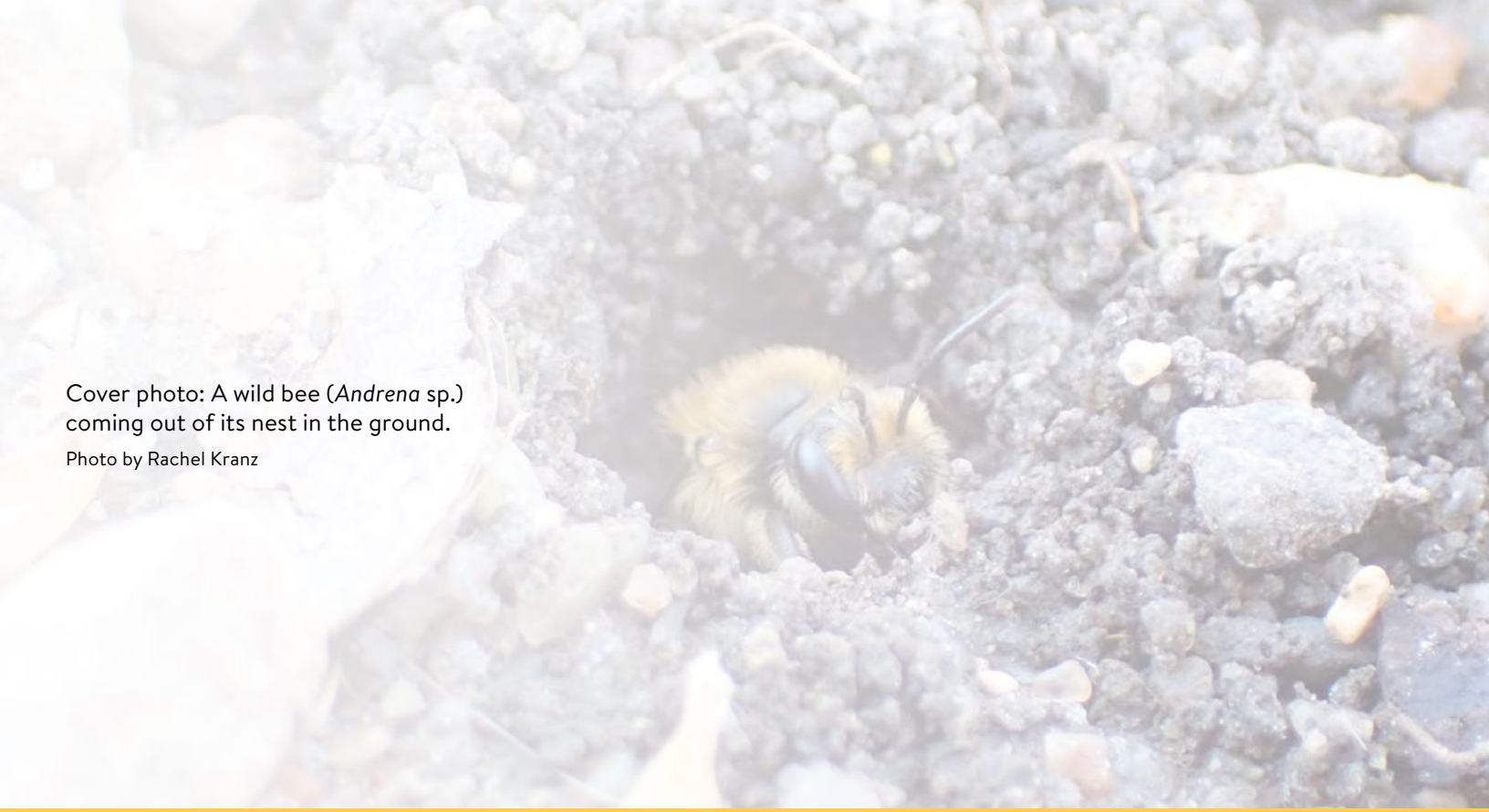
Minnesota State Agency Pollinator Report

2022 | ANNUAL REPORT

MINNESOTA



Cover photo: A wild bee (*Andrena* sp.) coming out of its nest in the ground.
Photo by Rachel Kranz

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The matrix draft of the pollinator action framework is available at **www.eqb.state.mn.us/pollinators**

Charge

Executive Order 19-28 directs state agencies to work toward restoring healthy, diverse pollinator populations in Minnesota. The order charges the Environmental Quality Board with convening the Interagency Pollinator Protection Team to provide operational support, ensure interagency coordination, develop cross-agency policies and programs, and report on progress toward statewide pollinator protection goals in a report to the board by December 1 of each year.

Our interagency team consists of staff from the Departments of Administration, Agriculture, Corrections, Education, Health, Natural Resources (DNR), Transportation (MnDOT), the Board of Water and Soil Resources (BWSR), the Minnesota Pollution Control Agency, and the Minnesota Zoological Garden (Minnesota Zoo).

University of Minnesota researcher setting a trap to study ground-nesting bees.

Photo by Amanda Sames

Introduction

Pollinators play a crucial role in Minnesota's economy, environment, and way of life. Yet, they continue to experience declines in our state and across the country. Some of the main threats to pollinators include loss of habitat, pesticides, diseases and parasites, and climate change. These stressors interact and amplify each other's negative effects on pollinator populations.

Over the past six years, we laid the foundation for a coordinated interagency approach to pollinator protection, and agencies are working together and individually to help pollinators in Minnesota. Additionally, through interagency collaboration and engagement with outside experts and members of the public, we identified pollinator protection goals, key outputs, key challenges, and metrics to measure progress toward healthy pollinators in the state.

In 2022, we began to draft a pollinator action framework. Once completed, the framework can serve as a guide for strategically protecting Minnesota's pollinators.

The 2022 Minnesota State Agency Report features highlights of state-led pollinator protection efforts, provides context for opportunities and challenges, and gives an overview of the draft action framework for our desired outcome of healthy pollinator populations and each of our pollinator protection goals.

Minnesota pollinator action framework

Purpose

To guide the strategic alignment of resources, policies, and programs to help Minnesota's pollinators.

About the draft

This report contains a narrative overview of the draft pollinator action framework for the desired outcome and each goal. The draft proposes actions state agencies can lead directly by taking administrative action; actions the Minnesota Legislature can enact by writing laws and allocating funds; and actions the state can encourage individuals, communities, and organizations to do.

We are sharing the draft to promote conversations about ways to help pollinators. Visit our pollinator webpage (**www.eqb.state.mn.us/pollinators**) to view the full draft framework.

Developing the draft

During the development of the draft pollinator action framework, we sought input from external experts, individuals, and pollinator protection organizations through our engagement platform (**engage.eqb.state.mn.us**) and through direct document review.

Through our engagement platform, we received 922 contributions from members of the public. People shared their ideas for helping pollinators and voted and commented on the ideas shared by other participants. Additionally, we received direct feedback from the Monarch Joint Venture, the Xerces Society, the University of Minnesota Bee Lab, and the Natural Resources Conservation Service of the United States Department of Agriculture. We considered the ideas we received and incorporated many into the draft.

Next steps

We will host a second round of public engagement in early 2023 to inform the final pollinator action framework. We plan to release the final action framework during the summer of 2023.

2022 Highlights

- **Pollinators in summer school programs.** The departments of Education and Natural Resources developed pollinator webinars for schools to incorporate pollinator education in their summer programs.
- **Educational videos about protecting pollinators from pesticide use.** The Department of Agriculture produced educational videos about pollinator habitat, integrated pest management (IPM), and protecting pollinators when using pesticides. The University of Minnesota and other sponsors are using them at pesticide applicator recertification workshops. At least 11,000 applicators will see these educational videos over the next three years.

School children learning to plant pollinator-friendly native plants.

Photo by Janine Kohn

- **Collaboration to educate about IPM and pollinator protection.** The Department of Agriculture, in collaboration with the University of Minnesota Extension, reached approximately 1,100 people at the Field School for Ag Professionals, Horticulture Night, and Farmfest with materials about IPM and protecting pollinators. Additionally, the Department of Agriculture and the University created 40 permanent educational signs to provide long-lasting information about pollinators and IPM on the University's St. Paul campus.
- **Recognition of commitment to conservation practices.** As of September 2022, the Department of Agriculture's Minnesota Agricultural Water Quality Certification Program has endorsed 62 farms for IPM practices and 43 farms for wildlife conservation.
- **BWSR's Living Landscapes Initiative improves pollinator habitat and raises awareness.** BWSR administers programs to help declining populations of pollinators, other wildlife, and plant species. These programs highlight the role of biodiversity in meeting BWSR's soil and water conservation goals.
  - **Lawns to Legumes.** Since 2019, BWSR awarded over 2,700 grants to Minnesotans to install pollinator plantings in their residential spaces. There are 26 Demonstration Neighborhood grantees working across the state to establish community pollinator projects and corridors, raise awareness for pollinator protection, and showcase best practices.
  - **New Habitat Enhancement Landscape Program.** This program provides cost-share funds to restore and enhance strategically located diverse habitats across Minnesota to benefit pollinators, beneficial insects, and biodiversity. During the first year of this pilot program, BWSR awarded grants to 11 organizations.

› **Habitat Friendly Solar Program.** Over 55 sites across Minnesota have met the program's habitat standards, providing pollinator habitat and renewable energy on over 1,300 acres. In 2022, BWSR convened the second Habitat Friendly Solar Summit, bringing together a diverse group of practitioners to discuss shared goals of pollinator-friendly practices and co-benefits of community and utility-scale solar projects.

- **Updated state seed mixes.** BWSR, DNR, MnDOT, and conservation partners continue to create and update more than 70 state seed mixes for habitat restoration and conservation guidance documents that consider pollinator needs, soil health, and climate change and landscape resiliency. The state seed mix update is expected to wrap up by spring 2023.
- **Progress toward MnDOT's sustainability goals.** One of MnDOT's goals is to plant 75% acres of disturbed soil with Minnesota-native seed mixes by 2025. In 2021, MnDOT planted 61% acres that will benefit pollinators.
- **Fire as a habitat management tool.** MnDOT utilizes prescribed burns as the preferred management tool on over 900 acres of roadside vegetation to maintain and improve prairie pollinator habitats.
- **Releases of imperiled butterflies.** In July 2022, the Minnesota Zoo continued reintroducing Dakota skippers from their breeding program to a prairie preserve managed by The Nature Conservancy in southwest Minnesota. Over the next few years, the Minnesota Zoo will use the survey data to inform habitat management for prairies with Dakota skipper populations.

Attendees of the "Follow the Sun Tour" in August learning about the Habitat Friendly Solar Program.

Photo by Paul Erdmann

Progress in understanding the diversity of Minnesota's wild bees

The DNR's Minnesota Biological Survey, in collaboration with the University of Minnesota Bee Lab, have documented upwards of **490 species of bees** in the state. In 2022, the survey team wrapped up the final year of the wild bee survey, recording bees from the Laurentian Mixed Forest area with a focus on Koochiching County. In addition, researchers began monitoring species of potential conservation concern, in particular those that have specific floral hosts. The results from these monitoring efforts help us understand which bee species are present in Minnesota.

Dufourea novaeangliae bees found during 2022 direct surveys. This species hadn't been recorded in Minnesota since 1934!

Photo by Rachel Kranz

Surveying for bees in Savanna Portage State Park.

Photo by Rachel Kranz

Planting pollinator gardens can foster community collaboration.
Photo by Urban Roots

Equity and pollinators

Pollinator declines negatively impact our environment, food systems, and way of life. All Minnesotans feel these impacts, but not everyone is affected equally. Structural inequities have historically influenced land access, ownership, and management, creating systems where some communities have less access to land to connect with nature, grow healthy food, and plant gardens.

Actions that help pollinators can also help address inequities. For instance, with the creation of community gardens, families can grow a diversity of vegetables and flowering plants that benefit pollinators, create a space to connect with nature, and have access to healthy food.

Diverse pollinator habitat has broad positive environmental effects, such as reducing soil erosion, improving water quality, and sequestering carbon to help in the fight against climate change. Trees and shrubs that provide flower resources for pollinators can also provide shade and reduce the urban heat island effect, which disproportionately affects children, older adults, and low-income communities.

When thinking about the work needed to protect pollinators, we must reflect on how we are engaging marginalized communities and considering their priorities. The draft pollinator action framework includes action ideas to help pollinators, and it offers an opportunity for state agencies and Minnesotans to think about developing pollinator protection actions with equity in mind.

GOAL 1. Lands throughout Minnesota support healthy, diverse, and abundant pollinator populations

Key output: More food sources and nesting and overwintering sites for pollinators

The challenge

Loss and fragmentation of habitat reduce the availability of high quality food resources and nesting and overwintering sites for pollinators.

Context

Pollinator habitat can take different forms

Pollinators thrive where abundant flowering plants bloom throughout the growing season. In addition to flowers, pollinators also need undisturbed places to build their nests, food for their larvae, and safe areas to overwinter. Some pollinators make use of areas we might consider untidy or unusual: bare areas of earth, dead wood, old rodent burrows, and hollow stems.

Threats to pollinator habitat

Human activities that can have a direct negative impact on pollinator habitat include urban sprawl, monocultures, intensive agrochemical use, pollution, and overuse of fossil fuels. Additionally, cultural norms that favor fewer plant species and nesting sites reduce the quality and quantity of habitat in urban, suburban, and rural landscapes.

Habitats are shifting rapidly due to the changing climate. In North America, some plant species are moving toward northern regions and higher elevations. This can reduce the availability and diversity of food resources for pollinators. Additionally, warmer temperatures can cause a mismatch between when pollinators emerge in the spring and when flowers bloom.

Diverse prairie flowers provide high quality food resources to pollinators.

Photo by Deborah Rose

Minnesotans can support pollinator habitat

Minnesotans can increase the size and diversity of habitat wherever plants grow and land is managed. Whether in rooftop gardens, window boxes, boulevard plantings, lawns, golf courses, farms, marginal lands, parks, wildlife areas, and prairie restorations, our actions can make a large difference to these important animals.

Important definition

- **Urban sprawl:** the rapid expansion of geographic extent of cities and towns, characterized by low-density residential housing, single-use zoning, and increased reliance on the private automobile for transportation.

A Lawns to Legumes program grant recipient describes her pollinator meadow and rain garden to Lawns to Legumes Demonstration Neighborhood tour attendees.

Photo by Paul Erdmann

Goal 1 in the Minnesota pollinator action framework draft

The pollinator action framework draft proposes actions to protect, restore, and enhance pollinator habitat in public and private lands. Additionally, it includes actions to design and implement strategic policy and programs, to improve the quality of habitat restorations, connect habitat in highly fragmented landscapes, and develop guidance about integrated habitat management approaches.

Visit **www.eqb.state.mn.us/pollinators** *to download the full list of actions included in the current pollinator action framework draft.*

GOAL 2. Minnesotans use pesticides judiciously and only when necessary, to reduce harm to pollinators from pesticides while retaining economic strength

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

The challenge

Pesticide exposure can negatively impact pollinators and their habitat.

Context

Many factors influence pesticide use

The use of pesticides depends on many factors. In some cases, pests can cause a predictable level of economic loss, so clear thresholds can guide when to take action to manage a pest. Other factors that can influence how and when pests are managed include things like cost, efficacy, safety, personal values, or aesthetics.

Many types of people use pesticides in many settings

Pesticides have a broad range of uses, such as for crop production, yard and lawn care, disease vector and nuisance control, and invasive species management. Some pesticides require licensing or certification to buy and use.

Pesticide risk to pollinators is variable

Both toxicity and exposure are important in understanding pesticide risk to pollinators. Research on estimates of realistic exposure and species-specific toxicity helps regulators assess risk and design protective mitigation actions.

A balanced approach to pest management is important and possible

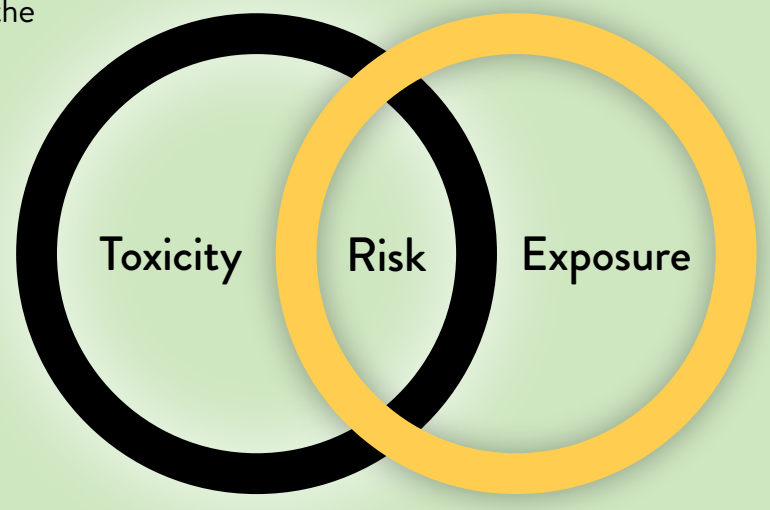
Pesticides play a key role in pest management. However, pesticides can directly and indirectly harm pollinators. Using pesticides judiciously and only when necessary, such as through IPM, can reduce risks to pollinators. Minnesota state agencies use and encourage others to use IPM to mitigate the risks of pest management on pollinators. Balancing pesticide use with pollinator protection can reduce harm while retaining economic strength.

Scouting for and counting pests is integral to practicing integrated pest management. With this approach, management is tailored specifically to which and how many pests are present. Spotted wing drosophila flies, an invasive species that primarily eats soft-skinned fruits, can be monitored using apple cider vinegar traps shown here.

Photo by Theresa Cira

Important definitions

- **Integrated pest management:** an approach to managing pests that seeks to prevent the buildup of pest populations, identify pest species to use species-specific management strategies, monitor for pests to know when management action thresholds have been reached, and use a combination of management techniques to address the pest problem by the most effective and economical means, and with the least possible hazard to people, property, and the environment.
- **Pesticide:** the Federal Insecticide, Fungicide, and Rodenticide Act defines a pesticide as "any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest; any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant; and any nitrogen stabilizer."
- **Pesticide risk:** the risk a pesticide poses to pollinators depends on its toxicity (potential to damage or kill) and the exposure (time and frequency of contact with the pesticide) the pollinator has to the pesticide. Both toxicity, measured in laboratories, and exposure, measured in the field or modeled, are used by the Environmental Protection Agency to help determine how pesticides can be used.



Goal 2 in the Minnesota pollinator action framework draft

The pollinator action framework draft proposes actions to develop, promote, and encourage the adoption of IPM in agricultural and non-agricultural lands and in managed pollinator colonies. Additionally, it includes actions to protect pollinators from pesticide exposure, such as promoting mitigation strategies to reduce pollinators' exposure to pesticides, supporting and conducting research focused on pesticide risk to pollinators, and increasing awareness about pesticide misuse reporting.

Visit **www.eqb.state.mn.us/pollinators** *to download the full list of actions included in the current pollinator action framework draft.*

GOAL 3. Minnesotans understand, value, and actively support pollinators

Key output: More action through community commitments

The challenge

Lack of awareness, funding, and knowledge of pollinators and their needs are barriers that prevent some Minnesotans from participating in pollinator-related programs.

Context

Minnesotans care about pollinators

Individuals and organizations continue to commit to learning about pollinators and finding ways to help them. Many Minnesotans participate every year in pollinator celebrations and in community science programs that generate vital information about native pollinator populations in the state. Additionally, several communities and schools have made pollinator resolutions and pledges to follow pollinator-friendly practices on their landscapes.

We can take advantage of this continued momentum to increase public participation in pollinator conservation efforts. Agencies need to evaluate current pollinator-related programs for opportunities to increase equitable access to information and resources. Equity must also be considered when creating new programs that connect pollinators with broader environmental and social issues.

Building strong relationships

Progress toward healthy pollinators requires the participation of different individuals and organizations in Minnesota, in addition to well-coordinated efforts by state agencies. There are many ongoing initiatives with external partners that expand agencies' capacity. However, there is still room for building intentional relationships with organizations that are not yet involved in pollinator protection, which can influence their communities toward action.

Neighbors gathering to check out a pollinator garden installation in a residential garden.

Photo by Melissa Wenzel

The beekeeping exhibition at the 2022 Minnesota State Fair sparked the interest of the public.
Photo by James Havens

Goal 3 in the Minnesota pollinator action framework draft

The pollinator action framework draft is an opportunity for us to evaluate the 2020 civic engagement process. The actions proposed in this draft reflect the lessons we have learned while working to help pollinators and encouraging Minnesotans to take action. The framework draft includes actions to build strong relationships and partnerships, to increase awareness and educational resources about different ways to help pollinators, to collaborate with communities that have adopted pollinator resolutions to find new ways to engage communities who haven't taken that important step.

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Desired outcome—healthy, diverse pollinator populations that sustain and enhance Minnesota's environment, economy and way of life

The challenge

Researchers have made progress in understanding pollinator diversity, their status, needs, and the factors affecting their survival. But there is still a long way to go to fill existing knowledge gaps and improve state protections for imperiled pollinator species.

Context

Status of Minnesota's insect pollinators

Minnesota is home to thousands of insect pollinator species, many of which have experienced declines. Several pollinator species that were once common in the state are now rarely seen. For example, the Dakota skipper, once a common Minnesota prairie butterfly, was listed as state-endangered in 2013 and federally threatened in 2014. Similarly, the rusty patched bumble bee was granted federal endangered species status in 2017. Many other species have not been found in the state in recent years, such as the Karner blue butterfly and the Poweshiek skipperling.

Pollinator-specific research

Many organizations conduct research to understand different aspects about pollinators and their needs, such as habitat requirements for different pollinator species, honey bee health and foraging preferences, and effects of pesticides on pollinator behavior and reproduction. State agencies and external organizations have conducted monitoring efforts to learn what pollinator species are present in the state.

A rusty patched bumble bee, Minnesota's state bee, forages on American bellflowers in a pollinator planting that is part of the Pleasant Valley Pollinator Corridor, an Lawns to Legumes Demonstration Neighborhood in Winona, Minnesota.

Photo by Jen Quarberg

A large part of this pollinator-specific research is funded by the Environmental and Natural Resources Trust Fund through competitive grants. This funding has allowed state agencies and others to learn important information about pollinators and develop relevant programs to protect them. There is still a long way to address the large knowledge gaps on pollinators, thus we must seek stable funding to generate the information we need to respond effectively to pollinator needs.

Aerial photo of experimental seed mix plots at the University of Minnesota.
Photo by Maggie Anderson

Desired outcome in the Minnesota pollinator action framework draft

In this section, the pollinator action framework draft proposes actions including planning, producing, and sharing the information that state agencies and external organizations need to make important decisions. In addition, it suggests developing strategic protections for imperiled pollinators.

Visit **www.eqb.state.mn.us/pollinators** *to download the full list of actions included in the current pollinator action framework draft.*

Acknowledgements

We want to thank the organizations that reviewed and provided input during the development of the draft pollinator action framework, including the University of Minnesota Extension Service and Bee Lab, the Natural Resources Conservation Service of the United States Department of Agriculture, the Monarch Joint Venture, and the Xerces Society.

A grateful acknowledgement to the people and organizations that participated in our public engagement platform, sharing their ideas for action to protect pollinators in our state. Your input helped inform the actions in the draft framework.

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A native bee (*Andrena* sp) feeding on a yellow coneflower.
Photo by Laura Marti

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