



# Environment and Natural Resources Trust Fund

## 2027 Request for Proposal

### General Information

**Proposal ID:** 2027-421

**Proposal Title:** Strengthening Urban Pollinator Habitats: Citizen Science and Strategic Communication

### Project Manager Information

**Name:** Garrett Steede

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

**Office Telephone:** (612) 625-6639

**Email:** gsteede@umn.edu

### Project Basic Information

**Project Summary:** This project examines communication and outreach strategies to equip Twin Cities pollinator garden owners with information and resources to effectively manage invasive species in their gardens.

**ENRTF Funds Requested:** \$400,000

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

**LCCMR Funding Category:** Fish and Wildlife (D)

### 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

## Narrative

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

Urban pollinator gardens are vital for biodiversity conservation but also pose a potential threat when invasive species are introduced. In 2023, Minnesota enacted legislation encouraging managed natural landscapes, which risks unintentional spread of invasive plants such as non-native Phragmites. Invasive species disrupt pollinator foraging, outcompete native plants, and can harm native wildlife, as demonstrated by Baker & Potter (2020) regarding paper wasps preying on monarch larvae.

Despite these concerns, urban pollinator gardens remain valuable, particularly when they incorporate diverse native plants. Programs like Minnesota's Lawns to Legumes have successfully promoted pollinator-friendly landscapes. However, knowledge gaps about invasive species persist. Effective communication and outreach are crucial to helping gardeners manage invasive plants and maintain ecological balance.

This proposal directly responds to the RFP's call for projects that "include citizen and community involvement in scientific efforts" and "implement clear strategies for implementing research results." Despite existing programs, knowledge gaps remain among gardeners regarding how they define and maintain these alternative lawns, which can potentially worsen the spread of invasive species (Barnes et al., 2025). There is an urgent need for prevention-focused outreach that empowers citizens as stewards of urban ecological resilience.

### **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.**

This project will assess awareness, attitudes, and behaviors of pollinator garden owners regarding invasive species prevention and evaluate the effectiveness of targeted communication strategies. We will conduct focus groups in the Twin Cities, Duluth, Marshall, and Rochester to gather regionally diverse insights, followed by a state-wide quasi-experimental survey to test communication messages. The project will produce an evidence-based "Pollinator Garden Defender Communication Toolkit" for statewide dissemination.

#### Research Objectives:

1. Describe pollinator garden owners' knowledge, attitudes, and practices regarding invasive species prevention.
2. Identify barriers and motivations for incorporating invasive species management into pollinator gardening.
3. Assess the effectiveness of targeted communication on knowledge and intended behavior change.
4. Develop an evidence-based "Pollinator Garden Defender Communication Toolkit" for use by Extension, community organizations, and policymakers.

#### Research Questions:

1. What do urban pollinator garden owners know about invasive species prevention?
2. How do demographics, gardening experience, and environmental attitudes influence receptivity to outreach?
3. What management strategies are currently used?
4. Which communication strategies are most effective in increasing awareness and action?

### **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 deliver five tangible products to protect Minnesota's natural resources:

Pollinator Garden Defender Toolkit: A digital and print resource with tested message frames, identification guides, and prevention best practices.

Professional Development Webinar: Recorded training for Extension educators, Master Gardeners, and others

leveraging the toolkit.

Peer-Reviewed Articles: Submissions to journals on communication efficacy in invasive species prevention.

Conference Presentations: Findings submitted to the Minnesota Native Plant Society symposium.

Regional Focus Group Reports: Summaries from the Twin Cities, Duluth, Marshall, and Rochester to inform regionally tailored outreach strategies.

## Activities and Milestones

### Activity 1: A Focus Group Study of Urban Pollinator Garden Owners Regarding Awareness, Knowledge, and Motivations for Controlling Invasive Species

**Activity Budget:** \$117,772

**Activity Description:**

Focus groups provide an effective method for exploring urban pollinator garden owners' awareness, knowledge, and motivations regarding invasive species management. These discussions foster interactive dialogue, allowing participants to share experiences, reveal diverse perspectives, and uncover social influences that shape decision-making. Unlike surveys or individual interviews, focus groups highlight knowledge gaps, barriers to action, and attitudes toward invasive species. The group setting encourages reflection and idea exchange, offering deeper insights into how gardeners perceive and respond to information.

Focus groups will be conducted in the Twin Cities, Duluth, Marshall, and Rochester to explore awareness, knowledge, and motivations regarding invasive species prevention. This community-involved scientific research will gather diverse perspectives and identify regional differences. Each location will host 1 - 4 focus groups (5–8 participants each), with approximately 100 total participants statewide. Participants will be compensated \$50 each. Sessions will be held June – August 2028 when pollinator gardens are most active and owners are highly engaged.

**Activity Milestones:**

Description	Approximate Completion Date
Identification of focus group participant pools	November 30, 2027
Develop focus group discussion guides and receive UMN Institutional Review Board approval to conduct research.	April 30, 2028
Schedule and conduct focus groups	August 31, 2028
Communicate and visualize findings, draft final report	May 31, 2029

### Activity 2: An Analysis of Communication Efficacy Regarding Invasive Species Control in Urban Pollinator Gardens

**Activity Budget:** \$172,209

**Activity Description:**

A quasi-experimental survey using communication message testing is an effective method for assessing how science communication influences invasive species management among urban pollinator garden owners. By systematically testing variations in message framing, scientific complexity, and/or visual elements, this approach identifies the most effective strategies for conveying ecological risks and conservation actions. Comparing participant responses across different message conditions provides insights into how communication influences knowledge retention, attitude shifts, and behavioral intentions. These findings will inform targeted, evidence-based outreach campaigns that enhance public engagement with invasive species management, ultimately strengthening conservation efforts in urban ecosystems.

Using insights from focus groups and existing literature, a survey will be developed and distributed to urban pollinator garden owners across the state leveraging listservs and Extension agents to target these populations. The survey will assess motivations for owning a pollinator garden, perceived knowledge of invasive species management, and responses to different science communication tactics. A total of 500 responses will be collected, with participants compensated \$5 each. Offering financial incentives is crucial for increasing response rates, improving data quality, and reducing dropout

rates (Kost & Rosa, 2018). The results will provide actionable recommendations for improving invasive species outreach and education.

**Activity Milestones:**

Description	Approximate Completion Date
Development of stimuli for quasi-experimental survey	December 31, 2028
Develop questionnaire for survey and receive UMN Institutional Review Board approval to conduct research.	December 31, 2028
Distribute, collect, and analyze survey responses	July 31, 2029
Communicate and visualize findings, draft final report	June 30, 2030
Host webinar and make webinar materials available online	June 30, 2030

**Activity 3: Develop “Pollinator Garden Defender Communication Toolkit”**

**Activity Budget:** \$110,019

**Activity Description:**

This activity translates the community-based research findings from Activities 1 and 2 into a practical, publicly accessible resource: the “Pollinator Garden Defender Communication Toolkit.” The toolkit will serve as a prevention-focused outreach package designed for Extension educators, community organizations, policymakers, and gardeners statewide. It will include tested message frames, visual identification guides for common invasive plants, step-by-step management protocols, and tailored outreach materials for diverse audiences (e.g., social media graphics, printable fact sheets, workshop outlines).

The toolkit will be designed for both digital and print dissemination, hosted on the UMN Extension website or [umnagricast.org](http://umnagricast.org), and promoted through Master Gardener networks, community workshops, and regional conservation organizations. A dedicated, recorded webinar will train key stakeholders in its use, ensuring immediate implementation and long-term adoption.

**Activity Milestones:**

Description	Approximate Completion Date
Synthesize focus group and survey findings into toolkit outline	October 31, 2029
Draft toolkit content (guides, messages, visuals)	January 31, 2030
Internal review and revision with Extension, county level Master Gardener programs, and industry partners	March 31, 2030
Finalize toolkit and make available via UMN Extension website or <a href="http://umnagricast.org">umnagricast.org</a>	May 31, 2030
Host statewide training webinar and publish recording	May 31, 2030
Distribute promotional materials to community networks	June 30, 2030

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Michael Barnes	University of Minnesota - Twin Cities, Department of Horticultural Science	Michael's expertise in urban ecosystems and human dimensions of horticulture is vital to this team. He will guide the creation of recruitment materials for pollinator garden owners, inform the focus group protocols and survey design, and contribute to the development of the final toolkit.	Yes
Jon Trappe	University of Minnesota Extension	Jon is an Extension Educator focusing on Horticulture, Turf and Urban Greenspaces. He will help guide the targeted recruitment of participants for the focus groups and dissemination of results to the target audiences, particularly within Extension.	No
James Wolfen	Twin Cities Seed Company	James Wolfen, Conservation Specialist and former UMN Bee Lab researcher, pioneered "bee lawns." He combines the scientific expertise behind pollinator-friendly turf with practical implementation experience from the "Lawns to Legumes" program. A letter of collaboration is included.	No
Darren Lochner	Ramsey County Master Gardener Volunteer Program	Darren Lochner, Ramsey County Master Gardener Program Coordinator, will collaborate on participant recruitment, toolkit evaluation, and serve as our liaison to statewide Master Gardener Programs. His partnership is vital to this project. A letter of collaboration is included.	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.**

Dissemination efforts will be multi-channel to reach researchers, educators, policymakers, and community members. All materials will include ENRTF acknowledgement/logo.

### Academic:

1. Peer-Reviewed Publications: We will submit manuscripts to open-access/traditional journals (e.g., Journal of Applied Communications, Invasive Plant Science and Management, Conservation Biology, Urban Ecosystems) on communication efficacy in invasive species prevention/pollinator conservation.
2. Conference Presentations: Present findings at state, regional, and national conferences (e.g., ACE, IASNR, AAAE, MN Invasive Species Conference) as travel funds allow for peer feedback.

### Practitioner & Public:

1. Pollinator Garden Defender Communication Toolkit: Digital toolkit with tested messages, visual guides, and prevention best practices hosted on UMN Extension websites and/or umnagricast.org. This toolkit will be freely accessible for Extension, Master Gardeners, organizations, and gardeners. Print materials will be available for workshops.
2. Professional Development Webinar: Recorded training for Extension staff, Master Gardeners, and partners on implementing outreach, hosted on UMN Extension platforms.
3. Regional Focus Group Summaries: Brief, accessible summaries for participating communities (Twin Cities, Duluth, Marshall, and Rochester) will be posted online, highlighting regional insights.

### Stakeholder Engagement:

1. Direct Outreach: Share findings/toolkit directly with partners, including Master Gardeners, to integrate resources into existing programming.
2. Extension Integration: Incorporate project results into UMN Extension programming (horticulture, turf, natural

resources) for long-term reach.

#### Data & Documentation:

1. De-identified focus group transcripts and survey data archived and available to researchers upon request (with IRB protocols); codebooks provided for transparency.
2. All reports, presentations, and publications submitted to LCCMR and the UMN digital repository.

Compliance: All dissemination products will comply with ENRTF Acknowledgement Requirements, including logo and citation.

## 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?**

This project ensures lasting impact through integrated implementation. By May 31, 2030, the Pollinator Garden Defender Toolkit will be released for immediate use. All resources will remain permanently accessible online. Peer-reviewed publications will advance national knowledge, while materials will be incorporated into UMN curricula, training future professionals. Additionally, the Postdoctoral Researcher and Master's student will gain specialized expertise, strengthening state workforce capacity. Finally, the team will pursue extramural funding from federal and state sources, leveraging a strong funding track record. By embedding outcomes in Extension and academia, this project ensures sustained influence on invasive species prevention in Minnesota.

## Project Manager and Organization Qualifications

**Project Manager Name:** Garrett Steede

**Job Title:** Assistant Professor of Agricultural, Food & Natural Resource Communication

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

Steede is qualified to manage the project, because he brings extensive experience in grant-funded research, communication, and outreach in agricultural and environmental sciences. Over his eight years at UMN, he has been part of grant teams that have successfully acquired over \$10 million in funding. His expertise spans qualitative and quantitative research methodologies, strategic communication, and public engagement, making him well-equipped to oversee a project such as this. He has led multiple research initiatives examining science communication in agriculture and natural resources, including studies on trust in agricultural policy discussions, wine label messaging, and Extension program evaluation. Additionally, his experience advising students and facilitating collaborations between academic and industry stakeholders ensures effective project coordination.

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

**Organization Description:**

The College of Food, Agricultural and Natural Resource Sciences (CFANS) is a comprehensive institution at the University of Minnesota that advances the discovery and application of knowledge to address critical challenges in agriculture, bioeconomy, and natural resource stewardship. Our college unites fundamental and applied research across the life, social, and environmental sciences. With a network of 10 research and outreach centers spanning the state's diverse ecological regions, CFANS possesses a unique capacity for large-scale, real-world experimentation and data collection. Our faculty lead collaborative efforts in areas ranging from plant and animal genomics to sustainable ecosystem management, food safety, and rural development. Committed to the land-grant mission, CFANS ensures that research outcomes directly benefit stakeholders, industries, and policymakers in Minnesota and beyond.



## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Primary Investigator & Project Manager		Overall project coordination, supervision of personnel, oversight of all activities, dissemination leadership			36.6%	0.12		\$17,783
Researcher 5		Co-lead focus groups and survey design; guide recruitment; contribute to toolkit development and analysis; industry/stakeholder engagement			36.6%	0.3		\$39,330
Graduate Research Assistant (Master's)		Assist with focus group recruitment and facilitation; support survey development and distribution; contribute to data analysis; assist with toolkit development; complete master's project using project data			24.2%	1		\$116,973
Post-Doctoral Scholar		Lead day-to-day project coordination; conduct and lead focus groups; manage survey deployment; lead qualitative and quantitative data analysis; co-author publications; help supervise master's student; contribute to toolkit development			26.1%	2.5		\$209,419
							<b>Sub Total</b>	<b>\$383,505</b>
<b>Contracts and Services</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	Nvivo and SPSS Qualitative Data Analysis Software (2 subscriptions each)	Both qualitative (Nvivo) and quantitative (SPSS) data analysis software will be needed to analyze the data from both Activity 1 and Activity 2. These data analysis software subscriptions are renewed annually.					\$4,000
							<b>Sub Total</b>	<b>\$4,000</b>
<b>Capital Equipment</b>								

							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	<p>Twin Cities: UMN parking for 60 focus group participants @ \$12/each. Travel for 3 project members @ MN State rate of 72.5¢/mile to conduct focus groups.</p> <p>Duluth: UMN-Duluth parking for 20 focus group participants @ \$6/each. Travel for 3 project members @ MN State rate of 72.5¢/mile to conduct focus groups.</p> <p>Rochester: UMN-Rochester parking for 20 focus group participants @ \$12/each. Travel for 3 project members @ MN State rate of 72.5¢/mile to conduct focus groups.</p> <p>Marshall: Lyon County Extension Office parking for 10 focus group participants (free). Travel for 3 project members @ MN State rate of 72.5¢/mile to conduct focus groups.</p>	Travel for project members to conduct focus groups & day-rate parking for focus group participants during the data collection process.					\$2,500
							<b>Sub Total</b>	\$2,500
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
	Printing	Toolkit Material Printing and Advertising (500)	Funds will allow for high quality materials to be printed for dissemination of the Pollinator Garden Defender Toolkit					\$1,500

							<b>Sub Total</b>	<b>\$1,500</b>
<b>Other Expenses</b>								
		Research Subject Payments	Financial compensation for human subject research. Focus group members will be paid \$50 each for their time; Survey respondents will be paid \$5 for their survey response.					\$7,500
		Communication Toolkit Testing	Prior to public distribution of the Pollinator Garden Defender Toolkit, piloting of the toolkit will take place among community members in our 5-focus counties.					\$995
							<b>Sub Total</b>	<b>\$8,495</b>
							<b>Grand Total</b>	<b>\$400,000</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: \$400,000

This amount accurately reflects total project cost?

Yes

## Attachments

### Required Attachments

#### *Visual Component*

File: [fbf8b5b3-ab0.pdf](#)

#### *Alternate Text for Visual Component*

Target Counties for Pollinator Habitat Focus Groups...

### Supplemental Attachments

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

Title	File
UMN BOR Certification Letter	<a href="#">5b6517eb-66f.pdf</a>
Letter of Support - Olmsted County Master Gardeners	<a href="#">6329f089-4cb.pdf</a>
Letter of Partnership & Collaboration - Darren Lochner	<a href="#">a168fdb1-749.pdf</a>
Letter of Partnership & Collaboration - James Wolfen	<a href="#">bd37c278-ee3.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?**

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?**

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:**

Melissa Sullivan, 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