (*Colaptes auratus*)  
Eastern Kingbird (*Tyrannus tyrannus*)  
Northern Shrike (*Lanius excubitor*)  
Purple Martin (*Progne subis*)  
Sedge Wren (*Cistothorus platensis*)  
Brown Thrasher (*Toxostoma rufum*)  
Eastern Towhee (*Pipilo erythrophthalmus*)  
Field Sparrow (*Spizella pusilla*)  
Dickcissel (*Spiza americana*)  
Western Meadowlark (*Sturnella neglecta*)

#### 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.
- Fragmentation

#### HABITAT CONVERSION

- Incompatible natural resource management: A lack of active management can allow succession to a forested feature type; tree planting.

#### CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices

#### NONCONSUMPTIVE BIOLOGICAL RESOURCE USE

- Non-consumptive recreation: ATV and ORV use is common in savannas.

#### BIOLOGICAL INTERACTIONS

- Invasive plants and animals: Brown-headed cowbirds (*Molothrus ater*) have expanded their range due to habitat conversion and currently pose a significant threat to many native avian species.

#### EDUCATION

- Social attitudes: The public needs to understand that savanna are dependent on fire for maintenance and that the condition of the feature may vary, leading to varying levels of value for wildlife.

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*

- Trap and remove cowbirds. [Invasive plants and animals]
- Manage to approximate natural disturbance regimes using prescribed fire. [Altered fire regime; Social attitudes]
- Develop plans for active management to maintain and restore savanna. [Incompatible natural resource management; Social attitudes]
- 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 encourage the adoption of best management practices for logging in savanna. [Forestry practices; Incompatible natural resource management]
- Consider active restoration of dwarf bilberry and northern blue butterfly on suitable sites. [Altered fire regime; Incompatible natural resource management]
- Support Landowner Incentive Programs to foster conservation on private land [variety of threats]

*LAW & POLICY*

- Develop and enforce regulations to curtail recreational activities that cause significant damage. [Non-consumptive recreation]
- Work with municipalities to promote planning and zoning to discourage parcelization and reduction in feature size. [Fragmentation]

*RECREATION*

- Promote responsible ATV/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 cultural 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 savannas.
- A better understanding is needed of the history of savanna sites. Many sites have been retained through cultural 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.