



Environment and Natural Resources Trust Fund

M.L. 2024 Approved Work Plan

General Information

ID Number: 2024-005

Staff Lead: Tom Dietrich

Date this document submitted to LCCMR: June 12, 2024

Project Title: Long-Term Preservation of Minnesota's Ball Cactus Population

Project Budget: \$100,000

Project Manager Information

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Project Reporting

Date Work Plan Approved by LCCMR: June 20, 2024

Reporting Schedule: June 1 / December 1 of each year.

Project Completion: June 30, 2029

Final Report Due Date: August 14, 2029

Legal Information

Legal Citation: M.L. 2024, Chp. 83, Sec. 2, Subd. 08a

Appropriation Language: \$100,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Minnesota Landscape Arboretum to protect Minnesota's only population of ball cactus by supporting population expansion and establishment, monitoring transferred plants, and training long-term volunteer monitors. This appropriation is available until June 30, 2029, by which time the project must be completed and final products delivered.

Appropriation End Date: June 30, 2029

Narrative

Project Summary: A long-term project to protect Minnesota's only population of ball cactus has begun successfully. To cement this success, population expansion/establishment will finish and long-term volunteer monitors will be trained.

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

The first phase of this ENRTF-funded effort to secure the only population of ball cactus (*Escobaria vivipara*; Minnesota Endangered) in Minnesota has been successful. In Minnesota there is only one known population of this species, much of it on private, unprotected land the owners of which are likely to develop the land, which would result in a loss of most of that population. In the first phase, UMLA staff and partners planted seedlings from these unprotected areas. The new locations are better protected sites. As short-term monitoring of newly planted sites continues, there will be some loss in newly introduced plants and populations. As the initial phase work finishes, it will be important to set up the project and population for continued success, so perpetual intervention by people won't be necessary anymore. Additionally, increasing local community involvement in the continued long-term effort to monitor and manage this population would inspire local interest and support for the continued protection of this species, as well as foster local pride for one of their local natural treasures. Moving plants to protected areas will be vital to maintaining crucial genetic variability in the population and keeping this species around for Minnesotans to enjoy.

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 support the achieved first phase of this project we propose to continue monitoring the new and augmented populations, as well as the current population, to ensure that the planting efforts have been ultimately successful. The Big Stone National Wildlife Refuge population has been augmented with about 250 plants, including a small subpopulation created in an area for visitors to see and learn about the cactus. Two separate new populations have been created nearby on The Nature Conservancy and federally protected lands (the exact locations of these new populations are not made public). We also will continue to augment the new and already augmented populations, again to maximize the chance of success after the project is finished. Finally, we will recruit local volunteers to work with us to take on the long-term responsibilities of monitoring these populations and reporting the data to both landowners and MN PlantWatch.

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 continue to augment plantings and will establish the long-term monitoring of the cactus project, creating a program that will be sustainable by volunteers, partners and staff.

1. Population data will be gathered across the time span of the grant, for both planted and natural populations, to both better understand how well the planted populations are establishing and how stable the current population is.
2. Planted populations will be augmented as necessary with local genetics to support success.
3. Citizen scientist monitors will be connected with MN PlantWatch to maintain training and continued support after the granting period.

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: Propagation of seed material to replace plants that do not survive previous outplanting efforts. Plants will be distributed among sites.

Activity Budget: \$60,000

Activity Description:

Plants will be grown as backup material from seed collected at the private, unprotected sites. Cacti are slow-growing plants, so plant production will continue at low levels for the first few years to maintain small amounts of seedlings in anticipation of attrition of translocated plants. As populations need these individuals, they will be planted and distributed in a way to maximize genetic variability at each site. This means adding individuals from as many different parental sources from the private, unprotected subpopulations as possible, to capture the greatest amount genetic variability available from the source material. This supplemental planting also ensures that a minimum population size is maintained until plants can sustain the population without assistance. Plants will be mapped for monitoring at these recipient locations, two of which are at Big Stone NWR and the remaining two new populations on nearby TNC and federally-protected sites (we will not be providing exact site location to the public for protection of these fragile new populations. Ultimately, a sustained population (or subpopulation) size of 50-100 individuals would like to be achieved, which includes visual confirmation of spontaneous seedling recruitment,

Activity Milestones:

Description	Approximate Completion Date
Start roughly 200 individuals from diverse parentage, and maintain complete collection.	January 31, 2025
Start roughly 200 individuals from diverse parentage, and maintain complete collection.	January 31, 2026
Maintain collection, propagating more individuals only if necessary for replacement.	January 31, 2027
Maintain collection, propagating more individuals only if necessary for replacement.	January 31, 2028
Maintain collection, propagating more individuals only if necessary for replacement.	January 31, 2029

Activity 2: Establish long-term monitoring of current and planted population locations, and recruit partners to help carry monitoring into the future.

Activity Budget: \$40,000

Activity Description:

We will set up and conduct monitoring efforts for all subpopulations (and new populations) of ball cactus as well as recruit and train local volunteers to assist with monitoring moving forward. Plants are grouped in clusters and marked by high-accuracy GPS, monitoring will take place annually (or semi-annually), measuring size, mortality and any reproductive effort. We will be able to connect these volunteers with MN PlantWatch to maintain support for them once UMLA direct involvement tapers. MN PlantWatch is the new LCCMR-funded citizen scientist effort in partnership with the DNR that recruits and trains Minnesotans to survey and monitor rare plants around the state. This group collects important information on rare plant populations around the state amplifying efforts by DNR and UMLA staff. While the data collected will be more thorough than MN PlantWatch records, data can still be submitted to this important database.

Activity Milestones:

Description	Approximate Completion Date
Establish baseline data and recruit local citizen volunteers.	October 31, 2024
Recruit and train 2-3 citizen scientist monitors with MN PlantWatch and begin monitoring.	October 31, 2025
Monitor populations (2-3 trips to complete) with citizen scientists and report data to MN PlantWatch.	October 31, 2026

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.

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. We continue to present information to visitors and members of the Arboretum through talks and print media, including information about the project on the conservation program's webpage. We also have worked with the StarTribune to produce stories about this project. Seeds banked with this project, an important form of genetic information, will be preserved in the Plant Conservation Program's long-term seedbank and a portion of the seed will be available for researchers who need access to seed material for important research. Data and protocols will be made freely available and shared with federal and state partners to promote and better inform rare species restoration projects going forward. We worked with the USFWS at the Big Stone National Wildlife Refuge to create a small subpopulation near an interpretive trail, to better inform and delight visitors to the refuge. We hope to provide interpretation and information about both the project and the cactus for these displays. The displays will also likely have the additional benefit of providing a spot where people can look at the cactus without walking out onto the fragile granite outcrop landscapes across the refuge, further protecting both the cactus present out there and the other native species associated with those landscapes.

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?

UMLA is committed to plant conservation of native and rare species. We have worked on this species preservation outside of LCCMR funding and will continue to do so when LCCMR no longer funds this project, both through MN PlantWatch and our own infrastructure. In this phase of the project local partners will be developed and trained to continue monitoring work and plantings will continue as necessary for success. The UMLA rare plant long-term seed bank already houses the largest existing collection of seed from this population and will continue to care for and monitor this seed, replacing as necessary.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Preserving Minnesota's Native Orchids - Phase 2	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 08h	\$259,000
Preserving Minnesota's Only Ball Cactus Population	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 08d	\$103,000
Minnesota's Volunteer Rare Plant Conservation Corps	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 08a	\$859,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
UMLA Seed Conservation Biologist		Manage plant propagation and production for all outplanting material.			24.24%	0.5		\$37,000
Conservation Botanist		Field coordinator and main botanist			26.9%	0.25		\$25,000
Curator of Endangered Plants		Principal Investigator and Project Coordinator - work with local stakeholders/volunteers to train and deploy.			26.9%	0.25		\$27,000
							Sub Total	\$89,000
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Tools and Supplies	Field, lab and greenhouse supplies to propagate plant material	Supplies needed at UMLA for cactus propagation and field material					\$2,400
							Sub Total	\$2,400
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Food and lodging during seed and/or live plant collection trips in Greater Minnesota more than 200 miles round trip. 2 people x \$186.5/trip x 3 overnight	Lodging and per diem for UM staff to survey, plan and execute translocation and planting of cacti.					\$5,600

		trips per yr x 5 years. Reimbursed based on University of Minnesota plan.						
	Miles/ Meals/ Lodging	Mileage reimbursement for seed and/or live plant collection trips - 300 miles round trip - 0.655 per mile x 3 round trips per yr x 5 years. Reimbursed based on University of Minnesota plan 2020 rate.	Travel mileage for UM staff to survey, plan and execute translocation and planting of cacti.					\$3,000
							Sub Total	\$8,600
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$100,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

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

Attachments

Required Attachments

Visual Component

File: [56513d15-b5b.pdf](#)

Alternate Text for Visual Component

Summary of proposal objectives to preserve the only population of this species in the state. Images are also included illustrating the propagation and planting process already accomplished with this species....

Supplemental Attachments

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

Title	File
USFWS Letter of Support	474bc7a8-c04.pdf
SPA AOR Signed Authorization	c5ef8f70-7a0.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Added dissemination information, otherwise no changes. Changed some text according to requests from LCCMR staff for workplan. In one case a request to change the outcome description was made, but there was not room under the word limits for text fields to address that request. The requested information was placed in the activity 1 description as there was both room and the context of the activity allowed for the addition of this information. The request was made to also add acknowledgement of ENRTF for dissemination efforts. The text for that was already in the workplan at that location, but the text was moved to the beginning of the text field to make it more prominent.

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 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 UMN Policy.

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?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No