Environment and Natural Resources Trust Fund

2022 Request for Proposal

General Information

Proposal ID: 2022-067

Proposal Title: Minnesota Invasive Terrestrial Plants and Pests Center

Project Manager Information

Name: Heather Koop

Organization: U of MN - MITPPC

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Project Basic Information

Project Summary: The MITPPC requests $7 million to fund up to 20 new research projects to protect Minnesota's natural and agricultural resources from terretrial invasive species.

Funds Requested: $7,000,000

Proposed Project Completion: June 30 2027

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 plants, pathogens, insects, and earthworms threaten to lower the biodiversity and aesthetic value of prairies and wetlands, increase damage to urban and rural forests, and increase economic losses to agricultural producers. In total, TIS cost Minnesotans at least $3 billion annually. TIS – or any nonnative plant, animal, or microbe that causes harm – cost Americans $150 billion each year. They threaten our economic vitality (especially in food, forest, and horticultural sectors), food security, wildlife habitat, and occasionally our health.

Dutch elm disease, buckthorn, oak wilt, emerald ash borer 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.

Efficiently protecting Minnesota's lands requires new tools and techniques that can be only developed through applied research and implemented by engaged partners. The MITPPC relies on a dynamic strategic prioritization process to identify the invasive species that pose the greatest threats to Minnesota's natural and agricultural resources and focuses investments on these high-rated threats. Each proposal is extensively vetted by internal and external reviewers with expertise in terrestrial invasive species research for urgency, scientific merit, innovation, and impact on management. 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 terrestrial invasive species topics, particularly on issues that affect both the agricultural and natural resource sectors and (iv) communicating results to broad, diverse audiences within the state. Interdisciplinary teams and partnerships with key stakeholders are an integral component of our research approach and assist with disseminating and implementing research results.

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 pesticides use, for soybean and raspberry producers. Foresters now have new insights on gypsy moth movement which will help prevent its spread. Genetic sequencing research led to tools to identifiy Palmer amaranth seeds in seed mixes. Breakthroughs in buckthorn research have provided strategies that have simlutaneoulsly improved outcomes for forests, pollinators, and soybean producers. Early detection and distribution tools have assisted land managers in addressing oak wilt, soybean aphid, and non-native Phragmites.

Activities and Milestones

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

Activity Budget: $7,000,000

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 to threats that are newly arrived. The white paper, "Minnesota's Top Terrestrial Invasive Plants and Pests: An Expanded Prioritization" 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 20 new lines of high-priority research projects would be funded, including funding up to ten graduate students and 9 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
New tools and technologies developed to detect and characterize the distribution of invasive species.	June 30 2027
New, effective TIS prevention and management alternatives developed and tested.	June 30 2027
Predictive tools created to account for invasive species issues under future conditions.	June 30 2027
Socio-economic analyses completed to better gauge impacts from, and responses to, terrestrial invasive species	June 30 2027

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
TBD	TBD	Each project is strongly encouraged to collaborate 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	M.L. 2014, Chp. 312, Sec. 8	$1,460,000
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 - Phase III	M.L. 2016, Chp. 186, Sec. 2, Subd. 06a	$3,750,000
Minnesota Invasive Terrestrial Plants and Pests Center - Phase 4	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 06a	$3,500,000

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 six 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 built the structure and processes to manage the Outdoor Heritage Fund. Ms. Koop holds a master's 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
Personnel								
Research faculty/summer salary		Principal investigator			36.5%	1		$61,666
Associate director		Admin and program support for research projects			36.5%	2		$257,399
Communications specialist		Communication support for research project's result dissemination			31.8%	2		$148,354
Post-doctoral associate		Conduct research experiments and analysis			25.4%	4		$285,000
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Post-doctoral associate		Conduct research experiments and analysis			25%	4		$285,000
Graduate research assistant		Conduct research experiments and analysis			19%	2		$241,036
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Graduate research assistant		Conduct research experiments and analysis			19%	2		$241,036
Research faculty/summer salary		Principle investigator			36%	1		$61,666
Research faculty/summer salary		Principal investigator			36%	1		$61,666
Post-doctoral associate		Conduct research experiments and analysis			25%	4		$285,000
Post-doctoral associate		Conduct research experiments and analysis			25%	4		$285,000
Post-doctoral associate		Conduct research experiment and analysis			25%	4		$285,000
Post-doctoral associate		Conducts research experiments and analysis			25%	4		$285,000
Graduate research assistant		Conduct research experiments and analysis			19.9%	2		$241,036
Graduate research assistant		Conduct research experiments and analysis			19.9%	2		$241,036
Graduate research assistant		Conduct research experiments and analysis			19.9%	2		$241,036
Research faculty/summer salary		Principal investigator			36%	1		$61,666
Research faculty/summer salary		Principal investigator			36%	1		$61,666
							Sub Total	**$5,974,443**
Contracts and Services								
University of Minnesota	Professional or Technical	Biosecurity lab space rental				0		$85,200

	Service Contract							
TBD	Professional or Technical Service Contract	DaRT and genome sequencing services				-		$75,000
TBD	Professional or Technical Service Contract	Other fees for service/professional contracts for research				0		$611,357
							Sub Total	**$771,557**
Equipment, Tools, and Supplies								
	Tools and Supplies	Consumable lab materials	To conduct bench and field research					$100,000
							Sub Total	**$100,000**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	In-state travel for field research	In-state travel for field research related to MITPPC projects					$70,000
							Sub Total	**$70,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								

	Publication	Peer reviewed journal submission fees	To disseminate peer-reviewed scientific findings resulting from research					$84,000
							Sub Total	**$84,000**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$7,000,000**

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	**-**

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

Yes

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

Yes

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

No

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

Yes, Sponsored Projects Administration