



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

Most savanna in the Southern Lower Peninsula is considered to be degraded or very degraded (~90%) due to vegetative succession and development. Several savanna natural communities are classified as imperiled or critically imperiled within the State and globally (e.g., lakeplain oak openings) due to high or extreme rarity.

Associated Natural Communities

Bur Oak Plains	Oak Barrens
Dry Sand Prairie	Oak Openings
Hillside Prairie	Oak-Pine Barrens
Lakeplain Oak Openings	Woodland Prairie
Mesic Sand Prairie	

Associated Species of Greatest Conservation Need

INSECTS

barrens locust (*Orphulella pelidna*)
 a spur-throat grasshopper (*Melanoplus eurycercus*)
 blue-legged locust (*Melanoplus flavidus*)
 Hebard's green-legged locust (*Melanoplus viridipes*)
 Atlantic-coast locust (*Psinidia fenestralis*)
 conehead grasshopper (*Neoconocephalus retusus*)
 great plains spittlebug (*Lepyronia gibbosa*)
 a spittlebug (*Philaenarcys killa*)
 red-legged spittlebug (*Prosapia ignipectus*)
 a leafhopper (*Flexamia reflexus*)
 wild indigo duskywing (*Erynnis baptisiae*)
 persius duskywing (*Erynnis persius persius*)
 ottoe skipper (*Hesperia ottoe*)
 dusted skipper (*Atrytonopsis hianna*)
 pipevine swallowtail (*Battus philenor*)
 northern hairstreak (*Fixsenia favonius ontario*)
 Karner blue (*Lycaeides melissa samuelis*)
 Henry's elfin (*Callophrys henrici*)
 frosted elfin (*Callophrys irus*)
 gorgone checkerspot (*Chlosyne gorgone carlota*)
 tawny crescent (*Phyciodes batesii*)
 barrens buckmoth (*Hemileuca maia*)
 Sprague's pygarctia (*Pygarctia spraguei*)
 three-staff underwing (*Catocala amestris*)
 quiet underwing (*Catocala dulciola*)
 blazing star borer (*Papaipema beeriana*)
 phlox moth (*Schinia indiana*)

AMPHIBIANS

smallmouth salamander (*Ambystoma texanum*)
 eastern tiger salamander (*Ambystoma tigrinum tigrinum*)
 Fowler's toad (*Bufo fowleri*)
 northern leopard frog (*Rana pipiens*)

REPTILES

blue racer (*Coluber constrictor foxii*)
 black rat snake (*Elaphe obsoleta obsoleta*)
 eastern hognose snake (*Heterodon platirhinos*)

REPTILES cont.

smooth green snake (*Liochlorophis vernalis*)
 six-lined racerunner (*Apidoscelis sexlineatus*)
 eastern massasauga (*Sistrurus catenatus catenatus*)
 spotted turtle (*Clemmys guttata*)
 Blanding's turtle (*Emydoidea blandingii*)
 eastern box turtle (*Terrapene carolina carolina*)

BIRDS

Northern Bobwhite (*Colinus virginianus*)
 Cooper's Hawk (*Accipiter cooperii*)
 Northern Goshawk (*Accipiter gentilis*)
 Yellow-billed Cuckoo (*Coccyzus americanus*)
 Short-eared Owl (*Asio flammeus*)
 Common Nighthawk (*Chordeiles minor*)
 Red-headed Woodpecker (*Melanerpes erythrocephalus*)
 Northern Flicker (*Colaptes auratus*)
 Least Flycatcher (*Empidonax minimus*)
 Eastern Kingbird (*Tyrannus tyrannus*)
 Migrant Loggerhead Shrike (*Lanius ludovicianus migrans*)
 Northern Shrike (*Lanius excubitor*)
 Purple Martin (*Progne subis*)
 Sedge Wren (*Cistothorus platensis*)
 Northern Mockingbird (*Mimus polyglottos*)
 Brown Thrasher (*Toxostoma rufum*)
 Eastern Towhee (*Pipilo erythrophthalmus*)
 Field Sparrow (*Spizella pusilla*)
 Vesper Sparrow (*Pooecetes gramineus*)
 Dickcissel (*Spiza americana*)
 Bobolink (*Dolichonyx oryzivorus*)
 Western Meadowlark (*Sturnella neglecta*)

MAMMALS

least shrew (*Cryptotis parva*)
 prairie vole (*Microtus ochrogaster*)
 woodland vole (*Microtus pinetorum*)
 southern bog lemming (*Synaptomys cooperi*)

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

Associated Threats

MODIFICATION OF NATURAL PROCESSES

- Climate change
- Grazing and mowing patterns: Grazing, trampling, and compaction may be detrimental in some systems and helpful in others. The timing of mowing may alter vegetation species composition and wildlife species use.
- Altered fire regime: Lack of fire results in succession to forested landscape features.
- Fragmentation

HABITAT CONVERSION

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

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Removal of non-timber flora: Firewood cutting and collection may have an impact on species composition.

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

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

BIOLOGICAL INTERACTIONS

- Invasive plants and animals
- Disease, pathogens, and parasites

EDUCATION

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

- Manage to approximate natural disturbance regimes using managed grazing and mowing and prescribed fire. [Grazing and mowing patterns; Altered fire regime]
- Institute invasive species monitoring, prevention and control programs. [Invasive plants and animals]
- 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]
- 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 savanna or its conversion to features that have greater value to wildlife. [Industrial, residential, and recreational development; Conversion to agriculture]
- Develop and enforce regulations to curtail recreational activities that cause significant damage. [Non-consumptive recreation]
- Work with landowners to develop and implement lower impact recreational vehicle access and use of savannas. [Non-consumptive recreation]

EDUCATION & AWARENESS

- Create awareness in the general public of the value of savannas to wildlife. Educate the public on the use of prescribed fire. [Social attitudes; Altered fire regime]

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 on the potential for human-created forest clearings as surrogates for savanna. Do structures like freeway corridors act as substitutes for savanna on the landscape? Do species respond differently to these areas?

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

- Determine the effects of different grazing patterns on savannas. [Grazing and mowing patterns]
- A better understanding is needed of the temporal distribution of fire and its influence.
- 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.