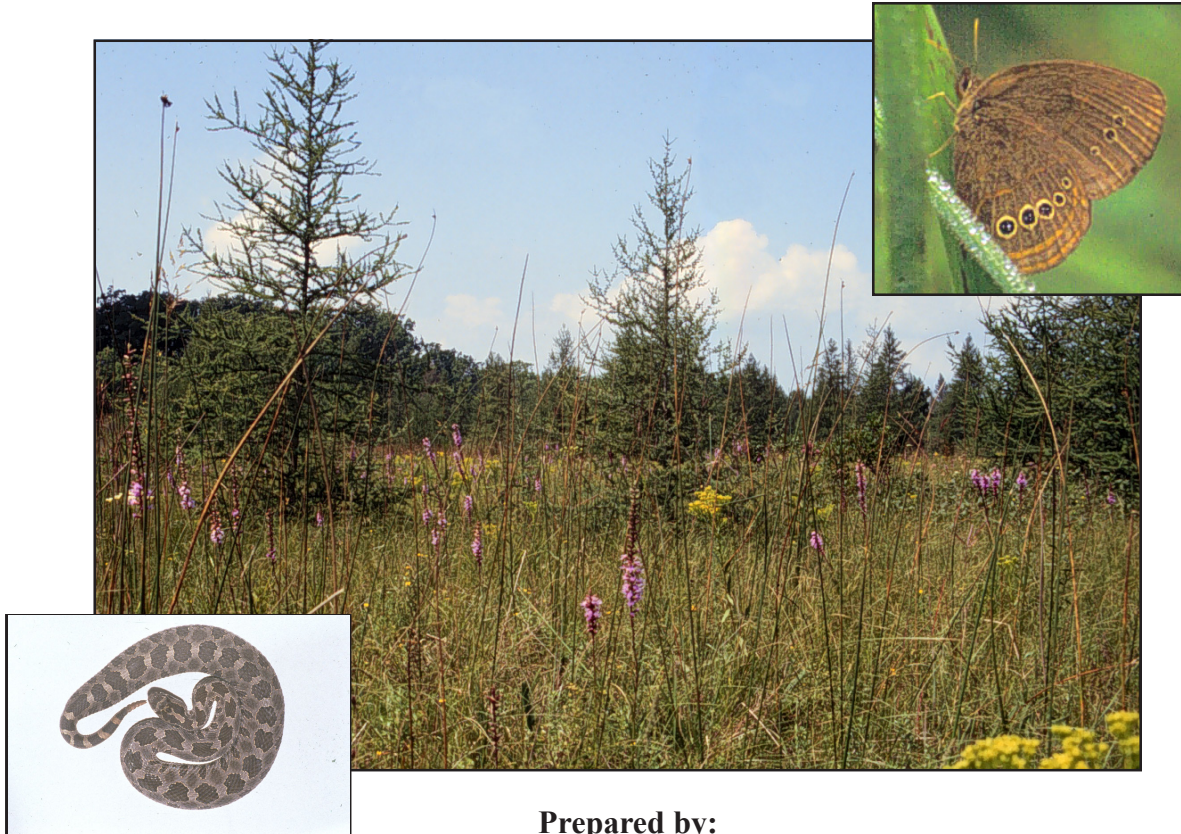

**Conservation of Mitchell's Satyr Butterfly (*Neonympha m. mitchellii*)
and Eastern massasauga rattlesnake (*Sistrurus c. catenatus*)
in Southwest Michigan: Year One Progress Report - 2000-2001**



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For:

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Project Goal

This project covers a three-year period to develop and implement a comprehensive long-term landowner contact and education program targeted towards the conservation of remaining Mitchell's satyr (*Neonympha m. mitchellii*) populations and associated rare species such as the eastern massasauga rattlesnake (*Sistrurus c. catenatus*). Unfortunately, the 17 known Mitchell's satyr populations are located in small isolated sites spread across southern Michigan. This type of scattered distribution has made it challenging to develop long-term contacts with landowners, build strong relationships, and provide the necessary information and stewardship resources to protect the satyr and associated rare species.

Strategy

MNFI is working with the Southwest Michigan Land Conservancy (SWMLC) to most effectively accomplish the goals of this project. SWMLC is a regional land conservancy located in Portage, Michigan whose mission is to protect the diversity, stability, and beauty of southwest Michigan by preserving its natural and scenic lands. SWMLC works in Allegan, Barry, Berrien, Branch, Calhoun, Cass, Kalamazoo, St. Joseph, and Van Buren Counties. They have a total of 22 preserves and conservation easements spread across 8 counties protecting approximately 1,880 acres, and they are currently involved in several large-scale conservation projects, such as the Dowagiac River Watershed Project and the MEANDRS. SWMLC also has a strong network of members throughout southwest Michigan, a stewardship committee to assist with natural resource surveys and site management, and expertise in land protection. SWMLC is currently working with us as a subcontractor to accomplish the objectives of this project. Ten of the 17 known satyr sites are within their jurisdiction, are located on private land and are not managed by any other conservation organization.

Objectives

Objectives identified for the first year of this project to accomplish this goal include:

- 1) Train Southwest Michigan Land Conservancy (SWMLC) staff in identification, life history, habitat and management needs of Mitchell's satyr and eastern massasauga rattlesnake.
- 2) Inform targeted landowners in southwest Michigan that their property contains or provides suitable habitat for Mitchell's satyr butterfly and other rare animals and plants.
- 3) Provide landowners with ecological and management information to enhance awareness of special habitat features that occur on their property and to help develop conservation-based landuse decisions.
- 4) Offer landowners in southwest Michigan the opportunity to voluntarily protect Mitchell's satyr, its habitat, and associated rare species that occur on their property.
- 5) Initiate formation of a volunteer stewardship team at each Mitchell satyr site in southwest Michigan.

Procedures

Procedures identified to address the objectives of this project include:

- 1) Provide training to SWMLC on the identification, life history, habitat and management needs of Mitchell's satyr and eastern massasauga rattlesnake.
- 2) Work with SWMLC staff to identify educational needs and complete development and printing of new educational materials.
- 3) SWMLC will identify landowners adjacent to known Mitchell's satyr sites with potential habitat, provide initial biological and protection information, and request permission to visit with landowners and survey their property.
- 4) SWMLC will visit landowners at known Mitchell's satyr sites, develop long-term relationships with landowners and provide landowners with detailed ecological, management, and protection information.
- 5) SWMLC will conduct surveys for Mitchell's satyr, massasauga rattlesnake, and other associated rare species at known sites.
- 6) SWMLC will initiate formation of voluntary stewardship teams for each site.

Coordination and Training

The first step identified in order to achieve the goals and objectives of this project was to build the capacity of SWMLC by providing them with needed information and expertise. MNFI met with personnel from SWMLC on five occasions during the grant period for training, information sharing and project coordination. The first meeting occurred in conjunction with the U.S. Fish and Wildlife's Mitchell's Satyr Butterfly Working Group on February 26, 2001. Topics discussed at this meeting included a summary of observations made during 2000, the current rangewide status, future research needs, Sec. 6 priorities and release site criteria, protection and management priorities, needs and practices at occupied sites, and standardized survey and monitoring methodology for satyr surveys.

The second meeting with SWMLC occurred on May 23, 2001. The purpose of this meeting was to provide training to SWMLC staff on landowner contact and education as well as satyr survey methodology. A copy of landowner contact letters which had previously been sent to individuals at known or potential satyr sites were shared with SWMLC in order to provide them with a history of landowner contact and to insure that contact and education efforts were continued in a consistent manner. A list of all landowners that have properties occupied by the satyr as well as those who have potential habitat for the satyr and other prairie fen associated species was provided to SWMLC. Standard survey methodology was also discussed and a draft survey schedule was completed for site visits to be conducted in 2001 jointly by MNFI and SWMLC.

On June 27, 2001, MNFI provided a one-day workshop to three staff from SWMLC as well as 18 volunteers targeted to work on this project. The morning session focused on identification and life history of Mitchell's satyr and associated rare species, threats to the satyr and its habitat, management considerations, survey methodology, landowner contact, site confidentiality and safety considerations (See Appendix A for PowerPoint outline of presentation). The afternoon session provided participants with an opportunity to identify the satyr and other associated prairie fen plants and animals in the field as well as provide instructions in survey methodology. This afternoon training session was the first day spent in the field monitoring known satyr sites and collecting data.

MNFI met with SWMLC on November 1, 2001 to organize and compile data from the 2001 field surveys. The group decided on how to best summarize data, evaluated our 2001 efforts, and discussed what worked well and potential improvements for next year. We also outlined a 2001-2002 work plan and clarified the roles of MNFI and SWMLC. We met with SWMLC on December 13, 2001 to develop a set of criteria for prioritizing satyr sites for conservation and to discuss protocol for obtaining permits to conduct management at satyr sites.

Educational Needs

MNFI and SWMLC conducted an inventory of the available educational resources and identified additional educational needs associated with this project. Currently we distribute a poster on the Mitchell's satyr, produced by MDNR Natural Heritage Program; a brochure on the eastern massasauga, produced by the Detroit Zoo; a brochure on prairie fen, bogs and marshes, produced by SWMLC; and abstracts on rare plants, animals and natural communities (including the Mitchell's satyr, eastern massasauga, and prairie fens) produced by MNFI. We determined that it would be most useful to produce a brochure on prairie fens targeted towards landowners which highlights rare species found in this community, especially the Mitchell's satyr and eastern massasauga, and which outlines stewardship activities needed to maintain this rare community. We will produce this brochure in the second year of the project.

Landowner Contact and Education

A letter was sent on December 15, 2000 to 72 landowners whose property was surveyed in 2000 for the Mitchell's satyr butterfly to inform them of the results. In addition, of these 72 landowners, those who have property in southwest Michigan were informed of the future role that SWMLC would be playing on this project. Landowners with the satyr on their property were told that SWMLC would be contacting them to conduct monitoring of the satyr in 2001 and to discuss suggestions for protecting this species. These landowners were provided with copies of abstracts on the satyr, spotted turtle, and the eastern massasauga rattlesnake as well as a brochure produced by SWMLC on prairie fens, bogs and marshes and a brochure produced by the Detroit Zoo on the eastern massasauga rattlesnake. These landowners were also provided with MNFI's website address so that they could learn more about other rare plants, animals and natural communities. Landowners with prairie fen not presently occupied by the satyr were informed of the work that SWMLC would be doing and told that they might be contacted in the future for further surveys on their land or to provide input on future conservation efforts. In addition, these landowners were provided with a brochure produced by SWMLC on fens, bogs and marshes and provided with abstracts (when available) for rare species encountered on their land during surveys.

In May of 2001, SWMLC contacted 40 landowners and received permission to survey 31 properties. These landowners included those in southwest Michigan with satyr on their property as well as some landowners with prairie fen and potential for the satyr. Staff at SWMLC kept track of all contacts with targeted landowners using an organized filing system, and they are in the process of entering this data into their land project tracking database.

Three landowners participated in conducting surveys for the Mitchell's satyr and eastern massasauga at two sites. Two landowners showed us additional prairie fen on their land, which resulted in an expansion of known occupied satyr habitat at this site. These particular landowners are very interested in initiating management activities, such as shrub removal, to benefit the satyr. The other landowner also expressed an interest in stewardship on his land.

Staff from MNFI and SWMLC visited with a landowner whose property supports a large satyr population on November 27, 2001 to discuss the potential long-term impacts of the landowner's cattle operation on the occupied satyr habitat. We discussed resources available to assist her to develop alternatives that would reduce the amount of time her cattle spent grazing in the occupied satyr habitat to limit the impacts of grazing. The impacts of cattle grazing on the Mitchell's satyr and the prairie fens in which they live is still unclear. Some suggest that cattle grazing may in fact be beneficial in the short term by keeping the fen open and free of invading shrubs and by providing satyr larvae with young sedge plants on which to feed. Mortality to satyr larvae from trampling has not been documented although it is highly likely. The long-term impact of grazing can in many cases be detrimental to the ecological processes that sustain prairie fens. At this particular site, years of cattle grazing has resulted in compaction of the soil and has left deep paths which could ultimately alter the hydrology of the fen by causing the water to drain away. If the fen becomes drier it is more vulnerable to invasive species and conversion to a shrub-carr and/or a swamp forest community. Additional nutrients from cattle manure as well as disturbance from grazing may encourage the growth of invasive plants such as purple loosestrife (*Lythrum salicaria*) and cattail (*Typha* sp.) which are becoming a problem at this site.

We plan to meet with staff from the East Lansing Office of USFWS in April to discuss this site and identify potential resources available to assist this landowner in managing her land in a way that is beneficial to the Mitchell's satyr without being detrimental to her family cattle operation.

Surveys /Fieldwork

MNFI provided 3 staff to act as team leaders during surveys for the Mitchell's satyr, eastern massasauga and associated rare species. SWMLC provided 3 staff and 15 volunteers to participate in the surveys. A total of 67 visits were made to 24 properties (9 sites) during the flight season. All sites where permission was granted were visited at least twice. No new satyr sites were discovered during 2001 surveys although the distribution of satyrs at known sites was expanded at two locations (St. Joseph Co. West and Van Buren Co. Northeast) as newly occupied habitat was found.

Occurrences of rare species documented during satyr surveys include: a new record for the cerulean warbler (*Dendroica cerulea*), one new and two updated records for the eastern massasauga rattlesnake (at three different locations), two updated occurrences of the eastern box turtle (*Terrapene c. carolina*) (two different locations) and one updated occurrence of the spotted turtle (*Clemmys guttata*).

Local Stewardship Teams

SWMLC initiated the formation of stewardship teams by keeping track and maintaining contact with interested volunteers and landowners. Fifteen volunteers participated in conducting surveys for the satyr and eastern massasauga and expressed an interest in assisting with stewardship of these sites and continued involvement with this project in future years. In addition, several landowners expressed an interest in assisting with the implementation of needed management on their property to maintain the ecological processes of the fen community. SWMLC will continue to maintain contact with these individuals and develop a strategic plan for implementing stewardship at select sites in FY 2001-2002.

Site Conservation Plans

Work on developing a matrix to prioritize satyr sites for conservation was initiated by MNFI and SWMLC at a meeting held on December 13, 2001. The matrix was designed to reflect various factors, which are important to consider when prioritizing these sites for management and restoration. They include landowner cooperation, size of site, restorability and potential for expansion, degree of threat, population size and urgency. An analysis was conducted using GIS to provide important data used in this matrix (i.e. number of acres of potential habitat adjacent to an occupied satyr site). The matrix was completed and ten sites (which are within the jurisdiction of SWMLC and where permission to survey has been granted) were run through the matrix and scored. One of the original sites was split into two sites due to an unnatural barrier (a steep railroad grade). It is believed that the railroad grade does not permit the exchange of genetic material between the satyrs occupying fen habitat on either side of the railroad grade. The sites were then ranked and put in order of priority (See Appendix B and C for the matrix and summary of scoring results). Work on writing site conservation plans will begin in April 2002.

APPENDIX A

Training Delivered to SWMLC

APPENDIX B

Mitchell's Satyr Site Prioritization Matrix

APPENDIX C

Mitchell's Satyr Site Ranking Results