Final Abstract

Final Report Approved on December 19, 2025

M.L. 2022 Project Abstract

For the Period Ending June 30, 2025

Project Title: Minnesota's Volunteer Rare Plant Conservation Corps

Project Manager: David Remucal

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Funding Source:

Fiscal Year:

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 08a

Appropriation Amount: $859,000

Amount Spent: $821,857

Amount Remaining: $37,143

Sound bite of Project Outcomes and Results

MN PlantWatch launched as a new program to engage community scientists in rare plant conservation in Minnesota. Volunteer interest exceeded expectations with 120 people contributing to 172 high-priority rare plant surveys and banking seed from 55 populations. Collected data provide important updates to our state's rare features database.

Overall Project Outcome and Results

Minnesota's rare plants are at risk of extinction, necessitating expanded tracking efforts and greater public awareness and support. MN PlantWatch addresses both needs, training enthusiastic Minnesotans to work together to protect rare plants. The first phase of the MN PlantWatch program was a resounding success, exceeding goals to survey and protect Minnesota's rare plants by establishing a new community science program. Processes and support for both training and survey work were developed and implemented for volunteers that we recruited through organizations including the Minnesota Native Plant Society and the Minnesota Master Naturalists. Word of mouth spread and quickly public interest in the program far outweighed capacity, and we continue to maintain an extensive waitlist of potential volunteers. Existing volunteers enjoy hands-on participation in meaningful conservation work in Minnesota.

During this phase, 120 volunteers attended training, 82 engaged in rare plant surveys and 29 in seed collections. We surveyed 172 historic rare plant populations representing 60 species. This included 162 populations that had not been visited in over 20 years (one plant record had not been updated in over 100 years!). 109 populations were located again and data were collected on the number of plants, location, habitat, and observed threats. While conducting surveys, 37 previously undocumented rare plant populations were discovered by participants and added to DNR NHIS state records. Seed was collected from 55 rare plant populations representing 27 species and banked at the University of Minnesota Landscape Arboretum Rare Plant Seedbank.

Banked seed preserves the genetic diversity of Minnesota's rare plants, supports research opportunities, and provides a backup in case of loss in the wild. Survey data provide an important source of current information on the status of rare plant populations throughout Minnesota greatly aiding conservation resource allocation decisions at all levels of government.

Project Results Use and Dissemination

MN PlantWatch data are incorporated into the Minnesota Department of Natural Resources' Natural Heritage Information System (the state's rare features database) where they can be accessed by natural resources professionals and others doing conservation work. Additionally, we provide survey results directly to land managers to inform on-site management for species conservation. Banked seed is maintained for research or propagation needs. Annual newsletters detailing program accomplishments are publicly available on the MN PlantWatch website and 17 presentations or articles have been delivered for outreach to various conservation groups in Minnesota and to visitors to the University of Minnesota Landscape Arboretum.

Environment and Natural Resources Trust Fund

M.L. 2022 Approved Final Report

General Information

Date: December 19, 2025

ID Number: 2022-006

Staff Lead: Tom Dietrich

Project Title: Minnesota's Volunteer Rare Plant Conservation Corps

Project Budget: $859,000

Project Manager Information

Name: David Remucal

Organization: U of MN - Landscape Arboretum

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Project Reporting

Final Report Approved: December 19, 2025

Reporting Status: Project Completed

Date of Last Action: December 19, 2025

Project Completion: June 30, 2025

Legal Information

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 08a

Appropriation Language: $859,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Landscape Arboretum to partner with the Department of Natural Resources and the Minnesota Native Plant Society to establish and train a volunteer corps to survey, monitor, and bank seed from Minnesota's rare plant populations and enhance the effectiveness and efficiencies of conservation efforts.

Appropriation End Date: June 30, 2025

Narrative

Project Summary: Establish a volunteer corps to survey, monitor and bank seed for rare plant populations around the state, enhancing the effectiveness and efficiencies of conservation efforts of multiple stakeholders across Minnesota.

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

Roughly one-quarter of Minnesota's diverse flora (1,900 plant species) is described as rare (see Visual Aid). These plants are invaluable components of the state's biodiversity and natural heritage but are declining or vulnerable to loss at an increasing rate. In fact, over 100 native plant species once known from Minnesota are now completely gone and 60 species have five or fewer known populations in the state. Currently, groups like the Minnesota Department of Natural Resources (MN-DNR) and the University of Minnesota Landscape Arboretum (UMLA) conduct rare plant surveys and seedbanking but the need and urgency for conservation outpace what those programs can do with available funding and staff. Additionally, rare plant conservation efforts around the state are largely uncoordinated between groups, thus inefficient and less effective.

Other states or regions (i.e. WI, IL, CA, New England, etc.) have countered these issues with successful establishment of rare plant volunteer corps. They recruit and train volunteers to survey and monitor rare plant populations, and in more advanced cases collect seed for preservation banking. Minnesota lacks a comprehensive coordinated state-wide surveying and seedbanking rare plant survey and seedbanking program that could be utilized for current and increasing needs.

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.

To address these problems, we proposed to establish a volunteer-based Minnesota Rare Plant Conservation Corps to assist groups like the MN-DNR and UMLA. The Corps will dramatically increase capacity to survey, monitor, and protect MN's invaluable rare plants.

A large corps of citizen botanists from across the state would be recruited, trained, coordinated. Volunteers will lead and assist in rare plant surveys, monitoring and seedbanking efforts. Managed by a team of UMLA and MN-DNR biologists, this program would call upon MN residents, interested in plant conservation, to collect vital data needed to protect rare plants and build on data already available at UMLA, MN-DNR and the UMN Bell Herbarium. This Corps will also tap into groups like the MN Master Naturalists and the Minnesota Native Plant Society, thus pulling together existing resources and people in a coordinated effort. This data collection effort will be paired with seed collection to establish a statewide long-term rare plant seed bank which is an expansion of UMLA's existing long-term seed bank.

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 bring together the strengths and expertise of several groups in the state, to magnify their already significant separate current conservation efforts and create a robust infrastructure to manage and continue this increased effort to protect Minnesota's native flora.

1. Develop and coordinate a corps of plant volunteers – training new and returning volunteers annually to support a continual corps of 50 active citizen botanists.
2. Prioritize and collect data on rare species, targeting 40 or more historical or anecdotal rare plant records of most need annually.
3. Establish multiple long-term seed banks for the highest priority species.

Project Location

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

Statewide

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

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Development and Training of Rare Plant Conservation Corps

Activity Budget: $259,600

Activity Description:
Volunteers will go through a training process that will include proper plant identification, data collection and field techniques. Training will happen on an annual/semi-annual basis. Once new volunteers are trained there will be refresher trainings for returning volunteers to enhance knowledge and build community. Because the environments in which rare plants are found are often fragile, training will also include proper field etiquette and the importance of minimizing impact on both plants and environment. In-person training will be done when possible, but because of the geographic spread of potential volunteers, online training modules will also be used.
The Rare Plant Corps would expand upon the small group of volunteers MN-DNR currently trains for rare plant surveys by increasing DNR and UMLA staff time dedicated to training and volunteer coordination. The Corps would also be highly efficient as it would utilize institutional knowledge and training infrastructure from the Minnesota Master Naturalists as well as botanical expertise available in the Minnesota Native Plant Society.

Activity Milestones:

Description	Approximate Completion Date
Finalize training materials for in person and online platforms	March 31, 2023
Train the first cohort of volunteers	June 30, 2023
Establish a corps of 50 active volunteers by the end of the granting period	June 30, 2025
Annual end-of-year review for volunteers and internal review of volunteer systems	June 30, 2025

Activity 2: Rare Plant Corps Survey Rare Species Across the State

Activity Budget: $256,800

Activity Description:
UMLA and MN-DNR staff and other stakeholders will help develop a priority list of locations for field surveys based on species' need and status. Rare Plant Corps volunteers will begin by surveying old records (>20 years old) of rare plant populations from data in various repositories, including the MN-DNR databases and UMN Bell Herbarium. They will also survey unverified locations from anecdotal records based on priorities.

Data collected by the Rare Plant Corps will be entered to the MN-DNR Natural Heritage Information System, the state's long-standing most comprehensive source of data on Minnesota's rare species, native plant communities, and other natural features. This volunteer corps will be able to add vital data to this database which has been an important resource for multiple different groups over many years with minimal increase in staff time and resources.

Activity Milestones:

Description	Approximate Completion Date
Establish initial species priorities for data collection and seedbanking	December 31, 2022
Survey at least 40 high priority records of greater than 25 years in age	November 30, 2023
Survey at least 40 high priority records of greater than 20 years in age	November 30, 2024
Enter data into MN-DNR Natural Heritage Information System	June 30, 2025
Annual end-of-year review species priority list	June 30, 2025
Survey at least 20 high priority records of at least 20 years (partial field season)	June 30, 2025

Activity 3: Collect seed from rare plant species across the state for long-term seedbanking

Activity Budget: $342,600

Activity Description:

Building on the increased survey information this program will produce, UMLA staff and advanced trained volunteers will collect seed from species derived from internal and external stakeholder priority lists, to bank in the UMLA long-term seed bank. This will be a huge influx of seeds and data for the UMLA seed bank program and will stretch existing UMLA seedbanking capacities. For this activity, UMLA will enhance current staff and its existing volunteer corps to clean, process, package and manage seed collections and expand infrastructure and information systems to manage the influx of seed. Seed collections will be backed up (i.e., a portion of a seed collection sample is stored at an alternate facility) under the current UMLA agreement with the National Lab for Genetic Resource Preservation in Fort Collins.

Activity Milestones:

Description	Approximate Completion Date
Develop or license a database to manage increased data needs for seedbanking and testing.	August 31, 2022
Bank seed from at least 30 high priority populations from the state of Minnesota	October 31, 2023
Expand seed banking infrastructure to handle increased seedbanking storage needs.	October 31, 2023
Bank seed from additional at least 35 high priority populations from the state of MN	October 31, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Bruce Carlson	Minnesota Department of Natural Resources	Will be working with UMLA to train and lead volunteer corps. Will be managing the data entry and management of the volunteer corps survey data.	Yes
George Weiblen	UMN Bell Museum/Herbarium	The Minnesota Biodiversity Atlas houses much of the data the volunteer corps will be using to perform survey work. The Atlas database will benefit directly from the verification work performed by this corps, greatly increasing the accuracy of the data housed.	No
Scott Milburn	Minnesota Native Plant Society	Source of vast botanical knowledge to be able to train conservation corps volunteers, especially in regards to advanced training.	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
When feasible with target seedbank plants, we will display plants at the Arboretum, where we can share the story of the individual project as well as the general importance of Minnesota native plant conservation through educational flyers, displays, and interpretive signage. We will also provide project updates and additional information on the Arboretum and Plant Conservation Program websites, https://arb.umn.edu/ and https://arbconservation.cfans.umn.edu/. Education, information, and outreach are important aspects of the Arboretum's and the DNR's conservation work. Additionally, UMLA and DNR partners will give presentations at several local or national conferences or meetings each year, which are additional opportunities to share this project and our conservation work. The DNR will also have the opportunity to disseminate information about the project and results through partners and networks. Importantly, the data collected as a result of this project will be incorporated in the NHIS data where the updates will inform future decisions on species listings and permitting.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement 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?
Both the volunteer corps and the seed bank are designed to be long-term entities, this proposal helps with initial start-up costs associated with establishing a volunteer corps and effectively managing the information and data this will produce. The Arboretum and DNR are committed to maintaining their long-term conservation priorities as embodied in this proposal and establishing ongoing program funding for the volunteer corps and seed bank to accomplish this.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount	$ Amount Spent	$ Amount Remaining
Personnel										
Curator of Endangered Plants		Principal Investigator - Project management, volunteer training, seed collection			36.8%	0.96		$90,220	-	-
Conservation Botanist/Plant Conservation Program Associate		Manage and train volunteers, in partnership with DNR position. Also managing seed collection and advising on species prioritization.			36.8%	1.74		$149,823	-	-
Seedbank Manager/Plant Conservation Program Associate		Manage seed bank intake and initial germination testing to verify viability			32%	2.1		$139,435	-	-
Field Botanist		Seed collection, volunteer field training and support for plant identification and field methods			32%	1.71		$80,092	-	-
UMLA Intern		Assist in all aspects of the program, especially learning to work with volunteers and conservation of rare plants			8.3%	0.46		$15,500	-	-
Student/Seasonal field and data assistant		General project assistance in the field and with seedbank and data management during the academic year			8.3%	1.16		$30,930	-	-
							Sub Total	**$506,000**	**$506,000**	**-**
Contracts and Services										
MN Department of Natural Resources	Subaward	Volunteer recruitment, coordination, training, data management and entry. Contract also includes $15,000 for travel, $8250 field supplies, $1800 conference attendance and $25,000 for CCMI service contract and $22,902 for Direct and Necessary		X		3		$290,943	$265,919	$25,024

		standard contract costs for DNR. Travel is for in-state field work only. Staff is non-classified.								
							Sub Total	**$290,943**	**$265,919**	**$25,024**
Equipment, Tools, and Supplies										
	Tools and Supplies	Annual contract for database software	Database software specifically designed for seed bank management and living collection curation					$6,000	$6,000	-
	Tools and Supplies	Seed banking and field supplies, including envelopes, desiccation chamber, germination testing supplies and media and seed storage containers, digital imagery tools, pin flags, flagging tape, and other field and lab supplies. Especially needed are safety and protective gear and supplies as these costs had been previously covered by UMLA, DNR and volunteer contributions.	Supplies needed for the collection, preparation and storage of seed material in the long-term seed bank, including digital imagery tools to create training material for volunteers in the lab and field. Field supplies are additional supplies needed for staff and volunteer use that are typically short-lived (pin flags, flagging tape, writing utensils, etc.). Safety and protective supplies are needed for staff and volunteer field work in uneven, exposed environments where survey workers are working remotely, often in isolation or small groups, and exposed to sun, insects and heat.					$10,057	$10,057	-
	Capital Equipment	Seed bank freezer - UMLA	Additional large freezer to house additional seed bank influx	X				$9,500	$9,496	$4
	Equipment	Desktop computer	The computer is needed to run ArcGIS, which tracks species and populations around the state in a	X				$2,500	$2,500	-

			spatially-organized database. The MN DNR Natural Heritage database is GIS-based, so we need to use that system with PlantWatch, as well.							
							Sub Total	**$28,057**	**$28,053**	**$4**
Capital Expenditures										
							Sub Total	**-**	**-**	**-**
Acquisitions and Stewardship										
							Sub Total	**-**	**-**	**-**
Travel In Minnesota										
	Miles/ Meals/ Lodging	120 trips (90 overnight), 250 mi, 1 person per trip, $182.50 for lodging/meals per trip, $0.56/mile	Mileage reimbursement, food and lodging for training, seed collecting, surveying and monitoring trips for UMLA staff					$34,000	$21,885	$12,115
							Sub Total	**$34,000**	**$21,885**	**$12,115**
Travel Outside Minnesota										
							Sub Total	**-**	**-**	**-**
Printing and Publication										
							Sub Total	**-**	**-**	**-**
Other Expenses										
							Sub Total	**-**	**-**	**-**
							Grand Total	**$859,000**	**$821,857**	**$37,143**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - MN Department of Natural Resources	Subaward	Volunteer recruitment, coordination, training, data management and entry. Contract also includes $15,000 for travel, $8250 field supplies, $1800 conference attendance and $25,000 for CCMI service contract and $22,902 for Direct and Necessary standard contract costs for DNR. Travel is for in-state field work only. Staff is non-classified.	DNR's direct and necessary costs pay for activities that are directly related to and necessary for accomplishing appropriated projects. HR Support ($4,993), Safety Support ($773), Financial Support ($4,194), Communication Support (~$1,311), IT Support ($10,622), and Planning Support (~$1,008). DNR MN PlantWatch staff will attend a Center for Plant Conservation conference in San Diego. This group is one of the only venues to bring together groups with programs similar to MN PlantWatch and is an invaluable networking opportunity that is not available with any in-state conferences. The staff would present on our program, as well as get feedback, and the presentation will have an international reach. Total costs would be about $1800 for the conference. Additional CCMI staff support is required in 2025 to complete reports and all volunteer training materials. Due to an early staffing deficit (hiring delay) and 2024's increased survey production over expected, all related administrative, data management, reporting and volunteer training documentation must be completed prior to the end of the grant period. The DNR on staff for this contract is already at 100% capacity. Additional staffing is required to complete associated grant activities, to be covered by shifts in UMLA staff and DNR's CCMI staff support.
Equipment, Tools, and Supplies		Seed bank freezer - UMLA	Freezer is necessary for increased seed banking effort for this project and this freezer is slated for use only for the seed brought in related to MN PlantWatch **Additional Explanation :** The freezer will be part of a long-term seed bank, so material will continue to be housed indefinitely after the appropriation period.
Equipment, Tools, and Supplies		Desktop computer	Without this computer, the UMLA staff assigned to this project can not fulfill necessary work for this project. The computer use is both directly related and necessary to the work of this project and will be used solely for work related to MN PlantWatch.

Non ENRTF Funds

Category	Specific Source	Use	Status	$ Amount	$ Amount Spent	$ Amount Remaining
State						
			State Sub Total	-	-	-
Non-State						
			Non State Sub Total	-	-	-
			Funds Total	-	-	-

Attachments

Required Attachments

Visual Component

File: 3b2b143e-7ef.pdf

Alternate Text for Visual Component

Draft visual showing major partners and stakeholders of this project and how they will contribute to strengthening and managing the volunteer program....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
UMN Master Naturalists Letter of Support	5e367e3c-aa2.pdf
Background Check document	a7a4a30d-8a9.pdf
Promotional Brochure	61550a3c-271.pdf
2023 MN PlantWatch Newsletter (Draft)	201912a6-2f3.pdf
2024 MN Master Naturalists Gathering Partner Annual Conference	9e183bfa-7c1.jpe
Article in Botanical Club of Wisconsin newsletter	3b90e91d-a2a.pdf
Sample images for seedbank identification	a98a226f-421.pdf

Media Links

Title	Link
MN PlantWatch information page - University of Minnesota Landscape Arboretum	https://arb.umn.edu/mn-plantwatch
MN PlantWatch information page - MN DNR	https://www.dnr.state.mn.us/eco/mbs/mn-plantwatch.html
Volunteers help save rare plants across Minnesota	https://www.mprnews.org/story/2024/09/04/volunteers-help-save-rare-plants-across-minnesota
Rare Plant Patrol - article in Minnesota Conservation Volunteer journal	https://www.dnr.state.mn.us/mcvmagazine/issues/2025/may-jun/qa.html

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Activity and narrative goal differences were corrected. Supply budget was split to include funding for training and field work. All funds to the DNR were moved to a subaward (salary, travel, supplies other) as requested, with only field supplies reallocated between the UMLA and DNR pools (DNR will handle purchasing of field supplies for survey and volunteer training). UMLA salary was reconfigured to reflect current salaries, capacity and future project work expectations. No budget changes required moving funds between categories outside of the subaward shift.

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?

N/A

Do you understand that travel expenses are only approved if they 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 understand the UMN Policy on travel applies.

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

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?

Yes, Sponsored Projects Administration

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

N/A

Work Plan Amendments

Amendment ID	Request Type	Changes made on the following pages	Explanation & justification for Amendment Request (word limit 75)	Date Submitted	Approved	Date of LCCMR Action
1	Amendment Request	• Budget - Capital, Equipment, Tools, and Supplies	The chosen freezer dropped in price between the grant writing and the purchase. At the same time software needed to manage GIS information has upgraded past the capabilities of our current computers. A new desktop computer is needed to continue to work the GIS data needed for MN PlantWatch. The computer will be directly necessary and related to this project and will be used solely for PlantWatch-related work.	September 12, 2023	Yes	September 12, 2023
2	Amendment Request	• Other • Budget - Professional / Technical Contracts • Attachments	DNR staff would attend a Center for Plant Conservation conference in San Diego. This group is one of the only venues to bring together groups with programs similar to MN PlantWatch and is an invaluable networking opportunity that is not available with any in-state conferences. The staff would present on our program, as well as get feedback, and the presentation will have an international reach. Total costs would be about $1800 for the conference.	February 12, 2024	Yes	February 16, 2024
3	Amendment Request	• Budget - Personnel • Budget - Professional / Technical Contracts • Budget - Capital, Equipment, Tools, and Supplies	Delay in hiring led to an early deficit of material needed for volunteer training, data collection and reporting. Increased staffing is required to complete this work before the end of the grant period, to avoid a knowledge deficit or unfinished/incomplete reports. UMLA staff will shift some hours to cover; however DNR staff is at 100% capacity. Additional CCMI staff support is required to increase DNR capacity.	April 29, 2025	Yes	May 6, 2025

Status Update Reporting

Final Status Update August 14, 2025

Date Submitted: August 29, 2025

Date Approved: November 10, 2025

Overall Update

The first phase of the MN PlantWatch program was a resounding success, with both recruitment and survey involvement far exceeding established goals. Nearly 150 volunteers have been trained over the course of this first phase and 96 of those have already participated in at least one survey after their training. It should be noted that the 150 volunteer trainings could easily have been more as we limited trainings to only 50 individuals per year and there was an extensive waitlist each year. As MN PlantWatch capacity grows, the number of trainees per year could increase as well as the number of surveys available to active volunteers. 167 populations were surveyed from 2023 to the present, including the partial field season so far in 2025. Seed from 55 high priority populations were banked in the UMLA long-term rare plant seedbank, which included the banking of multiple populations for some high priority species, helping to establish a diverse genetic bank for those species. The data and seed bank MN PlantWatch is producing will be invaluable for conservation of native species in the state and the citizen scientists will be an important, and growing, resource for conservation into the future.

Activity 1

Partway through the 2025 field season, 48 additional volunteers went through field training across 6 sessions, including 44 completing our more thorough online training. We have trained nearly 150 volunteers over three years. 51 volunteers have so far participated in surveys in 2025, bringing the total number of volunteers having done at least one survey with our program after their training to 96! The program continues to hold a waitlist for training every year as more and more people hear about the training and want to participate. An annual review and update was held at the Arboretum prior to the start of the field season, bringing in volunteers from the metro area and from outstate. Training material development was a priority this reporting period as well, with a solid training program in place as well as a commitment to continued feedback from volunteers and experts to continue to refine and improve training. The enthusiasm of the volunteers is such that several have requested advanced training as well. Overall, training and recruiting volunteers for this young program has been very successful, with many people eager to become part of the team and even hoping for more training opportunities.
(This activity marked as complete as of this status update)

Activity 2

In 2025 with less than half of the field season completed, already 51 volunteers have participated in 27 surveys. Across the three field seasons (2023-2025) of the granting period, 19, 66 and 51volunteers surveyed 64, 76 and 27 populations, respectively. A total of 167 populations were surveyed across all three years, surpassing our goals. Across those populations, 62 unique species were surveyed. We have developed a data collection system such that data are immediately available to DNR staff to be ported to the NHIS database, and species lists continue to be refined annually as the sophistication and training of program volunteers (as well as their enthusiasm for more complicated assignments) grows, allowing for surveys of species in more remote parts of the state or species that require more advanced identification skills. The success of the training program has translated into enthusiastic citizen scientists who are helping to collect quality data that will be very valuable to the DNR.
(This activity marked as complete as of this status update)

Activity 3

Seed collection continues, with multiple populations set up to collect seed in the 2025 season. While most 2025 seed hasn't matured prior to the granting period end date, seed from 5 populations have already been collected and the

number of populations targeted for collection would bring our total seed collections well past our target number. Seed collection started slowly but has grown as volunteers become more comfortable with the skills required with 55 total populations banked by the end of the granting period, which included multiple populations banked for some high priority species. Additional seed cleaning volunteers have been recruited and have helped the seedbank continue to process seeds in a timely manner. Seed imaging to improve field and bank identification of species has already produced valuable images, that are also stunning and offer the ability to be a fantastic education piece to share with the public to demonstrate the benefits of banking these rare plants.
(This activity marked as complete as of this status update)

Dissemination
We continue to educate about MN PlantWatch in regular talks given by the UMLA conservation team. There was also a Q&A article in the Minnesota Conservation Volunteer journal, entitled "Rare Plant Patrol", in the May-Jun3 2025 issue. That article can be accessed at https://www.dnr.state.mn.us/mcvmagazine/issues/2025/may-jun/qa.html. The MN PlantWatch team held a field day for fellows in the Increasing Diversity in Environmental Careers (IDEC) program in June. Staff presented on the program for Rice County Master Gardeners Horticulture Day in front of an audience of about 200 attendees. Staff also presented on the program for the Minnesota Native Plant Society.

Status Update Reporting

Status Update March 1, 2025

Date Submitted: April 29, 2025

Date Approved: May 6, 2025

Overall Update

MN PlantWatch continued to grow, recruiting and training more enthusiastic volunteers each year. Staff built on improvements made during the off-season and have surpassed the data and seed-gathering program goals. The program and its results are also receiving recognition by other groups. Volunteer requests are coming in seeking support with several additional surveys and searches. We are confident that, with an increase in staff time, we will reach all activity goals by the end of the grant period, continue to expand an excited and engaged volunteer corps, and advance the tangible and positive effects of native rare plant species preservation across Minnesota.

Activity 1

By the end of the 2024 field season, 100 volunteers were trained, and 48 participated in field work. Volunteers recruitment continued in preparation for the 2025 field season; we will meet and exceed our goal of 50 active volunteers. MN PlantWatch staff improved volunteer training in preparation for both new volunteers and returning volunteers needing additional help or refresher information. We are working to address an early deficit in training materials including plant identification imagery, protocols and reporting and data management backlogs. This information deficit is tied directly to the unanticipated, rapid success of our field work. It is important to address before the grant end to adequately prepare new volunteers for the field season's April start. As part of the training and review with volunteers, our annual newsletter was prepared and distributed –an invaluable resource for volunteers, stakeholders and a great outreach tool for potential volunteers, collaborators and as a recruitment tool for groups who could use MN PlantWatch assistance.

Activity 2

Surveys were accomplished for 76 rare plant records in 2024, surpassing the target goal. Of those 76 records, 71 had not been observed in over 20 years, and 42 were observed again in 2024. Additionally, there were 22 new records of listed species found while searching for other species! New records are a rewarding experience for our volunteers. Overall, MN PlantWatch covered 34 counties around the state and encompassed 34 different species. MN PlantWatch is leveraging the presence of cohabitating rare species as often there are more than one rare species at a site. Volunteers are training to search for and report on multi-species sites. While multiple species aren't always found, negative data (target species not found) are valuable and as important to land managers as the positive data. This complex reporting requires additional staff time. Field safety and adequately equipping staff and volunteers is of utmost importance with a program like this. There have been greater-than-anticipated field safety equipment needs which had previously been absorbed by DNR, UMLA budgets and volunteer contributions. Approximately $3000 of reapportioned unused funding will provide dedicated safety equipment, protective field gear and first aid equipment for immediate survey work done this field season.

Activity 3

MN PlantWatch learned lessons from the 2023 season and was better prepared to deploy volunteers effectively in 2024. As a result, seed collections were conducted for 39 populations, surpassing our annual goal. Material supporting positive identification of species difficult to verify is becoming increasingly important as the program continues to add species to track. Additional volunteer assistance has been recruited to create a catalog of high-quality seed and other diagnostic plant images for field and lab identification and training purposes. This is an important data development project, staff and volunteers will push to complete it for surveyed, banked and currently targeted species by the end of the granting period as the 2025 volunteers will be working before the end of the granting period. Approximately $ 5000 of

reappropriated unused funding will be used immediately to properly equip this imagery digitization project quickly. The already developed additional volunteer help has proven critical as the 2024 seeds are already cleaned, counted, and stored in the UMLA Rare Plant Long Term Seedbank, and germination testing is underway. Given the quick success of UMLA volunteers we are confident the imagery digitization project can be activated and productive for field use and training this field season.

Dissemination

In addition to the annual newsletter, there were UMLA publications and presentations about the program, and several external presentations. We also published an article in the Botanical Club of Wisconsin's newsletter. A highlight of this period's dissemination was a story with Minnesota Public Radio by Dan Gunderson. External talks included:

1/9/25 Presentation to the Wild Ones, SE MN Chapter

1/30/25 KRWC radio interview for the Wright County Outdoors segment

2/5/25 Minnesota Biological Survey report-out presentation

Status Update Reporting

Status Update September 1, 2024

Date Submitted: September 9, 2024

Date Approved: September 26, 2024

Overall Update
From our first season, our program has improved efficiency and planning and it has shown in our second season. With a couple of months still left in the season, we have already reached 53 survey sites. Seed collection has continued as well, although the main collection season is late summer into fall. Recruitment and training continues as well. We have found that reaching our recruiting goal has been simple, potential recruits have been excited to join and largely have proven to be dedicated volunteers.

Activity 1
Across multiple training sessions around Minnesota in 2024, including both group and individual trainings, MN PlantWatch has trained 50 new recruits, 27 of whom have already joined for survey or seed collection. We also had 15 returning community scientists join us for survey or seed collection. This increased volunteer deployment (compared to 2023) was supported by a large data and information development effort by MN PlantWatch staff.

Activity 2
By mid-Augustb 2024, MN PlantWatch community scientists and staff had surveyed 53 element occurrences 20 years or older. While already surpassing our planned goal of 40 surveys, we had set an internal goal of 60 record surveys for the year. This larger internal goal is partially to test our capacity to work towards larger goals than we had previously set, but also an evaluation of the off-season planning process, specifically for surveying sites where multiple target species may (or may not) be still present together. We have found in some cases that assignments can't be either completed or even begun for various logistical, climatic, or practical reasons. By creating a larger target number, we are able to evaluate what a realistic expectation for completion of an annual plan could be with a more mature and larger program. A particular high point was one of our youngest community scientists, at 13 years old, found a new county record of a rare fern, Ophioglossum pusilum, while surveying for a different target species.

Activity 3
So far in 2024, MN PlantWatch has collected seed from 12 populations for banking. We are finding that seed collection goals are harder to meet as seed production for plants is highly variable from year to year. Fall is typically where the bulk of seed and genetic banking happens, so we are still expecting this number to rise significantly by the end of the field season. Of note, a population of kitten-tails (Synthyris bullii) that was targeted this year appeared to be in dire straits, occupying a degraded and fragile landscape and population size had declined precipitously. We were able to collect seed from this site this summer and will continue to prioritize this population moving forward.

Dissemination
We have developed a Google Site for the program to disseminate information directly to our community scientists. Additionally, we again presented at the Minnesota Master Naturalists' Gathering Partners conference, as a way to both present information about our project and showcase efforts of Master Naturalist members in our group. We continue to be able to use our 2023 newsletter as outreach to new groups, it being an excellent summary of our project as well and we anticipate the 2024 newsletter will be as equally well-received. MPR produced a story about our program, as well (link provided).

Status Update Reporting

Status Update March 1, 2024

Date Submitted: February 14, 2024

Date Approved: February 16, 2024

Overall Update

The first full field season of Mn PlantWatch completed as a success. We engaged 19 enthusiastic volunteers and surveyed 64 sites, including 56 that hadn't been visited for over 25 years. An unanticipated benefit was also finding new records of rare plant species, with 6 new records reported as a result of this work. As we continue to both recruit new volunteers and stay engaged with the current volunteers, we anticipated field survey and seed collection work will continue to increase in these early stages of the program. As we look to wrap up the first phase of this program, we are developing a digital data entry system to allow for increased efficiency for volunteers in the field, as well as eliminating a paper filing system when possible (which can often result in lost data, or data shets that can be hard to read). All of these set the stage for the next phase as we work to make MN PlantWatch fully matured and working most efficiently and at its highest capacity.

Activity 1

After a successful season for MN PlantWatch, trainings and protocols have been thoroughly reviewed and are in the process of being updated in time for the 2024 field season. We have already begun the process of recruiting new volunteers and staying engaged with 2023 volunteers. We have determined that a mix of in-person and online trainings are going to be both the most efficient means of conveying information and the best way to keep volunteers engaged and active during parts of the year when there isn't as much field work to be done. We have begun the process of developing a more efficient data entry system, allowing for both streamlined digital data entry and for an information distribution means so citizen scientists in the field will have access to important notes and information that can be used during survey work.

Activity 2

By the end of the field season 64 sites had been surveyed, including 56 with records older than 25 years, well exceeding the goals for this time period. Target species were located at 42 of the 64 sites, meaning about one third of all populations' individuals weren't seen. This doesn't mean that those populations are necessarily gone, but it gives us an additional priority list of populations to keep an eye on to verify presence or absence in the future. In total 29 different species were surveyed, and 6 new records were recorded as well. This was an unanticipated result from MN PlantWatch surveys but likely something that will happen again and again, demonstrating another way this program can benefit the Natural Heritage Information System of the DNR.

Activity 3

Seed was collected from 11 populations in 2023. This number was below our expectations, but a large function of that was scheduling issues with populations and the small window for collecting seeds each year. In 2024 we expect to catch up on those numbers now that we have the experience from 2023 and we know better what to expect with people and plant schedules. Seed from 2023 was brought to UMLA and processed and stored in a timely manner and we expect to increase staffing capacity to handle the expected larger seed intake load from this program.

Dissemination

MN PlantWatch continued to engage and reach out to both current and potential volunteers. We have created MN PlantWatch landing pages on both the MN DNR website and the UMLA website, as well as a separate website specifically for MN PlantWatch citizen scientists. All of these will drive both interest in the program and increased outreach efforts. The UMLA and DNR staff have continued to present to both internal and external groups about MN PlantWatch

activities. Our first issue of the volunteer newsletter is also almost finished (see attached document) which will function as both a newsletter to volunteers and partners of this program and an outreach piece to groups that are not currently partners, but could be interested in working with the group.

Status Update Reporting

Status Update September 1, 2023

Date Submitted: September 7, 2023

Date Approved: September 12, 2023

Overall Update

Staff were finalized in this time period and protocols that had been prepped to start the field season were implemented. Field equipment and supplies were procured and the process of species and site location selection was begun. Given the late hirings, we expect in future years this process will already be largely accomplished by the beginning of the field season. A strong slate of volunteers had already been recruited and staff worked with 14 of these citizen scientists to start to work through our data collection protocols and begin to collect valuable data on these historical records. Volunteers trained across areas in northwestern, northeastern, central, west= central, metro and southeastern Minnesota and visited 37 population location records (Element Occurrences, or EOs) of 25 years or older. Several volunteers were involved in multiple surveys and some were trained enough to work on their own by the end of the season. Seed collection has only begun as the typical season for most species in Minnesota is the fall.

Activity 1

Volunteer recruitment continued, including a presentation at the MN Master Naturalists annual conference (see attached brochure, handed out at this meeting). DNR and UMLA MN PlantWatch staff finalized training and data collection protocols and forms and began to schedule training sessions with recruited citizen scientists. In future years, the expectation is to have one or more larger group, in-person training sessions as both a team-building social event, but as a way of allowing everyone to learn from each other's varied experience and expertise. Given the late start to this year and lack of an established, developed corps of citizen scientists, we were not able to hold one of these events. Instead we worked with all volunteers individually. Most volunteers this first year had prior experience with plant survey work and the field surveys were invaluable not just for the data collected, but also for the feedback we get back from these volunteers which will contribute to refinement and improvement of these processes.

Activity 2

Survey work started later than would likely happen in the future when more thorough winter planning and prep will happen, but as of this report, we are closing in on the 40 records objective for this first field season. With plenty of field season left, we have reached 37 records of more than 25 years in age (over 40 in total), spanning 19 high priority species. Importantly, we have engaged volunteers and reached sites across a wide range of regions and landscapes across the state. Citizen scientists contributed well over 320 hours towards this work and traveled over 3700 total miles to participate. Survey work this first season was done with paper, and this method will be carried forward but a digital data collection option is expected to be developed prior to the 2024 field season, streamlining data intake which will be necessary as the program accelerates and site visits become more numerous during the year. Species surveyed in 2023 included species such as ram's head lady's slippers, floating marsh marigold and american ginseng.

Activity 3

As of the reporting deadline, seed for many species are not ready to collect so only a few collections have been made so far. The seed collecting window is typically later in the year and compressed into a much smaller window than the survey window. The expectation is that the surveys will greatly inform the seed collections, making them more efficient than would likely typically be the case when a population may not be visited at all until it is time to collect seed. The freezer that will function as the vault for the seed bank has been procured at UMLA and is ready for accepting the expected seed.

Dissemination

MN PlantWatch staff continued to engage with potential volunteers, including with the state Master Naturalists at their annual conference where we developed a handout to give at events to both inform about and recruit for the program (see attached brochure). Most volunteers at this point were recruited for upcoming field seasons rather than try to incorporate them into this year. This dissemination and recruitment will remain an important part of the program going forward as it not only spreads awareness of both the program and the importance of plant conservation, but also allows MN PlantWatch staff to plan more efficiently during the offseason as they will have a better idea where in the state we will have volunteers stationed, both for survey work and for training.

Status Update Reporting

Status Update March 1, 2023

Date Submitted: March 13, 2023

Date Approved: March 17, 2023

Overall Update
Having decided on an official name for the program, MN PlantWatch, we have begun the process of developing material for the first set of volunteers to use in the field. We have had some delays in hiring so project partners have been working to advance the activity goals. The Coordinator position will be filled in March. Protocols for survey work, seed collection, field safety have been developed and are anticipated to be finalized for the first field season. We have begun recruiting citizen scientists, with many recruits having heard of the program on their own and reaching out to us. We anticipate easily reaching our initial year goal of 25 volunteers.

Activity 1
We have developed training material related to field survey data collection and field safety. These material are at the point where they can be used with the initial volunteer cohort, but as we have worked with groups around the country doing citizen science rare plant survey work, we recognize that our methods, and even the exact type of data we'll collect, will likely need to evolve the first year or two as we work with volunteers and learn what their skills, abilities and levels of effort will be. The goal is to create training and reference material that can be used to inform and standardize data collection so that the citizen scientists, no matter their background or experience, can submit data that matches the DNR's high standard for data quality.

Activity 2
We have begun to develop priority species lists. Given the targeted nature of our first year volunteers, we will likely be creating multiple priority lists that allow for the flexibility to match priority species with the abilities and geographic location of the initial set of volunteers. As we work through and review field protocols with this group of citizen scientists we anticipate working with species in landscapes and locations that are easier to access than we will in subsequent years. This allows for greater observation and guidance by MN PlantWatch staff.

Activity 3
UMLA did obtain a license for a robust database (BRAHMS, developed and maintained by Oxford University), expressly designed for seedbank management and with the added ability to manage field data. We are currently working on creating import structures to manage MN PlantWatch seed intake. We also continue to develop seed collection protocols and materials for volunteers to work with in the initial field season. UMLA staff are also ramping up the capacity and infrastructure to take on the expected increase in seedbanking effort that this project will develop.

Dissemination
We were asked to present and lead a discussion on this project at the annual MN DNR Roundtable symposium. This brought together a lot of ideas and good feedback. We are also going to be presenting information on the project to both the Minnesota Master Naturalists at their annual Gathering of Partners meeting in the spring of 2023 and the Minnesota Native Plant Society at monthly meetings. Both of these efforts are to disperse information about the project as well as to recruit high level volunteers for the first year of data collection. We continue to disseminate information about the project from through Arboretum sources.
We have also been participating in the leadership group of a new national network bringing citizen science survey and monitoring programs together to exchange protocols, training information, and experience. As this network develops, the experience of other groups will help us move quickly from a pilot program to a fully operational. By participating in the leadership, we are also able to highlight Minnesota's leadership in citizen science conservation efforts.