

**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

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

**Email:** hkoop@umn.edu

## **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. Ineli gible** | **% Bene fits** | **# FTE** | **Class ified 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 Service Contract | Biosecurity lab space rental |  |  |  | 0 |  | $85,200 |
| 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