M.L. 2014 Projects

MN Laws 2014, Chapter 226, Section 2 (beginning July 1, 2014)

MN Laws 2014, Chapter 312, Article 12, Section 8 (beginning July 1, 2014)

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Sec. 08 Invasive Terrestrial Plants and Pests Center

Sec. 08 Invasive Terrestrial Plants and Pests Center - Research Project - $1,460,000 TF

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Appropriation Language
$490,000 in 2015 is from the environment and natural resources trust fund for the Invasive Terrestrial Plants and Pests Center requested under this act, including a director, graduate students, and necessary supplies. This is a onetime appropriation and is available until June 30, 2022.

$970,000 from the environment and natural resources trust fund appropriated in Laws 2011, First Special Session chapter 2, article 3, section 2, subdivision 9, paragraph (d), Reinvest in Minnesota Wetlands Reserve Acquisition and Restoration Program Partnership, is transferred to the Board of Regents of the University of Minnesota for the Invasive Terrestrial Plants and Pests Center requested under this act, including a director, graduate students, and necessary supplies and is available until June 30, 2022.

Project Overview
Terrestrial invasive species are species that are not native to a location and that pose critical ecological and economic challenges once they become established in that location. They come in the form of plants, animals, insects, pathogens, and microbes that can cause harm to natural habitat, urban landscapes, and agricultural systems. The problems posed by terrestrial invasive species continue to grow as existing infestations expand and new exotic species arrive, many of which are poorly understood. New ideas and approaches are needed to develop solutions and to stay on top of emerging threats. The University of Minnesota is using this appropriation to help launch a new interdisciplinary Terrestrial Invasive Species Research Center charged with using scientific findings to support policy-making, application, and resource management practices that address the terrestrial invasive species affecting Minnesota. The center will coordinate initiatives focused on prevention of establishment, early detection and rapid response, development of new control methods and technology, integrated pest management, and minimizing non-target impacts of control. Proven tools and techniques developed at the center are intended to be implemented statewide as applicable.

Sub-Projects M.L. 2014, Sec. 08:

- *01: Novel Diagnostic Tools for Rapid and Early Detection of Oak Wilt* - $271,911
- *02: Early Detection, Forecasting and Management for Halyomorpha halys* - $616,081
- *03: Climate Change and Range Expansion of Invasive Plants* - $206,335
- *04: Cover It Up! Using Plant to Control Buckthorn* - $327,000
- *05: Terrestrial Invasive Species Prioritization* - $32,000

SOUND BITE OF PROJECT OUTCOMES AND RESULTS

Funding enabled the establishment of the Minnesota Invasive Terrestrial Plants & Pests Center (MITPPC). MITPPC now drives discoveries to prevent or reduce threats posed by priority invasive species to Minnesota lands. We bring University-of-Minnesota researchers together with partners from around the state, taking a programmatic approach to make thoughtful research investments and solve complex problems.

OVERALL PROJECT OUTCOME AND RESULTS

MITPPC, established by the Minnesota Legislature in 2014, has become a national leader in research to protect Minnesota's forests, prairies, wetlands, and agricultural lands from invasive species. Under this first appropriation, MITPPC set up its internal operations; established an advisory board, comprised of representative stakeholders from agriculture and natural resource sectors; developed a prioritization process and document upon which the RFP was based; made five research awards; and worked with LCCMR staff to appropriately document an ENRTF appropriation of this scope. Significant accomplishments include:

- Sub-project #1: Dr. Abdennour Abbas and his team developed novel detection and diagnostic tools for the oak wilt pathogen, generating patents and significant publications with spin-off applications for other invasive pathogens. These new technologies will reduce the time necessary to confirm the pathogen.
- Sub-project #2: Dr. William Hutchison and his team greatly improved our understanding of the biodynamics of the brown marmorated stinkbug, Halyomorpha halys. A stinkbug app ("The Midwest Stinkbug Assistant") and climate suitability models by Drs Twine and Snyder were important contributions for early detection and management of this pest.
- Sub-project #3: Drs. David Moeller and Ryan Runquist completed a deep dive into climate and range maps for 10 current and emerging invasive plants, including Palmer amaranth. Their maps can guide management decisions about surveillance and eradication efforts for these species.
- Sub-project #4: Dr. Peter Reich and colleagues have demonstrated the utility of planting native plants to help manage common buckthorn. Their findings suggest managers can simultaneously increase forest health, inhibit invasion, and reduce the need for investment in future buckthorn removals.
- Sub-project #5: Dr. Amy Morey provided critical on-going research into terrestrial invasive species (TIS) prioritization. A research publication summarizes MITPPC's unique approach to the process that has been applied to more than 200 TIS and drives its requests for research proposals.

PROJECT RESULTS USE AND DISSEMINATION

The MITPPC's impact can be measured by the dissemination of its applied results. In-person interviews and engagements (108 presentations around the state) and peer-reviewed publications (e.g., 12 papers in high profile journals as Restoration Ecology, the Journal of Economic Entomology, and the Journal of Biogeography) provide initial outlets to share progress of the Center. MITPPC amplifies these messages

and engages broader, diverse audiences through social media and on-line content, such as MITPPC's website, Twitter account, and YouTube channel and these messages are further amplified through other outlets (e.g., local press, newsletters, etc.).

Project Completed: 06/30/2022
FINAL REPORT - 64 pgs
Managing Invasive Buckthorn - 14 pgs
A participatory method for prioritizing invasive species: Ranking threats to Minnesota's terrestrial ecosystems - 10 pgs

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