SUMMARY

LAKES STATES SFI IMPLEMENTATION COMMITTEE (SIC)
BIODIVERSITY IN FIBER SOURCING
FORESTS WITH EXCEPTIONAL CONSERVATION VALUE (FECV) ASSESSMENT

Version 1: November, 2022

This summary of the Lake States Regional FECV Assessment is best referenced in tandem with the full assessment document and associated landowner and logger training and outreach materials developed collectively, or individually, by the Lake States SFI Implementation Committees (SIC)s. This replaces all previous versions.

Summary

Given the regional similarities in forest ecology, forest management, landowner patterns, BMPs and biodiversity values, the SICs of the Lake States (MI, MN and WI) worked cooperatively on an assessment of Forests of Exceptional Conservation Value (FECVs). Lists of Globally Critically Imperiled (G1) and Imperiled (G2) species and ecosystems were acquired from NatureServe for each state. (https://explorer.natureserve.org/) Trained biologists and foresters reviewed each entry and evaluated the potential for forestry activities to impact the FECV (positively and negatively). Emphasis was given to G1/G2 species and ecosystems found within the fiber procurement zones of SFI-certified organizations and forest types typically utilized by SFI-certified organizations. Only species and ecosystems potentially negatively impacted by forest management activities were prioritized for further action. The result is a focused lists of species and ecosystems (Appendices B-D) that could benefit from additional education, information and mitigation to ensure their continued presence on the landscape. Representatives from each state's SIC will annually review the latest available G1/G2 species information from NatureServe to determine if updates are needed.

SFI FECV Requirement *[Source: 2022 SFI Fiber Sourcing Standard]*

Objective 1. Biodiversity in Fiber Sourcing;

Performance Measure 1.2. Promotion and conservation of Forests with Exceptional Conservation Value;

Indicator 1 states, "*Certified Organizations shall conduct an assessment, individually and/or through cooperative efforts involving SFI Implementation Committees, of Forests with Exceptional Conservation Value, defined as critically imperiled and imperiled species and ecological communities, within their wood and fiber supply area(s) and make the summary of the assessment available to wood producers.*"

Results

Presence of G1/G2 Species & Ecosystems:

The Lake States contains 270 G1/G2 species and ecosystems combined, distributed similarly among broad classification groups (Figure 1). As expected, there is considerable overlap between the states.

- Species: There are 10 G1/G2 species found in all three states and 29 more found in two of the three states (Appendix E).
- Ecosystems: There are 11 G1/G2 ecosystems found in all three states, and another 16 found in two of the three states (Appendix F).

Regional Biodiversity Importance:

It is important to note that the timber management zone of the northern Lake States has relatively few imperiled species compared to other regions in the US. Figure 2 is a map of Biodiversity Importance produced by NatureServe that clearly shows that northeast Minnesota, northern Wisconsin and the Upper Peninsula of Michigan do not have high concentrations of imperiled species.

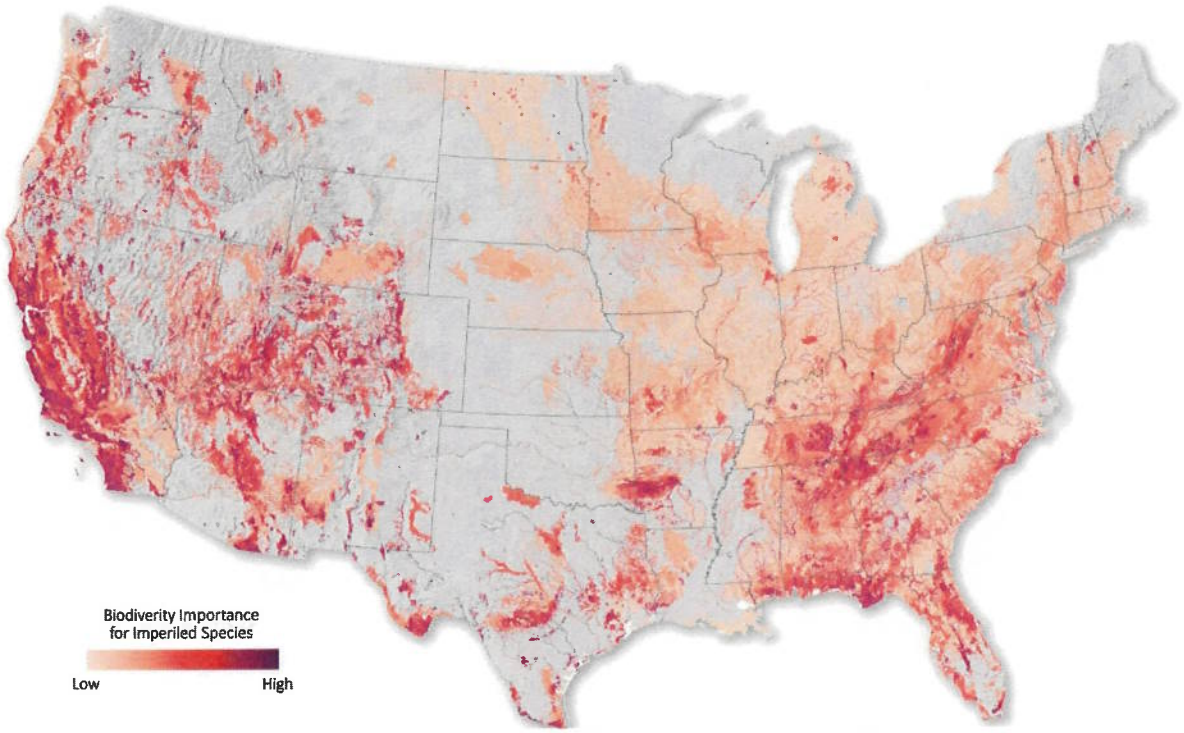

Figure 2: Map of Biodiversity Importance (https://www.natureserve.org)

Forestry-Impacted Species:

The assessment found that of the 270 identified G1/G2 species and ecosystems documented by NatureServe in the Lakes States, only five species and three ecosystems could be negatively impacted by forest management activities (Figure 3) to the degree that they warrant action by SFI-Certified organizations and/or SICs (Appendices B-D). Of these, three species and two ecosystems are found in all three states. Of those five, only four shared the same impact ranking across all three states.

Figure 3: FECVs *Potentially* Negatively Impacted by Forest Management

Common Name	Minnesota	Michigan	Wisconsin
Northern Long-Eared Bat	Impacted	Impacted	Impacted
Karner Blue	Possibly Impacted	No Impact	Impacted
Little Goblin Moonwort	Impacted	Impacted	Impacted
Frosted Elfin	Not Found	Possibly Impacted	Impacted
Pleistocene Catinella	Impacted	Possibly Impacted	Not Listed
An Ambersnail	Not Found	Impacted	Not Found
Indiana Bat	Not Found	Impacted	Not Found
Jack Pine / Prairie Forbs Barrens	Impacted	Impacted	Impacted
Northern White-cedar – Yellow Birch Forest	Impacted	Impacted	Impacted
Laurentian Pine Barrens	Not Listed	Impacted	Possibly Impacted

Refer to the Lake States FECV Regional Assessment for more details on each of the above species and ecosystems.

Discussion & Next Steps

2022 SFI Fiber Sourcing Standard - Objective 1. Biodiversity in Fiber Sourcing;

Performance Measure 1.2. Promotion and conservation of Forests with Exceptional Conservation Value;

Indicator 2 states SFI-Certified organizations must have a "*Program* to address *FECV (critically imperiled* and *imperiled* species and ecological communities) for all harvest operations through *fiber sourcing* activities such as:

a. use of *qualified logging professionals, certified logging companies* (where available), and *qualified resource professionals*; or
b. training *program* for *qualified logging professionals* on how to recognize and *protect FECV*; or
c. through in-the-forest verification by *certified logging companies*; or
d. forest landowner outreach; or
e. *SIC* involvement in the assessment of *FECV*, and development of recommendations for *conservation*."

The SICs will work together to create educational materials for those that overlap and will work individually on the remainder. This will result in regionally consistent design and messaging around FECVs. These materials will provide more information on G1/G2 species and ecosystems, including:

a. Identification
b. General location
c. How to secure proprietary specific locations
d. Specific threats
e. Mitigation
f. Sources for more information

These materials will be used in FECV-specific training for wood producers, loggers and foresters. They will also be incorporated into state SIC Landowner manuals and made available to other entities who routinely work with non-industrial private forest landowners (e.g., DNR private lands foresters, consulting foresters, Soil and Water Conservation Districts, etc.).

These state-based assessments, conducted in coordination across the Lake States, provide a thoughtful, science-based process for promoting the conservation of forestry-impacted globally critically impaired and impaired species. Providing key information to wood producers, foresters, loggers and private landowners in the fiber procurement supply chain will help drive conservation of these species and ecosystems. This will serve to demonstrate SFI-certified organizations' commitment to conserving biodiversity within their sphere of influence.

LAKES STATES SFI IMPLEMENTATION COMMITTEE
BIODIVERSITY IN FIBER SOURCING
FORESTS WITH EXCEPTIONAL CONSERVATION VALUE (FECV) ASSESSMENT

Version 1, November 2022

This FECV Assessment is best referenced in tandem with landowner and logger training and outreach materials developed collectively, or individually, by the Lake States SFI Implementation Committees (SIC)s. This replaces all previous versions.

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Tables & Figures

Summary

In accordance with the requirements of the 2022 SFI Fiber Sourcing Standard, the SFI Implementation Committees of the Lake States (MI, MN and WI) worked cooperatively on an assessment of Forests of Exceptional Conservation Value (FECVs). Lists of Globally Critically Imperiled (G1) and Imperiled (G2) species and ecosystems were acquired from NatureServe for each state. Trained biologists and foresters reviewed each entry and evaluated the potential for forestry activities to impact the FECV (positively and/or negatively). The process resulted in focused lists of species and ecosystems that could benefit from additional education, information and mitigation to ensure their continued presence on the landscape. The SICs and SFI certified organizations will use this information to develop training materials and programs for wood producers, foresters, loggers and private non-industrial forest landowners within their fiber procurement regions.

Background

Sustainable Forestry Initiative (SFI) certified organizations have been supporting biodiversity conservation since their initial certification to the Fiber Sourcing standard. While some of the Forests with Exceptional Conservation Value (FECV) related requirements in the SFI 2015-2019 Fiber Sourcing Standard did not change, the 2022 SFI Fiber Sourcing Standard introduces new requirements and approaches to promote and conserve FECVs.

The 2022 SFI Fiber Sourcing Standard Objective 1. Biodiversity in Fiber Sourcing; **Performance Measure 1.2.** Promotion and conservation of Forests with Exceptional Conservation Value; **Indicator 1** states, *"Certified Organizations shall conduct an assessment, individually and/or through cooperative efforts involving SFI Implementation Committees, of Forests with Exceptional Conservation Value, defined as critically imperiled and imperiled species and ecological communities, within their wood and fiber supply area(s) and make the summary of the assessment available to wood producers."*

Ultimately, SFI-certified organizations are responsible for demonstrating conformance with the new requirements of the 2022 SFI Standard. However, SFI Implementation Committees (SICs) provide an opportunity for SFI-certified organizations to collaboratively leverage activities to meet SFI certification requirements in a cost efficient, expeditious and mutually beneficial way. Multilateral cooperation amongst SFI-certified organizations operating in similar geographies, with similar markets and similar forest ecosystems increases efficiency and provides regional consistency in messaging and forest management practices.

Following are examples of activities conducive to regional and in-state SIC collaboration that can help SFI-certified organizations meet the FECV Standards:

- Gathering and analyzing scientific information on Globally Critically Imperiled (G1) and Imperiled (G2) species and ecosystems.
- Engaging in or supporting regional research on G1/G2 species and ecosystems.
- Sharing experiences and knowledge on best practices that can be implemented to address G1/G2 species and ecosystems.
- Developing and distributing educational and informational materials to wood producers, loggers, foresters and landowners.

Methods

Regional Similarities: The Lake States of Michigan, Minnesota and Wisconsin share very similar forested landscapes. All historically had native prairies in the south, a hardwood transition zone mid-state and conifer grading to boreal forests in the north. All three have climatic influence from the Great Lakes. The historical logging patterns in each state were virtually identical in nature, with slight temporal variation. The current forests are oak-hickory-maple in the transition zone and aspen-spruce-pine in the north. The industries are also similar, with hardwood sawmills in the south, softwood sawmills and pulp mills in the north. Additionally, the three states have similar forest landowner patterns, state agency organizations and forestry best management practices (BMPS).

Committee Process: Given the regional similarities, the three SICs elected to work together on this FECV assessment and any subsequent educational and informational efforts. Representatives from the Lake State SICs participated in the FECV Playbook Training session, and then formed an ad hoc FECV Committee (Appendix A) to develop the processes to conduct the FECV Assessment. The Committee met once virtually to develop the scope of work, discuss document sharing and make work assignments. The ad hoc FECV Committee met in person during the 2022 SFI Annual Conference in Madison, WI to review progress on individual state assessments, agree to the process, and set a timeline. We also attended the SIC General Session dedicated to FECV assessments. Once the data was analyzed and consensus reached, the FECV Committee members crafted this document and circulated it to the MN, WI and MI SICs for review and approval.

Data Gathering & Analysis: We used NatureServe Explorer (https://explorer.natureserve.org/) to export Excel spreadsheets of all G1 and G2 species and ecosystems for each state (MI, MN and WI). We then added columns to the spreadsheets as part of the effort to assess the impacts of forestry activities to each FECV. Column data and color-coding indicate:

- Educated determinations of (N) – Not Impacted By Forest Management, (P) – Potentially Impacted By Forest Management, or (I) – Impacted by Forest management. Impact level was color-coded such that Green indicates no impact by forestry, Yellow indicates a potential impact, and Red indicates an impact from forestry.
- The nature of the potential impact (positive, negative or both) and a brief explanation. This was done only for P or I species and ecosystems.
- If existing forestry Best Management Practices (BMPs) address the impacts (yes or no). This was done only for P or I species and ecosystems.
- Notes of any additional mitigation recommendations.

SIC members with appropriate knowledge and expertise on wildlife ecology, biology and forestry (individually or cooperatively) reviewed NatureServe's data on the FECV species and ecosystems, consulted as needed with other subject experts and resources, and then made a professional determination of the forestry impacts on each FECV. Only species and ecosystems lacking sufficient BMPs that were ranked as (I) - Impacted by forest management or (P) – Potentially Impacted by forest management where the nature of the impact was negative or both positive and negative were prioritized for further action in this assessment. These are attached as Appendices B-D to this document, serve as the heart of the assessment, and guide future educational efforts directed towards foresters, loggers, landowners and the public.

Results

Presence of G1/G2 Species & Ecosystems:

The Lake States contains 270 G1/G2 species and ecosystems combined, distributed similarly among broad classification groups (Figure 1). As expected, there is considerable overlap between the states.

- Species: There are 10 G1/G2 species found in all three states and 29 more found in two of the three states (Appendix E).
- Ecosystems: There are 11 G1/G2 ecosystems found in all three states, and another 16 found in two of the three states (Appendix F).

Figure 1: Lake States G1/G2 Species and Ecosystems

Classification	Minnesota	Michigan	Wisconsin
Crayfish, Shrimp, & Other Crustaceans		1	2
Fungi	2		
Insects	23	25	22
Lichens	4	1	2
Mussels, Snails, & Other Molluscs	8	13	11
Nonvascular Plants	3	3	1
Other Invertebrates - Terrestrial/Freshwater	2		1
Vascular Plants - Ferns and relatives	2	3	2
Vascular Plants - Flowering Plants	2	9	7
Vertebrates	2	4	3
Forest Ecosystem	6	9	10
Prairie Ecosystem	11	12	8
Savanna/Barrens Ecosystem	7	8	6
Wetlands Ecosystem	8	7	4
Other Ecosystem	1	8	7
Total	81	103	86

Regional Biodiversity Importance:

It is important to note that the timber management zone of the northern Lake States has relatively few imperiled species compared to other regions in the US. Figure 2 is a map of Biodiversity Importance produced by NatureServe that clearly shows that northeast Minnesota, northern Wisconsin and the Upper Peninsula of Michigan do not have high concentrations of imperiled species. Within Minnesota and Wisconsin, the highest concentrations of imperiled species/ecosystems and thus the greatest biodiversity importance occur outside of the forested areas most frequently harvested/utilized for wood fiber? This is largely because the landscapes are dominated by natural forest ecosystems, and that forest management, harvesting and utilization has been conducted responsibly in ways that support and conserve existing biodiversity.

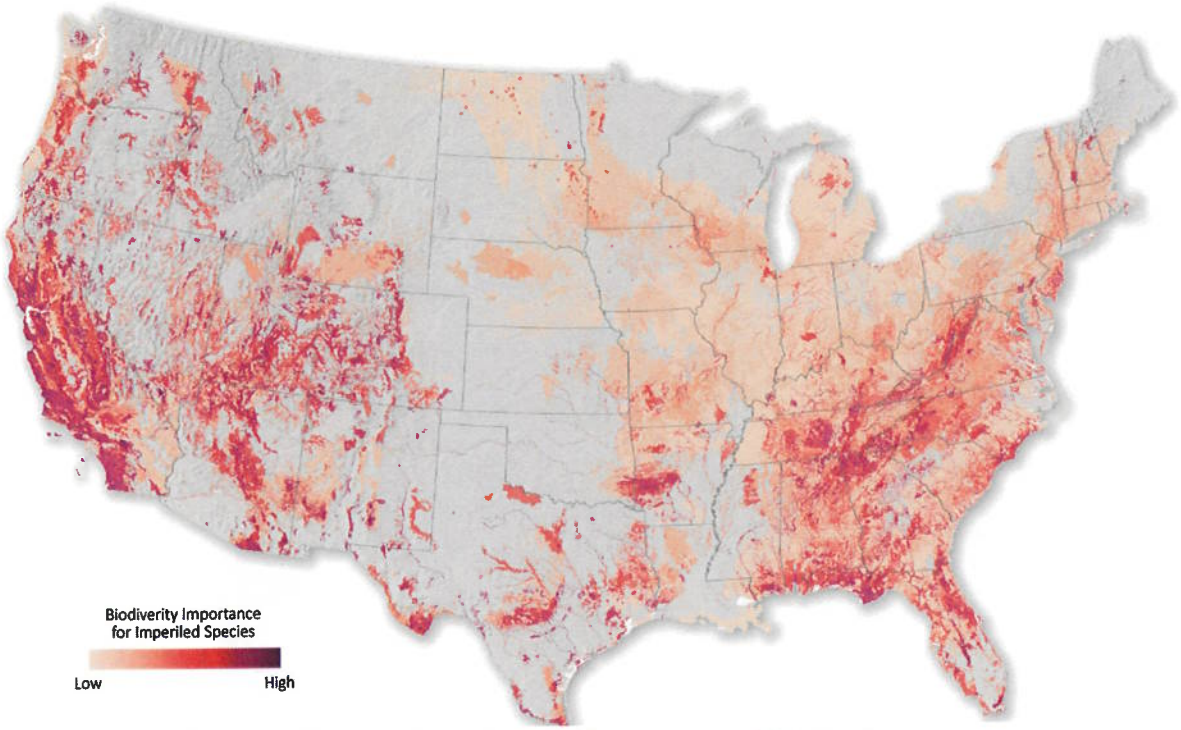

Figure 2: Map of Biodiversity Importance (https://www.natureserve.org)

Groupings:
The Assessment found that many of the FECVs (G1/G2 species and ecosystems) are not impacted by forestry activities because they are unforested or do not use forested habitats in their life cycles. There are others that could potentially be impacted by forestry activities, both positively and negatively. Accordingly, we grouped the key FECVs and considered mitigation actions.

- Aquatic Species: There are a few fish, a large number of insects (caddisflies, mayflies, dragonflies, and stoneflies), and gastropods (mussels, snails, & other mollusks) listed in all three Lake States. Many of these are associated with river systems. There is the potential for forestry activities (especially road construction, landings, and timber harvesting) to result in erosion that could negatively impact these species. However, each state has site level forest management water quality best management practices (BMPs) in place. Loggers are trained to these BMPs and implementation monitoring shows a high level of compliance. The small amount of non-compliance is insufficient to result in negative impacts to these species.
- Open Ecosystems and Associated Species: There are nearly 100 prairie, dune, open wetland, pavement, shrubland, talus slope, savanna, and barrens ecosystems listed for the region. Prairie, savanna and barrens systems were historically cleared for agriculture and development and are subsequently rare today. They require frequent disturbance from variable intensity wildfires or fires of aboriginal origin to maintain their open condition. Without disturbance, some succeed into woodlands and forests, while others are too nutrient-poor to support trees. Forest management activities (logging) can be a tool to maintain and restore the open character of these ecosystems or to reduce the risk of prescribed burning escaping and causing damage. Conversely, tree planting could transition openlands into forests, or convert native forest to other types (e.g., jack pine converted to red pine). Landowners should be educated to recognize rare native open landscapes and encouraged to manage them accordingly.

- Distribution: Some G1/G2 species and ecosystems are not found within the fiber procurement zones of SFI-certified organizations. Others are found in forest types not typically utilized by SFI-certified organizations. This was taken into consideration during the Assessment and referenced when determining priority landowner outreach and logger training action items.
- Extremely Rare Species: Throughout the Lake States there are extremely rare species and ecosystems that are artifacts of historic conditions or result from speciation, specialization and geological/geographical conditions. Some are thought to be extinct, others are historic records that lack confirmation, and yet others are found in one or two locations. Due to their rarity, the fact that a large proportion of timber harvest in the region occurs in winter, and high level of BMP compliance in the Lake States, this assessment concluded that there is a low likelihood of negative impacts from forestry activities on those species or ecosystems.

Forestry-Impacted Species:

The assessment found that of the 270 identified G1/G2 species and ecosystems documented by NatureServe in the Lakes States, only seven species and three ecosystems could be negatively impacted by forest management activities (Figure 3) to the degree that they warrant action by SFI-Certified organizations and/or SICs (Appendices B-D). Of these, three species and two ecosystems are found in all three states. Of those five, only four shared the same impact ranking across all three states.

Figure 3: FECVs *Potentially* Negatively Impacted by Forest Management

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The following pages include summaries of the above species and ecosystems that are determined to be impacted by forest management activities in at least one of the Lake States. This information will be utilized in future logger and natural resource professional trainings and included in landowner outreach materials.

Each is shown on a separate page to allow for easier reader navigation, updating as the status of them change, and use of this information by SICs and SFI-certified organizations.

Northern Long-Eared Bat

Myotis septentrionalis (NLEB) is one of four non-migratory forest bat species in the Lake States that have suffered dramatic population declines due to contracting White-Nose Syndrome (WNS). WNS is the result of infection of the non-native fungus *Pseudogymnoascus destructans*, which causes the bats to come out of hibernation mid-winter and die due to starvation and dehydration. On November 30, 2022, the NLEB was reclassified as Endangered, which will take effect on January 30, 2023.

Habitat loss is not contributing to NLEB decline. In fact, forest management helps create travel corridors and foraging habitat for the species. But female bats use old, loose-barked trees as maternal roost trees – places where females congregate to rear their pups in summer. Loss of these trees or too much timber harvesting near hibernacula could negatively impact the few surviving animals. Since their Threatened listing forest management has occurred under the NLEB 4(d) Rule, which specifies no timber harvest within a 0.25 mile (0.4 kilometer) radius of known northern long-eared bat hibernacula; and no harvest of known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the known maternity tree during the pup season (June 1 through July 31). Lakes States state agencies developed a Habitat Conservation Plan (HCP) with the USFWS. This HCP, which is to be approved on January 16, 2023, will replace the 4(d) Rule when the species is formally uplisted to Endangered on January 30, 2022.

Source: US Fish & Wildlife Service

All three Lake States consider NLEB impacted by forest management activities and encourage foresters, landowners and loggers to be aware of their plight, to perform the appropriate risk analysis to reduce the likelihood of take, and to check with the state agency before timber management to ensure there are no known, occupied roost trees on properties. If there are, they should follow the recommendations of the HCP to protect the species' habitat.

More Resources:

- US Fish & Wildlife Service
- NatureServe
- NLEB 4(d) Rule
- Lake States Forest Bat HCP
- White-Nosed Syndrome Response Team

Indiana Bat

Myotis sodalis is a small, insectivorous, migratory bat that hibernates colonially in caves and mines in the winter. The species was originally listed as in danger of extinction under the Endangered Species Preservation Act of 1966 and is currently listed as endangered under the Endangered Species Act of 1973. The current population has declined by half compared to when the species was listed as endangered.

Indiana bats require forests for foraging and roosting and are found in forested areas in the eastern half of the United States. In winter, Indiana bats hibernate in caves and mines. They are highly concentrated during hibernation, with 72% of the population hibernating in just four sites.

Threats to the species include human disturbance of hibernating bats, commercialization of caves where the bats hibernate, loss of summer habitat, pesticides and other contaminants, and most recently, the disease white-nose syndrome. The greatest single cause of loss of forest habitat within the range of the species is urbanization and development, but the forested habitat used by this species remains extensive and probably is not limiting the population.

Source: US Fish & Wildlife Service

White-Nose Syndrome (WNS) is the result of infection of the non-native fungus *Pseudogymnoascus destructans*, which causes the bats to come out of hibernation mid-winter and die due to starvation and dehydration. The range-wide population has declined by 19% since 2007, when white-nose syndrome first arrived in North America.

The species is not found in Minnesota or Wisconsin. The Michigan assessment listed it as Impacted by forest management due to the species use of forests for maternal roost colonies, using the same areas year after year.

More Information:

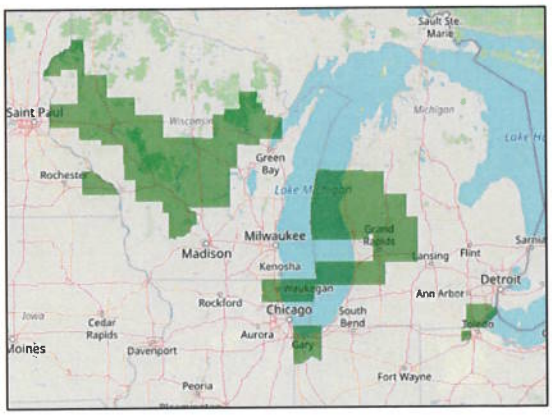
- NatureServe
- US Fish & Wildlife Service
- Bat Conservation International
- Michigan State University

Karner Blue

Plebejus samuelis is an endangered (1992) subspecies of small blue butterfly found in portions of eastern Minnesota, Wisconsin, Michigan. Its life cycle depends on the wild blue lupine flower (Lupinus perennis), found in oak savannas and pine barrens habitats as well as in frequently disturbed areas.

These open habitats were often cleared for agriculture, but also suffer from the lack of fire on the landscape to maintain the open character for the butterfly's host plant. Without disturbance savannas and barrens can transition into more closed-canopy woodlands. Therefore, forestry can have a positive impact on the species if used to maintain these open habitats, or a negative impact if they are planted into other species or managed as woodlands or forestlands.

This species is found in all three states but is classified differently in each. Wisconsin has the largest and best habitat and has listed the Karner Blue as Impacted by forest management. The DNR and 50 partners have signed a Habitat Conservation Plan with the USFWS. Minnesota has a small population in the southeast. Their assessment found that the species was Possibly Impacted by forest management, but the population is small and isolated, is outside of the primary SFI certified organization procurement range and the biggest threat is a lack of forest management leading to succession. The Michigan assessment concluded forest management has No Impact on Karner Blue for the same reasons.



Source: US Fish & Wildlife Service

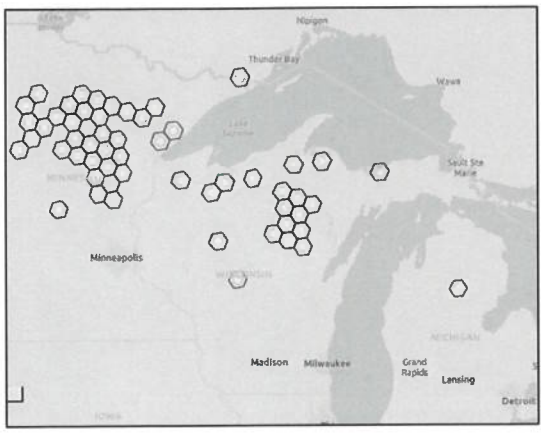
More Resources:

- USFWS Karner Blue
- NatureServe
- Karner Blue Habitat Conservation Plan
- Wisconsin DNR
- Minnesota DNR
- Michigan DNR

Little Goblin Moonwort

Botrychium mormo is a small species of moonwort found in rich hardwood forests in the northern portions of Minnesota, Wisconsin, and Michigan, and one site in Quebec. It grows in loamy soils with rich organic matter on shaded forest floors in mature maple-basswood and maple-basswood-beech forests. Habitats are typically north-facing hillsides, possessing moist, mineral-rich soils. It is a mycorrhizal species that can remain underground for many years until habitat conditions improve.

Non-native earthworms are a major threat range wide and have shown to cause dramatic declines. Any activity that opens the forest canopy and increases the effects of soil desiccation is likely to be detrimental to the species. Planting monocultural pine plantations and ground-layer herbicide application are other threats to this species. Grazing can compact the forest soil, remove or damage existing plants, and damage overstory trees.



Source: Nature Serve

All Lake States assessments found that forest management impacts the species. Populations are well-documented. It is unknown exactly what level of disturbance the species can tolerate given its mycorrhizal nature, but care should be taken to avoid drying the soil.

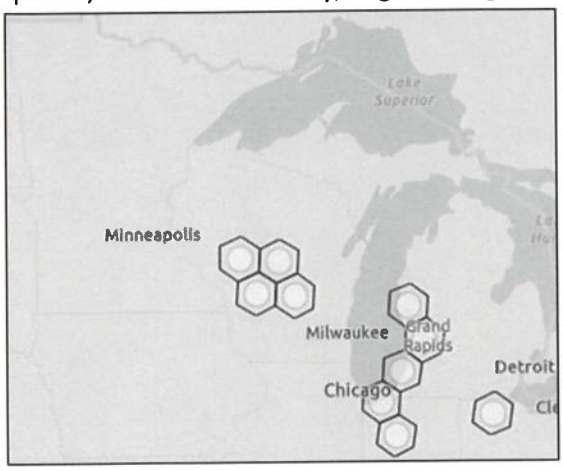
More information:

- NatureServe
- Wisconsin DNR
- Minnesota DNR
- Michigan State University
- Chippewa National Forest

Frosted Elfin

Callophrys irus is a small non-migratory butterfly dependent on host plants wild blue lupine (*Lupinus* spp.) and wild indigo (Baptisia spp.) to complete its annual life cycle. A portion of the range overlaps with the Karner blue. Where the species co-occur, both use wild blue lupine as host plants and face similar threats or potential benefits from management.

The frosted elfin faces habitat loss from a variety of sources, including conversion of habitat due to development, invasive plant species, recreational activity, degraded rights-of-way (ROWs), deer herbivory on host plants, insecticide use and fire exclusion or management leading to succession.



Source: Nature Serve

The species is not found in Minnesota. Wisconsin assessed it as Impacted and Michigan assessed it as Possibly Impacted. Both have statewide Habitat Conservation Plans (HCP) for activities such as forestry and rights-of-way management. Frosted elfins are not included as a covered species in the HCP but are discussed as a Karner blue butterfly associated species. Forest management is not listed as a factor effecting its survival but managing trees to maintain habitat in known sites is part of the management strategy.

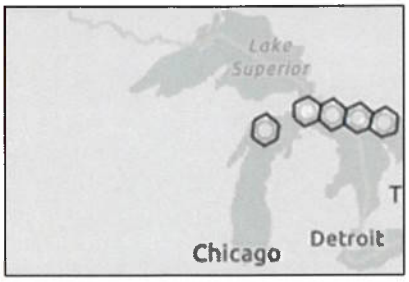
More Information:

- NatureServe
- USFWS Assessment
- Wisconsin DNR
- Michigan State University

Pleistocene Catinella

Catinella exile is a terrestrial snail found in forested rich fens. These fens are peatlands that form in areas of ground water discharge and have relatively high soil moisture and cooler soil temperatures. It was originally described from Pleistocene fossils and thought to be extinct until discovered alive in a fen in Iowa in 1986.

Land use activities that could trample or otherwise alter cool, moist microhabitats should be avoided (e.g., ORV use and timber harvest). Prescribed fire has been shown to substantially reduce the abundance of land snails. Hydrologic changes to ecosystems supporting habitat should be avoided.



Source: Nature Serve

The species is not listed in Wisconsin. The Minnesota assessment listed it as Impacted by forest management since it is found in the aspen parklands region and NatureServe specifically lists timber harvesting as a threat. Michigan assessed it as Possibly Impacted, as it is largely found in beach cobbles there.

More Information:

- NatureServe
- Michigan State University
- USFS Conservation Assessment

An Ambersnail

Catinella protracta is a terrestrial snail with a fragile, translucent yellow shell that grows up to .6 inches in length, commonly with 3 whorls, and features a large oval aperture and sharp lip. The snail's body is light brown to gray, broad at the front, tapering behind with short and thick eye peduncles and tentacles. The mantle is pale grey spotted with black and white.

This species is found in a variety of habitats, such as carbonate cliffs, alvars, grasslands, beneath leaf litter, logs and stones on the forest floor, lakeshores, dunes, ditches, and pastures in southern Michigan. It is known from 6 observations, most recently in 1975.

Habitat loss, fragmentation and degradation are considered the greatest threats to land snail species. Dependence on specific microhabitat conditions renders many species vulnerable to changes brought about by increased edge area, forest canopy reductions, and the loss of vegetative ground cover. Fire can negatively affect land snail populations and microhabitats. Large, downed logs may provide important refuges during periods of fire and drought, and should be retained. Heavy recreational traffic may negatively impact snail habitat. Identifying and protecting areas of suitable habitat will aid Catinella protracta.

Source: Michigan State University

The species is not present in Minnesota or Wisconsin. The Michigan assessment listed it as Impacted by forest management since it is found in forested areas and the Michigan Natural Features Inventory specifically lists forest canopy reductions as a threat.

More Information:

- NatureServe
- Michigan State University

Jack Pine / Prairie Forbs Barrens

Jack Pine / Prairie Forbs Barrens ecosystems are found on the prairie/forest border in the US and Canada. The sandy soils are acidic, droughty, and infertile. The open vegetation was historically influenced by fires. The vegetation is dominated by grasses and forbs with a sparse tree layer. The dominant tree is jack pine (*Pinus banksiana*), with varying amounts of northern pin oak (*Quercus ellipsoidalis*), red pine (*Pinus resinosa*), and aspen (Populus spp.).

Fire is the most important natural disturbance in this community, keeping the tree canopy very open. In the absence of fire oak become more abundant, and then the canopy closes and more shade-tolerant species invade. Many former sites of this type have become forests due to fire suppression or have been logged. Other sites have been converted to tree plantations.

All three state's assessments listed this community as Impacted by forest management. Land managers should be aware of the community and avoid converting it to other species. Logging can be used to open up the overstory before the reintroduction of fire as a management strategy.

More Resources:

- NatureServe
- Wisconsin DNR
- Michigan State University
- Minnesota DNR

Northern White-cedar - Yellow Birch Forest

Northern White-cedar - Yellow Birch Forest ecosystems are found on well-drained to somewhat poorly drained upland soils across the Lake States. The canopy of this upland community is dominated by white cedar (*Thuja occidentalis*) and a variety of hardwoods, most typically yellow birch (*Betula alleghaniensis*), paper birch (*Betula papyrifera*), and quaking aspen (*Populus tremuloides*), but occasionally red maple (*Acer rubrum*) and sugar maple (*Acer saccharum*). Associated conifers include balsam fir (*Abies balsamea*), white spruce (*Picea glauca)*, and (rarely) eastern hemlock (*Tsuga canadensis*).

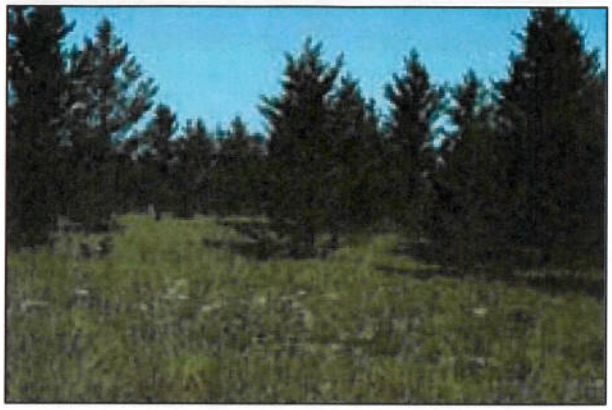
There are probably fewer than 100 occurrences of this community range wide. Currently there is only one 14-acre occurrence documented from Minnesota. Several old growth stands have been documented on the Apostle Islands in Wisconsin.

All three states' assessments listed this community as Impacted by forest management. Land managers should be aware of the community and avoid logging practices that could significantly alter composition. Both white cedar and yellow birch are difficult to regenerate, especially where white-tailed deer numbers are high.

More Resources:

- NatureServe
- University of Minnesota
- Minnesota DNR (MHn45b)

Laurentian Pine Barrens



Laurentian Pine Barrens ecosystems are found in the northern and western Great Lakes region. They occur primarily on sandplains/outwash soils, with dry, frequent fires. Jack pine (*Pinus banksiana*) typically dominates the canopy, but red pine (*Pinus resinosa*), northern pin oak (*Quercus ellipsoidalis*), and white pine (*Pinus strobus*) also are common overstory dominants. The understory is often quite low in diversity and open, with prairie species present.

Past logging practices combined with post-logging slash fires in some areas decreased the number of pines and created areas dominated by oak sprouts and scrubs. Fire suppression policies instituted in the 1920s resulted in the succession of many open pine barrens to closed canopy forests dominated by jack pine. Many sites formerly occupied by pine barrens were also converted to pine plantations. Other threats include livestock grazing, off-road-vehicle activity, and the invasion of non-native species.

This community is not listed in Minnesota. The Michigan assessment concluded it was Impacted by forest management due to the role logging and tree planting can play in altering the community. The Wisconsin assessment concluded it was Possibly Impacted. Land managers should be aware of the ecosystem and manage it for a low-density jack pine overstory and prairie-dominated understory using judicious logging and fire as management tools.

More Resources:

- NatureServe
- Wisconsin DNR
- Michigan State University
- Michigan DNR

Discussion

The Lake States SIC Forests With Exceptional Conservation Value (FECV) Assessment evaluated all 270 G1 and G2 species and ecosystems documented by NatureServe and concluded that eight are impacted by forest management activities in at least one of the Lake States. Of these, five are found in all three states, four of which share the classification of being impacted by forest management (Figure 3 and Appendix E).

The 2022 SFI Fiber Sourcing Standard Objective 1. Biodiversity in Fiber Sourcing; **Performance Measure 1.2.** Promotion and conservation of Forests with Exceptional Conservation Value; **Indicator 2** states SFI-Certified organizations must have a "*Program* to address *Forests with Exceptional Conservation Value*" *(critically imperiled* and *imperiled* species and ecological communities) for all harvest operations through *fiber sourcing* activities such as:

a. use of *qualified logging professionals, certified logging companies* (where available), and *qualified resource professionals*; or
b. training *program* for *qualified logging professionals* on how to recognize and *protect Forests with Exceptional Conservation Value*; or
c. through in-the-forest verification by *certified logging companies*; or
d. forest landowner outreach; or
e. *SFI Implementation Committee* involvement in the assessment of *Forests with Exceptional Conservation Value*, and development of recommendations for *conservation*."

The SICs will work together to create educational materials for those that overlap and will work individually on the remainder. This will result in regionally consistent design and messaging around FECVs. These materials will provide more information on G1/G2 species and ecosystems, including:

a. Identification
b. General location
c. How to secure proprietary specific locations
d. Specific threats
e. Mitigation
f. Sources for more information

These materials will be used in FECV-specific training for wood producers, loggers and foresters. They will also be incorporated into state SIC Landowner manuals and made available to other entities who routinely work with non-industrial private forest landowners (e.g., DNR private lands foresters, consulting foresters, Soil and Water Conservation Districts, etc.).

These state-based assessments, conducted in coordination across the Lake States, provide a thoughtful, science-based process for promoting the conservation of forestry-impacted globally critically impaired and impaired species. Providing key information to wood producers, foresters, loggers and private landowners in the fiber procurement supply chain will help drive conservation of these species and ecosystems. This will serve to demonstrate SFI-certified organizations' commitment to conserving biodiversity within their sphere of influence.

Annual Review

Representatives from each state's SIC will annually review the latest available G1/G2 species information from NatureServe to determine if updates are needed. The Lakes States working group will then be convened to review the overall regional assessment and determine if any findings warrant further actions to mitigate risk to FECV's or specific species or ecosystems.

Appendix E: Lake States G1/G2 Species Overlap				
Common Name	Latin Name	Minnesota	Michigan	Wisconsin
a leafcutter bee	Megachile dakotensis	X	X	
a leafcutter bee	Megachile rugifrons	X	X	X
a lichen	Caloplaca parvula	X	X	
a polycentropodid caddisfly	Holocentropus milaca	X	X	
Blackfin Cisco	Coregonus nigripinnis		X	X
Blazing Star Stem Borer	Papaipema beeriana	X	X	X
Coldwater Pondsnail	Stagnicola woodruffi		X	X
Douglas Stenelmis Riffle Beetle	Stenelmis douglasensis		X	X
Early Hairstreak	Erora laeta		X	X
Eastern Prairie White-fringed Orchid	Platanthera leucophaea		X	X
Fat Pocketbook	Potamilus capax	X		X
Flanged Valvata	Valvata winnebagoensis	X	X	X
Frosted Elfin	Callophrys irus		X	X
Higgins Eye	Lampsilis higginsii	X		X
Hine's Emerald	Somatochlora hineana		X	X
Karner Blue	Plebejus samuelis	X	X	X
Lake Huron Locust	Trimerotropis huroniana		X	X
Little Goblin Moonwort	Botrychium mormo	X	X	X
Michigan Dune Dart Moth	Copablepharon michiganensis		X	X
Northern Long-eared Bat	Myotis septentrionalis	X	X	X
Northern Prostrate Clubmoss	Lycopodiella margueritiae		X	X
Oklahoma Grass-pink	Calopogon oklahomensis	X		X
Ontario Hawthorn	Crataegus nitidula		X	X
Pleistocene Catinella	Catinella exile	X	X	
Poweshiek Skipperling	Oarisma poweshiek	X	X	X
Purplecap Valvata	Valvata perdepressa		X	X
Rambling Dewberry	Rubus vagus		X	X
Red-tailed Prairie Leafhopper	Aflexia rubranura	X		X
Robust Sunflower Leafcutter Bee	Megachile fortis	X		X
Rusty-patched Bumble Bee	Bombus affinis	X	X	X
Scaleshell	Potamilus leptodon	X	X	X
Sioux Snaketail	Ophiogomphus smithi	X		X
Spiral Crisp Moss	Trichostomum spirale	X	X	X
St. Croix Snaketail	Ophiogomphus susbehcha	X		X
Variable Cuckoo Bumble Bee	Bombus variabilis	X		X
Vicksburg Blackberry	Rubus variispinus		X	X
Whitney's Underwing	Catocala whitneyi	X	X	X
Whooping Crane	Grus americana	X		X
Winged Mapleleaf	Quadrula fragosa	X		X

Appendix F: Lake States G1/G2 Ecosystems Overlap			
Ecosystem	**Minnesota**	**Michigan**	**Wisconsin**
Boreal Extremely Rich Seepage Fen	X		X
Bur Oak - Swamp White Oak Mixed Bottomland Forest	X		X
Central Interior-Great Lakes Flatwoods & Swamp Forest	X	X	X
Central Midwest Oak Openings & Barrens	X	X	X
Central Tallgrass Prairie	X	X	X
Central Wet-Mesic Tallgrass Prairie	X	X	X
Chinquapin Oak Driftless Bluff Woodland	X		X
Dogwood - Willow - Poison-sumac Shrub Fen		X	X
Driftless Area Algific Talus	X		X
Glaciated Midwest Beech - Sugar Maple Forest		X	X
Great Lakes Coast Pine Barrens	X	X	X
Great Lakes Limestone Cobble - Gravel Shore		X	X
Great Lakes Sandstone Cobble - Gravel Shore		X	X
Great Lakes Sedge Rich Shore Fen		X	X
Inland Coastal Plain Marsh		X	X
Jack Pine / Prairie Forbs Barrens	X	X	X
Lakeplain Wet-Mesic Prairie		X	X
Laurentian Pine Barrens		X	X
Midwest Dry Sand Prairie	X	X	X
Midwest Dry-Mesic Prairie	X	X	X
Midwest Mesic Sand Tallgrass Prairie		X	X
Midwest Mesic Tallgrass Prairie	X	X	X
North-Central Bur Oak Openings	X	X	X
Northern White-cedar - Yellow Birch Forest	X	X	X
River Ledge Limestone Pavement		X	X
Sandcherry Dune Shrubland		X	X
Southern Tamarack - Red Maple Rich Swamp	X	X	X

Wisconsin SFI FECV Assessment 2022 - Species

Common Name	Scientific Name	Species Group (Broad)	Species Group (Fine)	NatureServe	U.S. Endangered Species Act Status	Distribution	View on NatureServe Explorer	WI Status	Forestry Impact? (N, P, I)	Nature of Impact (+, -, both) and explanation	Impact Mitigated By BMPs, Standards or other protections? (Yes, No)	Additional Recommended Mitigations	Comments
Northern Long-eared Bat	Myotis septentrionalis	Vertebrates	Mammals	G2	Threatened; Proposed endangered	Canada: AB (S2), BC (S3), LB (S2), MB (S3N,S4B), NB (S1), NF (S2), NS (S1), NT (S2), ON (S3), PE (S1), QC (S1), SK (S3), YT (S1B) United States: AL (S2), AR (S1), CT (S1), DC (S4), DE (SU), FL (SH), GA (S1), IA (S4), IL (S1), IN (S2), KS (S3), KY (S1), LA (S1), MA (S1), MD (S1), ME (S1), MI (S1), MN (S3), MO (S1), MS (S1N), MT (S2), NC (S2), ND (SU), NE (S1), NH (S1), NJ (S1), NY (S1), OH (S1), OK (S2), PA (S1), RI (S1), SC (S1), SD (S3), TN (S1), VA (S2), VT (S1), WI (S1), WV (S1), WY (S1B,S1N)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102615/Myotis_septentrionalis	S1		Both. Cutting maternal roost trees (-). Creating openings, flyways and young forests (+) [illegible] barren and central sands pine-oak forest communities, afforestation in barrens/savanna habitats; (+) forest management may promote early successional habitat suitable for lupine both. (-) conversion of savanna to forest; (+) forest management may promote early successional habitat suitable for lupine (-) See link. Found in CNNF. Avoid opening hardwood canopy or conversion for conifers.	Yes	4d Rule guidelines and Lake States HCP address positive and negative impacts.	
Frosted Elfin	Callophrys irus	Insects - Butterflies and Moths	Butterflies and Skippers	G2		Canada: ON (SX) United States: AL (SU), AR (SNR), CT (S2), DC (SH), DE (S1), FL (S2), GA (S3), IL (SH), IN (S1), KS (SNR), KY (S1), LA (S2), MA (S2), MD (S1), ME (SX), MI (S2), NC (S2), NH (S1), NJ (S2), NY (S1), OH (S1), OK (S1), PA (S1), RI (S1), SC (SNR), TN (S1), TX (SNR), VA (S1), VT (S1), WI (S1), WV (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.116737/Callophrys_irus	S1		No		Similar habitat requirements as Karner Blue Butterfly Wisconsin HCP for KBB: https://dnr.wisconsin.gov/topic/endangeredresources/karner; KBB is regulated within the KBB High Potential Range: https://dnr.wisconsin.gov/sites/default/files/topic/EndangeredResources/kbbRangeMap.pdf https://dnr.wi.gov/topic/EndangeredResources/Plants.asp?mode=detail&SpecCode=ppoph010n08&title=Little%20Goblin%20Moonwort%20(Botrychium%20mormo)%2C%20a%20Wisconsin%20Endangered%20plant,mkd%20July%20throu
Karner Blue	Plebejus samuelis	Insects - Butterflies and Moths	Butterflies and Skippers	G1	Endangered	Canada: ON (SX) United States: IL (S1), IN (S1), MA (SX), MI (S2), MN (S1), NH (S1), NY (S1), OH (S1), PA (SX), WI (S3)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.120997/Plebejus_samuelis	S3		Yes	Monitor sites for presence of wild lupine. If present, refer to HCP for avoidance measures	
Little Goblin Moonwort	Botrychium mormo	Vascular Plants - Ferns and relatives	Adder's-tongues, Grapeferns, and Moonworts	G2		Canada: ON (S1), QC (S1) United States: MI (S2), MN (S2), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.129668/Botrychium_mormo	S1		No	Maintain mature hardwoods and avoid earthworm movement to known sites.	
Higgins Eye	Lampsilis higginsii	Mussels, Snails, & Other Molluscs	Freshwater Mussels	G1	Endangered	United States: IA (S1), IL (S1), MN (S1), MO (S1), SD (S1), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.112888/Lampsilis_higginsii	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	St. Croix & Wisconsin River only
Fat Pocketbook	Potamilus capax	Mussels, Snails, & Other Molluscs	Freshwater Mussels	G2	Endangered	United States: AR (S2), IA (SX), IL (S1), IN (S1), KY (S2), LA (S1), MN (SX), MO (S1), MS (S1), NY (SH), OH (SX), TN (SNR), WI (SX)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.109746/Potamilus_capax	SX	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Believed to be extirpated from WI
Scaleshell	Potamilus leptodon	Mussels, Snails, & Other Molluscs	Freshwater Mussels	G1	Endangered Endangered; Experimental population, non-essential	United States: AL (SX), AR (S2), IA (SX), IL (S1), IN (SX), KY (SX), MI (SX), MN (SX), MO (S1), NE (S1), OH (SX), OK (S1), SD (S1), TN (SX), WI (SX)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.115603/Potamilus_leptodon	SX	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Winged Mapleleaf	Quadrula fragosa	Mussels, Snails, & Other Molluscs	Freshwater Mussels	G1		United States: AR (S1), IA (SX), IL (SX), IN (SX), KS (SX), KY (SX), MN (S1), MO (S1), OH (SX), OK (S1), SD (SX), TN (S1), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.111959/Quadrula_fragosa	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	St. Croix River only
Storm Hydrobe	Hoyla sheldoni	Mussels, Snails, & Other Molluscs	Freshwater Snails	G1		United States: WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113015/Hoyla_sheldoni	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Only documented in Lake Michigan in Racine County
Broadshoulder Physa	Physella parkeri	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		Canada: ON (SNR), QC (SNR) United States: MI (SNR), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.120677/Physella_parkeri	SU	P	(+) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Marl-bottomed lakes
Sandbar Pebblesnail	Somatogyrus depressus	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		United States: IA (SNR), IL (SNR), MO (S2), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.118391/Somatogyrus_depressus	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Wisconsin River only
Coldwater Pebblesnail	Somatogyrus tryoni	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		United States: IL (SNR), MN (SNR), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113172/Somatogyrus_tryoni	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Coldwater Pondsnail	Stagnicola woodruffi	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		Canada: MB (SU), ON (S2) United States: IL (SNR), IN (SNR), MI (SNR), NY (SNR), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119690/Stagnicola_woodruffi	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Purplecap Valvata	Valvata perdepressa	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		Canada: ON (S1) United States: IL (SNR), MI (SNR), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.108734/Valvata_perdepressa	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Only occurs in Great Lakes
Flanged Valvata	Valvata winnebagoensis	Mussels, Snails, & Other Molluscs	Freshwater Snails	G2		Canada: ON (S1) United States: MI (SNR), MN (SNR), WI (SU)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119274/Valvata_winnebagoensis	SU	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Rusty-patched Bumble Bee	Bombus affinis	Insects - Bees	Bumble Bees	G2	Endangered	Canada: NB (SH), ON (S1), QC (SNR) United States: CT (SH), DC (SNR), GA (SH), IL (S1), IN (S1), KY (SH), MA (SH), MD (SH), ME (SH), MI (SH), MN (SNR), NC (S1), ND (SH), NH (SH), NJ (SNR), NY (SH), OH (S1), PA (S1), RI (SNR), SC (SH), SD (SNR), TN (S1), VA (S1), VT (SH), WI (S1), WV (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.108845/Bombus_affinis	S1	P	Nests underground in a variety of habitat types. Utilizes ephemeral flowers in hardwood stands in early spring. Threats include include pathogens from tame bees; habitat loss due to agriculture; pesticide use; and climate change	No	Guidance documents: https://www.fws.gov/sites/default/files/documents/ConservationGuidance%9Bv1_27Feb2018_0.pdf ; https://dnr.wi.gov/topic/endangeredresources/documents/NHIbeesscreening.pdf	
Robust Dubiraphian Riffle Beetle	Dubiraphia robusta	Insects - Beetles	Other Beetles	G2		United States: WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.120435/Dubiraphia_robusta	S2	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Douglas Stenelmis Riffle Beetle	Stenelmis douglasensis	Insects - Beetles	Other Beetles	G2		United States: IN (SU), MI (S1), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.117299/Stenelmis_douglasensis	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
Knobal's Riffle Beetle	Stenelmis knobeli	Insects - Beetles	Other Beetles	G2		United States: WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119900/Stenelmis_knobeli	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	
West Virginia White	Pieris virginiensis	Insects - Butterflies and Moths	Butterflies and Skippers	G2		Canada: ON (S3), QC (S3) United States: AL (SNR), CT (S3), GA (S3), IL (SNR), IN (S3), KY (S3), MA (S3), MD (S1), MI (SU), NC (S3), NJ (SH), NY (S3), OH (S3), PA (S2), SC (SNR), TN (S3), VA (S3), VT (S3), WI (S3), WV (S3)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.110832/Pieris_virginiensis	S3	P	(-) Forest fragmentation and spread of invasive species (especially garlic mustard)	Yes	BMP's for Invasive Species	https://dnr.wisconsin.gov/topic/Invasives/bmp.html
Blazing Star Stem Borer	Papaipema beeriana	Insects - Butterflies and Moths	Papaipema Moths	G2		United States: IL (SNR), IN (S2), KY (S2), MI (S2), MN (SNR), ND (SNR), OH (S1), VA (S1), WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.109815/Papaipema_beeriana	S2	P	Prairie/wet-meadow specialist (-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	

Wisconsin Small Square-gilled Mayfly	Cercobrachys lilliei	Insects - Caddisflies, Mayflies, and Stoneflies	Mayflies	G2		United States: NE (SNR), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.822010/Cercobrachys_lilliei	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate			
Sioux Snaketail	Ophiogomphus smithi	Insects - Damselflies and Dragonflies	Dragonflies and Damselflies	G2		United States: IA (SNR), MN (SNR), WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.107024/Ophiogomphus_smithi	S2	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate			
Hine's Emerald	Somatochlora hineana	Insects - Damselflies and Dragonflies	Dragonflies and Damselflies	G2	Endangered	Canada: ON (S1) United States: AL (SH), IL (S1), IN (SX), MI (S1), MO (S2), OH (SX), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.115545/Somatochlora_hineana	S1	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Bog/fen habitat		
Oklahoma Grass-pink	Calopogon oklahomensis	Vascular Plants - Flowering Plants	Monocots	G2		United States: AL (S1), AR (S2), GA (SH), IA (SX), IL (S1), IN (SX), KS (S1), LA (S1), MN (SH), MO (S2), MS (S1), OK (S2), SC (SX), TN (SH), TX (S1), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.160275/Calopogon_oklahomensis	S1	P	(-) Avoid landing placement and afforestation in prairie and savanna habitats	No				
Eastern Prairie White-fringed Orchid	Platanthera leucophaea	Vascular Plants - Flowering Plants	Monocots	G2	Threatened	Canada: ON (S2) United States: IA (S1), IL (S1), IN (S1), ME (S1), MI (S1), MO (S1), NY (SH), OH (S2), OK (SH), PA (SH), VA (SH), WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.134537/Platanthera_leucophaea	S2	P	(-) Increased erosion could change water quality, impacting the species.	Yes	Water quality provisions of BMPs are adequate	Occupies mesic to wet prairies and outer margins of sedge-sphagnum bogs around kettle lakes		
Mead's Milkweed	Asclepias meadii	Vascular Plants - Flowering Plants	Dicots	G2	Threatened	United States: IA (S1), IL (S2), IN (SX), KS (S2), MO (S2), WI (SX)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.129673/Asclepias_meadii	SX	P	(-) Avoid landing placement and afforestation in prairie and savanna habitats	No				
Whooping Crane	Grus americana	Vertebrates	Birds	G1	Endangered; Experimental population, non-essential	Canada: AB (S1B), MB (SXB,S1M), NT (S1), ON (SNA), SK (SXB,S1M) United States: AL (S1N), AR (SX), FL (SNR), GA (S1), IA (SXB), IL (SX), IN (S1N,S1M), KS (S1N), KY (SNA), LA (SH), MN (SXB,SNRM), MT (S1M), ND (SX), NE (S1), OK (S1M), SC (S1N), SD (SNA), TN (SX), TX (S1N), UT (SXM), WI (SXB)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.102971/Grus_americana	SX	N	Utilizes herbaceous wetland habitat					
Blackfin Cisco	Coregonus nigripinnis	Vertebrates	Fishes - Freshwater and Anadromous	G1		Canada: ON (SU) United States: IL (SX), IN (SX), MI (SX), WI (SX)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.101159/Coregonus_nigripinnis	SX	N	Only found in Great Lakes and presumed extirpated in WI					
Wisconsin Well Amphipod	Stygobromus putealis	Other Crustaceans	Amphipods	G2		United States: WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114162/Stygobromus_putealis	SNR	N						
Feminine Clam Shrimp	Cyzicus gynecia	Crayfish, Shrimp, & Other Crustaceans	Fairy, Clam, and Tadpole Shrimps	G2		United States: MA (SNR), NJ (SU), NY (SNR), OH (SNR), PA (SNR), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.119717/Cyzicus_gynecia	SNR	N						
Variable Cuckoo Bumble Bee	Bombus variabilis	Insects - Bees	Bumble Bees	G1		Canada: ON (SNR) United States: AR (SNR), AZ (S1), CO (SH), FL (S1), GA (SNR), IA (SNR), IL (SH), IN (SH), KS (SNR), MD (SH), MN (SNR), MO (SNR), MS (SNR), NC (SH), ND (SNR), NE (S1), NH (SNR), NJ (SNR), OH (SNR), OK (SH), SC (SNR), TN (SNR), TX (SNR), VA (SH), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.819626/Bombus_variabilis	SNR	N	Parasitic bee who's only known host declined. Prairie.					
Robust Sunflower Leafcutter Bee	Megachile fortis	Insects - Bees	Leafcutter Bees	G2		Canada: AB (SNR), MB (SU), SK (SU) United States: AZ (SNR), CO (SNR), IA (SNR), IL (SNR), IN (S2), KS (SNR), LA (SNR), MN (SNR), MO (SNR), MT (SNR), ND (SNR), NE (SNR), NM (SNR), OK (SNR), SD (SNR), TX (SNR), WI (SNR), WY (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.882203/Megachile_fortis	SNR	N	Grassland habitat					
a leafcutter bee	Megachile rugifrons	Insects - Bees	Leafcutter Bees	G2		United States: FL (SNR), IA (SNR), IL (SNR), IN (S2), LA (SNR), MI (SNR), MN (SNR), MO (SNR), MS (SNR), NC (SH), NE (SNR), NY (SNR), OH (SNR), TX (SNR), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.862191/Megachile_rugifrons	SNR	N	Restricted to xeric sands on primarily prairie sites					
Early Hairstreak	Erora laeta	Insects - Butterflies and Moths	Butterflies and Skippers	G2		Canada: NB (S1), NS (S1), ON (S2), PE (S1), QC (S4) United States: GA (S1), KY (S1), MA (S2), MD (S1), ME (S4), MI (S1), NC (S2), NH (SU), NJ (SNR), NY (S4), PA (S1), TN (S2), VA (S2), VT (S2), WI (SU), WV (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.108682/Erora_laeta	SNR	N	Extremely rare and beech bark disease is primary threat					
Poweshiek Skipperling	Oarisma poweshiek	Insects - Butterflies and Moths	Butterflies and Skippers	G1	Endangered	Canada: MB (S1) United States: IA (S1), IL (SH), IN (SX), MI (S1), MN (S1), ND (SNR), SD (S2), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.116340/Oarisma_poweshiek	S1	N	Tallgrass Prairie					
Whitney's Underwing	Catocala whitneyi	Insects - Butterflies and Moths	Underwing Moths	G2		Canada: MB (SU) United States: AR (SNR), IA (SNR), IL (SNR), IN (S1), KS (SNR), KY (SH), MN (S3), MO (SNR), ND (SNR), NE (S1), SD (SNR), TN (SNA), WI (S3)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.112296/Catocala_whitneyi	S3	N	Prairie Habitat					
Michigan Dune Dart Moth	Copablepharon michiganensis	Insects - Butterflies and Moths	Other Moths	G1		United States: MI (SNR), WI (SU) Canada: MB (SU), ON (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.809431/Copablepharon_michiganensis	S1	N	Sand dunes along shores of Great Lakes					
a dart moth	Dichagyris relicua	Insects - Butterflies and Moths	Other Moths	G2		United States: FL (SNR), IN (S1), MI (SNR), MO (S1), NJ (S1), WI (S2), WY (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.791967/Dichagyris_relicua	S2	N	Prairie Habitat					
St. Croix Snaketail	Ophiogomphus susbehcha	Insects - Damselflies and Dragonflies	Dragonflies and Damselflies	G2		United States: MN (S2), VA (S1), WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.108266/Ophiogomphus_susbehcha	S2	N	Aquatic. St. Croix River.					
Lake Huron Locust	Trimerotropis huroniana	Insects - Other	Grasshoppers	G2		Canada: ON (S2) United States: MI (S2), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.114849/Trimerotropis_huroniana	S1	N	Sand dunes along shores of Great Lakes					
Red-tailed Prairie Leafhopper	Aflexia rubranura	Insects - Other	True Bugs, Cicadas, Hoppers, Aphids and Allies	G2		Canada: MB (S2), ON (S1) United States: IL (S2), MN (S3), WI (S2)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.117244/Aflexia_rubranura	S2	N	Undisturbed prairie species.					
a cave obligate springtail	Onychiurus gelus	Other Invertebrates - Terrestrial/Freshwater	Diplurans, Springtails, and	G2		United States: IA (SNR), WA (SNR), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.113342/Onychiurus_gelus	SNR	N	Subterrestrial (cave dwelling)					
Northern Prostrate Clubmoss	Lycopodiella margueritiae	Vascular Plants - Ferns and relatives	Clubmosses	G1		United States: MI (S1), OH (SNR), PA (S1), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.141354/Lycopodiella_margueritiae	S1	N	Only one site known in WI			Non-forest wetland habitat		
Distinct Hawthorn	Crataegus distincta	Vascular Plants - Flowering Plants	Dicots	G1		United States: WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.156870/Crataegus_distincta	SNA	N	Only one site known in WI (Racine Co.)					
Ontario Hawthorn	Crataegus nitidula	Vascular Plants - Flowering Plants	Dicots	G2		Canada: ON (SH) United States: MI (SNR), PA (SNR), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.151531/Crataegus_nitidula	SNA	N	Limited information available and no avoidance measures available from WI DNR			Occupies woodland edges, old fields, pastures, roadsides		
Rambling Dewberry	Rubus vagus	Vascular Plants - Flowering Plants	Dicots	G2		United States: MI (SNR), WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.147686/Rubus_vagus	SNA	N	Limited information available and no avoidance measures available from WI DNR			Occupies woodlands in gullies or sandstone bluffs or containing talus/bare rock		
Vicksburg Blackberry	Rubus variispinus	Vascular Plants - Flowering Plants	Dicots	G1		United States: MI (SNR), WI (SNR) Canada	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.153158/Rubus_variispinus	SNA	N	Limited information available and no avoidance measures available from WI DNR			Occupies woodland edges		
Spiral Crisp Moss	Trichostomum spirale	Nonvascular Plants	Mosses	G1		United States: MI (SNR), MN (SNR), WI (S1)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.124705/Trichostomum_spirale	S1	N	Rare moss found on one site in Polk Co.					
a rock-shield lichen	Xanthoparmelia dierythra	Lichens		G2		United States: WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.122280/Xanthoparmelia_dierythra	SNR	N	Extremely rare and habitat information is not available					
a rock-shield lichen	Xanthoparmelia norhypopsila	Lichens		G1		United States: WI (SNR)	https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.127375/Xanthoparmelia_norhypopsila	SNR	N	Only one site known in WI					

Report Generated May 11, 2022

Search Criteria:

Include only full species.

Include only species with accepted taxonomy

Status	*Revised Global Status*
Location	*United States*

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