



## Environment and Natural Resources Trust Fund

M.L. 2022 Approved Work Plan

### General Information

**ID Number:** 2022-061

**Staff Lead:** Corrie Layfield

**Date this document submitted to LCCMR:** June 14, 2022

**Project Title:** Creating Seed Sources of Early-Blooming Plants for Pollinators

**Project Budget:** \$200,000

### Project Manager Information

**Name:** Christina Locke

**Organization:** MN DNR - Ecological and Water Resources Division

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**Web Address:** <https://www.dnr.state.mn.us/ewr/index.html>

### Project Reporting

**Date Work Plan Approved by LCCMR:** June 27, 2022

**Reporting Schedule:** March 1 / September 1 of each year.

**Project Completion:** October 31, 2025

**Final Report Due Date:** December 15, 2025

### Legal Information

**Legal Citation:** M.L. 2022, Chp. 94, Art. , Sec. 2, Subd. 08c

**Appropriation Language:** \$200,000 the second year is from the trust fund to the commissioner of natural resources to establish new populations of early-season flowers by hand-harvesting and propagating species that are currently lacking in prairie restorations and that are essential to pollinator health. This appropriation is available until June 30, 2026, by which time the project must be completed and final products delivered.

**Appropriation End Date:** June 30, 2026

## Narrative

**Project Summary:** We will establish new populations of early-season flowers by hand harvesting and planting species that are currently lacking in prairie restorations and are essential to pollinator health.

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Habitats need flowers blooming from spring through fall to effectively support pollinators. However, reaching this standard is a complex challenge for land managers, who must contend with plant availability and the propagation needs of dozens of plant species. Spring blooming, early-season flowers are among the hardest to restore, limiting their presence in restorations across the state.

Early-season flowers are expensive and have limited availability from native plant vendors due to their particular growing requirements and short harvest windows. Many also have specialized storage and germination needs that may limit seed viability and establishment success if improperly processed or if planted using traditional broadcast seeding methods. These issues make incorporation of early-season flowers into restorations a cost-ineffective and often unsuccessful endeavor for many land managers, to the detriment of pollinators, game, and non-game wildlife throughout Minnesota.

Identifying best restoration practices for early-season flowers in prairies would benefit some of Minnesota's most at-risk pollinator species: those that emerge in the early spring to harsh, variable weather and limited floral availability. Filling this early-season gap would also benefit overall prairie reconstruction effectiveness and resiliency by enhancing plant diversity.

**What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.**

Early-season flowers essential for pollinators exist on DNR land, but occur in small, isolated patches. With support for harvesting seed, storage, and planting, these flowers will be strategically restored to maximize cost-effectiveness and create new sources of seed for DNR beyond the life of this project.

We propose a pilot project to hand-collect seed from 6-10 early-season flowers essential to early-emerging pollinators from DNR properties, focusing on species with known propagation success. We will germinate and grow out plants in greenhouses, and then install mature plants into priority prairie reconstructions for pollinators within DNR region 4. These plantings will then be harvested over subsequent years, increasing the availability of early-season flowers for other DNR restoration projects as appropriate.

Throughout this initial pilot we will record data on our harvest, germination, and planting methods and begin compiling existing scientific literature and expert knowledge on these topics. This information will help inform best practices and serve as the basis for a future early-season flower propagation guide and workshops for land managers working throughout Minnesota's prairie region.

**What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?**

This project will have 3 major outcomes:

1. Enhances habitat for at-risk pollinators and other wildlife in a region of significant conservation need, including bumble bee queens, regal fritillaries, solitary bees, and other moths and butterflies.
2. Creates new seed sources of early-season flowers on DNR lands, providing additional capacity to test different planting approaches and identify best practices for restoring early-season flowers for pollinators to the landscape.
3. Begin identifying best practices for harvest, grow-out, and planting for future early-season planting guide and workshops for both DNR programs and prairie restoration community of practice.

## Project Location

**What is the best scale for describing where your work will take place?**

Region(s): SW

**What is the best scale to describe the area impacted by your work?**

Region(s): SW

**When will the work impact occur?**

During the Project and In the Future

## Activities and Milestones

### Activity 1: Early-season pollinator plant hand-harvest

**Activity Budget:** \$85,855

**Activity Description:**

A contractor will hand-harvest seed from ~ 8-12 species of early-season, pollinator supporting prairie plants across southwest Minnesota. Spring 2023 we will prioritize collection from easy to locate species known to produce large quantities of seed as well as several harder to collect species, either due to short stature or a narrow/early-season harvest window. For each species we will collect from as many source populations as possible. Spring 2024 and 2025 we will add to our effort by collecting seed from additional or rarer species, or new sources for those previously collected. Early-season plant seed often must be stored at cold temperatures to maintain viability. To address this a seed refrigerator will be purchased and kept at a regional WMA facility to provide proper storage for this and future projects region-wide.

We will create collection maps to aid in locating populations of plants, and will record seed availability post-harvest for planning future collections. When possible we will photograph harvestable plants, collect reference specimens, and compile harvest field notes and observations for a future early-season plant guide. We will coordinate with other managers to target recently burned areas with high seed harvest potential.

**Activity Milestones:**

Description	Approximate Completion Date
Collect from 3-7 species of early-season plant that produce large quantities of seed.	July 31, 2023
Collect from 1-3 species with harder to collect seed or fewer known populations.	July 31, 2023
Collect from 1-3 new species or new populations from previously collected species each subsequent year.	July 31, 2025

### Activity 2: Plant grow out and installation to enhance early-season pollinator habitat

**Activity Budget:** \$64,854

**Activity Description:**

We will contract a native seed vendor to grow out ~6,000 plants from the seed hand-harvested in Activity 1. Collected early-season plant species that are critical to the life cycles of specific at-risk, threatened, or endangered pollinators, and with the greatest likelihood of germination and propagation success will be given highest priority; for example, prairie violets for regal fritillaries. Plants that are harder to germinate and propagate will be given secondary priority. For all species the contractor will collect detailed germination and propagation data to guide development and identification of best growing methods for a future early-season plant propagation reference manual.

After completion of grow out the contractor will install plants as dormant bare root stock into existing SW MN prairie reconstructions. Planting will occur once plants have entered winter dormancy to maximize establishment success, approximately October 2024 and 2025. Seed not used for propagation and plant installation will be stored by DNR staff and broadcast seeded onto future reconstructions where appropriate, or shared with prairie local technical teams. The October 2024 planting will be monitored the following spring to ensure adequate establishment.

**Activity Milestones:**

Description	Approximate Completion Date
Germinate, grow, and install 6,000 bare-root, plug plants from at least 6 early-season plant.	October 31, 2024
Monitor establishment success of 2024 installations and adjust planting methods as necessary.	April 30, 2025
Install 6,000 bare-root plants from 5 additional species and/or install in additional locations.	October 31, 2025

### Activity 3: Early-season pollinator plant harvest coordination, field days, and outreach

**Activity Budget:** \$49,291

**Activity Description:**

Over the duration of this project we will share early-season plant harvest, propagation, and planting information and techniques identified in this project as well as through review of existing literature and consultation with subject matter experts. First, we will communicate our work plans and initial harvest results from year 1 to DNR prairie managers and partners within prairie local technical teams (LTTs) to receive feedback and coordinate on seed harvest and sharing opportunities across the work area. Final outcomes will also be reported to DNR managers and LTTs to identify next steps with this work and areas for expansion. Second, we will hold several workshops and/or field days to train DNR staff, private land managers, conservation organizations, university students, and other professionals on early-season pollinator plant identification, harvesting, and planting techniques to increase the community-of-practice's capacity for this work. Additional public outreach field days with both hands-on pollinator education and seed harvest may be hosted as well. Feedback from these coordination and outreach events will inform further development of an early-season plant propagation reference manual and other training materials.

**Activity Milestones:**

Description	Approximate Completion Date
Present preliminary harvest results to prairie plan local tech teams (prairie LTTs) for feedback.	January 31, 2024
Present first year grow out and installation outcomes to prairie LTTs for feedback.	January 31, 2025
Host early-season plant ID, harvest, and planting technique field day/workshop for practitioners	May 31, 2025
Host early-season pollinator and plant seed harvest field day for public	June 30, 2025
Project coordinator reviews collected data with managers to identify remaining knowledge gaps, next steps.	October 31, 2025

## Dissemination

**Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENTRF Acknowledgement Requirements and Guidelines.**

Project updates and results will be shared via the DNR website, and presented as a reference manual to prairie managers from DNR and partner organizations in order to share best practices and lessons learned in early season forb propagation. We also plan to reach broad audiences via several participatory workshops and/or field days open to public and private land managers, conservation organizations, university students, and other professionals on early-season pollinator plant identification, harvesting, and planting techniques. The project will also be advertised via signage at the prairie reconstruction sites. We will acknowledge the Environment and Natural Resources Trust Fund through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENTRF Acknowledgment Guidelines.

## Long-Term Implementation and Funding

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?**

Results and data from this pilot project will identify how to efficiently and effectively incorporate more early-season flowers into DNR prairie restorations across its regions and programs. Our findings will be shared with our conservation partners and contractors to help alleviate some of the seed cost and availability issues we currently face, and inform future partnerships and projects to enhance our prairies for pollinators and other game and non-game wildlife. Additionally, the plantings and equipment purchased will increase our capacity to restore early-season plants by creating new, easier to access harvest populations and proper seed storage for DNR managers.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Pollinator Conservation Coordinator Assistant		Project implementation including assisting and directing seed collection, work plan development and implementation, grant progress reporting, data management.			30%	1.5		\$82,500
							<b>Sub Total</b>	<b>\$82,500</b>
<b>Contracts and Services</b>								
Seed to Site LLC	Professional or Technical Service Contract	Seed harvest, voucher specimen collection for harvest guide, data collection on seed sources. Potentially plant propagation and related data collection depending on number of seeds collected.		X		1.5		\$36,000
TBD	Professional or Technical Service Contract	Two years of seed grow out in greenhouse, plug plant installation. Final cost dependent on seed amount and number plants successfully grown.				-		\$33,000
							<b>Sub Total</b>	<b>\$69,000</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	Activity 1: Materials and equipment for seed harvest, cleaning, and drying, including a seed mill, seed drying rack, seed collection bags, and seed storage bags. Harvest data collection materials, including notebooks, plant presses, etc.	Project implementation					\$6,500
	Tools and Supplies	Activity 2: supplies and materials for protecting maintaining plantings post-installation, including posts and signs, flagging, herbicide, etc.	Project implementation					\$2,101
	Tools and Supplies	Activity 3: Outreach and field day materials and supplies, including signage, handouts, porta-potty rental, etc.	Project implementation					\$5,760
	Tools and Supplies	Activity 3: Food and refreshments	Offer non-alcoholic beverages and a light lunch (e.g., sandwich plus snack) for the volunteers attending planting field days. Estimate \$12/person, 20-30	X				\$3,240

			volunteers per event, 9 events (3 events each year for 3 years).					
							<b>Sub Total</b>	<b>\$17,601</b>
<b>Capital Expenditures</b>								
		Seed refrigerator	Refrigerator will provide storage for hand-collected seed. Early-season plant seed often requires refrigeration to remain viable post-harvest.					\$8,000
							<b>Sub Total</b>	<b>\$8,000</b>
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	1-2 people; number of trips and mileage will vary dependent on harvest location and support needs, locations of presentations and field days.	Project coordinator, and possibly an assistant, will drive from DNR central office to region 4 to assist and direct project work, including hand-harvest, give presentations to regional staff and collaborators, and participate in field days					\$10,000
							<b>Sub Total</b>	<b>\$10,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Printing and Publication</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Other Expenses</b>								
		Direct and necessary costs	Direct and necessary costs to cover HR support (\$2,496), Safety Support (\$387), Financial Support (\$1,311),					\$12,899



			Communication Support (\$1,388), IT Support (\$5,311), and Planning Support (\$1,008).					
							<b>Sub Total</b>	<b>\$12,899</b>
							<b>Grand Total</b>	<b>\$200,000</b>

## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
<b>Contracts and Services</b> - Seed to Site LLC	Professional or Technical Service Contract	Seed harvest, voucher specimen collection for harvest guide, data collection on seed sources. Potentially plant propagation and related data collection depending on number of seeds collected.	A single-source contract is required for this project because Seed to Site is a registered Targeted Group (TG) small business vendor local 1) geographically located within the proposed work area, and 2) possesses the highly specialized botanical knowledge necessary to carry out the proposed activities. Seed to Site is ensuring a competitive price for the contracted work by offering lower travel rates to and from seed harvest sites relative to metro-based ecological service vendors.
<b>Equipment, Tools, and Supplies</b>		Activity 3: Food and refreshments	We foresee planting field days to be the most efficient way to get the 6,000 plants in the ground. DNR staff will lead these field days, but will recruit volunteers to assist. Providing refreshments for volunteers is a common courtesy and will help to draw interest in the effort. Estimate \$12/person, 20-30 volunteers per event, 9 events (3 events each year for 3 years).

## Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
<b>State</b>				
In-Kind	Reinvest In Minnesota (RIM) Critical Habitat Program	0.1 FTE over three years for the Pollinator Conservation Coordinator (Christina Locke), whose position is funded by RIM. The Pollinator Conservation Coordinator will coordinate this project and supervise the assistant position requested in this proposal.	Secured	\$37,500
			<b>State Sub Total</b>	<b>\$37,500</b>
<b>Non-State</b>				
			<b>Non State Sub Total</b>	-
			<b>Funds Total</b>	<b>\$37,500</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [3156b4db-888.pdf](#)

#### *Alternate Text for Visual Component*

Diagram outlining project problem and proposed solution activities: harvest, grow out, and outreach...

### Optional Attachments

#### *Support Letter or Other*

Title	File
Background Check Form	<a href="#">0cec814c-706.pdf</a>

## Difference between Proposal and Work Plan

### *Describe changes from Proposal to Work Plan Stage*

Salary budget item now refers to an assistant position rather than project manager's salary. Travel budget applies to 1-2 people (previously just 1). Addressed two comments to change species counts to ranges under Activities and separate out Tools and Materials budget item by Activity.

Added an entry for in-kind contributions from my own position (10% FTE).

Attached background check form.

Refined budget items as requested, with per person dollar amounts listed for refreshments for volunteer days.

## Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

**Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?**

Yes

**Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?**

Yes, I agree to the Commissioner's Plan.

**Does your project have potential for royalties, copyrights, patents, or sale of products and assets?**

No

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**

N/A

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**

N/A

**Does your project include original, hypothesis-driven research?**

No

**Does the organization have a fiscal agent for this project?**

No

# Seed collection of early-blooming plants for pollinators



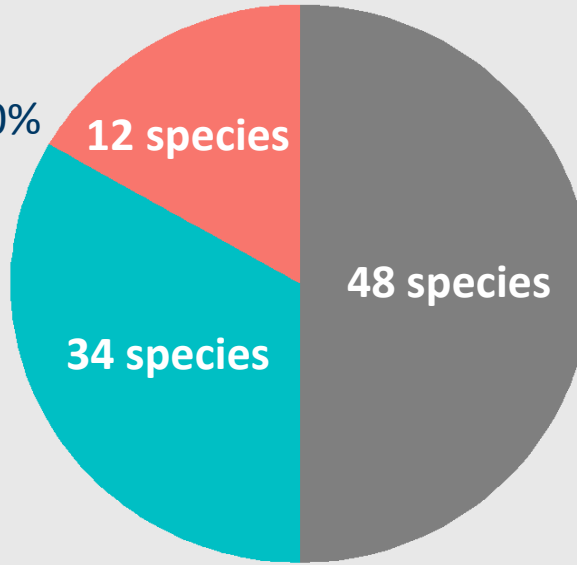
Prairie violet (*Viola pedatifida*), an early plant with poor commercial availability



The at-risk Regal fritillary (*Argynnis idalia*) requires violets to complete its life cycle

## Problem:

Approximately 50% of early-season prairie plants are **not available** commercially for restorations.



Not Available

Available

Limited Availability

## Proposed solution:

### Activity 1: Early Plant Harvest



Hand-harvest early plants for at-risk pollinators

### Activity 2: Plant Grow Out



Grow and install plants into pollinator habitat restorations

### Activity 3: Coordination & Outreach



Use findings from Activities 1 & 2 to coordinate with partners and educate other professionals