



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 Northern Lower Peninsula is considered to be degraded (~75%) due to vegetative succession and development. Much of the remaining area is considered fair or good (~15%). Several savanna natural communities are classified as imperiled or critically imperiled within the State, and sometimes globally, due to high or extreme rarity.

Associated Natural Communities

Dry Sand Prairie
 Great Lakes Barrens
 Mesic Sand Prairie

Oak-Pine Barrens
 Pine Barrens

Associated Species of Greatest Conservation Need

INSECTS

a spur-throat grasshopper (*Melanoplus eurycerus*)
 blue-legged locust (*Melanoplus flavidus*)
 secretive locust (*Appalachia arcana*)
 Davis's shield-bearer (*Atlantiscus davisi*)
 great plains spittlebug (*Lepyronia gibbosa*)
 a spittlebug (*Philaenarcys killa*)
 red-legged spittlebug (*Prosapia ignipectus*)
 persius duskywing (*Erynnis persius persius*)
 grizzled skipper (*Pyrgus wyandot*)
 ottoe skipper (*Hesperia ottoe*)
 dusted skipper (*Atrytonopsis hianna*)
 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 pygarcia (*Pygarcia spraguei*)
 boreal fan moth (*Brachionycha borealis*)
 Doll's merolonche (*Merolonche doli*)
 blazing star borer (*Papaipema beeriana*)
 phlox moth (*Schinia indiana*)

AMPHIBIANS

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*)
 smooth green snake (*Liochlorophis vernalis*)

REPTILES cont.

eastern massasauga (*Sistrurus catenatus catenatus*)
 spotted turtle (*Clemmys guttata*)
 Blanding's turtle (*Emydoidea blandingii*)
 eastern box turtle (*Terrapene carolina carolina*)

BIRDS

Sharp-tailed Grouse (*Tympanuchus phasianellus*)
 Northern Bobwhite (*Colinus virginianus*)
 Cooper's Hawk (*Accipiter cooperii*)
 Northern Goshawk (*Accipiter gentilis*)
 Merlin (*Falco columbarius*)
 Yellow-billed Cuckoo (*Coccyzus americanus*)
 Short-eared Owl (*Asio flammeus*)
 Common Nighthawk (*Chordeiles minor*)
 Northern Flicker (*Colaptes auratus*)
 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*)
 Prairie Warbler (*Dendroica discolor*)
 Eastern Towhee (*Pipilo erythrophthalmus*)
 Field Sparrow (*Spizella pusilla*)
 Vesper Sparrow (*Pooecetes gramineus*)
 Dickcissel (*Spiza americana*)
 Western Meadowlark (*Sturnella neglecta*)

MAMMALS

woodland vole (*Microtus pinetorum*)
 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.

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

HABITAT CONVERSION

- Industrial, residential, and recreational development: Residential development is a threat to savannas in the Northern Lower Peninsula.

CONSUMPTIVE BIOLOGICAL RESOURCE USE

- Forestry practices
- Mining practices: Oil and gas development may impact savannas in the Northern Lower Peninsula.
- Incompatible natural resource management: Tree planting within savannas may alter their value for wildlife.

NON-CONSUMPTIVE BIOLOGICAL RESOURCE USE

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

BIOLOGICAL INTERACTIONS

- Invasive plants and animals

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]
- Work with land managers to develop priorities for savanna restoration and management. [Incompatible natural resource management]
- Develop and implement forestry best management practices which address the value of savannas to wildlife. [Forestry practices]
- Temporary roads or clearings for oil and gas extraction should be planned and constructed to be revegetated. [Mining 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 savannas. [Industrial, residential, and recreational development]
- Develop new and enforce existing regulations for mitigation of oil and gas extraction facilities. [Mining practices]
- Develop and enforce regulations to curtail recreational activities that cause significant damage. [Non-consumptive recreation]

EDUCATION & AWARENESS

- Educate local planning and zoning boards about the value of savanna and methods to conserve savannas. [Industrial, residential, and recreational development]

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 savanna 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 savanna.
- 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.
- Determine whether fragmentation is a significant threat to savanna systems and features.
- Develop and use lists of indicator species to monitor savanna condition. Insect and plant species may be especially useful as indicators.

Monitoring

**MICHIGAN'S WILDLIFE ACTION PLAN
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- Track the acreage and distribution of savanna across the landscape.
- Track changes in the floristic composition of savanna in the region.
- Monitor indicator species for changes in savanna condition.