Environment and Natural Resources Trust Fund

M.L. 2022 Approved Work Plan

General Information

ID Number: 2022-067

Staff Lead: Becca Nash

Date this document submitted to LCCMR: July 6, 2022

Project Title: Minnesota Invasive Terrestrial Plants and Pests Center

Project Budget: $6,230,000

Project Manager Information

Name: Heather Koop

Organization: U of MN - MITPPC

Office Telephone: (651) 626-1914

Email: hkoop@umn.edu

Web Address: https://mitppc.umn.edu/

Project Reporting

Date Work Plan Approved by LCCMR: July 27, 2022

Reporting Schedule: July 1 / January 1 of each year.

Project Completion: June 30, 2027

Final Report Due Date: August 14, 2027

Legal Information

Legal Citation: M.L. 2022, Chp. 94, Sec. 2, Subd. 06a

Appropriation Language: $6,230,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to support the Minnesota Invasive Terrestrial Plants and Pests Center to fund high-priority research projects to better manage invasive plants, pathogens, and pests on Minnesota's natural and agricultural lands. This appropriation is subject to Minnesota Statutes, section 116P.10. This appropriation is available until June 30, 2027, by which time the project must be completed and final products delivered.

Appropriation End Date: June 30, 2027

Narrative

Project Summary: The MITPPC requests $6.23 million to fund up to 18 new research projects to protect Minnesota's natural and agricultural resources from terretrial invasive species.

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? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & 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.

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

Activities and Milestones

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

Activity Budget: $794,877

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 18 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	Approximate 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

Activity 2: Awarding subprojects

Activity Budget: $5,435,123

Activity Description:
Research projects will focus on the prediction and prevention of threats that are not yet in Minnesota, the early detection and rapid response of threats that are newly arrived, and solutions to terrestrial invasive species that are well established in the state. Research must address one or more invasive species that pose the greatest threats to Minnesota's forests, prairies, wetlands, or agricultural resources, as identified by MITPPC's prioritization process. The prioritization is revisited and updated regularly.

Proposals will be solicited annually for the first three years of the appropriation. Applicants first submit a preproposal which is reviewed and scored by a panel of up to five researchers in Minnesota. Research teams with the highest scoring preproposals are invited to submit a full proposals which are reviewed by relevant national and international experts. Project selection is based on the outcome of the peer review. Each proposal recommended for funding will be added as its own activity to this work plan for LCCMR review and approval. Budget lines are listed as "to be awarded to sub-projects" and "awarded to sub-projects" in Professional and Technical Contracts. Detailed updates will be limited to when sub-projects are added or funds are returned for redistribution.

Activity Milestones:

Description	Approximate Completion Date
Research project launched	December 31, 2023

Additional research projects launched	December 31, 2024
Final research projects launched	December 31, 2025

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

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.
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, and publications. Media releases will also be used when warranted. Additionally, findings will be presented at local and national conferences and via peer-reviewed publication and student theses.

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?
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

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
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
Research Scientist		Update and support MITPPC prioritization			33.5%	2		$209,124
Director		Principal investigator; only after General Fund or USDA funds are depleted or expire			33%	1		$180,000
							Sub Total	**$794,877**
Contracts and Services								
To be awarded to sub-projects	Sub award	Budget reserve for awarding sub-projects upon approval by LCCMR				180		$5,435,123
Awarded to sub-projects	Sub award	This is the cumulative budget, spent, and balance for all sub-projects combined. Detailed sub-project budgets will be submitted in an Excel workbook via the attachments page under "Optional Attachments/Support Letter or Other" with the file name as the date of submission (e.g., "YYYY-MM-DD Budget)				0		-
							Sub Total	**$5,435,123**
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-

Travel In Minnesota								
							Sub Total	**-**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$6,230,000**

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				
Cash	ML 2014, Ch 312, Sec 8	Salaries and fringe for Associate Director, Communications Staff, and a Staff Researcher for the remainder of funding, after which ENRTF funds will be used. The amount listed is an estimate of the remaining funding from the original $3.4 million appropriation.	Secured	$657,691
			State Sub Total	**$657,691**
Non-State				
Cash	USDA Forest Service	Salary for Director (50% FTE per year, subject to annual approval). These funds are not considered cost-share/matching commitment.	Secured	$400,000
			Non State Sub Total	**$400,000**
			Funds Total	**$1,057,691**

Attachments

Required Attachments

Visual Component

File: 50dcb188-e2f.pdf

Alternate Text for Visual Component

The document is an example of a monthly newsletter that promotes the research of the MITPPC....

Optional Attachments

Support Letter or Other

Title	File
MITPPC Research Addendum	9d18b7c8-c7e.docx
Background check certification form	6e48a28a-37a.docx

Media Links

Title	Link
MITPPC visual component	https://mitppc.umn.edu/news/who-we-are-mission-and-accomplishments

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

The number of research projects was changed from up to 20 to up to 18 and the budget was adjusted accordingly. This version also breaks the appropriation down by activity and budget assigned, per LCCMR instructions. We also changed the update reporting dates to Jan 1 and July 1.

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 agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

N/A

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

View this email in your browser

UNIVERSITY OF MINNESOTA
Driven to Discover®

Minnesota Invasive Terrestrial Plants and Pests Center

NEWS FROM MITPPC

May 2022

Greetings from the Minnesota Invasive Terrestrial Plants and Pests Center at the University of Minnesota! Read on for recent news and research, upcoming events, media appearances, and more.

Expert alert: Highly invasive jumping worms

MITPPC researcher Ryan Hueffmeier spoke with University Relations about ways to spot jumping worms and the steps Minnesotans can take to help prevent the spread of the invasive species.

Read more

University of Minnesota Invasive Species Conference features MITPPC expertise

On **Tuesday, June 28, 2022**, the CFANS ROC system is hosting a one-day conference focused on invasive species management in partnership with MITPPC, MAISRC and UMN Extension. Keynote speakers include three MITPPC researchers:

- **Rebecca Montgomery, PhD** — Department of Forest Resources
- **Roger Becker, PhD** — Department of Agronomy and Plant Genetics
- **Dan Larkin, PhD** — Department of Fisheries, Wildlife and Conservation Biology

The hybrid event will feature morning keynotes via Zoom and afternoon expert talks in person at each of the 10 Research and Outreach Centers across Minnesota. RSVP information coming soon. Free and open to the public.

MITPPC publication roundup

Including foresters and loggers in developing forest health treatment strategies

In this MITPPC-funded study, researchers set out to explore the role foresters and loggers, whose experiences, attitudes, and opinions are often missing when refining forest health treatment strategies, play in sustaining forest health. The researchers examined timber sale administrators' and loggers' perspectives on treatment approaches for eastern spruce dwarf mistletoe (*Arceuthobium pusillum*), a parasitic plant native to Minnesota that increases mortality and reduces growth rate and regeneration success of black spruce (*Picea mariana*). The researchers used this native mistletoe as a surrogate to better understand potential limitations in response to the invasive American dwarf mistletoe (*Arceuthobium americanum*), a parasitic plant not in Minnesota, but as close as Manitoba. The case study's findings underscore the value of nurturing a science-management partnership to ensure a broad set of voices are considered when developing or revising forest health treatment strategies.

Citation:

Snyder, S.A., Blinn, C.R., Roth, S. et al. Gaining Insights about Forest Health Prescriptions from Loggers and Foresters: Understudied Voices in the Human Dimensions of Forest Health. *Environmental Management* (2022). **https://doi.org/10.1007/s00267-022-01652-5**

Data: Understanding spotted-wing drosophila flight behavior

The purpose of this data was to document the limitations, benefits, and effects of two common laboratory methods used to assess an insect's flight capacity. The data set contains flight behaviors of lab-reared summer and winter spotted-wing drosophila morphs (*Drosophila suzukii*) on a tethered flight mill and in a free flight chamber. The study is intended to help

determine if these flies might migrate or shelter to spend the winter.

Citation:

Kees, Aubree M; Tran, Anh K; Hutchison, William D; Aukema, Brian H; Rao, Sujaya; Rogers, Mary A; Asplen, Mark A. (2022). Data supporting: Comparing *Drosophila suzukii* (Matsumura) (Diptera: Drosophilidae) flight behavior using free flight and tethered flight assays. Retrieved from the Data Repository for the University of Minnesota, **https://doi.org/10.13020/4nsz-x660**.

MITPPC Researchers in the News

- **Ryan Hueffmeier**'s Expert Alert was picked up by: **WJON**, **96.7 The River**, **98.1 Minnesota's New Country**, **Fox 9**, **1390 Granite City Sports**, **WCCO-TV**, **KARE 11**, **KRFO**, **KROC**, **Mix 94.9**, **Mix 108**, **MPR**, **WDIO**, **101.9 Jack FM**, **Patch**, **Minnesota Ag Connection**, **Southernminn.com**, **St. Cloud Times**
- **Erin Buchholz**, a cooperator on the jumping-worms project led by Lee Frelich, spoke to **CBS Minnesota** about boxelder bugs, a nuisance pest native to Minnesota.
- **Lee Frelich** spoke to **Inside Climate News** about climate changes in northern forests.
- USA-National Phenology Network included a special page about the **Pesky Plant Trackers** project in their **2021 Annual Report**. Congratulations to **Abby Anderson**, project coordinator, and **Rebecca Montgomery**, project lead.
- Former MITPPC researcher **Don Wyse** spoke to the **New York Times** about regenerative agriculture.

Upcoming events

Fifth Annual Conference on Native American Nutrition

May 23, 2022–May 25, 2022

Mystic Lake Center, Prior Lake, MN

The Fifth Annual Conference on Native American Nutrition will bring together tribal officials, researchers, practitioners, funders, and others to discuss the current state of Indigenous and academic scientific knowledge about Native nutrition, dietary health, and food science, and identify new areas of work.

Minnesota Plants: A Spring 2022 Webinar Series

Tuesdays through May 24

Join local horticultural experts for the Minnesota Plants Spring Webinar Series! Virtually explore collections, backyards and gardens as you learn to appreciate plants in their peak season, tackle pests and problems with expertise, identify new plants on your hikes, and more.

Support MITPPC

Support the Minnesota Invasive Terrestrial Plants and Pests Center with a gift today! A gift to MITPPC is an easy way to help protect Minnesota's agricultural resources, forests, prairies, and wetlands for the future. **Click here to donate**.

Financial support for the Minnesota Invasive Terrestrial Plants & Pests Center (MITPPC) is largely provided by the Environment and Natural Resources Trust Fund as recommended by the Legislative and Citizen Commission on Minnesota Resources.

Our mailing address is:
Minnesota Invasive Terrestrial Plants & Pests Center
1992 Folwell Ave
Saint Paul, MN 55108-1034