



# Environment and Natural Resources Trust Fund (ENRTF) M.L. 2014 Work Plan

**Date of Report:** January 13, 2014  
**Date of Next Status Update Report:** December 31, 2014  
**Date of Work Plan Approval:**  
**Project Completion Date:** June 30, 2016  
**Does this submission include an amendment request?** No

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**PROJECT TITLE:** Pollination Education Center at the Minnesota Landscape Arboretum

**Project Manager:** Peter C. Moe  
**Organization:** Minnesota Landscape Arboretum  
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**Location:** Carver, Statewide

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<b>Total ENRTF Project Budget:</b>	<b>ENRTF Appropriation:</b>	<b>\$615,000</b>
	<b>Amount Spent:</b>	<b>\$0</b>
	<b>Balance:</b>	<b>\$615,000</b>

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**Legal Citation:** M.L. 2014, Chp. 226, Sec. 2, Subd. 09f

**Appropriation Language:**

\$615,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to develop exhibits for an educational center that will offer hands-on learning experience about the role of pollinators and importance of pollinator habitat. Exhibits must utilize and integrate the best available science pertaining to all pollinator types, particularly native species. Approval of the work plan for this appropriation is contingent upon the organization addressing how it will increase access to the center by youth at no or limited cost.

**I. PROJECT TITLE: Pollination Education Center at the Minnesota Landscape Arboretum**

**II. PROJECT STATEMENT:**

**WHY.** Pollination is the cornerstone that supports the ongoing flow of life through natural ecosystems and our food production system. Yet today pollinators are in trouble. Loss of habitat and native vegetation diversity, systemic pesticide use, advent of Round-up ready agricultural crops and upticks in diseases are contributing to declines in the many species of bees that are our region’s primary pollinators, as well as other flower feeders such as native butterflies, flies and beetles. We rely on a vast and often overlooked network of interdependencies between plants and their pollinators for the continued health of our woodlands, wetlands and prairie, as well as for food production. Developing an aware, informed citizenry that understands this issue is a key to finding and implementing solutions.

**WHAT.** The goal of the “Pollination Education Center at the Minnesota Landscape Arboretum” is to raise the profile of this important issue in our state. We will create a dedicated educational facility with exhibits, demonstration plantings and ongoing programming. All these will support increased public understanding of the issues facing our bee species and other pollinators. The Arboretum has secured funds for the building’s construction from other sources. This project will develop the essential messaging that fills its 1600 sq ft exhibit hall and the adjacent garden. Exhibits and displays inside and out will be based on sound ecological principles and current scientific research. Content will be reviewed by leading University scientists. Topics will include the intricate relationships between flowers and their pollinators, the critical role of pollination in plant reproduction and in maintaining species diversity, its importance for many food crops, and ways people can help pollinators - by creating pollinator-friendly landscapes in urban and rural settings, by helping to preserve and restore diversity and health of native habitats. The exhibits indoors and out will utilize “flagship” species such as honeybees and monarch butterflies, which waken strong public interest, show immediate links with our lives, and offer a variety of ways to explore the environmental stresses faced by both these charismatic species and other equally important but less-known pollinators. The potential public actions demonstrated, such as the importance of diverse landscape plantings, will improve conditions for many species of pollinators.

**HOW.** The approach will be to provide scientifically sound information in ways that awaken interest, wonder and curiosity, setting the stage for viewers to want to continue observing and learning in other times and places. The signage, displays, interactive stations and plantings will be designed to engage and inform both children and adults about pollinators. They will offer a wealth of visual and hands-on approaches to the underlying science concepts, and help visitors see the many ways pollination is important in their own lives and for the wider health of the ecosystem. Both within and without, visitors will discover actions they can take in their own lives on behalf of pollinators. When complete, the new facility’s exhibits and gardens will be open to Arboretum visitors. The facility will also house ongoing school and summer fieldtrip programs, classes for adults, drop-in weekend programs for families and public festivals.

Exhibits within the building will include a “portal” introduction to the science of flowers, their pollinators, and what occurs during pollination. They will explore the lifeways, adaptations and ecological role of such pollinators as wild bees and other native insects, and honeybees, including the roles these play in food production. Exhibits and plantings outside the building will reinforce and broaden the story, as visitors observe pollinators of many species at work in the plantings. “Best practice” plant choices and habitat characteristics important for success in creating more pollinator-friendly landscapes across urban and rural settings will be demonstrated.

**SIGNIFICANCE.** Both within and without, visitors will discover actions they can take in their own lives on behalf of pollinators. When complete, the new facility’s exhibits and garden area will welcome Arboretum visitors. The facility will also house ongoing school and summer fieldtrip programs for children, adult classes, free drop-in weekend programs for families and public festivals. Existing scholarship and partnership programs will provide access to the new facility and its services for under-served audiences including urban schools.

**III. PROJECT STATUS UPDATES:**

**Project Status as of:** December 31, 2014

**Project Status as of:** June 30, 2015  
**Project Status as of:** December 31, 2015  
**Overall Project Outcomes and Results:** June 30, 2016

**IV. PROJECT ACTIVITIES AND OUTCOMES:**

**ACTIVITY 1: Facility Exhibits (inside)**

**Description:**

Exhibits inside the facility will be developed via a standard, four-phase sequence widely used in the museum field: Framework & Concept Development, Schematic & Design Development, Final Design, and Production & Installation. Each phase involves specific tasks, and concludes with a set of deliverables or milestones.

**Framework & Concept Development (2 months)**

**TASKS:** Issue an RFP and select exhibit development firm; develop main messages and strategies for engaging the audience; develop list of themes and components for the messages; do preliminary budget allocation; make models; hold scientific review.

**DELIVERABLES:** Selection of exhibit development firm; statement of exhibition’s learning goals and strategies; preliminary summary listing of exhibition components, space allocations and budget.

**Schematic & Design Development (4 months)**

**TASKS:** Research and confirm themes and goals; develop floor plan and spatial arrangement; develop activities list for each area; test prototypes of selected activities with potential audience; develop graphic design look for furnishings and signage; research images; draft text for signage; describe interactives and audiovisual requirements.

**DELIVERABLES:** Final inventory of components; floor plan; sketches and elevation drawings of components; graphic elements family (“look” of exhibits); list of signs and other graphic elements; refined budget.

**Final Design (3 months)**

**TASKS:** Develop details of each activity; develop construction drawings and blueprints; select images and artifacts; finalize interpretive sign text; select props and costumes, develop lighting and electrical plan; develop production schedule; review budget; hold scientific review.

**DELIVERABLES:** Final components list; construction drawings for each component; production-ready graphic design of signs and other elements; props and artifacts list; lighting and electrical specs; fabrication schedule; installation schedule; cost estimates and final budget allocation.

**Production & Installation (6 months)**

**TASKS:** Locate fabricators and get bids; award construction contracts; build exhibits; purchase and create props and costumes; produce signs and other graphics; assemble audiovisuals; mount artifacts; install exhibits.

**DELIVERABLES:** Exhibits built and installed; backup graphics file created; extra props prepared; staff trained on operation and maintenance.

The facility’s indoor exhibit area of 1600 sq ft will be divided into 6-8 zones. It is preliminary to provide a complete listing of the zones, since this will be a product of the first design phase; however they may include a Blooming Meadow (close-up video of a number of pollinators in action), Meet the Natives (case studies of selected wild bee species), Food for Thought (environmental issues affecting health of pollinators), Inside the Hive (case study of honeybee cooperative society) and Honey House (demonstration honey extraction area).

Exhibit content will be reviewed twice by science experts including Drs. Marla Spivak and Karen Oberhauser:

- 1) during Framework & Concept Development, to check that proposed messages are clearly defined, flow logically and include important concepts and current findings.
- 2) before Production & Installation proceeds, to check for scientific accuracy and clarity.

**Summary Budget Information for Activity 1:**

*Facility Exhibits (inside)*

**ENRTF Budget: \$489,000**

**Amount Spent: \$ 0**

**Balance: \$489,000**

**Activity Completion Date:** June 30, 2016

Outcome	Completion Date	Budget
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1. Exhibits Framework & Concept Development phase complete	Sept 1, 2014	\$ 24,000
2. Exhibits Schematic Design & Design Development phase complete	Jan 1, 2015	\$ 51,000
3. Exhibits Final Design phase complete	April 1, 2015	\$ 51,000
4. Production & Installation of Exhibits complete	Nov 1, 2015	\$363,000

**Activity Status as of:** January, 2015

**Activity Status as of:** June, 2015

**Activity Status as of:** December, 2015

**Final Report Summary:** June, 2016

**ACTIVITY 2: Garden for Pollinators (outside)**

**Description:**

The Garden for Pollinators will be sited immediately adjacent to the exhibits and teaching building, to easily integrate the educational messages of the inside exhibits with opportunities to watch live pollinators in action outdoors. This will reinforce messaging and encourage ready use of the outdoors as a real-world learning lab by both general visitors and in hands-on programming for adults, children, schools and families.

**Design Development (3 months)**

**TASKS:** Issue RFP and interview applicant landscape architecture firms; award contract; form Garden for Pollinators Work Group; develop plant list with scientist input; design layout, including garden entrance, pathway circulation system, garden beds, central gathering or patio area, irrigation, teaching zone, interpretive displays and signage.

**DELIVERABLES:** Garden design; plant list and planting plan.

The selected landscape architect will join a workgroup that includes the Arboretum Curator, an Arboretum Gardener and the Arboretum Interpretation Manager. This group will develop the garden design including all components listed above. The Garden for Pollinators will also present demonstrations of other features such as “basking rocks” for butterflies and habitat sites for various native bee species. To prepare for determining the planting plan, Arboretum staff will gather input from University of Minnesota experts Drs Marla Spivak and Karen Oberhauser as well as Minnesota State DNR staff to develop a “best practices” list of plant species to be recommended for pollinator-friendly landscaping. The plant list and planting demonstrations will be organized by season of bloom, highlighting for visitors the importance of providing plants in bloom, thus food for flower feeders, all season long. To help visitors easily gather ideas for planting, it will be organized into planting zones by bloom time: Spring, Early Summer, Late Summer, Early Fall. Each planting zone will include top nectar and pollen producing perennials, shrubs, groundcovers and trees for that season. A demonstration planting of milkweed species will include interpretation on monarch butterflies, the monarch migration and the essential role that habitat requirements play en route for its success.

**Final Design & Plant Orders (3 months)**

**TASKS:** Do construction drawings including grading, drainage, bed structure, pathway construction and other features; create planting plan; find sources and order plants that have not been treated with systemic insecticides; order irrigation equipment.

**DELIVERABLES:** Construction drawings; plant and equipment orders.

**Develop Interpretation (2 ½ months)**

**TASKS:** Research and write sign text; develop displays of habitat features for native pollinator species including native bee nesting sites and rocks for butterfly basking; design graphics.

**DELIVERABLES:** Production-ready graphic designs for signage; designs for interpretive displays.

**Construction & Planting 4 ½ months)**

**TASKS:** Do grading; layout and install pathways; prepare planting beds and amend soil; install irrigation; install plantings and mulch; install signage and habitat features.

**DELIVERABLES:** Garden and displays are complete.

**Summary Budget Information for Activity 2:***Garden for Pollinators (outside)***ENRTF Budget: \$126,000****Amount Spent: \$ 0****Balance: \$126,000****Activity Completion Date:** June, 2016

<b>Outcome</b>	<b>Completion Date</b>	<b>Budget</b>
<b>1. Develop Pollinator Garden Design</b>	March 1, 2015	\$ 18,000
<b>2. Develop Pollinator Garden Interpretation</b>	May 1, 2015	\$ 6,000
<b>3. Build, plant and install interpretive displays in Pollinator Garden</b>	Nov 1, 2015	\$ 102,000

**Activity Status as of:** January, 2015**Activity Status as of:** June, 2015**Activity Status as of:** December, 2015**Final Report Summary:** June, 2016**V. DISSEMINATION:****Description:**

The "Pollination Education Center at the Minnesota Landscape Arboretum" facility will be a resource for all ages. Its Garden for Pollinators will welcome visitors during all hours the Arboretum Grounds are open (daily year-round closing at sunset, closed Thanksgiving and Christmas). The building will also have regular open hours, and will provide an ideal location for hands-on programming for both children and adults. From school fieldtrips to summer day camps for children; from adult classes to public festivals and free weekend, drop-in family programming, Pollination Place will be an exciting hub of activity at the Arboretum.

The Arboretum is committed to ensuring its facilities, programs and resources are accessible to all Minnesotans. In 2013 over 49,000 children received free admission to the Arboretum. The following outlines the Arboretum's admission policies and other ways it seeks to foster accessibility for underserved communities:

Admission policies. Regular admission for adults is \$12. The Arboretum provides free admission to all children 12 and under, whether they arrive with their family or with a school group. In addition, schools that reserve a self-guided visit in advance receive free admission for their adult leaders. Other reduced admission opportunities are:

- **Free Thursdays all day;** November through March
- **Free every third Thursday of the month after 4:30 pm;** April through October
- **Special group admission for groups of 15 or more, includes driver;** \$7 per person, Mon-Fri only, without an Arboretum tour guide
- **Free admission for Carver County residents;** yearly event
- **Free admission during January**
- **Free admission for members;** yearly membership begins at \$49, and include many other benefits

Fieldtrips. While the Arboretum charges \$5 per student for its hands-on fieldtrips, we seek to serve all schools and students regardless of ability to pay. Philanthropic support is used to provide scholarships that reduce program fees by half for schools with more than 30% of their students eligible for free/reduced lunch. Scholarships are available to waive fees completely, making fieldtrip programs free, for schools with more than 50% of their students eligible for free/reduced lunch. Recognizing transportation costs may be an obstacle for many schools, the Arboretum also offers transportation stipends of \$285 per bus to reimburse schools for bus costs. These are available on a first come, first served basis for up to 35 schools yearly; schools with more than 50% of their enrollment on free/reduced lunch may apply for one. These opportunities are widely publicized via the Arboretum's website, a print fieldtrip guide distributed to teachers and districts across the 7 county metro area, and at the annual Minnesota Education Association Conference held every October.

**Activity Status as of:** January, 2015

Activity Status as of: June, 2015  
 Activity Status as of: December, 2015  
 Final Report Summary: June, 2016

**VI. PROJECT BUDGET SUMMARY:**

**A. ENRTF Budget Overview:**

Budget Category	\$ Amount	Explanation
Personnel:	\$ 21,000	.20 FTE Lead Gardener, .20 FTE Interpretive Asst
Professional/Technical/Service Contracts:	\$ 495,000	Exhibit developer contracts for design and production of exhibits; landscape architect contract for garden & irrigation design
Equipment/Tools/Supplies:	\$ 99,000	Supplies for garden construction & outdoor interpretation; teaching equipment
<b>TOTAL ENRTF BUDGET:</b>	<b>\$ 615,000</b>	

**Explanation of Use of Classified Staff:**

**Explanation of Capital Expenditures Greater Than \$5,000:** Exhibits, displays and signage at the Pollination Place facility and garden will be coordinated by Minnesota Landscape Arboretum, and will remain installed at the Arboretum for their entire working life, to support increased public understanding of the importance of pollinators.

**Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:** .40 FTE

**Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:**

Exhibit Development Contract 6.5 FTE's  
 Landscape Design Contract .2 FTE

**B. Other Funds:**

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state	\$ 2,850,000	secured	Funding secured by Arboretum for building & access road construction
State	\$ 80,158	secured	In-kind services provided by Arboretum personnel: Director of Operations (.05 FTE), Manager of Interpretation (.75 FTE), Manager of Youth Education (.05 FTE)
<b>TOTAL OTHER FUNDS:</b>	<b>\$ 2,930,158</b>		

**VII. PROJECT STRATEGY:**

**A. Project Partners:**

**Peter Moe**, Arboretum Director of Operations, will coordinate design and development of Garden for Pollinators plantings, structures and circulation system.

**Sandy Tanck**, Arboretum Manager of Interpretation, will lead planning to design, develop and produce interpretive displays and signage inside facility and in outdoor Garden for Pollinators.

**Randall Gage**, Arboretum Manager of Youth Education, will ensure exhibits, gardens, facility and interpretation align with program needs for schools and children.

**Marla Spivak**, Professor of Entomology, University of Minnesota, will review proposed exhibit and garden designs, interpretation and plant lists for accuracy, clarity and message relevance. Scientist content review provided gratis.

**Karen Oberhauser**, Assistant Professor of Forest Resources, University of Minnesota, will review proposed garden interpretation and plant lists for accuracy, clarity and message relevance. Scientist content review provided gratis.

**B. Project Impact and Long-term Strategy:**

The “Pollination Education Center at the Minnesota Landscape Arboretum” with its facility and gardens will be the first feature attraction to be built in a new eastern Red Barn Campus the Arboretum is developing. The goals of the Red Barn Campus are to demonstrate sustainable landscape principles, best practices for cleaner water, and food production and preservation methods for a variety of scales from backyard and neighborhood gardens, to urban agriculture, to small and mid scale rural production. Other features currently planned for the Red Barn Campus will include Best of Minnesota Demonstrations, Grow at Home Demonstrations, Grow in the City Demonstrations, Mid-scale Demonstrations, Indoor & Outdoor Kitchens, Incubator Food Processing Space, State Master Gardener Headquarters, Education Offices & Teaching Pavilions, and a Nature-based Therapeutic Demonstration. The importance of a healthy environment for pollinators is an essential aspect of the message for this campus.

Impact of the facility will be tracked through several existing Arboretum systems. Education staff will prepare yearly attendance reports across all program formats (fieldtrips, festivals, family weekends, camps etc). They also collect and compile evaluation forms from teachers and adult program participants on an ongoing basis. Visitor awareness of the facility will be measured via regularly administered visitor surveys.

**C. Spending History:**

Funding Source	M.L. 2008 or FY09	M.L. 2009 or FY10	M.L. 2010 or FY11	M.L. 2011 or FY12-13	M.L. 2013 or FY14
2013 LCCMR – Land Acquisition				2,000,000	

**VIII. ACQUISITION/RESTORATION LIST:** NA

**IX. VISUAL ELEMENT or MAP(S):** See attached graphic

**X. ACQUISITION/RESTORATION REQUIREMENTS WORKSHEET:** NA

**XI. RESEARCH ADDENDUM:** NA

**XII. REPORTING REQUIREMENTS:**

Periodic work plan status update reports will be submitted no later than January 2015, June 2015 and December 2015. A final report and associated products will be submitted between June 30 and August 15, 2016.

**Environment and Natural Resources Trust Fund**

**M.L. 2014 Project Budget**



**Project Title:** Pollination Education Center at the Minnesota Landscape Arboretum

**Legal Citation:** M.L. 2014, Chp. 226, Sec. 2, Subd. 09f

**Project Manager:** Peter C. Moe

**Organization:** Minnesota Landscape Arboretum

**M.L. 2014 ENRTF Appropriation:** \$ 615,000

**Project Length and Completion Date:** 2 years; June 30, 2016

**Date of Report:** January 13, 2014

<b>ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET</b>	<b>Activity 1 Budget</b>	<b>Amount Spent</b>	<b>Activity 1 Balance</b>	<b>Activity 2 Budget</b>	<b>Amount Spent</b>	<b>Activity 2 Balance</b>	<b>TOTAL BUDGET</b>	<b>TOTAL BALANCE</b>
<b>BUDGET ITEM</b>	<i>Facility Exhibits</i>		<i>Garden for Pollinators</i>					
<b>Personnel (Wages and Benefits)</b>	\$9,000		\$9,000	\$12,000		\$12,000	\$21,000	\$21,000
TBD, Lead Gardener: \$12,000 (64% salary, 36% benefits); .20 FTE for 1 yr								
TBD, Interpretive Assistant: \$9,000 (92% salary, 8% benefits); .20 FTE for 1 yr								
<b>Professional/Technical/Service Contracts</b>								
TBD (competitive bid): Exhibition development consulting to develop exhibition concepts, layout, components, blueprints, lighting, production and installation	\$480,000		\$480,000				\$480,000	\$480,000
TBD (competitive bid): Garden design consulting to develop design for garden entry, pathway system, layout of beds, planting plan, irrigation, seating				\$15,000		\$15,000	\$15,000	\$15,000
<b>Equipment/Tools/Supplies</b>								
Soil preparation (\$3,000)				\$3,000		\$3,000	\$3,000	\$3,000
Irrigation (\$10,000)				\$10,000		\$10,000	\$10,000	\$10,000
Plants, installation (\$65,000)				\$65,000		\$65,000	\$65,000	\$65,000
Mulch (\$5,000)				\$5,000		\$5,000	\$5,000	\$5,000
Interpretive signage, plant labels (\$12,000)				\$12,000		\$12,000	\$12,000	\$12,000
Microscopes for outdoor garden teaching (40@ \$100)				\$4,000		\$4,000	\$4,000	\$4,000
<b>COLUMN TOTAL</b>	<b>\$489,000</b>		<b>\$489,000</b>	<b>\$126,000</b>		<b>\$126,000</b>	<b>\$615,000</b>	<b>\$615,000</b>



# Pollination Education Center at the Minnesota Landscape Arboretum



