



# Environment and Natural Resources Trust Fund

## 2021 Request for Proposal

### General Information

**Proposal ID:** 2021-425

**Proposal Title:** Minnesota Invasive Terrestrial Plants and Pests Center, Ph.5

### Project Manager Information

**Name:** Heather Koop

**Organization:** U of MN - MITPPC

**Office Telephone:** (651) 626-1914

**Email:** hkoop@umn.edu

### Project Basic Information

**Project Summary:** The Minnesota Invasive Terrestrial Plants and Pests Center (MITPPC) requests \$7 million to fund up to 15 new, high-priority applied TIS research projects to improve Minnesota's natural and agricultural resources.

**Funds Requested:** \$5,000,000

**Proposed Project Completion:** 2026-06-30

**LCCMR Funding Category:** Aquatic and Terrestrial Invasive Species (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?**

In the Future

## Narrative

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

Terrestrial invasive species (TIS) affect nearly every Minnesotan and terrestrial landscape. Invasive weeds, pathogens, insects, and arthropods threaten to lower the biodiversity and aesthetic value of prairies and wetlands, increase damage to urban and rural forests, and increase economic damage to grain and fruit producers. In total, terrestrial invasive plants and pests cost Minnesotans at least \$3 billion annually.

Terrestrial invasive species – or any nonnative plant, animal insect or microbe that causes harm – cost Americans \$150 billion each year. They threaten our food systems, wildlife, recreation spaces, food security, economy and occasionally our health.

For example: Dutch elm disease, buckthorn, oak wilt, garlic mustard, mountain pine beetle and other pests have dramatically changed the way American forests look and feel. Terrestrial invasive species threaten the diversity of native plants, pollinators and wildlife across all ecosystems. Controlling them often carries both an environmental and economic cost due to the use of pesticides and the investment of human labor. New invasive threats will continue to emerge as climate, global trade, land use and human behaviors shift over time.

### **What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.**

Invasive plants, pests, and pathogens threaten Minnesota's prairies, wetlands, forests, and agricultural resources. Efficiently protecting Minnesota's lands requires new tools and techniques that can only be developed through applied research and implemented by engaged partners. The MITPPC relies on a dynamic strategic prioritization process to describe the invasive species that pose the greatest threats to Minnesota's natural and agricultural resources and focuses investments on these high-rated threats. Each successful proposal has been extensively vetted by internal and external reviewers with expertise in terrestrial invasive species research. Proposals are carefully considered and evaluated on a number of criteria, including urgency, extent of impact, contribution to the field, and innovation. The value-added benefits of the center approach extends to (i) leveraging previous/ongoing research efforts, (ii) facilitating new research team development, (iii) convening stakeholders on a terrestrial invasive species topics, particularly on issues that affect both the agricultural and natural resource sectors, and (iv) providing administrative and communications support. Interdisciplinary teams and partnerships with key stakeholders are an integral component of our research approach and assist with research result dissemination to wide audiences.

### **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?**

MITPPC research produced on-the-ground management alternatives for the control of TIS which have resulted in increased yields, while decreasing the amounts of pesticides and herbicides from soybean to raspberry production. Foresters now have new on gypsy moth movement which will help prevent its spread. Genetic sequence research led to identification of Palmer amaranth seeds in seed mixes. Breakthroughs in buckthorn research and its relationship with native vegetation, improves outcomes for forests, pollinators, and soybean production. Early detection and distribution tools have assisted land managers address oak wilt, soybean aphid, and numerous TIS plants and insects.

## Activities and Milestones

### Activity 1: Accelerate research on high priority, terrestrial invasive species

**Activity Budget:** \$5,000,000

**Activity Description:**

Research projects will focus on the prediction and prevention of threats that are not yet in Minnesota, and on early detection and rapid response of threats that are newly arrived. The white paper, “Minnesota’s Top 124 Terrestrial Invasive Plants and Pests: Priorities for Research,” focuses funding by prioritizing the invasive species that pose the greatest threats to Minnesota’s forests, prairies, wetlands, and agricultural resources. The prioritization is revisited regularly and updated as new threats arise and new biological information comes available. For example, the MITPPC was able to respond quickly when Palmer amaranth was found in western Minnesota and to address the impact of jumping worms on our natural resources due to the coordination with state agencies and UMN research scientists.

It is anticipated that 15 new lines of high-priority research projects would be funded, and fund up to seven graduate students and 15 post-doctoral associates. With this investment, a new generation of applied scientists will be cultivated who will address current and future terrestrial invasive species threats.

**Activity Milestones:**

Description	Completion Date
Socio-economic analyses completed to better gauge impacts from, and responses to, terrestrial invasive species	2026-06-30
Predictive tools created to account for invasive species issues under future conditions.	2026-06-30
New, effective prevention and management alternatives developed and tested.	2026-06-30
New tools and technologies developed to detect and characterize the distribution of invasive species.	2026-06-30

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
TBD	TBD	Each project is strongly encouraged to partner with an external partner. Current research project partners include the Minnesota departments of agriculture, natural resources, and transportation, the US Forest Service, Minnesota Soybean Research and Promotion Council, Fond du Lac Band of Lake Superior Chippewa, Friends of the Mississippi, and TNC.	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 be funded?**

Findings will be shared with agencies and citizen groups so that public information and decision making is based on the best available science. Updates on progress and research results will be disseminated through University of Minnesota, College of Food, Agricultural, and Natural Resource Sciences, and College of Biological Sciences via websites, social media, publications, and media releases. Findings will be presented at local and national conferences and via peer-reviewed publication and student theses.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Minnesota Invasive Terrestrial Plants and Pests Center - Phase 4	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 06a	\$3,500,000
Minnesota Invasive Terrestrial Plants and Pests Center - Phase III	M.L. 2016, Chp. 186, Sec. 2, Subd. 06a	\$3,750,000
Minnesota Invasive Terrestrial Plants and Pests Center	M.L. 2015, Chp. 76, Sec. 2, Subd. 06a	\$5,000,000
Minnesota Invasive Terrestrial Plants and Pests Center	M.L. 2014, Chp. 312, Sec. 8	\$1,460,000

## Project Manager and Organization Qualifications

**Project Manager Name:** Heather Koop

**Job Title:** Associate director, MITPPC

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

Ms. Koop has been associate director with the MITPPC for over five years, managing more than two dozen research projects totaling \$15 million. Previously, she was the assistant director for the Lessard-Sams Outdoor Heritage Council for five years, where she designed and build the structure and processes to manage the Outdoor Heritage Fund. Ms. Koop holds a degree in public affairs from the Humphrey Institute of Public Affairs at the University of Minnesota.

**Organization:** U of MN - MITPPC

**Organization Description:**

The MITPPC was established at the University of Minnesota under ML 2014, Chapter 312, Article 13, Section 44. The MITPPC is administratively located in the College of Food, Agricultural, and Natural Resources Sciences and is guided by a 14-member Advisory Board, comprised of internal and external stakeholders. Activities of the MITPPC are conducted

in close collaboration with state, federal, local and tribal governments, nongovernmental agencies, the private sector, University of Minnesota Extension, and other colleges and universities.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Research faculty/summer salary		Principal investigator			33.8%	1		\$49,333
Associate director		Admin and program support for research projects			33%	2		\$189,264
Communications specialist		Communication support for research project's result dissemination			29.5%	2		\$113,248
Graduate research assistants		Conduct research experiments and analysis			9%	2		\$450,000
Post-doctoral associates		Conduct research experiments and analysis			21.4%	4		\$228,000
Post-doctoral associate		Conduct research experiments and analysis			21.4%	4		\$228,000
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Post-doctoral associate		Conduct research experiments and analysis			21.4%	4		\$228,000
Graduate research assistant		Conduct research experiments and analysis			9%	2		\$202,552
Graduate research assistant		Conduct research experiments and analysis			9%	2		\$202,552
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Graduate research assistant		Conduct research experiments and analysis			9%	2		\$202,552
Research faculty/summer salary		Principle investigator			33.8%	1		\$49,333
Director		Principal investigator			33%	1		\$180,000
Research faculty/summer salary		Principal investigator			33%	1		\$49,333
							<b>Sub Total</b>	<b>\$3,866,375</b>
<b>Contracts and Services</b>								
TBD	Professional or Technical Service Contract	Biosecurity lab space rental				-		\$85,200
TBD	Professional or Technical Service Contract	DaRT and genome sequencing services				-		\$75,000
TBD	Professional or Technical Service Contract	Minnesota Supercomputing Institute				-		\$105,000
TBD	Professional or Technical Service Contract	Other fees for service/professional contracts for research				0		\$614,425
							<b>Sub Total</b>	<b>\$879,625</b>
<b>Equipment, Tools, and Supplies</b>								

	Tools and Supplies	Consumable lab materials	To conduct bench and field research					\$100,000
							<b>Sub Total</b>	<b>\$100,000</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	In-state travel for field research	In-state travel for field research related to MITPPC projects					\$70,000
							<b>Sub Total</b>	<b>\$70,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
	Publication	Peer reviewed journal submission fees	To disseminate peer-reviewed scientific findings resulting from research					\$84,000
							<b>Sub Total</b>	<b>\$84,000</b>
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$5,000,000</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
<b>State</b>				
			<b>State Sub Total</b>	-
<b>Non-State</b>				
			<b>Non State Sub Total</b>	-
			<b>Funds Total</b>	-

## Attachments

### Required Attachments

#### *Visual Component*

File: [210b360e-d7e.pdf](#)

#### *Alternate Text for Visual Component*

The document describes the MITPPC and provides an overview of funded research projects.

## Administrative Use

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

No

**Does your project have patent, royalties, or revenue potential?**

Yes,

- Patent, Copyright, or Royalty Potential

**Does your project include research?**

Yes

**Does the organization have a fiscal agent for this project?**

Yes, Sponsored Projects Administration



# Minnesota Invasive Terrestrial Plants & Pests Center

Science-based solutions to protect Minnesota's prairies, forests, wetlands and agricultural resources



## Our Mission

The Minnesota Invasive Terrestrial Plants & Pests Center (MITPPC) drives discoveries to prevent and reduce harm from the top invasive species threats in our state.



### World-Class Research

We pull top talent from across departments, campuses, field stations and research and outreach centers of the University of Minnesota system.

### Strategic Partnerships

We engage partners from across Minnesota to ensure that everyone's voice is heard, and that stakeholders can stay informed about the latest research and how to use it.



### Practical Solutions

Our success is measured by the real-world improvements we make to invasive species management in our state.

### Investments for the Future

Researching better solutions pays off – terrestrial invasive species cost Minnesotans around \$3 billion annually.



## What is a terrestrial invasive species (TIS)?

A terrestrial invasive species is any land-based plant, animal, insect or microbe that enters a new environment and causes harm. Invasive species can spread rapidly and damage the ecosystem, economy and human health.