



Wildlife Featured Species Habitat Management Guidance for Mitchell's Satyr

Latin Name: *Neonympha mitchellii*

Scope: Southern Lower Peninsula (SLP)

Rationale - *why we value the species and what the species' problem is:*

The Mitchell's satyr (MS) is federally and state endangered (Michigan DNR 2015), and populations are declining. It is currently known to occupy only 16 sites in southern Michigan and 1 site in northern Indiana (Hyde et al. 2009). Wetland draining, invasive species and conversion to shrub or forested cover types are the probable causes of decline. Dispersal among populations, colonization of new sites, and re-colonization of extirpated sites has become increasingly unlikely (United States Fish and Wildlife Service 1998).

Habitat Need - *the cause & effect relationship between habitat and species and its primary limiting habitat need:*

The MS is restricted to wetland cover types most often classified as prairie fen. MS appear to occupy the parts of fens where herbaceous plants are in close proximity to woody vegetation (Shuey 1997; Hyde et al. 2009), usually within about 9 feet or 3 meters (Barton and Bach 2005). Occupied habitat is characterized by peat soil with carbonate-rich groundwater seeps and is most often dominated by *Carex stricta*. Most sites occur in valleys with distinct slopes (McKinnon and Albert 1996). The food plants used by larvae include tussock sedge (*Carex stricta*), Bristly-stalked sedge (*C. leptalea*), fowl bluegrass (*Poa palustris*), and *Panicum* sp. (Tolson and Ellsworth 2008). MS oviposit on the underside of very short broad-leaved plants in close proximity to sedges.

Habitat Objectives - *the treatment or management to address the primary limiting habitat need:*

Habitat management details are outlined in the Mitchell's Satyr Recovery Plan (United States Fish and Wildlife Service 1998) and the Fen Conservation Plan for Michigan and Indiana (Michigan DNR 2011):

1. Reduce glossy buckthorn, reed canary grass and other invasive species;
2. Maintain the quality and quantity of groundwater; and
3. If permitted, use prescribed fire to maintain short-statured forbs for butterfly oviposition. Site Conservation Plans have been created for 12 satyr sites (Hyde et al. 2004) and TNC has created management plans for 3 occupied sites that they manage.

Priority Geographic Areas - *the specific geographic areas where we should focus management for the species:*

The currently occupied sites in Berrien, Van Buren, Cass, St. Joseph, Kalamazoo, Barry, Branch, Jackson and Washtenaw counties; and previously occupied sites in Lenawee and Kent counties. See Figure 1.

Priority Landscapes - *the landscape, setting, or cover-type where we should focus management within the areas above:*

Prairie fens, their surface watershed, and the source areas for their groundwater.

Population Goal - *the goal for the species, its habitat, or a stakeholder's actions:*

12 to 25 geographically distinct populations/meta-populations in Michigan with more than 25 consistently counted butterflies per site.

Evaluation Method - *the monitoring method to measure progress towards the goal above:*

Annually assess the vegetation response and MS response to management. Conduct timed-meander transects through potential habitat in mid to late June. Report findings to the local wildlife biologist and Michigan Natural Features Inventory.

Incidental Species - *other species which may benefit from management for this species:*

American bittern; mallard; massasauga rattlesnake; and ring-necked pheasant.

References - citation for documents referenced in this guidance:

- Albert, D. A. 1995. Regional Landscape Ecosystems of Michigan, Minnesota, and Wisconsin: A Working Map and Classification. Report to USDA Forest Service, North Central Forest Experiment Station. St. Paul, MN. General Technical Report NC-178. 250 pp.
- Barton, B. J. and C. E. Bach, 2005. Habitat use by the federally endangered Mitchell's satyr butterfly (*Neonympha mitchellii mitchellii*) in a Michigan prairie fen. *Am. Mid. Nat.* 253:41-51.
- Hyde, D. A., B. S. Slaughter, D.L. Cuthrell, H.D. Enander, Y. Lee, M.R. Penskar, B.J. Barton, M.A. Kost, M.A. Sanders, P.J. Badra, and M.J. Monfils, 2009. Development of a multi-state Mitchell's satyr habitat conservation plan: Michigan portion- 2009 annual report. Report number MNFI 2009-18. Report to MDNR, Wildlife Division, Lansing, MI. 75 pages + appendices.
- Hyde, D. A., J.J. Paskus, N. Fuller, and J. Simoes, 2004. Collection of site conservation plans for Mitchell's satyr butterfly in Michigan. Report to MDNR, Wildlife Division, Lansing, MI.
- Mackinnon, W.A. and D. Albert. 1996. Mitchell's satyr historical habitat analysis. Unpublished report to the U.S. Fish and Wildlife Service by Michigan Natural Features Inventory, Michigan DNR, Lansing, MI.
- Michigan Department of Natural Resources (DNR). 2011. Fen Conservation Plan for Michigan and Indiana.
- Michigan Department of Natural Resources (DNR). 2015. DNR online list of Frequently Asked Questions on the 2009 Revision of the State Endangered Species List. <http://www.michigan.gov/dnr/0,1607,7-153-10370_12141-213610--,00.html>. Accessed 09 Sept. 2015.
- Shuey, J.A. 1997. Conservation status and natural history of Mitchell's satyr, *Neonympha mitchellii mitchellii* French (Insecta: Lepidoptera: Nymphalidae). *Natural Areas Journal* 17 (2): 152-163
- Tolson, P.J. and C.L. Ellsworth 2008. Final Report- Mitchell's Satyr Larval Feeding Experiments: Report to MI DNR for the Mitchell's satyr 07 HCP (Development of a Multi-State Mitchell's Satyr Habitat Conservation Plan) 61-7610 project. 10 pp.
- United States Fish and Wildlife Service, 1998. Recovery Plan for Mitchell's satyr butterfly *Neonympha mitchellii mitchellii* French (Lepidoptera: Nymphalidae: Satyrinae). Prepared for The Mitchell's Satyr Butterfly Recovery Team for Region 3 U.S. Fish and Wildlife Service, Ft. Snelling, Minnesota. 71 pp.

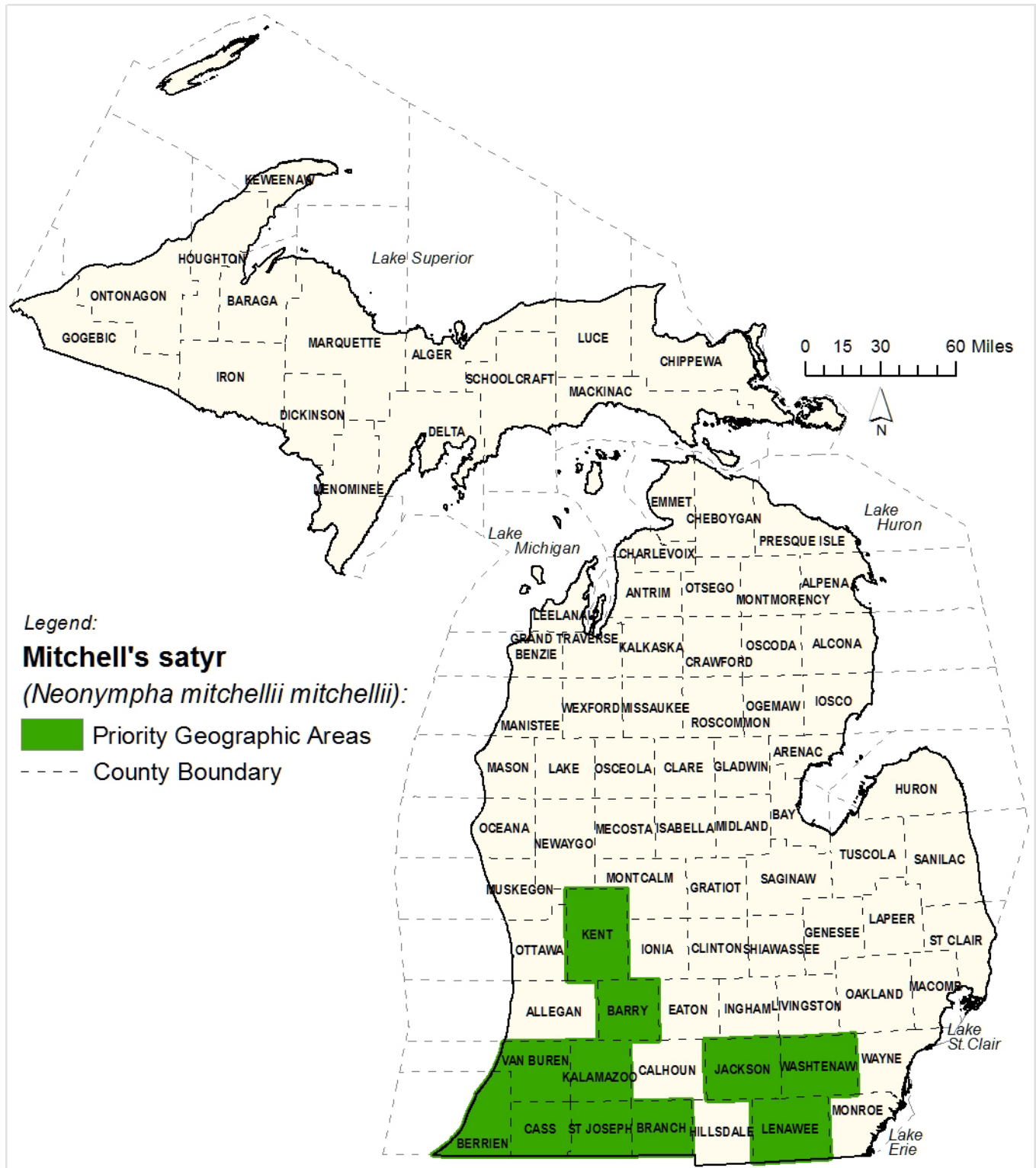


Figure 1. Priority Geographic Areas for habitat management. Map represents an overlay of all the areas identified in the Priority Geographic Area section.

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