



Environment and Natural Resources Trust Fund

2024 Request for Proposal

General Information

Proposal ID: 2024-005

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

Project Manager Information

Name: David Remucal

Organization: U of MN - Landscape Arboretum

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Project Basic Information

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.

Funds Requested: \$100,000

Proposed Project Completion: June 30, 2029

LCCMR Funding Category: Small Projects (H)

Secondary Category: Methods to Protect, Restore, and Enhance Land, Water, and Habitat (F)

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

Narrative

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. As short-term monitoring 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. The largest part of this population has been on unprotected granite quarry lands and 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. 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.

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 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.

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. We will be able to connect these volunteers with MN PlantWatch to maintain support for them once UMLA direct involvement tapers. 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
Have citizen scientist monitors train with MN PlantWatch and begin monitoring.	October 31, 2025
Monitor populations with citizen scientists and report data to MN PlantWatch.	October 31, 2026
Monitor populations with citizen scientists and report data to MN PlantWatch.	October 31, 2028

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

Project Manager and Organization Qualifications

Project Manager Name: David Remucal

Job Title: Delores E. Isaacson Curator of Endangered Plants

Provide description of the project manager's qualifications to manage the proposed project.

Dr. Remucal is the Curator of Endangered Plants at the Minnesota Landscape Arboretum where he has developed and managed the Plant Conservation Program since its inception in 2013. A graduate of Carleton College, he received his PhD in plant reproductive ecology and evolution from the University of Colorado. He will provide overall project direction. As manager of the Plant Conservation Program, he has demonstrated the ability to manage and develop budgets, direct volunteers and staff, work with stakeholders, coordinate with remote and local partners, communicate program information and results to a variety of audiences, and expand the scope and influence of the MLA Conservation Program. As part of outreach and education for the program, he teaches and presents to multiple groups every year and works to reach a broad audience around the state. The Plant Conservation Program strives to work with a broad coalition of partners for its work, engaging with regional NGOs, federal, state and local governmental agencies and researchers and groups nationally and internationally-based. Remucal and the Plant Conservation Program has parlayed two previous LCCMR grants into a nationally-recognized orchid research and conservation program.

Organization: U of MN - Landscape Arboretum

Organization Description:

The U of MN Landscape Arboretum, founded in 1958, is a 1,200-acre premier northern garden that includes 28 specialty gardens, 45 plant and tree collections, 18 model landscapes and natural areas, and an extensive collection of northern hardy plants. Located 35 minutes west of Minneapolis-St. Paul, the Arboretum's 12.5 miles of garden paths and hiking trails welcome 500,000 visitors each year who are inspired by their explorations of nature, the many seasonal displays and exhibits, and hands-on educational programming. The Arboretum's mission is to welcome, inform and inspire all through outstanding displays, protected natural areas, horticultural research and education. Its vision is to be the premier northern landscape arboretum, welcoming all to enjoy, learn from and connect with nature.

The U of MN Landscape Arboretum was born out of the University of Minnesota's Horticultural Research Center and is an established, nationally recognized research institution that includes a Plant Conservation Program focused on developing and implementing conservation strategies for imperiled native plants of the upper Midwest region.

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 for 4 people - \$186.5/trip x 3	Lodging and per diem for UM staff to survey, plan and execute translocation and planting of cacti.					\$5,600

		overnight 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....

Optional Attachments

Support Letter, Photos, Media, Other

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

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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

Does your project include the design, construction, or renovation of a building, trail, campground, or other capital asset costing \$10,000 or more?

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?

No