Environment and Natural Resources Trust Fund

M.L. 2025 Approved Work Plan

General Information

ID Number: 2025-295

Staff Lead: Noah Fribley

Date this document submitted to LCCMR: June 11, 2025

Project Title: Trialing Climate-Ready Woodland Trees in Urban Areas

Project Budget: $255,000

Project Manager Information

Name: Alicia Coleman

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

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Project Reporting

Date Work Plan Approved by LCCMR: June 24, 2025

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

Project Completion: June 30, 2028

Final Report Due Date: August 14, 2028

Legal Information

Legal Citation: M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 03ee

Appropriation Language: $255,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to demonstrate performance of climate-adaptive tree species and study land manager and public perceptions of these species to identify the best species and risk tolerance for future plantings in metropolitan areas of Minnesota.

Appropriation End Date: June 30, 2028

Narrative

Project Summary: This project studies climate-adaptive tree species performance across metropolitan areas of Minnesota. This project will recruit volunteers to collect data and will assess volunteers' risk tolerance of climate-adaptive tree species.

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

A number of studies have revealed the ways in which global climate change will affect the forests and woodlands of Minnesota, and these researchers have published experimental protocols to further study how impacts in cities affect broader landscape changes over time (e.g. the North American Adaptive Silviculture for Climate Change, with experimental forest site in Saint Paul). This research has been used by expert groups, like UMN Extension, to develop lists of climate change-adapted tree species for a range of land managers to plant trees that are expected to grow and remain healthy in uncertain futures, including many non-invasive species native to the Southern United States. However, much of this work has not yet occurred in the context of city forests and metropolitan regions, and the survival of climate-adapted trees across core cities and metropolitan areas has not been critically studied. Given the complicated history of pests and pathogens in cities of Minnesota, we also have anecdotal evidence that land managers are resistant to planting too many unusual tree species. Communities of researchers and practitioners would benefit from an empirical understanding of perceived resilience and risk for large-scale tree planting decisions across different cities and urban ecosystems of Minnesota.

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.

We propose a structured series of tree assessment trials for species carefully selected based on Minnesota's native plant community composition and projected climate suitability. These assessments will help communities identify the species best suited to future urban and forest plantings. This proposal will build on several prior LCCMR investments (e.g. Peter Reich 2020-175e, Metro Blooms 2022-280) as well as new research-based lists of species to maintain productive, healthy, climate-ready woodlands. This proposal seeks to support research that assesses and monitors the dynamics of trees in smaller planting spaces of cities and metropolitan areas across Minnesota, as well as the perceptions towards these tree species by a range of land managers. We would like this research to begin while federal and state investments, as well as general support for the protection and enhancement of urban forest systems, are at an all time high. In 2024, a pilot study is being deployed on the University of Minnesota Saint Paul campus to plant 100 trees from the Climate-Ready Woodlands (CRW) planting list for the Minneapolis-Saint Paul region. We will also invite volunteers to inventory the presence and performance of the same species of trees existing in varying urban properties.

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?

The project outcomes and purposes relate to the protection, conservation, preservation, and enhancement of Minnesota's forest resources by:
- Understanding land and forest managers' risk tolerance for lesser known tree species and perceived impacts of tree stewardship
- Enhancing the species composition and resilience of urban forests across Minnesota by understanding of climate-adapted tree survival characteristics
- Creating an opportunity for participatory science that elevates the involvement and feedback loops between individuals, organizations, and forestry climate adaptation research

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: Recruit Participatory Scientists (Individuals and Organizations) Across Multiple Cities and Ecoregions

Activity Budget: $37,922

Activity Description:
We will establish monitoring plots by recruiting interested government-based urban forest managers as well as through locations identified by "participatory scientists". We are developing a participatory science data collection app for this project, similar to projects like Terrestrial Invasive Participatory Science (TIPS: https://z.umn.edu/TIPSprojects). High traffic public places will receive fixed durable signage to educate the public about this project and acknowledge LCCMR.

We will compile two separate data sources: (1) the spatially-and species-explicit urban tree inventories available from municipal governments, county governments, park systems, and non-profit organizations. Data acquisition and standardization protocol will follow those generated by the MSP-LTER and USDA Forest Service ; (2) the participatory science data available from the citizen science protocol will also be verified for "research grade" observations and standardized to align with the cleaned urban tree inventory data (lead by Co-PIs Dombeck and Gupta). Once the prevalence of species of interest are identified, the data will be integrated with the received urban tree inventories. Tree species will be assigned a "climate change readiness" index category and supplementary variables related to "typical" urban tree planting locations will be layered through spatial GIS data.

Activity Milestones:

Description	Approximate Completion Date
Refine data collection protocol	August 31, 2025
Determine subsets of tree species from Extensions' Climate Ready Woodlands lists	August 31, 2025
Produce online content (e.g. website, social media, data collection app)	August 31, 2025
Establish study areas and monitoring locations	December 31, 2025
Install fixed durable signage per the LCCMR's acknowledgement requirement	May 31, 2026

Activity 2: Collect Data And Quantify Climate-Adaptive Urban Tree Survival

Activity Budget: $175,656

Activity Description:
To begin assessing the performance of "climate ready" tree species across cities and ecoregions of Minnesota, we intend to select a statistically-robust subsample of tree points across participating partners recruited form Activity 1. Each selected tree will be visited in person once per year and monitored according to the established metrics of the USDA Forest Service ("Urban Tree Monitoring Protocol", Roman et al. 2017). These measures rely on visual assessment only and document health characteristics, the biophysical environment, and social determinants of planting space (e.g. land use). The metrics/ definitions of this monitoring protocol have already been transcribed into an ESRI Survey 123 form and data collection will be lead by PI Coleman, the Researcher 5, and the undergraduate students; a number of volunteers (e.g. Master Naturalists) will also be trained according to the data collection protocol and will be overseen by Co-PIs Dombeck and Gupta. Annual data will be quantitatively analyzed using inferential statistics most appropriate for the final acquired dataset; the University of Minnesota Statistical Consulting center will be solicited as needed and manuscripts will be prepared to report findings.

Activity Milestones:

Description	Approximate Completion Date
Hire and train a range of early career students and professionals to facilitate data collection	August 31, 2025
Maintain a robust participatory science network	June 30, 2026
Collect Data (round 1)	June 30, 2026
Update online content as needed	June 30, 2026
Collect Data (round 2)	June 30, 2027
Prepare manuscripts and presentations to report strategy and results	June 30, 2027

Activity 3: Describe Perceptions of Risk and Resilience: Field Tours and Narrative Interviews

Activity Budget: $41,422

Activity Description:

There is shared interest to plant climate-ready trees in communities across Minnesota, to monitor their health and performance through their post-planting establishment period, and to infer species mortality and survival based on the species characteristics, the biophysical environment, and social determinants of urban tree stewardship. To synthesize this greater need and broadly contextualize our project, UMN Extension will lead field tours in each participating region that will include a walking and/or driving tour to draw attention to the goals of this project and share initial results. Participants feedback will be documented and incorporated into research results.

Additionally, select volunteers from Samples #1 & 2 will be separately interviewed about their tree stewardship knowledge, risk perceptions, and motivations to mitigate climate change. Consenting adults will be asked to engage in narrative interviews immediately after they submit tree monitoring data. Prompts will be semi-structured and gauged to understand how different land managers perceive the impacts of their stewardship changing their individual property, neighborhood, and wider community. We hope to learn how the care and appraisal of tree stewardship translates to positive or negative attitudes toward tree-based solutions to climate change and the overall role of trees to mitigate climate change.

Activity Milestones:

Description	Approximate Completion Date
Identify stakeholder groups across sampling locations	December 31, 2025
Generate site-specific program and talking points for field tours	June 30, 2026
Lead field tours across each region once/ year	June 30, 2027
Conduct interviews and surveys of participants twice/ year	June 30, 2027
Prepare manuscripts and presentations to report strategy and results	June 30, 2027

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Extension	University of Minnesota	Facilitate project outreach, co-lead data management	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.
Dissemination will occur through several outlets: 1) Multiple public-facing presentations at the Minnesota Shade Tree Short Course annual meeting and UMN Extension's Fridays with a Forester webinar series for statewide tree care professionals; 2) One or more academic/professional society presentations to the Society of American Foresters Annual Convention, Association of Natural Resource Professionals, Association of American Geographer's Annual Meeting, and/or the Ecological Society of America; 2) Multiple peer-review manuscripts to inform the scientific community of our approach and findings; 3) Public-facing webpages via UMN Extension and UMN UFOR. All dissemination materials will acknowledge Environment and Natural Resources Trust Fund through use of the trust fund logo and/or attribution language on project print and electronic media, publications, signage, and other communications per the ENTRF Acknowledgment Guideline

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?
Initial results can be expected in 2026 and will be announced across peer-reviewed and non-academic communication outlets. UMN Extension, Project Manager Coleman, and the Researcher 5 will critically support the mentorship of participatory scientists and undergraduate researchers. The duration of this study could extend 10+ years if based on academic precedents, so extended support would be funded by internal and external grants. Data reporting, visualization, protocol and websites will continue to exist after the project. Ongoing project support maintains existing resources with minor needs for maintenance. Users of the resources are welcome to continue using them with acknowledgment to LCCMR.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Project lead - Alicia Coleman		Lead project deployment, research design and protocol development; Lead data analysis and data management; oversee educational content development			37.1%	0.26		$50,727
Project co-lead - Anna Stockstad		Lead field tours, co-facilitate educational content development and participant recruitment			37.1%	0.02		$1,672
Project co-lead - Angela Gupta		Co-facilitate participant recruitment, outreach with the ROCs, field tours, and marketing			37.1%	0.02		$4,387
Content and marketing lead - Emily Dombeck		Produce education videos and web content, lead marketing			7.7%	2		$19,057
Undergraduate student researchers		Assist evaluation and analysis; co-lead seasonal data collection			0%	5		$54,000
Researcher 5		Co-manage project with Project Manager and Key Personnel, co-lead outreach and data collection			37.1%	1		$96,655
							Sub Total	**$226,498**
Contracts and Services								
							Sub Total	**-**
Equipment, Tools, and Supplies								
	Tools and Supplies	Food for 11 field tours/ year, running 3 hours/ event, approximately $110/ event	to conduct Extension-led field tour to train/ education people	X				$2,400
	Tools and Supplies	Demonstration site signage (x11)	to explain purpose and significance of the project at centrally-located demonstration sites and acknowledge LCCMR					$1,102
							Sub Total	**$3,502**

Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel to sites, lodging, and per diem for an estimated 100 trips	"Researchers and Extension staff will need to travel for field tours and data collection approximately 100 times over 2 years"					$25,000
							Sub Total	**$25,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$255,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Equipment, Tools, and Supplies		Food for 11 field tours/ year, running 3 hours/ event, approximately $110/ event	a total of 22 events will serve food and refreshments reasonable and proportionate to the type of event being held.

Non ENRTF Funds

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

Total Project Cost: $255,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: f31dc9d8-d0e.pdf

Alternate Text for Visual Component

Imaged are Southern tree species unusual to MN and locations on the UMN Saint Paul Ag. Experiment Station where new trees will be trialed as part of the proposed study. Another image depicts the expected climate change conditions are are similar between urban and wildlands-rural forests....

Supplemental Attachments

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

Title	File
Board of Regents of the University of Minnesota	032ed18b-4fa.pdf
2025-295 Research Addendum revised_final	73a7e3c0-2e8.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

The Project Location was updated; Dissemination activities were expanded; Activities and Milestones were updated based on peer-review suggestions; Budget was updated based on revised Activities and Milestones and as requested

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?

Yes

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

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

Amber Kevelin and Kelsey Grachek, University of Minnesota

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