Environment and Natural Resources Trust Fund
2025 Request for Proposal

General Information

Proposal ID: 2025-266

Proposal Title: Promoting Pollinators on Corporate Campuses

Project Manager Information

Name: Adam Kay

Organization: University of St. Thomas

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Project Basic Information

Project Summary: We will use experimental "bee lawn" installations on corporate campuses, combined with landscape modeling and employee surveys, to determine potential ecological, economic, and societal benefits of widespread lawn habitat transformation

ENRTF Funds Requested: $591,000

Proposed Project Completion: August 31, 2027

LCCMR Funding Category: Methods to Protect or Restore Land, Water, and Habitat (F)

Project Location

What is the best scale for describing where your work will take place?
Region(s): Central

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

When will the work impact occur?
In the Future

Narrative

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

Over 40% of insect species, including bees and other pollinators, are experiencing widespread decline. Pollinator declines are largely driven by habitat loss and degradation due in part to urban development and have impacts on agricultural production, preservation of natural landscapes, and human well-being. Programs are urgently needed to help transform urban areas into ecologically rich spaces that support pollinators and people. Minnesota has emerged as a leader in promoting pollinator- and human-friendly habitat. The MN Board of Water and Soil Resources (BWSR) and collaborating organizations developed a statewide Lawns to Legumes program (aka "bee lawns") aimed at transforming residential areas into pollinator-supporting habitats. As part of the National Science Foundation-supported MSP Long-Term Ecological Research (MSP LTER) program, we conduct metro-wide assessments of the efficacy of these bee lawns on residential properties. With our current funding, we are assessing linkages between plant species diversity, including the presence of specific "bee lawn" flowering plants, to the presence of bumble bees (pollinator indicator species) in these lawns. Here we aim to extend this work to a broader range of pollinators and larger private and public managed landscapes to better address how managed lawn-dominated urban landscapes can support pollinators at the landscape scale

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 will build broad-based partnerships between environmental and social scientists from academia and government agencies, land managers, and the public to assess how corporate campuses can provide pollinator habitat. Based on preliminary analysis within the seven-county metropolitan area (MSP), ~218,000 acres of land are managed as lawns (and shrub), with ~25,000 of those acres under corporate land use. Landscapes on these campuses often reflect the aesthetic of suburban households with significant area allocated to monoculture lawns that are frequently mowed and heavily irrigated. Negative ecological impacts of such lawns are well documented, and their transformation to bee-friendly spaces provides significant opportunity for increasing urban and suburban pollinator habitat. We propose to 1) design a lawn transformation experiment and refine seed mixes in lawn programs to maximize positive impacts on pollinator diversity, 2) assess the potential statewide environmental impacts of broad transformation of corporate landscaping with the aim of encouraging companies to finance such transformation on their campuses, and 3) identify factors that could encourage more widespread establishment of bee lawns by Minnesota residents and professional land managers. Our proposal will result in action-based conservation and technical assistance for improving pollinator habitat to Minnesota residents and corporations

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 achieve three main outcomes. First, by testing how alternative lawn transformations impact pollinators, the results will inform refinements to improve the statewide Lawns to Legumes program. Second, it will pilot traditional-to-bee lawn transformations on corporate campuses, and provide social and economic analyses of these transformations, with the aim of encouraging corporations to adopt widespread implementation of bee lawns. Third, it will demonstrate how habitat transformation on corporate campuses can have broad influence by encouraging campus employees and visitors to convert their own yards to pollinator-friendly habitat

Activities and Milestones

Activity 1: Develop test beds of different bee lawn seed mixes and assess their ecological and economic impact

Activity Budget: $223,000

Activity Description:

We will create and assess experimental "bee lawns" on four greater Minnesota and four MSP metro corporate campuses. In year 1, we will plant three seed mixes recently developed by the MN Board of Water and Soil Resources (BWSR) in each of four replicate plots at each of the eight campuses. We will then track the development and ecological impact of these experimental lawns in year 2 by comparing manipulations to control (unmanipulated) campus lawn area. This tracking will include bi-yearly measures of plant diversity, ground cover, and root density, and other ecological characteristics (including water and soil nutrient retention). We will also conduct monthly non-destructive sampling of bumble bee abundance and diversity (using established protocols) and lawn resources for pollinators (number and diversity of floral resources on experimental and control lawn plots). Given the time-lag between bee lawn establishment and use, these assessments of the efficacy of different seed mixes will provide baseline information for a Phase 2 broader implementation and contribute data to BWSR for use in statewide lawn conversion programs. We will also work with land managers at each campus to conduct economic analyses of the establishment and maintenance of bee lawns compared to traditional lawn

Activity Milestones:

Description	Approximate Completion Date
Establish experimental bee lawns on 4 greater Minnesota and 4 metro corporate campuses	May 31, 2026
Conduct monthly/seasonal measurements of bumble bees, plants, and other ecological markers	August 31, 2027
Assess economic impact of transformation of campus area from traditional to bee lawn	August 31, 2027
Prepare manuscript and reports of results	August 31, 2027

Activity 2: Assess the potential ecological and economic impact of corporate campus lawn transformation across Minnesota

Activity Budget: $127,000

Activity Description:

We will identify the total amount, extent and location of managed lawns throughout the state by combining spatial analysis methods and ground-truth results. Then we will develop different lawn management and transformation scenarios to assess the costs and benefits for maintaining high maintenance lawns (i.e. lawn management that includes fertilizer application, irrigation, and weekly mowing), low maintenance lawns, and bee lawns. Within these different proposed scenarios and baseline scenarios (unmanipulated lawn area), we will estimate several environmental, ecological, and economic outputs of managed lawns and compare those with baseline scenarios. These outputs include carbon storage, hidden carbon costs (e.g., maintenance machine emissions), water use, stormwater management, cost of transforming high maintenance lawns to bee lawns (e.g., seed cost, labor, ground prep), maintenance costs (e.g., gas for mowers, irrigation, fertilizer and other inputs), pollinator habitat connectivity and biodiversity potential. The InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) pollinator model will be used to calculate pollinator abundance across the state under different scenarios. An interactive map viewer will be created at both company and state scale to show basic parcel information for each company, area of different types of lawns, and cost/benefit estimates in different scenarios

Activity Milestones:

Description	Approximate Completion Date
Compile spatial datasets of land use and land cover	June 30, 2026
Conduct ground truthing to compare machine learning algorithms to available databases and field sampling	January 31, 2027
Develop lawn management scenarios that encompass different seed mixes and management intensity	May 31, 2027
Build interactive map viewer	August 31, 2027
Draft report for corporate campus managers	August 31, 2027

Activity 3: Develop and implement a social factors survey to assess perceptions of pollinators and identify potential barriers for implementing bee lawns.

Activity Budget: $241,000

Activity Description:

We will assess how the existence of experimental bee lawns combined with outreach information at eight corporate campuses (Activity 1) impact perceptions of campus employees and management towards pollinator-friendly lawns. We will administer surveys to determine whether employees and management are aware of general pollinator declines, understand the value of increasing pollinator habitat, and appreciate the aesthetics of experimental bee lawns. Perceptions will be assessed through economic, wellbeing (mental and physical), social, and instrumental values. These values may influence employees' views toward management of resources on corporate campuses, motivation to establish or contribute to pollinator habitat, appreciation of the aesthetics from experimental bee lawns, and wellbeing from pollinator habitat. We will design experimental bee lawns to support several ecological and societal benefits, including informative signs that describe different aspects of the project. Corporate campus appearance has the potential to influence landscaping norms in surrounding communities. Results from the surveys will help inform outreach materials, e.g., UMN Extension web resources, online education courses, webinars, and the UMN Master Gardener tool kit. Taken together, these factors could contribute to Minnesota residents and professional land managers establishing community-based programs that provide high-quality pollinator habitat

Activity Milestones:

Description	Approximate Completion Date
Develop survey instruments for campus employees, visitors, and maintenance managers	December 31, 2025
Execute pre-bee lawn installation surveys	April 30, 2026
Create interpretive signs on lawns and pollinators for the 8 corporate campuses (see Activity 1)	June 30, 2026
Execute post-bee lawn installation surveys	July 31, 2027
Develop outreach materials and prepare manuscript and reports of results	August 31, 2027

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Adam Kay	University of St Thomas	Project leader. Dr. Kay will be responsible for overseeing all aspects of the project including project development and implementation, post-doc mentoring, and research dissemination.	Yes
Susannah Lerman	US Forest Service	Collaborator on all activities. Dr. Lerman will work with Dr. Kay to oversee all project activities, including project implementation and dissemination	No
Eric Watkins	University of Minnesota - Turfgrass Science	Dr. Watkins will serve as an unpaid collaborator to provide expertise and help oversee bee lawn establishment and assessment work (Activity 1)	No
Elaine Evans	University of Minnesota	Dr. Evans will provide professional expertise to oversee all bee identification	Yes
Postdoctoral researcher 1	University of St Thomas	This postdoc will help implement the development of test beds on corporate campuses and assess their ecological and economic impact (Activity 1), and will assist on statewide modeling work (Activity 2)	Yes
Lingling Liu	University of Minnesota	Dr. Liu will be responsible for modeling work to assess the potential ecological and economic impact of corporate campus lawn transformation across Minnesota (Activity 2)	Yes
Eric Lonsdorf	Emory University	Dr. Lonsdorf will help develop and oversee activities related to statewide modeling efforts (Activity 2)	No
Michael Barnes	University of Minnesota	Dr. Barnes has expertise in understanding the ideas and beliefs that influence how land managers and residents manage urban vegetation. He will work with postdoctoral research 2 to lead survey development, distribution, analysis, and dissemination (Activity 3)	Yes
Postdoctoral researcher 2	University of St Thomas	This postdoc will help lead survey development, distribution, analysis, and dissemination (Activity 3)	Yes
Undergraduate Assistants	University of St Thomas	Three full-time summer students will help conduct all field activities (activity 1) and will help carry out survey work (activity 3)	Yes
Shanice Jones	US Fish and Wildlife Service	Dr. Jones will help in the development of outreach materials and other dissemination products associated with Activity 3	No
Dan Shaw	MN Board of Water and Sewer Resources (BWSR)	Help design lawn manipulations, especially development of experimental seed mix, and help with dissemination (Activity 1)	No

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?

All experimental lawn implementation, field sampling, survey work, and landscape modeling will occur before the grant period ends. Any remaining data analysis, manuscript preparation, and dissemination needed after the grant period ends will be supported through various sources including 1) a potential renewal of the National Science Foundation MSP Long-Term Ecological Research (LTER) that Kay and others on this proposal are a part of, and 2) internal professional development funds for Kay and other personnel through their respective universities and agencies

Project Manager and Organization Qualifications

Project Manager Name: Adam Kay

Job Title: Professor

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

Project leader Kay has extensive experience managing large research projects with conservation and broader social applications. Over the last 3 years, he has co-led the Twin Cities bee lawn project, which is part of the National Science Foundation-supported MSP Long-Term Ecological Research program. This project involves determining the impact of private lawn modification on pollinators using surveys across the Twin Cities metro region. This research has allowed Kay to interact with numerous researchers and other stakeholders passionate about pollinator conservation and urban land management in Minnesota. In addition, Kay leads a National Science Foundation-funded network aimed at integrating urban agriculture into undergraduate biology education. Kay also has extensive experience leading research projects involving undergraduate students. As a liberal arts college professor, Kay takes on numerous teaching and service responsibilities. Kay has numerous broader outreach and social impact activities, including co-director a food security non-profit in the Twin Cities (BrightSide Produce) and a food-waste composting program in a South African township (Chumisa Community Composting). Together, these activities demonstrate Kay's organizational and leadership skills. As a researcher, Kay has worked on a wide range of topics including animal behavior, tropical ecosystem ecology, urban biodiversity, and science-art collaboration. Kay has had numerous and varied collaborations with researchers in the University of Minnesota's Ecology, Evolution, and Behavior Department, and in the UMN School of Public Health. His lab at St. Thomas typically houses 6-10 undergraduate researchers per year and he has over 60 peer-reviewed scientific publications (see google scholar page: https://scholar.google.com/citations?user=JjN8WOsAAAAJ&hl=en)

Organization: University of St. Thomas

Organization Description:

This project combines expertise from the University of St. Thomas with collaboration from partners at the University of Minnesota, the US Forest Service, and Emory University in Atlanta. St. Thomas is a private Catholic research university with campuses in St. Paul and Minneapolis. It is Minnesota's largest private, nonprofit university. Kay and his students are part of St. Thomas' Biology Department, which provides significant research infrastructure, support, and course release to conduct impactful research. With project partners, our team has expertise in ecological restoration for pollinators, landscape modeling, and social impact surveying. With the various partners involved, we have the space, facilities, and experience for all ecological sampling including turf grass manipulation and pollinator sampling, statewide economic impact assessments, and social analysis work.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Adam Kay		Project Leader (1-3)			8%	0.4		$44,500
Postdoctoral researcher 1		This postdoc will help implement the development of test beds on corporate campuses and assess their ecological and economic impact (Activity 1), and will assist on statewide modeling work (Activity 2)			35%	1.9		$175,000
Postdoctoral researcher 2		This postdoc will help lead survey development, distribution, analysis, and dissemination/outreach activities (Activity 3)			35%	1.9		$175,000
Undergraduate researcher 1		Assist in field sampling (Activity 1) and survey work (Activity 3)			8%	0.5		$18,500
Undergraduate researcher 2		Assist in field sampling (Activity 1) and survey work (Activity 3)			8%	0.5		$18,500
Undergraduate researcher 3		Assist in field sampling (Activity 1) and survey work (Activity 3)			8%	0.5		$18,500
							Sub Total	**$450,000**
Contracts and Services								
University of Minnesota	Sub award	The UMN will provide help with bee identification (project personnel Elaine Evans, 0.15FTE/yr), with statewide modeling efforts (project personnel Lingling Liu, 0.3FTE/yr), and with oversight of all aspects of survey work (project personnel Michael Barnes, 0.18 FTE/yr)				1.26		$113,000
							Sub Total	**$113,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Seeds and other supplies for experimental lawn establishment	These will include seed mixes and all other materials needed for experimental lawn establishment on corporate campuses					$4,000
	Tools and Supplies	Software	Stata software for survey work and other software license needs for modeling work					$1,000

	Tools and Supplies	Incentives for surveys	Raffle drawings for gift cards to incentivize survey participation					$8,000
							Sub Total	**$13,000**
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Car travel to 8 corporate campuses. We estimate 95 miles each way (190 miles round trip) for a single vehicle with 2-4 passengers. We use federal mileage rate of $0.67/mile. Three trips in year 1 and two trips in year 2	These trips will be mostly for site establishment and field sampling, but also for initiating survey work					$5,000
							Sub Total	**$5,000**
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
	Printing	Signage for experimental gardens	To advertise the benefits of bee lawn transformation to corporate employees and managers					$5,000
	Publication	Website development	Allow for the development of QR codes to bring visitors to online resources about the project					$5,000
							Sub Total	**$10,000**
Other Expenses								
							Sub Total	-
							Grand Total	**$591,000**

Classified Staff or Generally Ineligible Expenses

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

Non ENRTF Funds

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

Total Project Cost: $591,000

This amount accurately reflects total project cost?

    Yes

Attachments

Required Attachments

Visual Component

File: acb54685-670.pdf

Alternate Text for Visual Component

The visual includes a picture of a traditional corporate campus lawn, a picture of a lawn transformed for bees, and a map of central Minnesota illustrating possible locations for corporate campus work...

Financial Capacity

Title	File
University of St Thomas 990 form 2022	aba6188e-29f.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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 proposal:

None