MINNESOTA STATE AGENCY POLLINATOR REPORT

2019 | Annual Report

Protecting pollinators in Minnesota: How are we doing?

Draft

MINNESOTA

INTRODUCTION

The third annual report of the Interagency Pollinator Protection Team (IPPT) to the Environment Quality Board (EQB) presents a scorecard to help Minnesotans understand progress toward the State's **desired outcome of healthy, diverse pollinator populations** and the goals of the interagency pollinator framework developed in the 2018 report:

GOAL 1
Lands support diverse pollinators

KEY OUTPUT
More food sources for pollinators

GOAL 2
Judicious use of pesticides

KEY OUTPUT
Reduced pesticide impacts on pollinators through integrated pest management (IPM)

GOAL 3
Minnesotans understand, value, and support pollinators

KEY OUTPUT
More action through community commitments

Based on the scorecard metrics and other available information, the IPPT generated recommendations for leaders in Minnesota to take meaningful action to benefit pollinators. These recommendations, included in this report, can also inform grassroots efforts across Minnesota and promote collaborative strategies toward the key outputs.

Interagency Pollinator Protection Team

Minnesota Governor Tim Walz issued Executive Order 19-28 in April 2019, building on his predecessor's efforts directing state agencies to take action to support insect pollinators. The new executive order directs the EQB to continue to convene the IPPT and provide operational support to ensure interagency coordination, develop cross-agency policies and programs, and report on progress toward statewide goals in a report to the EQB by December 1 of each year.

Team members are from the Minnesota Departments of Administration, Agriculture, Corrections, Education, Health, Natural Resources, Transportation; the Minnesota Board of Water and Soil Resources; the Minnesota Pollution Control Agency; and the Minnesota Zoological Garden.

Front cover: A male endangered rusty-patched bumble bee, Minnesota's newly-designated state bee, rests on a researcher's fingertip. The bee was handled with appropriate federal permits. Photo: Christopher E. Smith

This page: Green metallic bee on a native wood lily flower. Photo: Brett Whaley

SCORECARD

Pollinators in Minnesota

KEY TO STATUS

GOOD – Ahead of goals and expectations

OKAY – Nearly meets goals and expectations

FAIR - Behind goals and expectations

POOR – Well behind goals and expectations

? Not enough data or too variable

KEY TO TREND

Getting better

About the same

Getting worse

? Not enough data or too variable

The EQB uses Results Based Accountability, a data-driven process that identifies the desired result and uses metrics to guide decision-making. The IPPT chose metrics through extensive dialogue among state agencies and partners, including the University of Minnesota, the United States Fish and Wildlife Service, Monarch Joint Venture, Pollinate Minnesota, and the Xerces Society for Invertebrate Conservation. The IPPT used the best available information and selected metrics that help tell a larger story about trends, challenges, and opportunities for action.

To find sources for data and more information about state agency pollinator efforts, visit www.eqb.state.mn.us/pollinators.

Pollinator-friendly plants can be incorporated into raingardens that filter stormwater. Photo: Blue Thumb

DESIRED OUTCOME

Healthy, Diverse Pollinator Populations that Sustain and Enhance Minnesota's Environment, Economy, and Quality of Life

GROUP	SPECIES	STATUS	TREND	SUMMARY
Imperiled pollinators	Rusty-patched bumble bee	POOR	?	This species has disappeared across most of its historic range. Current trend is unknown, but the U.S. Fish and Wildlife Service is developing metrics and a recovery plan.
	Monarch butterfly	FAIR	↗	Monarch butterflies had a good year after a long decline, but the population is smaller than it was 20 years ago.
	Dakota skipper	POOR	↔	Only one wild population of the once widespread butterfly may remain in Minnesota. The Minnesota Zoo has begun reintroducing this endangered species in prairies.
Common pollinators	Brown-belted bumble bee	?	?	Data for this metric are being compiled.
	Bumble bee communities	?	?	Data for this metric are being compiled.
Managed pollinators	European honey bee	FAIR	↔	Honey produced per colony, a measure of honey bee health, has been steady over the last decade, but is 21% lower than the previous decade.

MINNESOTA'S LOST POLLINATORS

Species are disappearing from Minnesota. The following pollinators are on Minnesota's Species in Greatest Conservation Need (SGCN) list and have not been found in the state in recent years. The status of many other SGCN species is unknown due to a lack of funding for surveys, so the number of lost pollinator species may be higher.

- Ottoe skipper
- Uncas skipper
- Karner blue butterfly
- Poweshiek skipperling
- Uhler's arctic butterfly

Number of pollinator species presumed to no longer be in Minnesota:

5

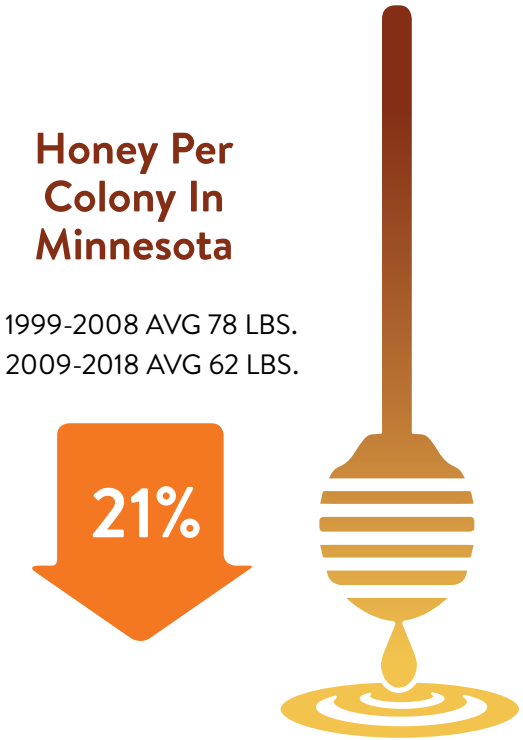
Karner blue butterfly. Photo: Kent Miller

A variety of insects are considered pollinators, including bees, butterflies, moths, flies, wasps, and beetles.

Reports of pollinator declines and disappearances continue to be a cause for concern. Wild pollinators and managed pollinators like honey bees are challenged by multiple and interacting factors including a changing climate, parasites, diseases, loss of flowering habitat, and exposure to pesticides. Changes in climate can lead to plant stress and a disruption of plant-pollinator interaction due to a mismatch of flowering and pollination timing.

Responding to pollinator declines can be challenging because each species has different biology and habitat requirements and can respond differently to stressors. For example, the only remaining wild Dakota skipper population is in a remnant prairie (a fragment of undisturbed, pre-settlement landscape), while reports of the federally-endangered rusty-patched bumble bee are often documented in urban areas.

Unfortunately, we do not have the information needed for many species that could help us understand the declines, but recent investments will help. The Legislative-Citizen Commission on Minnesota's Resources funded the Department of Natural Resources to complete the statewide bee survey, which could serve as a baseline for future monitoring. Additionally, the U.S. Fish and Wildlife Service recently created a bumble bee database to aid bumble bee species recovery, which will yield information on both common and imperiled pollinators. More long-term monitoring and research is needed to provide critical information on the state of pollinators and the most effective ways to help them.



In encouraging news, monarch butterflies had the largest population on their overwintering grounds in Mexico since the winter of 2006-2007. Minnesota is an important breeding ground for the generation of monarchs that migrates to Mexico. There is hope that with widespread coordinated efforts on habitat and pesticide awareness, the monarch population will stay strong.

RECOMMENDATIONS

- Support efforts to develop and implement recovery plans for state and federally listed pollinator species, including the possible reintroduction of species.
- Invest in long-term monitoring to better understand native bee and other pollinator populations.
- Support continuing education on best practices for managed pollinators, including strategies to reduce impacts to native pollinators.

Endangered Poweshiek skipperling butterfly reared by the Minnesota Zoo.
Photo: Cale Nordmeyer, Minnesota Zoo

The youngest participant in a University of Minnesota bumble bee survey. Photo: Meghan Manhatton

GOAL 1

Lands Throughout Minnesota Support Healthy, Diverse, and Abundant Pollinator Populations

Key output: More food sources for pollinators

LAND	ACTION	STATUS	TREND	SUMMARY
Public lands	State-managed protected lands restoration	OKAY	↔	The Department of Natural Resources annually restores habitat at a steady pace, but continues to explore ways to increase the number of forbs (flowering plants) in restorations.
	State-managed highway right-of-way restoration	OKAY	↗	The Department of Transportation is increasing use of native seed and prescribed fire along state road rights-of-way and developing performance measures for vegetation management to better guide maintenance practices.
Private lands	State private lands easement restoration	GOOD	↗	The restoration of pollinator habitat through Conservation Reserve Enhancement Program and Reinvest in Minnesota is increasing on private lands.
	Federal private lands restoration	FAIR	↘	The restoration of pollinator habitat has been decreasing on private lands through federal conservation programs such as the Conservation Reserve Program.
	Urban and suburban land restoration	?	↗	Many urban and suburban landowners are establishing pollinator habitat on their property. The new Lawns to Legumes program will help build on this trend and begin to address demand for residential pollinator habitat.

NEW PLACES FOR POLLINATORS

Minnesotans continue to seek creative ways to provide habitat for pollinators. Incorporating native flowers into projects often adds multiple benefits, such as reducing labor, stabilizing and improving soil, and adding beauty to the landscape.

Lawns to Legumes

The legislature created the Lawns to Legumes grant program in 2019 to plant residential lawns with native vegetation. Projects may include establishing raingardens, interseeding lawns, and planting flowering shrubs and trees.

Habitat-Friendly Solar

Incorporating high quality pollinator habitat under solar arrays can benefit pollinators and other wildlife while reducing stormwater runoff, reducing maintenance costs, and sequestering carbon. Government entities, private landowners, and solar developers can follow the Board of Soil and Water Resources' Habitat Friendly Solar program standards as they implement solar projects.

Researchers studying economic and ecological effects of pollinator plantings under solar photovoltaic arrays at the Chisago Solar Site, part of the Aurora Solar Project in Minnesota.
Photo: National Renewable Energy Labs

Minnesotans have a history of valuing conservation, as evidenced by several unique funding sources such as the Environment and Natural Resources Trust Fund, Outdoor Heritage Fund, Clean Water Fund, and Reinvest in Minnesota Fund. Additionally, the Conservation Reserve Enhancement Program establishes permanent state easements on private lands and has a goal of restoring 60,000 acres over five years.

These efforts are making a difference; however, **pollinator habitat in Minnesota continues to decline overall** due to land conversion for urban development, fewer acres enrolled in federal Farm Bill conservation programs, and increased intensification of agriculture. We can build on our conservation ethic in Minnesota by finding new places for pollinator habitat, improving the quality of existing habitat for pollinators, and seeking resources to accelerate these efforts. We can increase our effectiveness by developing tools to prioritize our efforts and by supporting collaborative efforts with federal, tribal, and local partners.

RECOMMENDATIONS

- Continue progress toward achieving the goal of 60,000 acres under the Conservation Reserve Enhancement Program and increase public investments in restoration of public lands and private lands with an emphasis on high quality pollinator habitat.
- Increase investment in pollinator habitat and management in state-managed highway rights-of-way. Collaborate with other states to exchange knowledge and strategies that will improve effectiveness and increase pollinator populations.
- Support legislation at the federal level that would benefit pollinators, including passage of the Recovering America's Wildlife Act and a strong conservation commitment in the next Farm Bill that restores the Conservation Reserve Program in Minnesota to peak levels.
- Support the development of pollinator habitat mapping to more effectively target restoration efforts.

Reinvest in Minnesota conservation easements on Camp Ripley's perimeter are preserving fish and wildlife habitat while protecting the Minnesota National Guard's 52,830-acre regional training center from development that could impede its operations. These easements make use of funding from the U.S. Department of Defense and Outdoor Heritage Fund. Camp Ripley's firing ranges double as pollinator habitat, offering a diversity of wildflowers.
Photo: Ann Wessel, Board of Water and Soil Resources

GOAL 2

Minnesotans Use Pesticides Judiciously and Only When Necessary, in Order to Reduce Harm to Pollinators While Retaining Economic Strength

Key output: Reduced pesticide impacts to pollinators through integrated pest management (IPM)

ACTION	STATUS	TREND	SUMMARY
IPM development	OKAY	↔	Researchers at the University of Minnesota have developed IPM practices for some key pests including soybean aphid. Greater efforts are needed to develop IPM practices for other harmful pests.
IPM promotion and implementation	OKAY	↗	Minnesota has developed neonicotinoid best management practices (BMPs) for treated seed, soil and foliar, and home and residential applications. Additional efforts to promote and implement IPM could reduce harm to pollinators.
IPM adoption	?	?	Reports from state and national agencies vary; additional data is needed in order to fully understand the level of adoption throughout the state.

Non-chemical pest control methods, such as prescribed burning, can be effective in many situations. Photo: City of St. Paul

THE IPM APPROACH

1 Prevent buildup of pests.

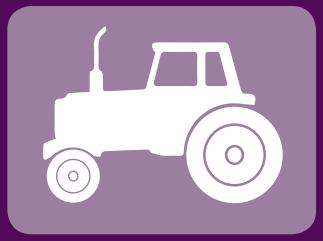
2 Monitor and identify pests.

3 Control pests, if necessary, using the most environmentally sensitive and effective methods.

WHERE TO USE IPM

MANAGED NATURAL AREAS

FARMS



GARDENS AND LANDSCAPES

Honey bee and soldier beetle pollinating goldenrod flowers.
Photo: Meghan Manhatton

Use of an IPM approach can prevent ineffective and unnecessary pesticide applications when pest levels are below an economic threshold, when no pest threat is present, or when alternative pest control methods are effective. For example, IPM encourages using treated seed only in higher risk situations. Unfortunately, there are gaps in IPM methods and guidance. **Improving IPM through research and promoting IPM through coordinated outreach and education are important ways to increase IPM adoption and reduce adverse impacts to pollinators.**

The Minnesota Department of Agriculture (MDA) and the University of Minnesota have focused on the development of IPM-related materials for many years. Recently, the MDA increased efforts toward promoting judicious pesticide use in the state in order to reduce harm to pollinators, including the development of IPM guidance on neonicotinoids, a widely-used class of insecticides that are highly toxic to bees and other beneficial insects. These IPM resources cover stewardship guidelines and BMPs for use of treated seed, soil and foliar applications in agriculture, and home and residential applications.

Widespread IPM adoption in Minnesota is the end goal of these efforts. Significant challenges remain, including the lack of clear and consistent surveys to measure IPM adoption.

RECOMMENDATIONS

- Increase funding for IPM development, promotion, and implementation through state funding and public-private partnerships.
- Collect data on IPM adoption to understand practices in the field and inform policy.

THE CASE FOR IPM

Integrated pest management requires close monitoring of pest populations and other factors to determine when, where, how much, and what kind of pest control to use. Pesticides, one form of pest control, can impact pollinators in several ways, including through direct spray, drift, and abraded treated seed dust. Increases in rainfall and temperature from climate change have resulted in greater disease incidence and new insect pest dynamics, which can lead to additional pesticide applications. By using best management practices and IPM, growers can minimize the effects of pesticides on pollinators and the environment.

Farmers participate in a University of Minnesota Extension training on scouting for soybean gall midge in Luverne, Minnesota.
Photo: University of Minnesota Southwest Research and Outreach Center

GOAL 3

Minnesotans Understand, Value, and Actively Support Pollinators

Key output: More action through community commitments

ACTION	STATUS	TREND	SUMMARY
Pollinator resolutions	GOOD	↗	Community pollinator resolutions increased from 38 to 44 in 2019.
Community science	OKAY	↘	The number of participants contributing sightings to Bumble Bee Watch decreased from 2017-2018, but overall numbers are okay (116 in 2017, and 98 in 2018).
Pollinator pledges	?	?	Data for this metric are being compiled by Xerces Society.

A monarch caterpillar eating milkweed leaves.
Photo: Brett Whaley

ESTIMATED NUMBER OF PEOPLE WHO VISITED THE TRAVELING POLLINATOR EXHIBIT IN LIBRARIES AROUND THE STATE IN 2019.

OVER
100,000

Jake Tanghe of Northfield receives a DNR Commissioner's Youth Award at the 2019 Minnesota State Fair for his monarch conservation efforts, which included participation in a Monarch Watch community science program.
From left: Governor Tim Walz, Jake Tanghe, DNR Commissioner Sarah Strommen, and Lieutenant Governor Peggy Flanagan.
Photo: Minnesota Department of Natural Resources

Interest in supporting pollinators remains very high in Minnesota. Many communities are hosting pollinator festivals and passing pollinator resolutions at the city, county, and school district level to improve habitat, implement best management practices, and increase education. Community science (also known as citizen science), is increasingly used to expand the capacity of agencies and research institutions to collect data across the state. Minnesotans are attending trainings and collecting data on pollinators and their habitats through programs like the Integrated Monarch Monitoring Program, Bumble Bee Watch, Bug Guide, and iNaturalist. Minnesota residents are also committing to changes on their own lands through pollinator pledges. Pledge programs can provide guidance on plant selection and maintenance that benefits pollinators.

From these measures, it is clear that many Minnesotans know and appreciate the importance of pollinator populations to the ecosystem. At the same time, **there is room to grow — to increase knowledge, to reach new people and communities, and to improve conditions for pollinators statewide.**

RECOMMENDATIONS

- Cultivate relationships with businesses, nonprofits, schools, communities, and local governments to support widespread pollinator pledge and resolution adoption.
- Integrate community science into pollinator research efforts and increase participation in community science.
- Support the development of pollinator education initiatives for teachers, community educators, conservation professionals, and the general public to reach more Minnesotans with key information.

A member of the University of Minnesota Bee Squad teaches about honey bees at a community event. Photo: Judy Griesedieck

Back cover photo: Urban Roots

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