

**Environment and Natural Resources Trust Fund  
2017 Request for Proposals (RFP)**

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**Project Title:**

**ENRTF ID: 118-D**

Conserving Trees and Biodiversity with Strategic EAB Management

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**Category:** D. Aquatic and Terrestrial Invasive Species

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**Total Project Budget:** \$ 708,500

**Proposed Project Time Period for the Funding Requested:** 3 years, July 2017 - June 2020

**Summary:**

EAB is spreading but most of Minnesota is not yet affected. We will measure impacts of tree removal and treatments on EAB populations and non-target organisms to improve management strategies.

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**Location**

**Region:** Statewide

**County Name:** Statewide

**City / Township:**

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**Alternate Text for Visual:**

Graphic contains graphs showing EAB spread in Minnesota vs the U.S. over time as well as a graph of the percentage of Minnesota cities infested.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



**PROJECT TITLE: Conserving trees and biodiversity with strategic EAB management**

**I. PROJECT STATEMENT**

The emerald ash borer (EAB) is spreading at a faster rate within Minnesota each year. During 2015 alone the number of counties with known infestations doubled from six to twelve and the number of affected cities is increasing rapidly. However, much of the work in dealing with this issue remains to be done. Of the 853 cities in Minnesota, EAB has only been found in 24. Moreover, St Paul, the first Minnesota city with EAB, is still working in 2016 to deal with about 30,000 of an estimated 38,000 public ash trees present when EAB arrived in 2005. In short, we likely still face decades of work in dealing with EAB-infested trees across Minnesota.

Many landscapes in Minnesota are at risk including forests, riparian areas and agricultural fence-row plantings. However, EAB poses a unique threat to urban forests due to the economic and environmental impacts upon city governments and their residents.

This project will evaluate the impact of EAB management activities in cities to promote the preservation of urban forests while ensuring that beneficial insects and wildlife are not harmed. Previous work funded through LCCMR has helped establish and evaluate the impact of biological control agents, determine cold tolerance limits, and improve sampling and monitoring strategies for emerald ash borer.

We now focus on optimizing strategies for management of EAB, realizing that:

- Trees are a critical part of the urban infrastructure reducing air pollution, storm water runoff and cooling costs. The loss of trees from EAB has also been indicated as a cause in human mortality rates in affected areas.
- Management opportunities for EAB include biological control agents, removal of infested trees and insecticide treatment. Cities need information on how to merge the use of these tools into a cohesive management strategy understanding that most urban landscape trees will eventually need to be removed or treated with insecticides.
- Other insects and wildlife utilizing urban ash trees perform critical ecosystem services and require conservation. Management strategies for EAB should be assessed for impacts to these organisms before EAB is more widespread in Minnesota.

The products from this project will include a comprehensive guide to EAB management for cities and other entities that will provide optimal strategies for the preservation of ecosystem services while minimizing economic impact.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1:** Determine EAB population growth and biodiversity of other insects and birds in cities with varying EAB management strategies (MDA). **Budget: \$440,750**

We will utilize sampling methods developed in the LCCMR project “Improving EAB Detection Efficacy for Control” (2014-2016) to study population growth rates of emerald ash borer in areas with different EAB management strategies in place. We will also evaluate the diversity of other insects and birds in areas with different EAB management strategies. Widespread removal of mature trees is known to lead to reductions in several ecosystem services and could impact abundance and diversity of organisms performing ecosystem services as well. Similarly, insecticide treatment of trees could affect non-target insects including pollinators. We



**Environment and Natural Resources Trust Fund (ENRTF)**

**2017 Main Proposal**

**Project Title: Saving trees and bees with strategic EAB management**

will determine visitation rates of non-target insects to ash trees and other landscape plants to assess the likelihood of insecticide exposure.

<b>Outcome</b>	<b>Completion Date</b>
<i>1. Assessment of canopy condition sample arthropod and bird diversity, compare visitation rates to ash vs non-ash</i>	<i>October 2017, 2018, 2019</i>
<i>2. Visual / branch sampling to quantify EAB density, sample bird diversity at study sites</i>	<i>May 2018, 2019, 2020</i>
<i>3. Completion of final report</i>	<i>June 2020</i>

**Activity 2:** Assess existing approaches and develop guidelines for optimal conservation of trees and biodiversity **Budget: \$267,750**

We will integrate the novel data collected through this project on EAB population growth and biodiversity under different management regimes with other work that has evaluated the impacts of EAB management on other ecosystem services such as storm water runoff and air pollution. We will also incorporate an economic quantification to produce guidelines for the urban management of EAB. These EAB management guidelines will help cities to maximize conservation of ecosystem services while minimizing economic impact.

<b>Outcome</b>	<b>Completion Date</b>
<i>1. Assess related data from work in other areas of the country</i>	<i>June 2019</i>
<i>2. Analyze data on EAB, other insects and birds under different management regimes</i>	<i>June 2020</i>
<i>3. Create EAB management guidelines for urban areas</i>	<i>June 2020</i>

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

This is a collaborative effort between the MDA and the University of Minnesota. Both partners will collaborate on Activities 1 and 2. MDA will collect data on EAB population changes and biodiversity under different management regimes. The U of M will collect data to compare visitation rates of insects to ash and non-ash landscape trees and plants. The U of M will analyze the data collected in these efforts and also assess data related to ash management strategies in other parts of the country. Both partners will collaborate on developing guidelines for urban EAB management. Both MDA and U of M will supply in-kind support through facilities, IT support, equipment and intellectual input. Cooperators on this project will include entities with EAB infestations. Existing community EAB management efforts will be leveraged to provide access to different management approaches. We will work with communities to measure EAB densities and biodiversity in study areas. Participating cities will be reimbursed for assistance with branch or tree dissection using ENRTF funds.

**Not receiving funds:** US Forest Service will provide in-kind support through the use of facilities, equipment and intellectual input. ENRTF funds will not support actual EAB management work.

**B. Project Impact and Long-Term Strategy**

This project will help cities identify optimum management strategies based on the density of EAB, forest management goals and minimization of non-target effects. This is an important project because EAB will continue to spread to new cities who will need information on reducing costs while preserving ecosystem services.

**C. Timeline Requirements**

This project is a proposed three-year project and builds on efforts from previous LCCMR projects on EAB biocontrol (2011-2014, 2015-present) and EAB monitoring and detection (2013-2016).

## 2017 Detailed Project Budget

**Project Title: Conserving Trees and Biodiversity with Strategic EAB Management**

### IV. TOTAL ENRTF REQUEST BUDGET 3 years

<b>BUDGET ITEM</b> (See "Guidance on Allowable Expenses", p. 13)	<b>MDA</b>	<b>UMN</b>
<b>Personnel:</b> <ul style="list-style-type: none"> <li>• MDA Coordinator: \$180,000 (72% salary, 28% fringe) 100% FTE - The project coordinator will coordinate field work and data collection for the MDA portion of this project</li> <li>• MDA Assistants: \$132,000 (72% salary, 28% fringe) 100% FTE - These assistants (2 @ 50% FTE) will help with collecting data during portions of the year</li> <li>• UMN graduate student for Activity 1 (3 yrs x \$42K inclusive of tuition and 17% benefits), technician for Activity 2 (3 years x \$45K inclusive of 27% benefits), partial faculty summer support (\$6K/year for Activity 1 and 2 x 3 summers, inclusive of 33% benefits)</li> </ul>	\$ 312,000	\$ 297,000
<b>Professional/Technical/Service Contracts:</b> Joint power agreements for removal of branches/trees for EAB sampling with local government cooperators.	\$ 75,000	
<b>Equipment/Tools/Supplies:</b> Supplies for conducting survey and sampling - includes, traps, lures, collection bags and vials, handheld tools for dissecting branches, personal protective equipment, etc.	\$ 5,000	\$ 2,000
<b>Travel:</b> <ul style="list-style-type: none"> <li>• MDA Vehicle rental and fuel (estimated \$12,000) - we will utilize Department lease vehicles which is the most cost effective means of travel</li> <li>• Meals and lodging for MDA Coordinator (15 days of travel per year for 3 years and MDA Project Manager (5 days of travel per year for 3 years - estimated \$2,500 total)</li> <li>• UMN vehicle for traveling to field sites Activities 1 and 2, estimated at \$1,000 / year. Rental of laboratory truck or lease from UMN fleet, whichever is more economical option in given summer.</li> </ul>	\$ 14,500	\$ 3,000
<b>Additional Budget Items:</b>	\$ -	
<b>SUBTOTALS</b>	\$ 406,500	\$ 302,000
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	\$	708,500

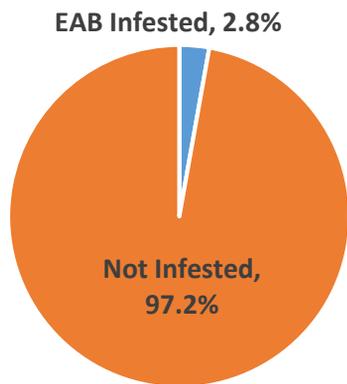
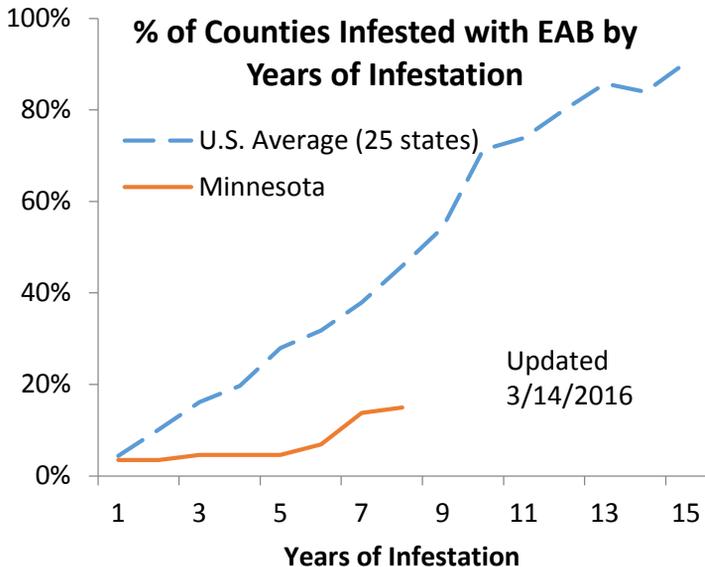
### V. OTHER FUNDS (This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)

<b>SOURCE OF FUNDS</b>	<b>AMOUNT</b>	<b>Status</b>
<b>Other Non-State \$ To Be Applied To Project During Project Period:</b> NA	\$ -	
<b>Other State \$ To Be Applied To Project During Project Period:</b> NA	\$ -	
<b>In-kind Services To Be Applied To Project During Project Period:</b> <ul style="list-style-type: none"> <li>• MDA oversight of project, 5% FTE MDA Scientist = \$15,000</li> </ul>	\$ 15,000	Secured
<b>Funding History:</b> <ul style="list-style-type: none"> <li>• ENRTF Project on EAB detection to MDA and U of M = \$600,000 in FY 14, 15 and 16</li> <li>• Forest Service Grant for EAB Management to MDA = \$96,000 in FY 15 and 16</li> <li>• Forest Service Grant for EAB Management to MDA = \$187,000 in FY13, 14 and 15</li> </ul>	\$ 883,000	Spent
<b>Remaining \$ From Current ENRTF Appropriation:</b> <i>Improving Emerald Ash Borer Detection Efficacy for Control</i>	\$ 53,814	Obligated

Conserving trees and biodiversity with strategic EAB management

EAB has spread more slowly in Minnesota than other states, but the number of infested counties doubled during 2015 (year 7 for Minnesota).

However, the vast majority of the 853 cities in Minnesota have not yet experienced EAB and much work can be done to improve management strategies.



EAB will force the removal or treatment of most ash trees in most Minnesota cities. More work is needed to understand how to maximize impacts on EAB will minimizing impacts on other organisms that utilize or depend on ash trees.

Reduce



Conserve



Conserve



Image: Whitney Cranshaw, Colorado State University, Bugwood.org

## **Conserving Trees and Biodiversity with Strategic EAB Management**

### **Qualifications**

#### **Project Manager**

#### **Mark Abrahamson, Pest Detection and Management Unit Supervisor, Minnesota Department of Agriculture**

Mark has coordinated statewide efforts regarding emerald ash borer in Minnesota since 2006 and has served as the Project Manager in collaboration with Drs. Aukema and Venette for a previous project funded by the ENRTF addressing emerald ash borer entitled "Improving Emerald Ash Borer Detection Efficacy for Control"

#### **Robert Venette, Director, Minnesota Invasive Terrestrial Plants and Pests Center, and Research Biologist, USDA Forest Service**

Dr. Robert Venette will co-advise the two graduate students on this project. Dr. Venette is employed by the United States Forest Service and holds an adjunct faculty position at the University of Minnesota. Similar to the emerald ash borer projects funded by LCCMR to date, no money will go to the Forest Service.

#### **Brian Aukema, Associate Professor of Forest Entomology, University of Minnesota**

Dr. Brian Aukema oversees the Forest Insect Laboratory where his students work on a variety of forest pest problems of both native and invasive species in the state of Minnesota and beyond (e.g., emerald ash borer on ash, gypsy moth on oak and aspen, thousand cankers disease on walnut, mountain pine beetle on tamarack, eastern larch beetle on tamarack, and more). Students he has taught can be found in a wide variety of resource professional positions, from city arborists to federal government employees.

### **Organization Description**

The Minnesota Department of Agriculture's Plant Protection Division has primary responsibility for the emerald ash borer and other new terrestrial invasive pests. Minnesota Department of Agriculture is responsible for plant protection (Minnesota Statute 18G.01) and is the lead agency on EAB in Minnesota.