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# 2023 Minnesota State Agency Pollinator Annual Report

Minnesota Pollinator Action Framework

September 2023

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## **2023 Interagency Pollinator Protection Team**

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## Charge

In Minnesota, state agencies work together to protect pollinators. Executive Order 19-28 directs the Environmental Quality Board (EQB) to lead and convene an interagency pollinator protection team (hereafter the interagency team) to restore healthy, diverse pollinator populations that sustain and enhance Minnesota's environment, economy, and way of life.

The interagency team is comprised of designees of the Departments of Administration (ADMIN), Agriculture (MDA), Corrections (DOC), Education (MDE), Health (MDH), Natural Resources (DNR), Transportation (MnDOT), the Board of Water and Soil Resources (BWSR), the Minnesota Pollution Control Agency (MPCA), and the Minnesota Zoological Garden (MNZOO). This team provides annual operational support, ensures interagency coordination, develops cross-agency policies and programs, and reports on progress toward statewide pollinator protection goals to the EQB.

## Introduction

Pollinators continue to face multiple threats, including the loss of habitat, pesticides, pathogens, parasites and climate change. Because these threats do not act in isolation but interact with each other and intensify their detrimental effects on pollinator populations, a multidisciplinary approach is necessary to make significant progress toward helping pollinators.

The interagency team is committed to working toward restoring healthy and diverse pollinator populations in Minnesota. Our agencies continue to work individually and together to support policies, programs, and initiatives to advance our three pollinator protection goals: 1) Lands throughout Minnesota support healthy, diverse, and abundant pollinator populations; 2) Minnesotans use pesticides judiciously and only when necessary; 3) Minnesotans understand, value, and actively support pollinators.

Since 2022, we have focused our interagency efforts on developing a comprehensive pollinator action framework to guide the strategic alignment of resources, policies, and programs to help pollinators in our state. This year's pollinator report contains the action framework matrix, provides our vision for each goal, and includes context for the actions included. In addition, a section on climate change and pollinators and "stories of action" presents a wider picture of pollinator efforts ongoing in Minnesota.

## Developing the pollinator action framework

To develop the pollinator action framework, we conducted two rounds of public engagement during 2022 and 2023. We sought input from subject-matter experts, organizations working to help pollinators, and members of the public. We received input through conversations with focus groups, direct review of the framework matrix by subject matter experts, and through EQB's online public engagement platform.

In addition, we considered the 2018 recommendations for pollinator protections developed by the Governor's Committee on Pollinator Protection. Finally, we held workshops with leadership from state agencies involved in

the interagency team to inform the final pollinator action framework matrix included in this year's pollinator report.

## Structure of the pollinator action framework

The pollinator action framework is organized in four sections. There is one section for each of our pollinator protection goals, and a fourth section named "Desired outcome", which includes actions necessary to: advance our knowledge on pollinator populations; develop protocols for sharing information; enhance at-risk pollinator protections; and advance our strategic planning. Each section is divided by categories and subcategories describing the intention of the specific actions that need to be taken to meet the goal.

In addition, the actions included in the pollinator action framework matrix are categorized as actions state agencies can **lead** on by taking administrative action, actions the state legislature can **enact** by writing laws and allocating funds, and actions the state can **encourage** individuals, communities, and organizations to do. Some actions expand on existing efforts, while other actions could require the creation of new policies, programs, or grants. Many actions will require collaboration, partnerships, and initiatives beyond state government.

## Climate change and pollinators

Minnesota's climate continues to change rapidly. Winters and nights are getting warmer, and precipitation has increased, with floods occurring more frequently. These changes threaten Minnesota's economic activities, ecosystems, and public health.

Climate change also threatens the stability and diversity of our food supply, because the majority of food crops are dependent on pollinators. Additionally, pollinators are responsible for the reproduction of approximately 85% of wild plants, meaning they are essential to the survival of natural ecosystems. Disruptions to the delicate balance that exists between plants and the creatures responsible for their reproduction can be catastrophic.

Climate change can cause mismatches in timing between flower bloom and pollinator emergence, causing insects to miss out on food, and plants to miss out on pollination services. The loss and fragmentation of pollinator habitat compounds the issue of food scarcity for pollinators.

Protecting and restoring habitat with diverse plant systems not only feeds pollinators, but helps store carbon, mitigate drought, and yield many other far-reaching benefits. This is the work of all land managers and land stewards, in both protected areas and working landscapes.

The pollinator action framework identifies climate actions that will help us restore healthy and diverse pollinator populations and build a more resilient Minnesota. Additionally, we have an opportunity to connect with Minnesota's Climate Action Framework and synergize efforts to amplify our common goals. It will take all of us to build a brighter future for generations to come.

## Equity statement

The interagency team pledges to implement the pollinator action framework with an equity-conscious approach. We believe that integrating equity into our work is the only way we can truly advance our pollinator protection goals. Therefore, we will intentionally seek the input, feedback, and collaboration from Minnesota's tribal nations, and from individuals, organizations, and communities with diverse perspectives who share our state's lands and natural resources.

## Stories of action

In this section we highlight two stories from organizations who are doing important work to help Minnesota's pollinators. They show the importance of building strategic collaborations between different sectors, and engaging with members of the public who can play a critical role in pollinator protection.

### Towards better honey bee health in northern climates

By Bridget Mendel and Katie Lee

The University of Minnesota's history of honey bee research, outreach, and education is over a century strong. The UMN Honey Bee Lab consists of a professor-led research and teaching program, an outreach team known as the Bee Squad, and an Apiculture Extension educator. Much like a honey bee colony, these three entities work together and collaborate on research, extension and outreach programming that supports beekeepers and the public in Minnesota and beyond.

Due to landscape changes, increased pesticide use, and new pests and pathogens, today's beekeepers need to work harder to keep their bees healthy than their predecessors. There is a steep learning curve for new beekeepers, and having reliable educational resources and mentorship is essential for success.

In collaboration with Minnesota beekeepers and with funding from a Sustainable Agriculture Research and Education grant by the National Food Institute of Food and Agriculture of the United States Department of Agriculture, the Bee Lab team is developing a new tool to support more beekeepers across the north central region of the US. The innovative *Beekeeping in Northern Climates Workbook* is designed to guide beekeepers through colony health monitoring and management through the seasons. The ultimate goal is to enhance beekeeping skills and confidence and to increase overall colony health in the state of Minnesota.

The workbook is a tool that adds to the Bee Lab's *Beekeeping in Northern Climates* short course and manual. It provides beekeeping support during colony inspections, prompts seasonal management reminders, shares tips and tricks, and helps track goals with space for note taking. The workbook includes references for disease identification and honey bee nutrition sources.

The *Beekeeping in Northern Climates Workbook* is designed to help a beekeeper working alone or to be an interface between a beekeeper and their mentor. Alone, the workbook guides a beekeeper through colony

observations and decision making. Paired with a mentor, a beekeeper mentee can report their observations, receive confirmation or notes about their colony health and management, helping to build skills and confidence.

Currently in its pilot phase, a beekeeper-vetted version of the workbook will be available to Minnesota beekeepers, beekeeping clubs, and beekeeping educators by spring 2024. The project team is currently collecting beekeeper feedback and developing virtual and in-person mentoring models that can be used in conjunction with the workbook.

What is the feedback so far? Beekeepers are excited to have an in-apiary companion designed specifically for beekeeping in northern climates. The colorful workbook inspires good note taking and record keeping, one of the most important skills a beekeeper can have!



**Students and instructor in a beekeeping class**  
**Photo credit: Lucia Possehl**

## **The Lawns to Legumes Program – building strategic partnerships**

By Blue Thumb

In their yards, gardens, and lawns, Minnesotans across the state are building a movement to protect pollinators. Lawns to Legumes — the first statewide program of its kind — provides residents with funding and expert advice to create habitat to help native pollinators, including at-risk species like the rusty patched bumblebee and the monarch butterfly. Adding native plants to enough yards, even in developed areas, can form a network of high-quality habitat that help pollinators thrive.

Administered by the Minnesota Board of Water and Soil Resources, the Lawns to Legumes program now has over 100 conservation partners supporting outreach and education and acting as volunteer coaches for the program. The Blue Thumb Partnership, led by Metro Blooms, has played a key role by conducting workshops, coordinating coaches, reimbursing residents for cost-share funding, and ensuring that equity goals are met. Partners also include public agencies, landscape design, and build contractors, and native nurseries who are part of building a movement to reduce turf and expand pollinator habitat.



**Neighbors planting at a Lawns to Legumes Neighborhood Demonstration site.**  
**Photo credit: Briana Erickson**

During the program’s pilot phase, nearly 8,000 people participated in workshops and webinars, and downloaded resources for do-it-yourself home projects. Since 2019, over 3,000 residents have completed projects ranging in size from 10’ x 10’ plantings on small city lots to larger pollinator meadows. When it comes to creating pollinator habitat, even small contributions can make a big difference! The pilot phase was funded by \$900,000 from the Environment and Natural Resources Trust Fund.

Phase II of the program is currently underway with \$2,000,000 of funding. In 2023, the Minnesota Legislature agreed to provide an additional \$4,000,000 to support the program through 2026. In spring of 2024, new awardees will receive a \$400 award for native plantings in their yard. Neighborhood representatives, residents, and renters interested in planting for pollinators this spring can visit the [Blue Thumb](#) and [Minnesota Board of Water and Soil Resources](#) websites for information on projects like pocket gardens, pollinator lawns, pollinator pots, how to design your project, and more.



# Goal 1: Lands in Minnesota support healthy, diverse, and abundant pollinator populations

## **Key output**

More food sources, nesting, and overwintering sites for pollinators

## **Vision**

Land management activities in Minnesota provide enough nesting and foraging pollinator habitat to stabilize pollinator populations. Any loss in habitat is compensated by restoration or enhancement projects that increase the availability of high-quality food resources, nesting, and overwintering sites for pollinators.

## **Context**

Minnesota is located at the intersection of four major ecological biomes, which are naturally occurring areas hosting different interconnected communities of living organisms. These areas are: 1) the deciduous forest, 2) coniferous forest, 3) prairie grassland, and 4) tallgrass aspen parkland. Hundreds of pollinator species are found in all of these ecosystems, responsible for the reproduction of native plants that provide food and shelter for other animals, store carbon, prevent erosion, and buffer waterways.

The loss and fragmentation of these areas contribute to pollinator declines. The pollinator action framework proposes actions to protect, restore, enhance, and connect pollinator habitat in public and private lands. Actions to support this goal are organized in the following categories:

### *Intentional land stewardship*

The pollinator action framework includes actions to engage public and private land managers and stewards, support programs and provide incentives to convert areas with low flowering plant diversity to pollinator habitat and prioritizing the use of native plants.

### *Strategic policy and programs to protect, restore, create, and enhance pollinator habitat*

This category includes actions that will address the increasing demand for native plants, protect habitat for endangered and threatened pollinators, and develop guidance for individuals and organizations managing pollinator habitat.

### *Comprehensive research and data collection related to pollinator habitat*

Actions in this category aim to fill in gaps in our understanding of pollinator habitat needs and evaluate the impacts of ongoing efforts; for example, leading and encouraging research to help understand how different habitat management practices affect pollinator populations.

**Table 1. Pollinator action framework matrix**

Goal 1: Lands throughout Minnesota support healthy, diverse, and abundant pollinator populations

Category	Subcategory	Action	Lead	Enact	Encourage	
1.1. Intentional land stewardship	1.1.1. Protect pollinator habitat	Work with public land managers, private landowners and land stewards to identify and protect existing pollinator habitat	X		X	
		Expand and improve compensation rates for DNR’s Prairie Bank Program	X	X		
		Revise lighting guidelines in state-administered facilities to reduce light pollution detrimental to pollinators	X			
	1.1.2. Restore and create pollinator habitat	Work with public land managers and land stewards to promote the installation and management of pollinator habitat in rights-of-way			X	X
		Expand beneficial reuse at state-managed Closed Landfill Program sites and promote opportunities to partner with the Minnesota Pollution Control Agency to facilitate pollinator habitat creation on closed landfill sites	X	X		
		Engage public land managers to convert lawn or unused spaces and new developments to pollinator habitat (e.g., expanding the capacity of the Lawns to Legumes Program to include public lands)	X	X	X	
		Support and expand existing programs that provide incentives for farmers and foresters that implement pollinator-friendly land management practices (e.g., diversified crop production, no till, cover crops, prairie strips, forest thinning, wildlife openings, etc.)	X	X		
		Promote the installation of a certain percentage of pollinator-friendly landscaping in new developments (e.g., provide rebates for pollinator garden installations)	X		X	
		Update state building design guidelines to consider pollinator habitat for new buildings and major renovations	X			
		Continue prioritizing the use of native plants in state-managed landscapes	X		X	

Category	Subcategory	Action	Lead	Enact	Encourage	
	1.1.3. Enhance the quality of existing pollinator habitat	Continue prioritizing non-chemical habitat management tools in state-managed landscapes	X		X	
		Promote the use of farming, forestry and other land management practices that provide multiple benefits to soil, water and wildlife	X		X	
		Encourage peer-to-peer workshops focused on incorporating and protecting pollinator habitat in working lands			X	
		Ensure guidance for long-term management of pollinator habitat is available to the public	X		X	
1.2. Strategic policy and programs to protect, restore, create, and enhance pollinator habitat	1.2.1. Develop policy and programs to increase native plant supply	Create a state native seed program with an emphasis on early season species	X	X		
		Update the state seed mixes and related guidance with an emphasis on pollinator benefits	X			
		Collaborate with and support seed and native plant vendors and other partners to increase the production of plant species important to pollinators (including trees and shrubs)	X		X	
		Support and expand the state forest nursery efforts to include a wide diversity of pollinator-friendly plants (e.g., flowering trees and shrubs)	X			
		Provide funding to diversify seed mixes used in private land restorations		X		
	1.2.2. Design strategies to support pollinator habitat	Develop guidance about integrated habitat management approaches in public and private lands				X
		Develop a strategy to increase connectivity of habitat in highly fragmented landscapes	X		X	
		Create a certification program for pollinator-friendly landscaping available to landscape and gardening companies	X		X	
		Develop state regulations to increase remnant prairie protections (similar to existing wetland protections in statute)	X	X		

Category	Subcategory	Action	Lead	Enact	Encourage
		Develop technical assistance and resources to increase pollinator habitat to support pollination from native pollinator species	X	X	X
		Improve coordination and management of DNR rights-of-way to meet pollinator best management practices in alignment with existing goals and objectives	X		
1.3. Comprehensive research and data collection related to pollinator habitat	1.3.1. Understand pollinator habitat needs	Research how habitat management practices affect pollinator populations	X		X
		Support the development of resources to guide strategic prioritization of habitat conservation efforts	X		X
		Increase capacity to evaluate the quality and success of habitat conservation projects	X	X	X
		Research the benefits to pollinators of including adjacent-pollinator habitat in areas with intensive pesticide use (e.g., golf courses)			X
		Identify areas with low native plant diversity on state lands that would be good candidates for prairie or forest restoration or enhancement	X	X	

## Goal 2: Minnesotans use pesticides judiciously and only when necessary

### **Key output**

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

### **Vision**

Awareness and adoption of integrated pest management continues to be prioritized across working landscapes in Minnesota. The state continues to promote and fund new IPM efforts to support growers across many cropping systems and pesticide use scenarios. IPM principles have broad support in forestry, agriculture and wildlife management. When pesticide use is necessary, regulators help ensure a strong culture of safe pesticide use and label compliance exists among users of pesticide products.

### **Context**

We engaged the public, stakeholders, and subject matter experts to identify actions to ensure pesticides are used judiciously and only when necessary. We included the following categories in the pollinator action framework.

#### *Judicious use of pesticides*

One of the best ways to ensure pesticides are being used judiciously is through a more holistic pest management approach like IPM. IPM is an approach to managing pests that seeks to prevent the long-term buildup of pest populations beyond economically damaging levels. Pest control relies on species-specific management strategies, re-occurring pest monitoring, and use of a combination of management techniques to control pest damage below an established guideline, and with the least possible hazard to people, property, and the environment. Through use of diversified pest management, pesticide users can work to prevent the buildup of pest populations before pesticide intervention is required. Diversified practices like those listed below can be leveraged before intervention with chemical control.

- *Host-plant resistance.* Use of plant varieties that can withstand certain amount of pest damage or are less desirable for pests.
- *Physical/mechanical control.* Use of physical barriers, sanitation, mulches, mowing and manual removal.
- *Cultural control.* Use of crop rotation, irrigation, and fertilizers, prescribed burning, and native plantings in ways that prevent or discourage pests.
- *Biological control.* Living organisms that target pests such as predators, pathogens, and parasites intentionally released or supported through adjacent habitat.

#### *Robust protections*

Federal and state pesticide regulators provide compliance assistance for pesticide product labels. State-led compliance efforts are supported by education and outreach focused on mitigation strategies to reduce harm to pollinators, minimize off-site pesticide movement, and increase awareness of safe product use and handling. Additionally, agencies continue to promote awareness about pesticide misuse reporting.

### *Focused research*

We identify areas of focused research that would inform pollinator protection efforts, including pesticide toxicity values for native pollinators species, risk of inert ingredients on pollinators, and cumulative risk to pollinators of multiple pesticides used in conjunction. Continued research on economic pest action thresholds used as a part of IPM is important to ensure that pesticides are used judiciously and only when necessary while retaining Minnesota's agricultural economic strength.

**Table 2. Pollinator action framework matrix, Goal 2: Minnesotans use pesticides judiciously and only, when necessary, to reduce harm to pollinators from pesticides while retaining economic strength**

Category	Subcategory	Action	Lead	Enact	Encourage	
2.1. Judicious use of pesticides	2.1.1. Support integrated pest management (IPM) on agricultural and non-agricultural lands	Develop IPM programs for crops and non-agricultural systems where they do not yet exist			X	
		Develop and collect standardized methods to evaluate and analyze the adoption of IPM on Minnesota farms and in non-agricultural systems			X	
		Continue funding for projects that include implementation of or research on IPM		X	X	
		Continue to strengthen compliance assistance for pollinator and IPM language on pesticide labels	X		X	
	2.1.2. Promote IPM on agricultural and non-agricultural lands	Increase IPM education for all pesticide users	X		X	
		Collaborate to create and distribute signage about the use of IPM and reducing risks to pollinators for different settings	X		X	
	2.1.1. Support IPM in managed pollinator colonies	Continue to fund projects that include research on or implementation of IPM			X	X
		Continue to strengthen and support compliance assistance for legal pesticide use				X
		Promote the use of existing IPM programs				X
		Provide education on IPM for pollinator colony health				X
2.2. Robust protections	2.2.1. Support or develop strategic policy and programs	Continued long-term funding for the “Pollinator Research Account”		X		
	2.2.2. Reduce off target movement of pesticides	Increase promotion of mitigation strategies to reduce pesticide movement off-site, including promoting reduction of dust-off from treated seed	X		X	
		Expand promotion of existing BMPs for using and disposing of treated seed	X		X	
	2.2.4. Report pesticide misuse	Increase awareness about pesticide misuse reporting	X		X	
		Strengthen capacity to investigate pesticide misuse reports			X	

Category	Subcategory	Action	Lead	Enact	Encourage
2.3 Focused research	2.3.1. Understand pesticide exposures in the environment	Monitor pesticides in soil and pollinator friendly plants in natural landscapes			X
		Collect data on how and where pesticide-treated seed is being disposed of in Minnesota	X	X	X
		Evaluate methods to reduce abraded dust from planting of pesticide treated seed			X
		Collect data on how the restriction of the use and sale of neonicotinoid insecticides to licensed applicators has impacted pollinators in other states	X		X
	2.3.2. Study the effects of pesticides and pesticide inert ingredients on pollinators and their habitat	Conduct native pollinator species pesticide toxicity studies following EPA guidelines that can be used in risk analyses			X
		Conduct studies on the effects of pesticide inert ingredients on pollinators following EPA guidelines that can be used in risk analyses			X
		Conduct studies on how pesticides interact with each other and other stressors to affect pollinator health following EPA guidelines that can be used in risk analyses			X
		Create new or update outdated thresholds for common pests in Minnesota			X
		Research and document obstacles pest managers face to adopt IPM and what factors lead to increased adoption			X



## **Goal 3: Minnesotans understand, value, and actively support pollinators**

### ***Key output***

More action through community commitments

### ***Vision***

Mitigate barriers preventing Minnesotans from actively participating in pollinator protection initiatives and programs by increasing awareness of pollinators and their needs, building intentional relationships with external partners, and supporting funding initiatives for pollinator programs.

### ***Context***

Through the public engagement process to develop this framework, we heard many ideas for action from Minnesotans who are interested in learning and doing more to help pollinators. Many organizations are leading grassroots and community-centered pollinator-related actions across the state, and we believe more can be done as we create opportunities to work together. The actions to advance this goal are organized in the following categories:

#### ***Strong partnerships and relationship building***

Partnership and relationship building is the foundation to grow and expand our pollinator protection movement. If we intentionally seek key partners and collaborators who have influence and the trust of their communities, and actively listen and learn from their experiences, we can work to expand each other's capacity.

#### ***Diverse and inclusive public participation***

There are differences in the levels of awareness, information, and resources available for communities across Minnesota to get involved in helping pollinators. This category includes a broad action to identify communities who have not been involved in pollinator protection actions, to learn what are the barriers they are facing to participate and determine strategies to meaningfully include them in this work.

#### ***Informed communities***

This category includes actions to improve accessibility to information, and to increase public awareness about pollinators, their needs, and effective ways to help them. Topics include promoting the use of native plants vs in garden projects, raising awareness of pollinators at popular events – like the Minnesota State Fair – and making it easier for local governments to amend their ordinances to be compatible with pollinator-friendly landscaping.

#### ***Sustained education and training***

This section includes actions to share accurate information on pollinator protection, expand pollinator-related education and training, and make resources readily available to different target audiences.

**Table 3. Pollinator action framework matrix, Goal 2: Minnesotans understand, value, and actively support pollinators**

Category	Subcategory	Action	Lead	Enact	Encourage
3.1. Strong partnership and relationship building	3.1.1. Build intentional relationships with individuals and organizations for pollinator protection	Connect with communities that have adopted pollinator-friendly resolutions to learn from their experiences and strategize ways to engage cities that have not participated	X		X
		Strengthen relationships with non-profit and for-profit organizations that work to protect pollinators	X		
	3.1.3. Build strategic partnerships to advance pollinator protection goals	Collaborate with GreenStep Cities program to increase education and promotion of pollinator-friendly practices	X		
		Collaborate with stores that sell retail pesticides and flowering plants to include information and resources about how to protect pollinators and their habitat	X		X
		Create a process with Tribal Nations to work together on pollinator protection	X		
		Collaborate with the Minnesota Science Teachers Association to promote pollinator educational resources for use in K-12 classrooms	X		X
3.2. Diverse and inclusive public participation	3.2.2. Increase participation in initiatives and programs	Assess which communities have not been involved in pollinator protection actions, reach out to them, and learn how to align this subject with their community priorities	X		X
3.3. Informed communities	3.3.1. Effective public access to information	Improve accessibility of pollinator protection resources (i.e., translations)	X		X
	3.3.2. Increase public awareness about pollinator needs and ways to help them	Leverage Pollinator Week to raise awareness about pollinator protection through different strategies: pollinator costume contest, pollinator garden sign design contest, webinar series with pollinator experts, etc.	X		X
		Promote pollinator-related apps (i.e., Bumble Bee Watch, iNaturalist) at community events			X
		Promote pollinator protection actions at the State Fair	X		X
		Provide clear information about how to create and improve pollinator habitat (e.g., increase awareness about mitigating the negative effects of light pollution)	X		X

Category	Subcategory	Action	Lead	Enact	Encourage
		Provide information about the benefits to wildlife of using native vs non-native plants	X		X
		Increase visibility of pollinator-friendly lawn alternatives (e.g., media campaign that shows what pollinator habitat looks like)	X		X
		Review local ordinances and coordinate with municipalities to make those ordinances compatible with adopting pollinator friendly landscaping			X
3.4. Sustained education and training	3.4.1. Strengthen programs with pollinator protection resources and information	Develop an interagency communications plan to promote pollinator resources and programs	X		
		Include pollinator-related education and resources in current agency-led programs where appropriate (e.g., as done in Ag in the Classroom)	X		
		Develop programming in partnership with youth organizations like Girl Scouts, Boy Scouts, YMCA, etc. to educate and facilitate pollinator projects and participation in pollinator-related community science projects.	X		
		Explore synergies with third-party certification programs that support pollinators and pollinator habitat	X		
		Work with organizations with expertise to expand pollinator-related education and training for inmates at state-administered facilities (e.g., beekeeping, habitat restoration training)	X		
	3.4.2. Make pollinator protection educational resources readily available for the public	Create a hub of pollinator-related curriculum/materials that makes it easy for educators to incorporate in their programs	X		
		Encourage members of the Master Gardener’s program to be a resource for schools who want to install pollinator habitat	X		X
		Work with SWCDs to increase pollinator guidance and resources (e.g., pollinator-friendly plants to mitigate flooding)	X		
		Increase awareness of programs to assist landowners, land stewards, and land managers in creating, managing, and maintaining pollinator habitat	X		X

## **Desired outcome: Healthy, diverse pollinator populations that sustain and enhance Minnesota’s environment, economy, and way of life**

### ***Vision***

Build a strong foundation for making informed decisions, develop strategic protections for imperiled pollinators, and improve our long-term coordination within state agencies and with external partners and collaborators to help Minnesota’s pollinators.

### ***Context***

Minnesota is home to thousands of species that can be considered pollinators, the vast majority of which are insects. Insects are the most diverse class of animals in the world, each species with its own particular life cycle and habitat needs.

We recognize there is a large information gap about pollinators in our state. Recent surveys conducted by the Department of Natural Resources’ Biological Survey and the University of Minnesota’s Bee Lab documented 500 species of bees in Minnesota. These results give us a glimpse about the diversity of one subset of pollinators, but more work is needed to paint a full picture on the status of pollinators in Minnesota, including questions of abundance, distribution, population trends, and the effects of land management activities on species. These questions are critical to understanding what species are in need of protection, and how best to plan for recovery of imperiled species. It is also critically important to have policies and partnerships in place that allow for effective implementation of protective measures for imperiled species.

In this section of the pollinator action framework, we include actions to help us address knowledge gaps, policy actions that affect species protections, and improvements to our internal and external collaboration.

### ***Informed decision-making***

In this category, we include actions that will help us gather and share information necessary to make sound decisions to develop policies, programs and initiatives needed to advance our pollinator protection goals.

### ***Strategic protections***

Actions in this category aim to increase our capacity to strategically protect imperiled pollinators. Additionally, we consider actions to protect managed pollinators from diseases and parasites.

### ***Long-term planning***

The actions included in this category have the intention to improve coordination among state agencies, to identify further interagency collaborations, avoid unnecessary duplication of efforts, and optimize resources. We include an action to encourage the creation of a pollinator coalition of diverse stakeholders in Minnesota to increase collaboration and capacity to tackle pollinator conservation issues.

**Table 4. Pollinator action framework matrix, Desired outcome: Healthy, diverse pollinator populations that sustain and enhance Minnesota’s environment, economy, and way of life**

Category	Subcategory	Action	Lead	Enact	Encourage
4.1. Informed decision-making	4.1.1. Long-term monitoring	Secure permanent funding to inventory and monitor pollinators	X	X	
		Explore and promote monitoring techniques that don’t require lethal captures	X		X
	4.1.2. Generate new information and create a framework for sharing information	Create a group to develop a pollinator-specific research priority list and identify funding streams	X		X
		Develop a framework to facilitate collaboration, data and information sharing about pollinators among organizations	X		X
		Research risk of environmental pollutants (e.g., salts and heavy metals) on pollinators			X
		Research the drivers behind changes of perception and behavior toward pollinator-friendly practices to inform state outreach and education efforts	X		X
4.2 Strategic protections	4.2.1. Develop effective policy to protect at-risk pollinator species	Include a question on the Environmental Assessment Worksheet form that provides information about potential reductions in pollinator habitat and identifies proposed mitigation that will offset those reductions	X		
		Increase capacity for state listing at-risk species (including staffing, taxonomic expertise, and data gathering)	X	X	
	4.2.2. Protect pollinators from diseases and parasites	Develop a model local ordinance for hobby beekeeping addressing managed pollinators’ health concerns			X
		Raise awareness and provide guidance to protect managed pollinator health from diseases and parasites due to interstate managed pollinator transport			X
		Raise awareness of BMPs for commercial bumble bee colonies to address risk of disease spread to wild bees			X
4.3. Long-term planning	4.3.1. Improve interagency coordination	Align state agencies’ policies, practices and procedures to effectively protect pollinators and reduce inconsistencies	X		
		Create and maintain an inventory of past and ongoing pollinator protection programs and initiatives	X		

Category	Subcategory	Action	Lead	Enact	Encourage
		Synergize strategies and priorities between the Pollinator and the Climate Action Framework (e.g., integrate pollinator-friendly plants in green infrastructure projects)	X		
	4.3.2. Improve intra-agency coordination	Clarify internal pollinator policies and streamline their implementation across agency actions.	X		
		Update pollinator-related state policies, standard operating procedures, protocols, and guidelines in light of new scientific information	X		
	4.3.3. Improve coordination with non-agency organizations	Create a coalition of pollinator conservation stakeholders to increase collaboration, resources and capacity for statewide implementation of pollinator priority actions		X	X

## Call to action

The pollinator action framework is a call to action to individuals and organizations across sectors, regions and communities to join forces to help our state pollinators. Many actions will take connections, collaborations and strategic partnerships to make significant progress. We call on decision makers and legislators to support initiatives that consider the actions included in this document.

As we move forward with our mission, we are committed to listen and identify additional opportunities to engage with Minnesotans in this work to amplify our impact.

## Acknowledgements

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- Monarch Joint Venture
- Xerces Society
- Minnesota Farm Bureau