



Diverse Grassland Complexes for Species of Greatest Conservation Need

2013—2015

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Cover photograph: Native warm-season grass planting at Otis Farm Bird Sanctuary, Barry Co., MI, August 14, 2014. Photograph by Daria A. Hyde.



Diverse Grassland Complexes for Species of Greatest Conservation Need

Final Report: 2013 — 2015

Introduction

Grassland birds are among the most imperiled birds in North America, with approximately half of all species considered to be of conservation concern, and over half of species undergoing population declines. In Michigan, over 99% of the original native grasslands (prairies) have been converted to agriculture or otherwise lost, with a similar severe loss of grass-dominated communities with groves of open-grown trees (savannas). Surviving remnants are often too small to support populations of grassland birds.

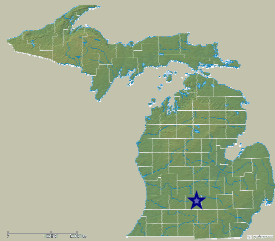
Instead, grassland birds are currently found primarily in cultural grasslands such as old fields, hay fields, and pastures, mostly dominated by non-native grasses and forbs. In addition to reforestation of abandoned cultural grasslands and loss of cultural grasslands to row crops or residential, commercial, and industrial development, grassland management practices such as intense mowing and grazing patterns and fragmentation of grassland parcels negatively affect populations of grassland birds and other species identified as being of conservation concern (Species of Greatest Conservation Need, or SGCN). The implementation of conservation practices such as the establishment of disturbance regimes to set back succession, invasive species control, removal of fencerows, and the creation/planting of large grasslands is critical to the long-term conservation of grassland birds in Michigan and elsewhere in North America.



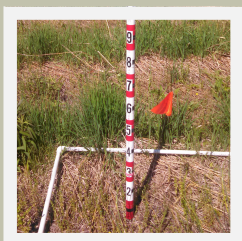
The state endangered Henslow's Sparrow (*Ammodramus henslowii*) utilizes cultural grasslands in the southern two-thirds of Lower Michigan. Photograph by Daniel Behm.

To address declining populations of grassland birds and other grassland-dependent SGCN, MNFI partnered with the Michigan Department of Natural Resources, Wildlife Division (WLD) to restore, enhance, and expand habitat on private and public lands in southern Lower Michigan. Three primary objectives were identified:

- Restore or enhance at least 400 acres of prairie, savanna and low quality grasslands for the federally endangered Karner blue butterfly, Henslow's sparrow, grasshopper sparrow, Northern harrier, and a diverse array of grassland SGCN.
- Plant at least 1,350 acres of native grasses and forbs for grassland birds such as Henslow's sparrow, grasshopper sparrow and northern harrier and a diverse array of SGCN.
- Develop, review, and update conservation plans for key project sites.



Southern Lower Michigan





MNFI staff worked with WLD to meet these objectives through the following activities:

- Assistance with the development and refinement of monitoring strategies
- Point counts of grassland birds during the breeding season (May-June)
- Placement and sampling of vegetation plots to monitor coarse changes in vegetative structure and composition
- Survey for targeted SGCN at sites where the species are not known to be present
- Attendance at relevant meetings (e.g., Karner Blue Working Group)

The results of MNFI project activities from 2013 to 2015 follow.

Key species that utilize cultural grasslands include Henslow's Sparrow, Grasshopper Sparrow, and Dickcissel

Acknowledgments

We thank several WLD staff who assisted with this project, especially past and current project referees, including Mark Sargent, Sue Tangora, Amy Derosier, Jennifer Olson, and Mike Parker. Ken Kesson and Don Bonnette of WLD and Glenn Palmgren of MDNR Parks Division identified and managed grassland projects. Assistance with study design and data analysis was provided by Mike Monfils (MNFI) and Sarah Mayhew and Erin Victory (WLD). Becky Norris (MNFI) conducted surveys in 2013 and 2014. Additional survey assistance was provided by Jennifer Taggett, Tevy Hambric, and Diane Hyde.

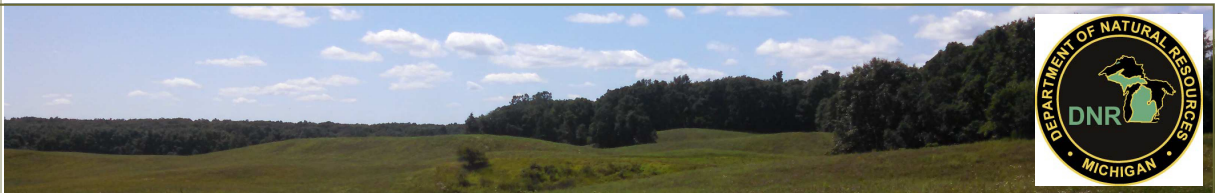
Private organizations and landowners who participated in this project and provided access for surveys include Bernard W. Baker Sanctuary, Larry Geni (and Roger Heffner, renter), Joe Gesmundo (and Tim Kanouse, caretaker), Ingham County Conservation District (Michelle Beloskur), Edward Lowe Foundation, Keith McClish, Otis Farm Bird Sanctuary (Tom Funke), and Pierce Cedar Creek Institute.

Ed Schools, Helen Enander, and Rebecca Rogers provided technological assistance. We also thank Brian Klatt, Sue Ridge, and Nancy Toben for administrative assistance. Uncredited photographs were taken by the authors.



HIGHLIGHTS

- 3 new occurrences each of Henslow's Sparrow and Grasshopper Sparrow and 2 new occurrences of Dickcissel
- Documentation of numerous SGCN and game spp. such as wild turkey and ring-necked pheasant
- Diverse stakeholders including MDNR, private organizations, and private individuals



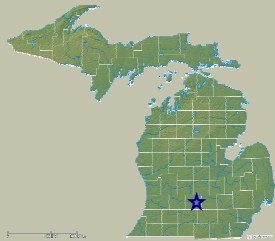
Diverse Grassland Complexes for Species of Greatest Conservation Need

Summary of Bird Surveys

- Breeding grassland bird surveys were conducted at 13 sites in eight counties (Barry, Calhoun, Cass, Huron, Ingham, Kalamazoo, Lenawee, and St. Joseph)
- Each site was visited twice per year, between late May and late June
- 5-minute point counts (generally 4-7 points per site)
- Vegetation monitoring twice per year, once between late May and late June and once in August



Mixed cover types at the Geni property, Cass County



Southern Lower Michigan



The following tables provide data on documented element occurrences (EOs) and observations of grassland birds and game species at survey sites. Bird point count data and vegetation data were provided to WLD staff for data entry and analysis.

New/Updated Grassland Bird EOs

Species	New/Update	Site	County
Dickcissel	New	Gesmundo Prairie	Barry
Dickcissel	New	Verona SGA	Huron
Dickcissel	New	Gourdneck SGA	Kalamazoo
Dickcissel	New	Lake Hudson SRA	Lenawee
Grasshopper sparrow	New	Otis Sanctuary	Barry
Grasshopper sparrow	New	Savage Rd. Prairie	Cass
Grasshopper sparrow	Update	Verona SGA	Huron
Grasshopper sparrow	New	Gourdneck SGA	Kalamazoo
Grasshopper sparrow	New	Lake Hudson SRA	Lenawee
Henslow's sparrow	Update	Pierce Cedar Creek Institute	Barry
Henslow's sparrow	Update	Otis Sanctuary	Barry
Henslow's sparrow	New	Gesmundo Prairie	Barry
Henslow's sparrow	New	Savage Rd. Prairie	Cass
Henslow's sparrow	Update	Verona SGA	Huron
Henslow's sparrow	Update	Ingham County CD	Ingham
Henslow's sparrow	New	Gourdneck SGA	Kalamazoo
Henslow's sparrow	Update	Lake Hudson SRA	Lenawee

Presence/Absence Data by Site

Eastern Sites	Baker Sanctuary (Calhoun Co.)			Ingham Cons. District (Ingham Co.)			Lake Hudson SRA (Lenawee Co.)			Verona SGA N (Huron Co.)			Verona SGA S (Huron Co.)		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Grassland Birds (state status)															
Bobolink							•	•		•	•		•	•	•
Dickcissel - SC									•						•
Eastern Meadowlark							•	•	•			•		•	•
Field Sparrow	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Grasshopper Sparrow - SC				•	•				•	•	•	•	•	•	•
Henslow's Sparrow - E				•	•	•	•	•	•		•		•	•	•
Killdeer															
Savannah Sparrow	•	•			•	•				•	•	•	•	•	•
Vesper Sparrow									•			•			
Game Species															
Ring-necked Pheasant	•					•	•	•	•		•	•	•	•	•
Wild Turkey											•				

Presence/Absence Data by Site

Western Sites- 1/2	Gesmundo Prairie (Barry Co.)			Otis Sanctuary (Barry Co.)			Pierce Cedar Creek Institute (Barry Co.)			Gourdneck SGA (Kalamazoo Co.)		
	2013 No Survey	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Grassland Birds (state status)												
Bobolink			●				●					
Dickcissel - SC			●							●		
Eastern Meadowlark			●									
Field Sparrow		●	●	●	●	●	●	●	●	●	●	●
Grasshopper Sparrow - SC					●					●	●	
Henslow's Sparrow - E			●			●	●				●	●
Killdeer												
Savannah Sparrow			●									
Vesper Sparrow												
Game Species												
Ring-necked Pheasant								●	●			
Wild Turkey												

Presence/Absence Data by Site

Western Sites- 2/2	Geni Prairie (Cass Co.)			Lowe Foundation (Cass Co.)			McClish Site (St. Joseph Co.)			Savage Rd. Prairie (Cass Co.)		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013 <small>No Survey</small>	2014	2015
Grassland Birds (state status)												
Bobolink											•	
Dickcissel - SC												
Eastern Meadowlark	•			•							•	
Field Sparrow	•	•	•	•	•	•	•	•	•		•	•
Grasshopper Sparrow - SC												•
Henslow's Sparrow - E											•	•
Killdeer			•						•		•	•
Savannah Sparrow												•
Vesper Sparrow												
Game Species												
Ring-necked Pheasant							•	•	•		•	
Wild Turkey									•			



Site Highlight: Joe Gesmundo Grassland Planting

Diverse
Grassland
Complexes for
Species of
Greatest
Conservation
Need



Barry County
T02N R10W Secs. 25, 36



Little bluestem (Suzan Campbell)



Bobolink (Steve Maslowski-USFWS)

Activity Summary and Site Description

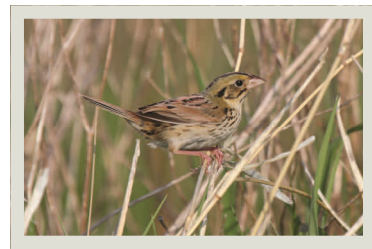
The Joe Gesmundo property is located in south-central Barry County. The property is several hundred acres in size with much of the property being forested and consisting of a mixture of upland and lowland hardwoods. In addition to the forested areas, there are two large open areas, one approximately 150 acres and the other approximately 50 acres. In fall 2013 the landowner harvested soybeans from the larger area that was previously farmed. The site was sprayed with glyphosate twice in the spring of 2014 to kill weeds, and was planted in summer 2014. Various seed mixes were used to establish beneficial cover for grassland birds. The majority of the site was planted to a short grass prairie mixture. Low areas were planted to a sedge meadow mix and the ecotone between lowland and upland soils was planted to a wetland edge seed mix. The site was then mowed once in July 2014 to aid with establishment of the restoration mixes. The site was surveyed for birds in 2014 prior to restoration and post-restoration in 2015 by MNFI/DNR staff. The site has shown a remarkable increase in bird diversity and now hosts numerous grassland birds, including two rare species.

Goals and Objectives:

Install native grassland to create habitat for grassland birds and deer.

Target Species / Community:

Henslow's Sparrow, Bobwhite Quail, Grasshopper Sparrow, Ring-necked Pheasant, Wild Turkey, and white-tailed deer. Native Grassland.



Henslow's Sparrow (Dominic Sherony Maslowski, USFWS)

Rare Species

The state endangered Henslow's Sparrow and the State special concern Dickcissel were documented during the June 2015 bird surveys. This is the first record in the state natural heritage database for Dickcissel in Barry County. It is likely that these as well as several other grassland bird species recorded in 2015 benefited from grassland management activities, as only the only grassland bird observed during 2014 when the prairie was first planted was the Field Sparrow.



BEFORE: Agricultural field prior to grassland restoration in 2014



AFTER: In 2015 this shortgrass prairie planting provides habitat for grassland birds as well as high quality deer forage.



In the first year post-restoration, two state-listed birds and many other grassland-dependent species appeared

Species Benefited

- State endangered Henslow’s Sparrow
- State special concern Dickcissel
- Other grassland birds including the following: Bobolink, Eastern Meadowlark, Eastern Kingbird, Field Sparrow and Savannah Sparrow



Eastern meadowlark (Dominic Sherony)

Public-Private Partnership

- Landowner converted a 150 acre field from soybeans to a native grassland.
- MNDR provided 28% cost share for the project including cash match and partial cost of seed.
- Private landowner provided remaining 72% of funds to pay contractor for installation services and seed.
- Landowner’s goal was to improve deer habitat as well as create habitat for grassland birds.
- Grassland restoration projects such as the Gesmundo property contribute to the conservation and recovery of Michigan’s diverse natural heritage.



Dave Kenyon— MDNR



Dickcissel (Roger Eriksson)

HIGHLIGHTS

- 1st confirmed breeding population of State special concern Dickcissel in Barry County, MI
- State endangered Henslow’s Sparrow documented at site.

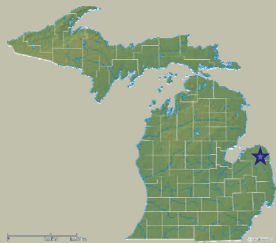


MNFI Volunteer Tevy Hambric monitoring vegetation growth at Gesmundo Prairie in September



Site Highlight: Verona State Game Area

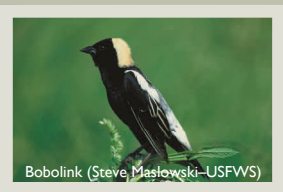
Diverse Grassland Complexes for Species of Greatest Conservation Need



Huron County
T16N R13E; T16N R14E;
T15N R13E; T15N R14E



Henslow's Sparrow (Vince Cavalieri)



Bobolink (Steve Maslowski-USFWS)

Activity Summary and Site Description

The Verona State Game Area was purchased in the mid-1980s from the Detroit Edison Utility Company via the Michigan Recreational Land Trust Fund. On March 19, 1987, 6,852 acres were deeded to the State of Michigan. Since that time, another 843 acres was added through direct purchase bringing the total acreage to 7,695 acres. The portion of the Verona SGA surveyed for grassland birds is located in Huron County, south of M-142, east of Pangborn Rd., west of Scott Rd., and north of Philip Rd. Located at the northern tip of a series of end moraines, the portion of Verona SGA surveyed is topographically diverse, particularly when compared to the surrounding flat, glacial lake plain landscape dominated by agricultural row crops.

Verona North is approximately 203 acres in size, and consists of old fields, old fields recently planted with a prairie seed mix, lowland forests, agricultural fields, and cool season grass fields. The west half of Verona North was planted to mixed warm season grasses around 2005. The MDNR has allowed some sharecrop farming here since the area was acquired and will be planting much of that acreage into mixed warm season grasses in 2016. The west and north

portions of Verona North were burned in 2013, while the east portions were burned in 2009. Only open, non-forested fields dominated by cool and/or warm season grasses were surveyed for grassland birds. A drainage ditch runs roughly north-south through the center of the site. A total of eight targeted grassland birds were observed during the two field surveys in late May and early June. Highlights included Eastern Meadowlark, Bobolink, Grasshopper Sparrow (eight males in June), Henslow's Sparrow, Savannah Sparrow, Vesper Sparrow, and Field Sparrow. Several Ring-necked Pheasants were also observed using the fence rows and densely vegetated ditch banks. Plans for Verona North are to plant much of the currently farmed ground into mixed warm season grasses and forbs in 2016, manage autumn-olive with herbicide and/or cutting, and applying prescribed fire on a four year rotation. The next prescribed fire is planned for 2017.

Verona South is approximately 166 acres in size, and consists of a similar mix of habitats as Verona North, with more of an emphasis on old fields recently planted with a prairie seed mix. This site was harvested annually for hay for many years (probably since the state acquired the land) until about 2011. In 2008, the MDNR began converting the site from cool season grass to mixed warm season grasses and forbs. A total of nine targeted grassland species were observed during the two site visits in May and June. Highlights include Grasshopper Sparrow, Henslow's Sparrow, Dickcissel, Vesper Sparrow, Eastern Meadowlark, Field Sparrow, and Savannah Sparrow. Both Wild Turkey and Ring-necked Pheasant were heard in the distance. Particularly noteworthy is the large number of bobolinks found throughout the site. Future management plans for Verona South will focus on eliminating autumn-olive and preventing its re-establishment through herbicide application and prescribed fire on a 4 year rotation.



Verona State Game Area provides a unique opportunity to develop and manage large, treeless grassland habitats



Species Benefited

Active management has created several hundred acres of grassland habitat that support several state-listed species, grassland-dependent birds, and game species

- State endangered Henslow’s Sparrow
- State special concern Grasshopper Sparrow and Dickcissel
- Other grassland birds including the following: Bobolink, Eastern Meadowlark, Field Sparrow, Vesper Sparrow, and Savannah Sparrow
- Wild Turkey and Ring-necked Pheasant



Eastern Meadowlark (Dominic Sherony)



Wide, nearly treeless vistas characterize grassland restoration areas at Verona SGA



Big bluestem

HIGHLIGHTS

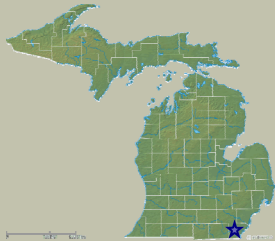
- Three state-listed species (Henslow’s Sparrow, Grasshopper Sparrow, and Dickcissel)
- Numerous other grassland birds and game birds



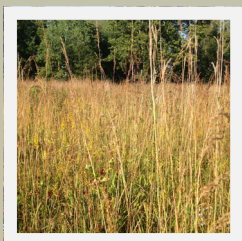
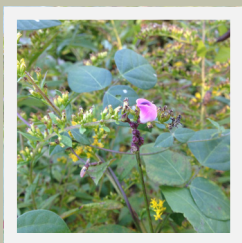
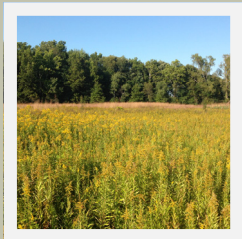
Big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), and gray-headed coneflower (*Ratibida pinnata*) are among several native grasses and forbs introduced to Verona SGA.



Diverse Grassland Complexes for Species of Greatest Conservation Need



Monroe County
T07S R06E Secs. 14, 15



Petersburg State Game Area

Activity Summary and Site Description

In 2015, the grassland openings at Petersburg State Game Area were assessed following significant restoration activities, including mechanical removal (brush-hogging) of woody species and prescribed fire. This area supports the Minong-Petersburg Prairie State Natural Area, a well-known example of a globally imperiled grassland known as mesic sand prairie. The Petersburg SGA is also notable for supporting a population of the federally endangered Karner blue butterfly (*Lycaides melissa samuelis*), which was first documented in the 1960s and was reintroduced to the site in 2008 following its disappearance from the site sometime in the late 1980s. One of the habitat management goals for the SGA is to restore savanna conditions to support the Karner blue butterfly and a diversity of species of greatest conservation need (SGCN) and game species that also utilize savanna and grassland habitats.

Mesic Sand Prairie

Prior to 2015, approximately six acres at the SGA were tracked as an element occurrence of mesic sand prairie, a globally imperiled grassland habitat occurring in Michigan primarily on sand lakeplain in the southeastern Lower Peninsula. The September 2015 survey documented approximately 18 acres of high quality prairie habitat, including the previously identified, presumably untilled opening, and a larger area of openings west and east of Teal Road where restoration activities have resulted in the recovery of mesic sand prairie on formerly tilled soils. In addition to the increase in acreage, the conservation rank was elevated from CD (fair to poor) to C (fair) due to recent management activities that have expanded grassland acreage and



Showy goldenrod (*Solidago speciosa*) and tawny prairie grasses adorn a late September mesic sand prairie

reduced woody encroachment within the openings.

The mesic sand prairie at Petersburg SGA is dominated by warm-season grasses, including Indian grass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and little bluestem (*Schizachyrium scoparium*). In addition to lupine (*Lupinus perennis*), the larval food of the Karner blue butterfly, the prairie supports a diversity of colorful forbs, including several species of goldenrod (*Solidago* spp.), aster (*Symphotrichum* spp.), tick-trefoils (*Desmodium* spp.), northern blazing-star (*Liatis scariosa*), and tall coreopsis (*Coreopsis tripteris*).

Rare Species

Three state-listed vascular plant species were documented during the September 2015 surveys. A known population of the state special concern (SC) willow aster (*Symphotrichum praealtum*) was found to be widespread and locally abundant throughout the openings, likely benefiting from grassland management activities. A previously identified population of hairy angelica (*Angelica venososa*, SC) was observed in one of the high quality prairie openings, and a newly documented



population of wild bean (*Strophostyles helvula*, SC) was found in a partially shaded ecotone in one of the large openings supporting old field that is being restored to higher quality prairie. Surveys in 2014 by TNC staff and botanist Anton Reznicek of The University of Michigan found additional colonies of the previously documented, state threatened tall green milkweed (*Asclepias hirtella*) and tall nutrush (*Scleria triglomerata*, SC) and a new occurrence of Clinton's bulrush (*Trichophorum clintonii*, SC). A seventh state-listed plant, conobea (*Leucospora multifida*, SC), was also collected from the SGA in 1992.

Petersburg SGA also supports populations of several state-listed animals. In addition to the aforementioned Karner blue butterfly, the site supports the state special concern barrens buckmoth (*Hemileuca maia*), wild indigo duskywing (*Erynnis baptisiae*), Culver's root borer (*Papaipema sciata*), blazing star borer (*Papaipema beeriana*), dusted skipper (*Atrytonopsis hianna*), and threatened silphium borer moth (*Papaipema silphii*). Perhaps the most exciting find was the discovery by the birding community of a breeding population of lark sparrow (*Chondestes grammacus*), previously considered extirpated from Michigan as a breeding species, in 2015. This ground-nesting grassland sparrow occurs in the Oak Openings region of northwestern Ohio, and its presence at Petersburg SGA is indicative of the expansion and improvement of the sandy grassland habitats it favors.

This savanna-prairie complex supports a high concentration of rare species and species of greatest conservation need

Species Benefited

- Federally endangered Karner blue butterfly
- At least seven state-listed animals, including the first documented breeding population of lark sparrow since the 1950s
- Other SGCN and game species, including the following (reported on eBird): wild turkey, yellow-billed cuckoo, field sparrow, eastern towhee, wood thrush, mallard, yellow-breasted chat, killdeer, eastern kingbird, northern flicker, great blue heron, Canada goose, Cooper's hawk, brown thrasher, and American woodcock

HIGHLIGHTS

- 167% increase in EO-quality mesic sand prairie habitat
- 1st confirmed breeding population of lark sparrow in MI since 1950s
- 7 state-listed animals, 7 state-listed plants, and many SGCN and game species

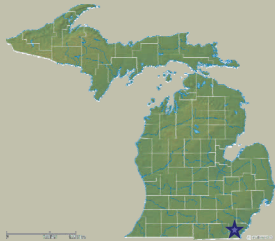


Lark sparrow (*Chondestes grammacus*) nested at Petersburg SGA in 2015. Photo by Erin Victory.



Jeff Seitz property

Diverse Grassland Complexes for Species of Greatest Conservation Need



Monroe County
T07S R07E Sect. 18



Activity Summary and Site Description

In 2015, this large private tract of oak forest, constructed ponds, and savanna and prairie openings in the vicinity of Petersburg State Game Area was surveyed to document restoration activities and the potential presence of high quality natural communities and rare species typical of sand lakeplain in southeastern Lower Michigan. Successful reintroduction of the federally endangered Karner blue butterfly (*Lycaeides melissa samuelis*) in the Oak Openings Region of Ohio and Michigan will likely require the restoration of oak savanna on both public and private lands such as this site.

Habitats

The majority of the area supports closed-canopy oak forest (dry southern forest), representing fire-suppressed former lakeplain oak openings on gently rolling sand lakeplain. Pockets of prairie vegetation occur along Ida Center Road and in the powerline corridor east of the Seitz tract, and remnant and anthropogenic openings in the oak forest support savanna species such as woodland sunflower (*Helianthus divaricatus*), the special concern (SC), hairy angelica (*Angelica venenosa*), and pasture rose (*Rosa carolina*). Wetter areas, particularly at the margins of constructed ponds and in the powerline corridor, support vegetation more typical of lakeplain wet-mesic prairie. Although the natural communities on the Seitz property are disturbed and do not meet MNFI element occurrence standards for inclusion in the natural heritage database, continued restoration and concomitant recovery of the ground layer has the potential to restore lakeplain oak openings.



One of the management goals here is to restore closed-canopy oak forest to oak savanna

Rare Species

In addition to hairy angelica, TNC staff identified the state threatened (T) tall green milkweed (*Asclepias hirtella*) and purple milkweed (*A. purpurascens*) at this site in 2014. During a September 2015 survey, MNFI and TNC staff identified three additional state-listed plants in the powerline corridor: tall nut-rush (*Scleria triglomerata*, SC), Leggett's pinweed (*Lechea pulchella*, T), and short-fruited rush (*Juncus brachycarpus*, T), for a total of six state-listed plants.

No state-listed animals have been documented from the Seitz property, though it may support some of the rare insects known from the nearby Petersburg SGA, such as wild indigo duskywing (*Erynnis baptisiae*, SC). With continued restoration, surveys for rare animals, SGCN, and game species should be conducted to assess the efficacy of savanna and prairie restoration for grassland and savanna specialist species. In time, savanna restoration that results in the recovery of lupine (*Lupinus perennis*) populations here and elsewhere in the region may permit the introduction of Karner blue butterflies to this and other nearby sites.



Species Benefited

- Future site conditions potentially suitable for federally endangered Karner blue butterfly
- Several potential SGCN and game species, including species known from the nearby Petersburg SGA (reported on eBird) such as: wild turkey, yellow-billed cuckoo, field sparrow, eastern towhee, wood thrush, mallard, yellow-breasted chat, killdeer, eastern kingbird, northern flicker, great blue heron, Canada goose, Cooper's hawk, brown thrasher, and American woodcock

Recovery potential of Karner blue butterfly in southeastern Lower Michigan will improve with management of both public and private lands

HIGHLIGHTS

- Large block (ca. 200 acres) of contiguous, restorable oak forest with remnant openings
- 6 state-listed plants



MNFI Lead Botanist Emeritus Mike Penskar admires hairy angelica (*Angelica venenosa*, SC).