



# Environment and Natural Resources Trust Fund

2027 Request for Proposal

## General Information

**Proposal ID:** 2027-050

**Proposal Title:** Natural Resource Inventory for Restoration and Resilient Landscapes

## Project Manager Information

**Name:** Jared Rubinstein

**Organization:** U of MN - Landscape Arboretum

**Office Telephone:** (612) 301-7732

**Email:** rubin097@umn.edu

## Project Basic Information

**Project Summary:** The University of Minnesota Landscape Arboretum (Arboretum) will conduct vegetation, bird, and pollinator surveys across its natural and designed garden areas to create opportunities for management, restoration, and climate resilience.

**ENRTF Funds Requested:** \$137,000

**Proposed Project Completion:** June 30, 2030

**LCCMR Funding Category:** Small Projects (G)

**Secondary Category:** Resiliency (A)

## Project Location

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

Region(s): Metro, SE,

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

Region(s): Metro, SE,

**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 Arboretum's 600+ acres of fragmented natural areas face threats from suburban expansion, invasive species encroachment, and the impacts of climate change. We have long prioritized the restoration and active management of these lands, but our reference data for this work comes from a 2002 vegetation survey that is now out of date and that doesn't include any information on insects or birds. We do not have an up-to-date assessment on changes in populations of invasive or non-native plant species (such as leafy spurge) or on landscape changes such as erosion. While we know that the Arboretum is within the federally endangered rusty patched bumble bee (*Bombus affinis*) High Potential Zone and critical habitat and is home to state-listed species, such as the Henslow's sparrow (*Centronyx henslowii*), we have limited species-specific data to inform our work. With accurate data we can ensure the continued integrity of our natural and restored areas, prioritize new areas for restoration, and mitigate impacts from invasive species and a changing climate. As a leader in landscape restoration and natural area management, the Arboretum can use these findings to improve its own site and to inform similar efforts across the region.

### **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.**

The Arboretum is seeking an extensive survey of the vegetation, birds, and pollinators across our natural and landscaped grounds. A contractor will conduct a survey that includes an inventory of the vegetation communities of our more than 600 acres of forests, grasslands, and wetlands to assess plant community type, invasive plant density, and management needs. We can use these data to compare previous surveys and evaluate changes over time. Additionally, the Arboretum has acquired new properties since 2002; the vegetative surveys will give us a baseline for assessing management needs. A contractor will also conduct bird and pollinator (butterfly and bumblebee) surveys to evaluate species on site and habitat use and quality across the Arboretum. In addition, we will survey a subsection of our designed garden areas, which are geographically intermingled with our natural areas, for birds and pollinators to understand how their populations in formal gardens differ from managed natural areas.

### **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?**

We will analyze the survey data to compare plant community changes over time, identify resilient sites, and prioritize areas in need of additional support. Data on species of conservation concern will guide management actions to increase habitat and nesting opportunities. Intentional prioritization and updated data will lead to higher quality restoration projects that support greater biodiversity, clean water, carbon storage, and resilience in the face of climate change within the greater Twin Cities metropolitan area. As a public garden, the Arboretum will not only protect the state's natural resources but will showcase best practices and promote stewardship to the public.

## Activities and Milestones

### Activity 1: Community Assessment and Vegetation Surveys

**Activity Budget:** \$51,000

**Activity Description:**

We plan to evaluate plant diversity and community change, in addition to invasive plant density, across the natural areas of the Arboretum. We will hire a contractor to conduct community assessment and floristic surveys across ~600 using meander surveys conducted to replicate the vegetation surveys conducted in 2001/2002, for comparison. The meander surveys capture plant species and their relative cover within each management unit and will be used to calculate a Floristic Quality Assessment (FQA). Contractors will assess current conditions of each plant community while also documenting dominant vegetation, hydrologic features, potential wildlife habitat, and other key resources. Contractors will also map invasive species and other disturbances and alterations. The contractors will update the community type, plant species list with estimated cover classes, and invasive plant density estimates for each of the Arboretum's existing natural area units. With this updated vegetative data, we can analyze changes over time since the last inventory and assess sites for restoration potential. We can then prioritize our sites for management or restoration based on these results and allocate resources more efficiently.

**Activity Milestones:**

Description	Approximate Completion Date
Data inventory and desktop analysis	May 31, 2028
Plant community and vegetation surveys	September 30, 2028

### Activity 2: Bird, Butterfly, and Bumble Bee Surveys

**Activity Budget:** \$63,000

**Activity Description:**

We plan to assess bird and pollinator communities across the Arboretum and understand what habitats are utilized by which species. Additionally, we are interested in understanding what species of conservation concern may be on the property that could shift management priorities. We will hire a contractor to conduct bird count surveys across the Arboretum, including natural areas and collection and garden areas. Survey points will follow a grid system across the Arboretum and will avoid buildings, roads, and parking lots. All species heard at each point will be documented, generating a species list and relative abundance. Contractors will conduct butterfly and bumble bee surveys in natural areas and select garden and collection areas via timed meanders. Contractors will capture observed butterflies and bumble bees for photographs and identification before release. Bumble bee identification will be verified by a third-party expert following the survey. These results will provide the Arboretum with a baseline of diversity and relative abundance of bird, butterfly, and bumble bee species and what areas they utilize. Management of natural areas will then be adjusted to promote greater species diversity, minimize impacts on existing species, and enhance habitat for species of conservation concern.

**Activity Milestones:**

Description	Approximate Completion Date
Pollinator surveys (3 visits across the season)	September 30, 2029
Bird surveys (2 visits across the season)	September 30, 2029
Bumble bee photos verified by bee expert	March 31, 2030

### Activity 3: Report and Management Plan

**Activity Budget:** \$23,000

**Activity Description:**

Our contractor will prepare a final report and recommendations that include descriptions of each natural area unit. These descriptions will include information on: plant community type, hydrologic features, site disturbances, existing vegetation (including invasive or non-native species), observed bird and pollinator species, and potential wildlife habitat. The report will also include information on differences between these results and the 2002 survey, for data collected in both, including the results of the Floristic Quality Assessment (FQA). The FQA evaluates the ecological integrity of a site based on plant species composition and can inform restoration performance and priorities. The report will include maps and figures that identify community delineations, locations of disturbances (hydrologic alterations, erosion concerns, etc.), and information on localized invasive species populations. In addition to narrative description, the contractor will include all survey datasets from the project. Finally, the report will provide management and restoration recommendations. The Arboretum staff will incorporate the data and recommendations from the report as we develop our own Natural Resources Management Plan to guide prioritization and establishment of future restoration projects.

**Activity Milestones:**

Description	Approximate Completion Date
Draft report	December 31, 2029
Final report and management plan	June 30, 2030

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Sarah Rademacher	UMN Landscape Arboretum	Co-PI	Yes
Annie Weeks	Midwest Natural Resources	Proposed contractor for surveys	Yes
Sami Dolan/Bee Expert	Independent	Proposed independent bee expert to verify bumble bee identification	Yes

## 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.**

Results of our project will be shared through our report and management plan which will be accessible to staff and stakeholders. Key findings and relevant information related to conservation species will be shared with the appropriate agency (e.g. DNR, USFWS) or organization to promote collaboration and information sharing. Additionally, survey results and key takeaways will be communicated to other practitioners through professional conference presentations (Society for Ecological Restoration, BGCI Global Botanic Garden Congress, etc.). These data will also be shared with the general public and professionals through the Arboretum’s existing public outreach channels, such as the magazine, blog posts, presentations, etc. We will also offer the report and associated data to University of Minnesota faculty to use as teaching materials or datasets for future research.

## 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?**

The results of this project will inform an updated, comprehensive Arboretum Natural Resources Management Plan that will focus on resilience and prioritize future restoration efforts. The Arboretum’s budget will continue to support new projects and we will seek additional funding through philanthropy, other grant opportunities, and partnership with local agencies for larger scale initiatives. Key findings and relevant information related to conservation species will be shared with the appropriate agency (e.g. DNR, USFWS) to promote collaboration and information sharing. Additionally, survey results and key takeaways will be disseminated through professional conference presentations, written reports, and public engagement.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
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
Long-Term Preservation of Minnesota’s Ball Cactus Population	M.L. 2024, , Chp. 83, Art. , Sec. 2, Subd. 08a	\$100,000
Minnesota PlantWatch: Community Scientists Conserving Rare Plants	M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 08a	\$1,086,000

Grassland Restoration for Pollinator Conservation and Demonstration	M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 08b	\$250,000
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## Project Manager and Organization Qualifications

**Project Manager Name:** Jared Rubinstein

**Job Title:** Director of Horticulture

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

Jared provides strategic leadership in all aspects of Arboretum landscape operations, including curation and care of collections; greenhouse, nursery and orchard management; and stewardship of the Arboretum’s natural resources across 1,200 acres.

While leading a team of full-time, part-time and seasonal employees, Jared works to create a culture of respect, inclusion, continuous improvement, customer service and teamwork. Jared also collaborates with stakeholders across the University of Minnesota, such as the College of Food, Agricultural and Natural Resource Sciences (CFANS), the Department of Horticultural Sciences and U of M Extension to advocate for gardens, plant collections and resources in support of the Arboretum’s mission.

Jared’s previous experience includes key roles at the College of Biological Sciences Conservatory & Botanical Collection at the University of Minnesota in St. Paul; the Arnold Arboretum at Harvard University in Boston; Stoneleigh: A Natural Garden, and The Scott Arboretum of Swarthmore College, both in Pennsylvania.

Jared Rubinstein holds a master’s degree in Applied Plant Sciences/Horticulture from the University of Minnesota and a bachelor’s degree in History from Grinnell College in Iowa.

**Organization:** U of MN - Landscape Arboretum

**Organization Description:**

The University of Minnesota Landscape Arboretum (Arboretum), founded in 1958, welcomes 700,000 visitors annually to explore 1,200 acres of natural areas, designed gardens, seasonal displays, and woody and herbaceous plant collections. As our mission statement explains, we are “rooted in plant science and community, we grow knowledge and inspire action to support thriving ecosystems and our vital relationship with nature.” The Arboretum’s natural and restored landscapes are core to fulfilling this mission. We maintain Spring Peeper Meadow (the first tiled agriculture field to wet meadow restoration effort in the country), the Bennet-Johnson Prairie (the oldest restored prairie in the state), and more than 600 acres of other grasslands, woods, and wetlands. Additionally, the Arboretum’s Horticultural Research Center houses our Plant Conservation Program, a regional leader in projects like the Anoka Sand Plain Rare Plant Rescue Program and efforts to conserve Minnesota’s native orchid populations.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Lead Horticulturist/Project Lead		Coordinate with contractors, assist in field data collection, guide final report, etc. 2026 Position total (with fringe): \$102,208 UMN Fringe rate: 32.3% FTE from grant: 0.1 3.5% annual increase			32.3%	0.3		\$33,000
Director of Horticulture/PI		Select, review, oversee, and approve contracts and budgets; supervise project lead, etc. 2026 Position total (with fringe): \$204,012 UMN Fringe rate: 32.3% FTE from grant: 0.01 3.5% annual increase			36.6%	0.03		\$7,000
							<b>Sub Total</b>	<b>\$40,000</b>
<b>Contracts and Services</b>								
Contractor/MNR	Service Contract	Conducting site assessment, vegetation, bird, and pollinator surveys; generating report and management plan				2		\$92,000
Bee Expert	Service Contract	Expert verification of bumble bee photos from surveys				1		\$5,000
							<b>Sub Total</b>	<b>\$97,000</b>
<b>Equipment, Tools, and Supplies</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Capital Equipment</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Travel In Minnesota</b>								

							<b>Sub Total</b>	-
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
							<b>Sub Total</b>	-
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$137,000</b>

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	-

**Total Project Cost: \$137,000**

**This amount accurately reflects total project cost?**

Yes

## Attachments

### Required Attachments

#### *Visual Component*

File: [df77399d-59e.pdf](#)

#### *Alternate Text for Visual Component*

The map of the Arboretum shows natural areas and garden/collections that will be surveyed in this project....

### Supplemental Attachments

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

Title	File
Letter_SPA	<a href="#">3c4395d1-9bb.pdf</a>
Support Letter_MNR	<a href="#">9b8f60fc-f44.pdf</a>
Support Letter_FWS	<a href="#">c1bc0623-8c9.pdf</a>
Support Letter_Elaine Evans	<a href="#">4e914b51-d4e.pdf</a>

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**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?**

N/A

**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

**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

**Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:**

Sarah Rademacher, Valerie Aas

**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**

Yes, I understand