Environment and Natural Resources Trust Fund
2015 Request for Proposals (RFP)

Project Title: **ENRTF ID:** **125-F**

Building "Pollinator Friendly" Landscapes

Category: F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat

Total Project Budget: $ 225,714

Proposed Project Time Period for the Funding Requested: 2.5 years, July 2015 - Jan 2018

Summary:

Statewide pollinator populations will be increased by planting 'pollinator-friendly' landscapes in yards, towns and cities, and developing best management practices with the greenhouse, nursery, landscape and parks industries.

Name: John Erwin

Sponsoring Organization: U of MN

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St. Paul MN 55108

Telephone Number: (612) 385-6863

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Web Address

Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

The graphic identifies plant of origin of plants in a landscape/garden center and notes that we do not know whether any of these plants are pollinator supportive!

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

PROJECT TITLE: Building "Pollinator Friendly" Landscapes

I. PROJECT STATEMENT

WHY: We propose a 'two pronged' approach to increase MN pollinators:

1) Leverage the goodwill and private resources of Minnesotans to plant pollinator supportive landscapes in yards, towns, and cities and,

2) Work with the greenhouse and nursery industries to develop best management practices (BMPs) to eliminate bee kills due to pesticides.

Why is this important? Pollinator bee populations are collapsing and in peril throughout MN; seventy-one of 100 crops that provide 90% of the world's food are bee-pollinated. We suspect the impacts of MN pollinator declines on native plants, wildlife they support, and agriculture is more significant than appreciated. Over 80% of Minnesotans live in towns and cities, and >90% of plants they grow are not MN natives. Some of these plants produce pollen/nectar, others do not. . . . which ones? Many residents want to plant bee supportive landscapes but don't know which plants produce pollen/nectar; neither does the industry. Although this proposal does not deal exclusively with MN native plants, it does address the vast majority of plants consumers, landscapers and local governments love, plant, and grow. Although we appreciate LCCMR's emphasis on natives, non-native, non-invasive plants can support MN bees to benefit native plants and wildlife they support. For example, honeybees are not MN-natives, but benefit many MN native plants.

It is also critical to work collaboratively with the important MN greenhouse, nursery, and landscape industries (>$2.1 billion in sales; 2002) to develop BMPs to eliminate bee kills, and insure the continued success of this important agricultural sector. As the university faculty responsible for working with the greenhouse, nursery and apiculture industries, we can do this.

GOALS and OUTCOMES: Our goal is to simply increase MN pollinator populations in collaboration with consumers, local government and the MN greenhouse, nursery, landscape, and parks industries. If we are successful, yield and performance of MN native plants, wildlife they support, and agricultural yield will increase.

HOW: Existing public gardens, garden centers and nurseries throughout MN will be used to collect data on pollinator visits (honeybee, bumblebees, and other bee pollinators), nectar yield, and pollen production on annuals, perennials, shrubs and trees. Fact sheets, an iBook, and a website with bee supportive plants listed will be developed. Local garden centers, landscapers and local governments can use this information to impact the great majority of Minnesotans. BMPs will be developed with the Minnesota Nursery and Landscape Assoc. (MNLA) and the Minnesota Recreation and Parks Assoc. (MRPA) and that information will be published in the trade press, online, and at conferences to implement.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Count pollinator visits and identity (honeybee, bumblebee, other bees), and collect pollen and nectar samples on >200 annuals and perennials, and >100 shrub and tree species/cultivars at garden centers, nurseries and public gardens in each of 5 MN regions 3 times a year, in each of 2 years. Locations will include Detroit Lakes, Duluth, Rochester, Mankato, Winona, Moorhead, Crookston, Morris, Grand Rapids, Mankato, Austin, Chanhassen, and metro area.

Budget: $122,919

Outcome	Completion Date
1. Develop lists of pollinator supportive plants (high bee pollinator visitation and pollen/nectar production) so consumers, landscapers, and government can plant more pollinator supportive plants in landscapes to increase bee populations.	March 2016, and March 2017
2. Provide data and lists to the greenhouse and nursery industry to allow them to grow more bee supportive plants to increase bee populations.	March 2016, and March 2017

3. Provide data to plant breeders to establish benchmarks for breeding of native and non-native plants to increase bee support on new cultivars.	March 2016, March 2017

Activity 2: *Identify bee safe pesticides labeled in MN that can be used by the greenhouse, nursery, landscape industries, government (parks), and consumers. Develop BMPs collaboratively with MNLA and the MPRA to eliminate pollinator kills.* **Budget: $51,397**

Outcome	Completion Date
1. Consumers will not kill bees because they have access to information that is readily available about compounds that are pollinator safe, and safe application procedures.	March 2016
2. Greenhouse, nursery, and landscape industries will use pesticides and implement procedures that will eliminate pollinator kills (collaborate with MNLA)	March 2016
3. Government will use pesticides and implement procedures that will eliminate bee kills in parks and on street trees (collaborate with MPRA).	March 2016

Activity 3: *Develop fact sheets, iBooks, and online resources for the public, and other extension materials for the greenhouse, nursery industry and local government. Fact sheets will be distributed to garden centers and online for consumers to use as a guide for purchasing landscape plants that support pollinators.* **Budget: $51,398**

Outcome	Completion Date
1. Plant species/cultivars that support bees will be grown by the greenhouse and nursery industry and planted in yards, in parks, and along streets.	March 2017
2. News, newspapers and other media outlets will have access to information and will likely publicize that information to encourage more bee supportive landscaping.	March 2017

III. PROJECT STRATEGY

Project Team/Partners

John Erwin Professor (Co-leader) - Floriculture, Nursery and Greenhouse Vegetable Ext. Specialist – Dept. of Hort. Sci., U of MN, Project Lead- Oversee data collection, graduate student supervision.

Marla Spivak Professor (Co-leader) – Apiculture Ext. Specialist, Dept. of Entomology, U of MN.

Grad Students Joint - Depts. of Horticultural Science and Entomology, U of MN, Collect data, write results.

Directors Experiment Stations (U of MN) and public gardens (U of MN, local government)

Industry Members of MNLA and MPRA, Minneapolis Park and Recreation Board

B. Project Impact and Long-Term Strategy

Bee populations will increase throughout the state by more bee supportive landscape plants being planted in yards, parks and along streets. MN residents will have the opportunity to participate in increasing pollinator populations directly in their yards, towns and cities. Given landscape plants can live for decades, there is a long-term benefit to this work. In addition to resident/local government impacts, this project develops new BMPs for commercial MN greenhouse, nursery, landscape and park industries to insure they are supported, and continue to flourish. Lastly, the work presented here establishes benchmarks for plant breeding of more pollinator supportive landscape plants.

C. Timeline Requirements:

Project funding is requested for 2.5 years to allow data collection through two growing seasons, and data analysis, publication and website development.

2015 Detailed Project Budget

Project Title: Building" Pollinator Friendly" Landscapes

IV. TOTAL ENRTF REQUEST BUDGET 2.5 years

BUDGET ITEM *(See "Guidance on Allowable Expenses", p. 13)*	**AMOUNT**
Personnel: 2 Graduate Assistants @ 50% each for 2.5 years from 8/31/15 - 8/28/17 with salary, fringe benefits, and full tuition. 8/29/17 - 2/28/18 with salary, fringe benefits, and reduced tuition.The fringe rates are calculated at the current University of Minnesota negotiated rates of 15.7% for the academic year & 23.1 % for the summer months Year 1: Salary @ $23,660 x 2 = $47,320; fringe benefits @ $4,192 x 2 = $8,384; tuition @ $15,015 x 2 - $30,030; Total = $85,734 Year 2: salary @ $24,134 x 2 = 48,268; fringe benefits @ $4,275 x 2 = $8,550; tuition @ $15,916 x 2 = $31,832; Total = $88,650 Year 3 (6 months): salary @ $11,944 x 2 = 23,888; fringe benefits (15.7%) $1,875 x 2 = 3,750; tuition @ $1,784 x 2 = $3,568; Total = $31,206	$ 205,590
Equipment/Tools/Supplies: Field Supplies including materials for sampling/quantifying plant pollen and nectar production off campus, and on campus over 2.5 years.	$15,000
Travel: Travel to all 4 regions of MN (SE, SW, NW, NE) that will include overnight stays in some cases to visit public gardens, Ag Expt. Stations, and garden centers and nurseries, as well as metro sites over 2.5 years. This will include travel to Duluth, Grand Rapids, Detroit Lakes, Crookston, Morris, Marshall, Mankato, Waseca, Winona, Rochester with per diem associated with each (3 times a year x 2 years) = 1155 miles @ $.56/mile x 3 times a year ($1,940) + 5 days partial day meals ($194) and 4 nights lodging ($428) = $2,562 x 2 years = $5,124	$ 5,124
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 225,714

V. OTHER FUNDS

SOURCE OF FUNDS	**AMOUNT**	**Status**
Other State $ To Be Applied To Project During Project Period: Existing trial gardens in the state Agricultural Experiment Station System (Waseca, Morris, Grand Rapids, etc.) will be leveraged as evaluation sites, city owned parks, gardens, and street trees will be used as evaluation plants/sites, existing commercial nurseries will be used for test sites and information collection.	Unknown	Secured
In-kind Services To Be Applied To Project During Project Period: John Erwin effort @ 3.0% per year, salary @ $2,592/yr plus fringe @ 33.6% or $871/yr = $3,463 x 2.5 years = $8,658. Also, unrecovered indirect costs $225,714 - $80,104 (graduate student academic year fringe & tuition) = $145,610 x 52.0% MTDC rate = $75,717	$ 84,375	Secured:Erwin Pending: unrecovered IDC

Can we create pollinator friendly landscapes?
Yes! . . . . We can!

Plants in this Minnesota landscape. . . . . .

Dahlia (Mexico)
Daylily (China, Korea, Japan)
Juniper (North America)
Weeping Pea Shrub (Siberia)
English Ivy (England)
Crabapple (mainly Europe)
Coneflower (US)
Rudbeckia (US and Canada)
Burning Bush (Eastern Asia)
Star Magnolia (Japan)

Minnesota Landscape and Nursery Assoc. Merit Award Winner - Metro landscape redesign

Do these landscape plants produce pollen/nectar?

We don't know. . . . .

Plants in this Minnesota Garden Center . . .

Gazania (South Africa)
Bacopa (South Africa)
Geranium (South Africa)
Fuchsia (Brazil)
Calibrachoa (Brazil)
Petunia (Brazil)
Scaveola (South Africa)
Dusty Miller (Turkey)
Begonia (South America)
Pansy (Europe)

Nature's Edge Garden Center (Bemidji, MN)

Do these garden flowers produce pollen/nectar?

Which of the 228 pansy cultivars grown today produce pollen/nectar and which don't?

We don't know. . . . .

Organization Description – University of Minnesota:
The University of Minnesota is the Land Grant College which serves the resident of Minnesota and the greater region through teaching, research and extension. The Department of Horticultural Science serves the public as well as the commercial horticulture industries which include the greenhouse flower, florists, nursery crop, vegetable, fruit, turf, potato, and mushroom producers.

Project Lead - John Erwin
BS – Delaware Valley College of Science and Agriculture – Ornamental Horticulture
MS – Michigan State University – Horticulture
PhD – Michigan State University - Horticulture

Professor
Greenhouse Crop and Nursery Extension Specialist
Department of Horticultural Science, University of Minnesota
(Assistant Professor 1989-1996; Associate Professor 1997-2004; Professor 2005-Current); Former Vice Chair of Ornamentals of the International Society of Horticulture Sciences; Former Chair – Ornamentals, American Society of Horticultural Sciences.
Responsible for extension related to commercial production of ornamental plants and greenhouse fruit and vegetable production statewide. Recent responsibility change includes a new responsibility for the Minnesota Nursery industry. Past accomplishments focus developing new non-chemical production practices that to control plant growth, production procedures for NASA, protocols to force flowering of poinsettias, Easter lilies, and many garden annuals, protocols for lighting and shading to save energy. Also, identified new best management practices to increase pest/disease control while decrease chemical use.

Current Citywide Minneapolis Park and Recreation Board Commissioner (elected 3 times 2001, 2010, 2014), Former Vice President – 2 years, and President 4 years of the Minneapolis Park and Recreation Board.
Led the Minneapolis Park and Recreation Board when it was identified as the #1 Park System in the United States by the Trust for Public Land (2013), initiated the largest riverfront redesign and restoration project in recent memory in Minneapolis (RiverFirst), initiated an reinvestment in neighborhood recreation centers, and developed a management plan to restore Minneapolis's tree canopy that includes planting 10,000 trees/year, while 'holding the line' on tax increases (less than any Board in 40 years).

Consultant
Small Business Owner:
Consults with greenhouse ornamentals/vegetable production industries in CA, FL, TX, OR, WA, and CO. Essentially help produce product that is sold through big box chains along west coast.