

# **Proposal to Develop a Statewide Habitat Conservation Plan for the Karner blue butterfly (*Lycaeides melissa samuelis*) in Michigan**

**Submitted by:  
Michigan Department of Natural Resources**

## **Summary**

We propose to develop a statewide Habitat Conservation Plan (HCP) for the endangered Karner blue butterfly (*Lycaeides melissa samuelis*) in Michigan. An incidental take permit is needed to allow lawful land management activities to continue with protection for the Karner blue taken into consideration, and to allow additional recovery activities that focus on enhancing occupied sites and restoring potential habitat. Our biological goals are to protect occupied sites, increase habitat availability, and increase population levels of the butterfly to recovery goal levels. Our conservation strategy is to take a broad, ecosystem approach and use management practices that protect, enhance, or restore savanna, barrens, and other community types upon which the butterfly and other species-at-risk depend. We will develop and implement a plan that allows management activities to continue by partners in the HCP while ensuring sustainable and persistent populations of the Karner blue throughout its range in Michigan. Current information on the distribution and abundance of Karner blue populations and potential habitat will be reviewed. Additional population and habitat surveys on public and private lands will be conducted to provide a comprehensive understanding of the species in Michigan. Geographic Information System analyses will be conducted to determine which areas can be protected, enhanced, or restored as suitable habitat as part of the HCP implementation. Because humans are an integral component of the ecosystem and can influence the use and outcome of management practices, we will develop a parallel ecosystem-based education and outreach program. This program will be used to increase awareness of ecosystem processes on the landscape, emphasize proposed conservation efforts, and encourage enrollment of new partners and other levels of participation in the HCP. The Michigan Department of Natural Resource will apply for an incidental take permit in collaboration with a group of partners interested in the conservation needs of the Karner blue and the regulatory assurances provided by the permit.

## Need

We intend to develop and implement an ecosystem-based HCP to address the fundamental need to protect the butterfly and occupied sites, plus enhance, or restore parts of the ecosystem upon which the butterfly depends. Current activities, such as gypsy moth spraying, right-of-way and private property maintenance, property development, forestry actions, and grazing all have the potential to result in incidental take of Karner blue. There is a need to educate land managers about the Karner blue and to protect currently occupied sites. Beyond protection, we are proposing additional proactive management activities which will result in take, but will be offset by a significant positive conservation benefit to the Karner blue. In these cases, activities will be designed to enhance, or restore parts of the ecosystem. An Incidental Take Permit (ITP) is needed to allow lawful land management activities to continue with protection for the Karner blue in place, and allow additional proactive methods designed to enhance and restore habitats. These activities are necessary to meet the preliminary recovery goals in the Technical/Agency Draft Recovery Plan for the Karner blue (USFWS 2001).

The Karner blue's only known larval host plant is wild lupine (*Lupinus perennis*). In Michigan, lupine is found in oak and pine savanna and barrens, and other communities with dry, sandy soils. Historically, the habitats where Karner blue are found today were widespread in the western half of the lower peninsula, covering some 670,000 acres (Exhibit 1), and the butterfly was found in approximately the same range. Today, the range of this ecosystem and the corresponding range of the butterfly have been reduced. The shifting geographic mosaic of disturbance and early successional habitats upon which the butterfly depends have become more stable and thus far less widespread and abundant. This reduction in available habitat is due to land-use practices like urbanization, conversion to agriculture, and fire suppression. The once open or open-canopy habitats have undergone succession to become overgrown or closed canopy systems. Today the Karner blue persists in remnants of savanna and barrens, degraded openings, old fields, and rights-of-way.

Wisconsin and Michigan have the largest number of populations of Karner blue throughout the species' range. Indiana, Minnesota, New Hampshire, and New York have remnant populations. The butterfly has been nearly extirpated from Illinois, and has been extirpated from Iowa, Maine, Massachusetts, New Jersey, Ohio, and Ontario. Currently, a reintroduction using Michigan butterflies is underway in northern Ohio. Recovery cannot occur without proactive, significant, and coordinated changes in the way management practices on the landscape are approached. Wisconsin recently began implementation of a statewide HCP for the Karner blue (WDNR 2000). Our proposal is timely because some populations of the Karner blue in Michigan are protected on state land and federal, yet there is no comprehensive plan on public and private lands to maintain, enhance, or restore disturbance regimes and successional forces in the ecosystem upon which the butterfly depends. We will structure this HCP to provide a positive relationship on the landscape where habitat increase due to management activities is greater than habitat loss due to succession. The net result will be increased habitat availability and a more robust metapopulation structure. Only through this type of

program, and similar programs across the entire range of the species, will recovery goals be met and the long-term sustainability of the Karner blue be ensured.

## **Objective**

Our objective is to establish an ecosystem-based HCP for the Karner blue in Michigan and include other sympatric species-at-risk (Exhibit 2) to the extent practical. Our ultimate goal, consistent with the goals detailed in the unreleased Draft Recovery Plan (USFWS 2001) is to increase habitat availability and population levels of the Karner blue in Michigan to recovery levels. These goals can be achieved only through active management on a landscape scale, yet the management practices used will result in incidental take of the species. As such, the HCP will become an integral component of an incidental take permit (ITP) application submitted to USFWS.

During the three year grant period (October 2001 through September 2004) we will accomplish the following general tasks:

- 1) Finalize partnerships into a Significant Partners Work Group and solicit and encourage new partners to contribute to the overall HCP effort.
- 2) Implement comprehensive population and habitat surveys in the Muskegon and Newaygo Recovery Units and other areas where additional data are needed (USFWS 2001) and incorporate findings into work plans and the HCP.
- 3) Develop and implement an education and outreach program to be used during both the development and implementation phases of the HCP.
- 4) Develop an HCP which meets all statutory and regulatory requirements using a workgroup approach and public participation. This will include detailed work plans to be implemented within the ecosystem management framework by the partners and an adaptive management monitoring program to quantify impacts of management practices. A completed HCP (and Draft Environmental Impact Statement [EIS] in a single document) will be included in the ITP application package submitted to USFWS.
- 5) Hire (with lead agency USFWS approval), coordinate, and oversee a contractor to develop an EIS to ensure compliance with National Environmental Policy Act (NEPA) requirements. A completed Draft EIS (and HCP in a single document) will be included in the ITP application package submitted to USFWS.
- 6) Coordinate development, with USFWS, of an Implementing Agreement (IA) which will be acceptable and signed by all parties involved. This will include a comprehensive monitoring program to quantify progress toward reaching the established biological goals and compliance with the terms and conditions of the ITP.

## **Expected Results or Benefits**

This project will result in a positive conservation benefit for the Karner blue, other species-at-risk, and the ecosystem upon which these species depend. This project is designed to contribute positively to Karner blue recovery.

This positive conservation benefit will be realized because of the focus on increasing the amount of habitat available for the butterfly, and other species-at-risk with similar habitat requirements, in a large area of Michigan where HCP activities will occur (Exhibit 1). Associated survey and review efforts will provide definitive baseline information upon which to base our conservation efforts and judge the results. In addition, the education and outreach program will result in a significant increase in awareness of the conservation needs of the Karner blue and associated species, and underscore the influence of human impacts (positive and negative) on the ecosystem and the ecosystem processes on which these species depend.

## **Approach**

Because Wisconsin recently began implementation of a statewide HCP for the Karner blue, Michigan has the benefit of an excellent model to follow. We will communicate frequently with the Wisconsin Department of Natural Resources and their partners to take advantage of lessons learned through their successful efforts. Throughout this project we will follow the guidelines established in the HCP Handbook (USFWS 1996) and the five-point policy addendum to the Handbook (65 FR 35242; USFWS 2000). All efforts will be closely coordinated with the USFWS East Lansing Field Office and the Regional 3 Headquarters in Ft. Snelling, MN.

***Significant Partners Work Group***—We will formally establish the Significant Partners Work Group, define the group's goals, establish rules for group decision making, and develop a timetable and action items for development of the HCP. Based on discussions with potential partners, we expect approximately ten different organizations to participate as significant partners and up to ten more at a lower level of participation. Significant partners will likely include Michigan Department of Natural Resources (MDNR) Wildlife Division, MDNR Parks and Recreation Bureau, The Nature Conservancy (TNC), Consumer's Energy Corporation, Michigan Department of Transportation, Michigan Department of Agriculture, Michigan Nature Association, Wolverine Power Company, Eastern Panhandle Pipeline Company, and Michigan Consolidated Gas Company. Because of similar biological goals and conservation strategy, the Huron-Manistee National Forest (although already covered under a formal Section 7 consultation and Biological Opinion) has agreed to act as a significant cooperator, during both the development and implementation phases. Other groups have been or will be approached for participation, including, other corporations or groups managing rights-of-way in potential habitat (railroads, road commissions, other energy companies), local units of government (counties, townships, municipalities, road commissions, airports) and private landowners. Other groups without land management responsibilities will be invited to participate in discussions and review (e.g., Sierra Club, Michigan Land Use Institute, Michigan Environmental Council, and the Land Conservancy of Southwest Michigan).

The work group's primary responsibility will be to develop, review, and refine the working draft of the HCP document, including the establishment of detailed management practices and work plans the partners will undertake on the lands they manage. Partners will contribute time and effort to public scoping and information gathering meetings.

The group also will encourage membership by additional persons or organizations who are willing to work on development or participate in the implementation of the HCP. The group will be chaired by Michigan Department of Natural Resources personnel, initially by the current Endangered Species Program Coordinator and later co-chaired by the HCP Coordinator. Following the grant period, MDNR will oversee the implementation phase of the project and help ensure compliance with the terms and conditions of the ITP through an auditing program to be established.

***Population Surveys and Assessment of Potential Habitat***—A statewide HCP will require a comprehensive understanding of the distribution and abundance of Karner blue populations, potential habitat availability, and distribution of lupine. However, as indicated in the Draft Recovery Plan (USFWS 2001) the distribution and extent of the butterfly populations in the Muskegon and Newaygo Recovery Units and other areas of the state are poorly understood. Current information will be reviewed and additional population surveys on public and private lands will be conducted using the same methods used for earlier studies in Michigan (e.g., Cuthrell and Rabe 1996, 1998). Geographic Information System (GIS) analyses will be conducted to determine which areas can be protected, enhanced, or restored as suitable habitat. Within a broader ecosystem management context, site-specific recommendations will be developed using information on pre-settlement vegetation, past and current land use practices, current ownership, soil types, presence of lupine, historical or current presence of the butterfly or other sympatric species with similar habitat affinities, and willingness of landowners to participate in the HCP. As survey data and site recommendations become available they will be used to focus and refine work plans being developed concurrently for inclusion in the HCP.

There are at least three large tracts currently being restored and managed for savanna and barrens community types in southeast Michigan. All three have the potential to contain populations of lupine and are located near historical Karner blue sites. Although not required for recovery (USFWS 2001), these areas will be evaluated for potential reintroduction. We will actively pursue other sources of funding and cooperation from partners to conduct reintroduction if appropriate. These reintroductions would restore the species to an area where they have been extirpated and provide possible linkage to a recently restored population in northern Ohio.

Surveys and habitat evaluations will be conducted by the Michigan Natural Features Inventory (MNFI) through a contract with MDNR. MNFI is in a unique position to implement this part of the program because they have experience conducting habitat evaluations and Karner blue population surveys in other Recovery Units. Karner blue Recovery Team member Mary L. Rabe will be the principal investigator for the survey efforts.

***Education and Outreach***—Humans are an integral component of the ecosystem and human activities represent a major factor impacting the landscape. Public awareness, understanding, and acceptance of management actions (e.g., acceptance of prescribed fire) can influence the desired implementation and outcomes in a positive or negative way. Ownership patterns in western Michigan where the HCP will be implemented are

characterized by small and diverse landholdings. Therefore, a multifaceted approach to education and outreach targeted at a diverse audience will be required. Despite the diverse audience we will emphasize a central theme to increase awareness of ecosystem processes on the landscape, and the proposed conservation efforts. We will solicit feedback from users and alter our approach or materials as the educational program and HCP matures.

Educational materials to be developed will focus on: 1) landowners with Karner blue populations, including potential participants in the HCP; 2) local community leaders and decision makers who can influence land management practices; 3) broader audiences, including people using public lands (state parks, state game areas), local schoolchildren, and people with an interest in conservation.

Some of the products we will develop and distribute include a lupine finder card (i.e., Have you seen this plant?), a Karner blue fact sheet and frequently asked questions, posters (similar to the Mitchell's satyr and ecosystem posters produced by MDNR), and information kiosks (e.g., highway rest areas, township halls, state game areas, state parks). The partners will provide presentations to community or service organizations and produce press releases and other written products that focus on accessing the earned media (e.g., talk shows, interviews, opinion/editorial columns, articles for trade journals, conservation magazines). In addition, we will develop a Karner blue web-site, hosted by one of the partners, that will serve as a clearinghouse to track progress on the HCP, announce public meetings, and provide program related information to a broad audience. Educational materials will be produced, refined, and used during the HCP development phase, and will continue to be used at little cost during the implementation phase.

The education and outreach program will be conducted by the Michigan Chapter of The Nature Conservancy through a contract with MDNR. They are in a unique position to implement this program. A TNC regional office has been established in Grand Rapids to coordinate projects in the West Michigan Savannas ecoregion and TNC has excellent working relationships with public, private, corporate, and land conservancy groups in the area. John Legge, West Michigan Savannas ecoregional planner, and Melissa Soule, Communications Director will be principal investigators for the education and outreach program.

***HCP Document Development, Management Practices, Monitoring Program, and Levels of Participation***—The HCP document will be developed using the work group approach described above. Regularly scheduled work sessions will be designed to foster communication and cooperation among partners and USFWS, and result in assignments and action items to be completed and reported on during the next work session. The final HCP will be combined with the Draft EIS into a single document to be used in the ITP application package.

This HCP will be designed to provide the same regulatory assurances found in traditional HCPs, yet the approach used will result in a significant positive conservation benefit to the Karner blue, other associated species-at-risk, and the ecosystem upon which these

species depend. The HCP will incorporate strategies designed to minimize and mitigate take to the extent practical. Active management of Karner blue habitat can be accomplished in many ways (USFWS 2001, WDNR 2000), yet often these activities result in take. For example, an active Karner blue site that is being overgrown and soon will become unsuitable requires active vegetation management for maintenance of its suitability. Prescribed fire, shrub and tree removal or thinning, or herbicide treatments of overgrown sedge mats all are methods which initially may result in take, yet in the long term will have positive impacts on the butterfly population (i.e., increased abundance of butterflies). It is important to recognize that our goal is to protect, enhance or restore habitat and manage *populations*; an approach that de-emphasizes the fate of *individuals*.

A suite of land management practices and procedures will be established that are consistent with the overall conservation goals. Land management practices which the partners agree to follow, will be based on current knowledge (e.g., Lane 1997, Wisconsin DNR 1998, 2000) and additional information gathered during the development phase. Procedures will be established to refine and improve these practices based on feedback from an adaptive management monitoring program. The role of the monitoring program will be three-fold. First, it will provide data necessary to evaluate outcomes of the management activities on the ground and these evaluations will provide the basis for refinement of the management approach. Secondly, the monitoring program will evaluate how biological goals are being met. Finally, the monitoring program will provide the means to ensure compliance, at the varying levels agreed to by the partners in the IA, with the terms and conditions outlined in the ITP issued by USFWS. Further, the monitoring program reports will provide tangible benefits to other organizations engaged in Karner blue conservation activities.

Participation of partners will occur at several levels with emphasis on: 1) protection of areas with current populations of Karner blue, 2) enhancement of areas with current populations using active management, 3) restoration of areas that have potential habitat using active restoration followed by active management techniques, and 4) development of habitat corridors that will provide connectivity among populations, primarily along existing rights-of-way.

**NEPA Compliance**—We propose to contract with a third-party to assist with compliance with NEPA under this grant. The lead agency is USFWS and MDNR will request to be a cooperating agency (40 CFR 1501.6, 1506.5, and 1508.5). Using an experienced contractor will facilitate parallel, and more efficient, development of NEPA and HCP documents. When the grant period begins, we will publish a Request for Proposals from contractors to help provide NEPA compliance for this project. Once a contractor has been chosen and approved by USFWS, MDNR will coordinate with USFWS to publish a Notice of Intent to develop an EIS. Based on earlier discussions, MDNR and USFWS have concluded jointly that an Environmental Assessment (EA) will not suffice to comply with NEPA for this project and that an EIS will be required. Because the biological goals and the ecosystem-based conservation strategy are designed to result in significant changes over a broad geographic area and to have significant impacts on the

Karner blue (albeit positive), an EA could not be concluded with a Finding of No Significant Impact.

Public scoping meetings and other information will be used to provide input during the establishment of alternatives to be analyzed in the EIS as well as provide public input for alternative approaches in the development of the HCP. Throughout the EIS and HCP development, all meetings, hearings, and other information gathering efforts will be designed to serve as input for both documents. The Draft EIS included in the application package submitted to USFWS will be combined with the HCP into a single document.

***Implementing Agreement Development***—The last component covered under this grant will be the development of an IA to be signed by the partners and USFWS. The IA will be developed jointly with USFWS based on information in the HCP and will be developed with input and review by legal staff of MDNR, partners, and USFWS. The IA will outline the responsibilities of the partners and USFWS for the duration of the ITP, how the implementation phase will be financed, and how the terms and conditions of the ITP will be complied with. Compliance auditing (part of the adaptive management monitoring program) will be the responsibility of MDNR (the primary permit holder) with USFWS oversight.

## **Location**

Activities outlined in this proposal will benefit the Karner blue throughout its range in Michigan and have the potential to benefit more than 30 state listed species (Exhibit 2) and more than 30 additional special concern species. Most of the work will be conducted in the Allegan, Ionia, Muskegon, and Newaygo Recovery Units identified in the Technical/Agency Draft Recovery Plan for the Karner blue butterfly (USFWS 2001). However, additional work outside of these defined areas could be conducted if new information developed during the review and survey phase of the project warrants a geographical refinement. In addition, state lands with historical Karner blue populations and lands with potential for reintroduction efforts in southeast Michigan will be evaluated.

Because this grant proposal covers planning and document preparation efforts, much of the work will be conducted in an office setting, either in Lansing, Michigan or at other locations where workgroup meetings, or public scoping meetings will be held.

## **Estimated Costs**

The overall budget totals \$ 950, 515 (Federal share \$712,886.25), to be used during fiscal years 2002-2004 (Exhibit 3). This proposed budget of approximately \$317,000 per year is about 20% of the 1.5 million dollars per year estimated for recovery actions spelled out in the unreleased recovery plan (USFWS 2001).

## Personnel

Project Director: Patrick E. Lederle, Ph.D.  
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Wildlife Division  
Michigan Department of Natural Resources

Federal Aid Coordinator Eric Sink  
Office of Budget and Federal Aid  
Michigan Department of Natural Resources

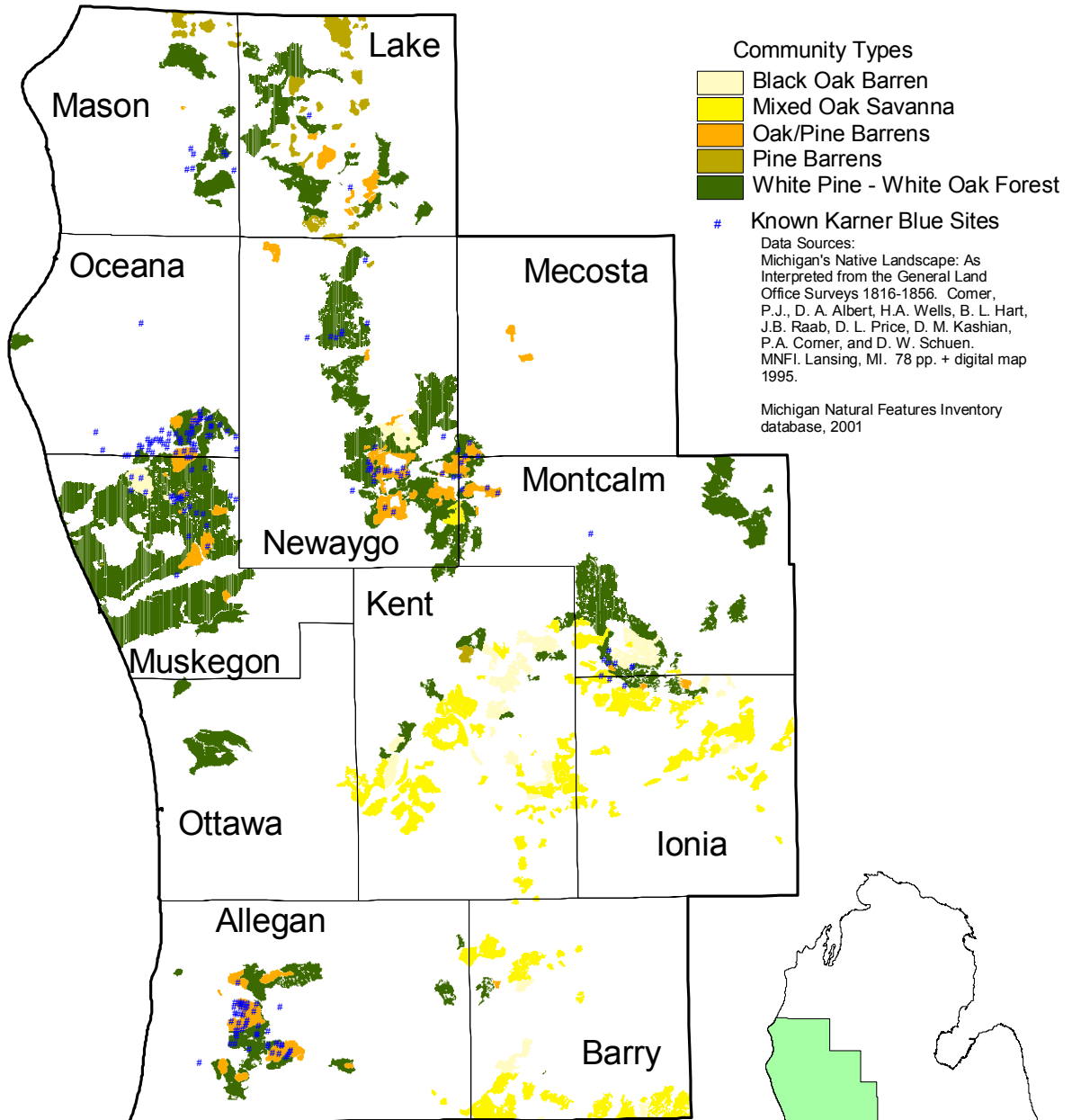
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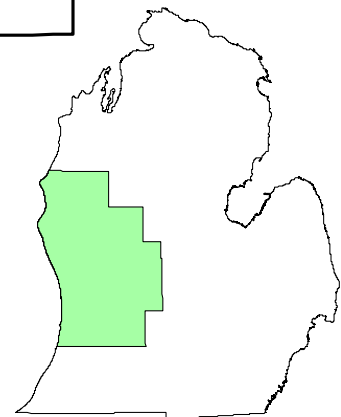
## **Exhibit 1**

**Presettlement (c. 1800) vegetation in western Michigan where Karner blue butterfly populations are most likely to occur. Occupied Karner blue sites occur in 11 counties (recently-documented sites in Kent and Barry counties not shown). Today the Karner blue persists in remnants of savanna and barrens, degraded openings, old fields, and rights-of-way. The four community types shown once covered over 670,000 acres and have the greatest potential for restoration.**

# Potential Karner Blue Butterfly Habitat



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EXTENSION



## **Exhibit 2**

**Other species-at-risk observed in association with occupied Karner blue butterfly sites (data from Michigan Natural Features Inventory). All species listed are protected under Michigan's Endangered Species Protection law, Part 365 of the Natural Resources and Environmental Protection Act of 1994. Thirty-five special concern species (not listed here) also have been observed at or near occupied sites. Special concern species are not protected by law, yet enough information is available on their distribution and abundance to consider listing them as threatened in the future. Management actions being considered for this HCP are designed to benefit these species by protecting, enhancing, or restoring the ecosystems upon which these species depend.**

Scientific Name	Common Name	State Status <sup>1</sup>
<i>Cryptotis parva</i>	least shrew	T
<i>Buteo lineatus</i>	red-shouldered hawk	T
<i>Haliaeetus leucocephalus</i>	bald eagle	T
<i>Clonophis kirtlandii</i>	Kirtland's snake	E
<i>Atrytonopsis hianna</i>	dusted skipper	T
<i>Erynnis persius persius</i>	Persius dusky wing	T
<i>Hesperia ottoe</i>	Ottoe skipper	T
<i>Lepyronia gibbosa</i>	Great Plains spittlebug	T
<i>Incisalia irus</i>	Frosted elfin	T
<i>Schinia indiana</i>	phlox moth	E
<i>Speyeria idalia</i>	regal fritillary	E
<i>Aster sericeus</i>	western silvery aster	T
<i>Bouteloua cutipendula</i>	side-oats gramma grass	T
<i>Echinodorus tenellus</i>	dwarf burhead	E
<i>Eleocharis atropurpurea</i>	purple spike-rush	E
<i>Eleocharis microcarpa</i>	small-fruited spike-rush	T
<i>Eleocharis tricostata</i>	three-ribbed spike-rush	T
<i>Festuca scabrella</i>	rough fescue	T
<i>Fuirena squarrosa</i>	umbrella grass	T
<i>Gentiana puberulenta</i>	downey gentian	E
<i>Geum triflorum</i>	prairie smoke	T
<i>Isoetes engelmannii</i>	Engleman's quilwort	E
<i>Juncus brachycarpus</i>	short-fruited rush	T
<i>Juncus scirpoides</i>	scirpus-like rush	T
<i>Juncus vaseyi</i>	Vasey's rush	T
<i>Lechea pulchella</i>	Leggett's pinweed	T
<i>Lycopodiella appressum</i>	appressed bog clubmoss	T
<i>Panicum longifolium</i>	long-leaved panic-grass	T
<i>Platanthera ciliaris</i>	yellow-fringed orchid	T
<i>Polygonium careyi</i>	Carey's smartweed	T
<i>Potamogeton bicupulatus</i>	waterthread pondweed	T
<i>Psilocarya scirpoides</i>	bald rush	T
<i>Rhexia virginica</i>	meadow beauty	T
<i>Rhexia mariana</i> var. <i>mariana</i>	Maryland meadow beauty	T
<i>Scirpus hallii</i>	Hall's bulrush	E
<i>Scleria pauciflora</i>	few-flowered nut-rush	E
<i>Scleria reticularis</i>	netted nut-rush	T
<i>Sisyrinchium atlanticum</i>	Atlantic blue-eyed grass	T
<i>Sporobolus heterolepis</i>	prairie dropseed	T
<i>Trichostema dichotomum</i>	bastard pennyroyal	T

<sup>1</sup> State status: T = threatened, E = endangered. *Haliaeetus leucocephalus*, bald eagle, is also federally threatened.