

**Laying the Foundation for Establishment of New Mitchell's Satyr
(*Neonympha mitchellii mitchellii*) Populations in Indiana and Michigan
and Securing Populations through Updated Species Management Plans**

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Cover photograph: Mitchell's Satyr, Jackson County, MI. Jeremie Wilson, MDOT

Laying the Foundation for Establishment of New Mitchell's Satyr (*Neonympha mitchellii mitchellii*) Populations in Indiana and Michigan and Securing Populations through Updated Species Management Plans

Project Description:

The purpose of this project is to help secure Mitchell's satyr (MS) populations at 4 viable sites and to lay the groundwork for the introduction of MS at 2 potential introduction sites where suitable habitat has been restored. We will update 4 site conservation plans, identify factors that threaten the MS and its habitat at these sites and develop a 5 year action plan to address these threats. In addition we will develop or update conservation plans at 2 potential introduction sites to identify management needs and recommend future actions. We will lay the groundwork for MS introduction by 1) development of standardized protocols for the translocation and/or introduction of MS, 2) assessment of MS populations at two Michigan sites proposed as collection sites for the captive rearing project and the Indiana site proposed as the source for the translocation of butterflies and 3) preliminary evaluation of the translocation of MS if this effort is initiated. We will also assist with MSB Working Group tasks.

Statement of Work

There are five goals for this one year project; 1) Update site conservation/management plans at 4 viable sites and 2 introduction sites, 2) Develop standardized protocols for translocation and/or introduction of MS, 3) Evaluate the population status at sites proposed for collection or translocation of MS, 4) Conduct a preliminary evaluation of the MS translocation if initiated and 5) assist with coordination of MS Working Group tasks.

1) Update site conservation/management plans at 4 viable sites and 2 introduction sites.

- Management plans were updated for the following three viable sites: Grand River Fen, Coldwater Lake Fen, and Cook Lake Rudy Road Fen. MNFI worked with managers of these three sites to update the plans following the template we developed which incorporates elements of existing plans and focuses objectives and actions on Mitchell's satyr recovery (Appendix 1). These plans are 80% completed as currently the managers are finalizing management descriptions and maps of proposed management actions. Preliminary draft e-versions of these plans were shared with ELFO staff so that they can provide input prior to finalizing the plans.
- The management plan for the fourth site, Shavehead Lake Fen, is 50% completed. MNFI will work the Camp Friedenswald director and the District DNR Wildlife Biologist during the summer and fall of 2015 to gather and analyze additional ecological information and incorporate specific management objectives into the plan. We plan to submit this plan to the ELFO staff by March 2016.
- A management plan for the proposed introduction site: Swamp Angel Fen, (Indiana TNC preserve) is nearly complete. The manager is finalizing recommendations specific to Mitchell's satyr introduction and management and will incorporate recent guidance from the USFWS. We will submit this plan to ELFO when it is finalized.
- We did not develop a management plan for the previously proposed introduction site: Park Lyndon Fen because the director of Washtenaw County Parks decided not to allow the introduction of Mitchell's satyr within the near future. Instead we will begin development a plan for an alternate introduction site in the second year of this project (fall/winter 2015), after the Mitchell's satyr working group has made a final decision.

2) Develop standardized protocols for translocation and/or introduction of MS.

Protocols for the introduction of Mitchell's satyr were developed by David Cuthrell and Daria Hyde - MNFI, John Shuey - Indiana, TNC and Peter Tolson - Toledo Zoo. Guidelines include rearing and release protocol as well as post-release monitoring protocols and survey protocols. See Appendix 2.

3) Evaluate the population status at sites proposed for collection or translocation of MS.

Surveys were conducted during the satyr flight at the three sites proposed for collection or translocation of MS including Cedar Lake Fen in La Grange Co, IN, Coldwater Fen in Branch County, MI and Grand River Fen in Jackson County, MI. A brief summary of these results is presented below.

Cedar Lake Fen: A survey was conducted at the site on July 7, 2014 by Daria Hyde, MNFI, Tameka Dandridge, USFWS and John Shuey and Matt Williams from TNC to evaluate the population status of this site and recommend whether this site should be considered as a source of adult MS for translocation to the Swamp Angel introduction site. We documented 15 MS in a one-hour survey of the portion of the site where we were granted access. Permission was not provided to survey the portion of the site which borders Cedar Lake. Ten MS were documented on the west side of the stream that bisects the fen and 5 satyrs were found on the east side of the stream. Although portions of the fen complex appear to be intact and contain a diversity of prairie fen indicator plants much of the site is becoming closed in by shrubs and inundated with invasive reed canary grass and cattail. The stream is quite wide in places and it was difficult to find a suitable crossing site. We estimated that there are approximately 5 acres of potential fen habitat that could be utilized by MS although it is critical that habitat management is initiated to secure the viability of this site. Current landowners have communicated that they are not interested in having management conducted on their property and will not allow access to the entire site.

Coldwater Fen: A survey was conducted at this site on July 2, 2014 by a group of nine individuals from several organizations including MNFI, Kalamazoo Nature Center, Southwest MI Land Conservancy, Toledo Zoo and Blue Heron Ministries. A total of 278 MS were documented at this site in a three hour survey. It is estimated that there is approximately 60 acres of potential habitat that is suitable for MS. Although some areas of the fen are becoming inundated with shrubs and invasive plants (purple loosestrife, reed canary grass and cattail), overall the quality and integrity of the fen complex appeared to be good. Locations of MS and invasive plants were mapped during the survey.

Grand River Fen: This site was visited on July 3, 2014 but a survey was not conducted as it was too cool (lower '60's) and few MS were seen during a brief walk-through of the main fen. We revisited the site the following week on July 10, 2014, and although the temperatures were still cool (hi '60's to low '70's) five individuals from MNFI and MDOT counted 74 MS in the main fen during a 2 hour survey. A TNC employee, Rodolfo Villegas, documented 168 MS in other areas of the fen on June 30, 2014. Researchers from Central Michigan University also conducted a count of this site on July 4, 2015 and documented 153 MS within the fen complex. Overall the quality of the site appeared to be very good with occasional occurrences of invasive plants.

Recommendations: It is recommended that surveys be conducted at either Grand River Fen or Coldwater Lake Fen next year. If > 200 MS are documented again at either of these sites in 2015, then it is recommended that up to 10 females (as stated in the current permit) could be collected from one of these sites by Toledo Zoo for captive rearing. Females would be released back to the site once eggs have been collected. The population at Cedar Lake Fen in Indiana appears too small to meet collection criteria

unless special consideration is made regarding the long term viability of this site or if it is determined that captive rearing is necessary to preserve the genetic stock from this site. Further discussion is needed to determine the best course of action at this site.

Finally, visits were made to two sites that have been proposed as potential reintroduction sites: Swamp Angel Preserve in Noble Co. Indiana and Park Lyndon Fen in Washtenaw Co. MI. Both sites appear to be highly suitable for MS with large areas of quality prairie fen and limited inundation by invasive plants or other threats from the surrounding landscape. Specific recommendations regarding the protocol for introduction of Mitchell's satyr at Swamp Angel are addressed in the Swamp Angel Management Plan as well as in the Criteria and Protocol for Mitchell's satyr introduction (Appendix 2.)

4) Conduct a preliminary evaluation of the MS translocation if initiated.

The Mitchell's satyr working group recommended the consideration of the Indiana site as a source population for a potential translocation to the proposed Swamp Angel introduction site. A preliminary evaluation was conducted during a site visit on July 7, 2014 and described under Goal 3. The number of MS observed (15) was significantly lower than the collection threshold (>200 MS observed) outlined in the protocol for MS introduction and thus we do not recommend translocation from this site.

5) Assist with coordination of MSB Working Group tasks.

- Assistance was provided to Tameka Dandridge with planning the agenda for the fall 2013 Mitchell's satyr working group meeting. We also provided an update to the group on a proposed MS reintroduction plan.
- Assistance was provided to Tameka Dandridge with follow up tasks associated with the March 31, 2014 Mitchell's satyr working group meeting, including summarizing discussion and action items and distributing documents to group members. Element occurrence ranks for the MS were updated on April 10, 2014 and a table of updated MS site ranks and viability was provided to Tameka on May 2, 2014 to distribute to the working group.
- Tameka Dandridge and Daria Hyde met with staff from Washtenaw County Parks on June 23, 2014 to discuss the potential for introducing the Mitchell's satyr into Park Lyndon Fen in Washtenaw Co., MI. We provided staff with and overview of the status of the MS and the need to establish MS populations at quality prairie fen sites which are in public ownership or protected by a conservation organization. We discussed the legal ramifications of introducing a federally endangered species onto public land and reviewed various alternatives for providing assurances to the parks so that introduction would not result in an unreasonable burden to park staff. Parks staff shared this information with their Board of Commissioners. Tameka followed up with them and learned of their decision not to allow an introduction of MS in the near future. It is recommended that we revisit this topic in the future to ask if they would reconsider this decision.
- MNFI assisted a Central Michigan University Master's degree student, Clint Pogue in obtaining permission to conduct fen research at a previously occupied MS site.
- A brief survey was conducted late in the flight at the Shavehead Lake site in Cass County, MI to assist Jennifer Seltzer, a researcher from Mississippi State University, with collection of a satyr for her DNA research. Three MS were documented during the 90 minute survey and a much worn male satyr was collected. We also provided Jennifer Seltzer, with logistical assistance and helped her to coordinate with partners in the MS working group during July 2014 so that she could visit viable satyr sites to for collection of satyrs for her DNA research.

- MNFI conducted a survey of the Turner Creek Fen in Barry County, MI to determine if MS were still present at this site. Unfortunately, for the second year in a row, no MS were found. A survey will be conducted by MNFI next year to confirm whether this site is still extant or if MS have become extirpated here.
- In August, 2014, MNFI provided information to Kalamazoo Nature Center staff for the development of a habitat assessment protocol for potential MS sites at the Fort Custer Training Center.
- In October, 2014, MNFI provided information to Nate Fuller regarding potential impacts of proposed dredging adjacent to the fen at Sarett Nature Center.
- MNFI provided a summary of MS counts and viability ranks to members of the MS Working Group at the fall meeting in November 2014.

Future Work

We received notification that we will be awarded funds for the second year of this project (January 1, 2015 – March 30, 2016). We will focus on the following objectives in the coming year.

Project Objectives: Year 2:

- 1) Update site conservation plans and develop a 5 year action plan for 3 viable MS sites and one potential introduction site in Michigan.
- 2) Conduct surveys of Grand River Fen or Coldwater Lake Fen to assess population status and determine if minimum criteria are met for collecting female MS in 2015 for captive-rearing purposes. Assist with collection of females for rearing of eggs at Toledo Zoo for 2016 introduction.
- 3) Coordinate with Jennifer Seltzer at Mississippi Entomological Museum to arrange for sampling of collected MS (nonviable eggs, larvae or adults) to determine *Wolbachia* status.
- 4) Conduct MS surveys at 6-8 additional sites to assess viability and collect data for site plans.
- 5) Conduct assessment of potential introduction sites in Michigan and provide recommendations to MS Working Group
- 6) Assist with MS Working Group tasks as needed.

APPENDIX

- 1) Template for 5 Year Management Plan for Mitchell's Satyr**
- 2) Criteria and Protocol for Mitchell's Satyr Introduction**