

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

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**Project Title:**

**ENRTF ID: 121-F**

MeCC VIII: Restoration for Climate Resilience, Pollinators, Working Lands

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

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**Total Project Budget:** \$ 459,000

**Proposed Project Time Period for the Funding Requested:** 3 years, July 2015 - June 2018

**Summary:**

In a compelling partnership, we evaluate oak viability, and effects of prairie haying on plants and pollinators; evaluate metro grazing/burning; gather pollinator data at restorations; and engage 770 citizens.

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**Name:** Wiley Buck

**Sponsoring Organization:** Great River Greening

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St. Paul MN 55107

**Telephone Number:** (651) 665-9500 x15

**Email** wbuck@greatrivergreening.org

**Web Address** www.greatrivergreening.org

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**Location**

**Region:** Metro

**County Name:** Hennepin, Ramsey, Scott, Washington

**City / Township:**

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**Alternate Text for Visual:**

Project Sites

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



**PROJECT TITLE: Restoration for Climate Resilience, Pollinators, Working Lands: MeCCVIII**

**I. PROJECT STATEMENT**

Innovative restoration techniques and increased public understanding are both needed to ensure the success of restoration and pollinator conservation in the face of habitat destruction, fragmentation, invasive species, pesticide drift, climate change and other persistent and emerging threats. This project focuses on three areas of study to address some of the most urgent real world challenges in restoration, pollinator conservation, and outreach: 1) viability of different bur oak ecotypes in a changing Minnesota climate; 2) the pollinator crisis in the context of prairie restoration and citizen science; and 3) the effectiveness of goat grazing as a management technique in urban areas. The proposed research and activities will be implemented with a compelling partnership of entities and findings will guide oak restoration, inform prairie management as it relates to pollinator conservation, provide an evaluation of emerging restoration techniques for the metro area, engage 770 citizens, and provide valuable data to a bumble bee database.

**II. PROJECT ACTIVITIES AND OUTCOMES**

**Activity 1: Accelerated Migration of Bur Oak Ecotypes for Climate Resilience**

**Budget: \$ 178,000**

Natural colonization by adapted native plants in response to a changing Minnesota climate is hindered by lack of seed source, invasive species, and fragmented habitat. Without careful intervention, weedy invasive species could come to dominate our vegetation. Oak trees, with their low natural rate of migration, extended age to maturity, and importance to Minnesota, are especially in need of human assisted accelerated migration. In this study, we will complete early year growth and survival comparison of three ecotypes – local, southern, and northwestern MN/Dakota – of bur oak at four metro sites to determine which if any ecotype fares better. Dr. Lee Frelich and his students will design the study, collect data on 2000 stems of each ecotype, analyze the results, and write a report. Greening will collect and germinate acorns from verified sites; plant 6000 stems engaging 50 volunteers; fence and manage the plantings; and produce informational materials for restoration practitioners based on the results.

Outcome	Completion Date
1. Early year growth and survival by oak ecotype determined; report written and prepared for publication/presentation	5/1/18
2. Informational materials for restoration practitioners prepared for distribution/presentation	6/30/18

**Activity 2: Citizen Engagement in Pollinator Monitoring and Prairie Enhancement**

**Budget: \$231,000**

Vegetation restoration and pollinator management are intricately related. In an effort to merge the best science from both fields, and also have a broad public impact stemming from today’s unprecedented public interest, we will form a working partnership between Greening, Xerces Society for Invertebrate Conservation, and Maplewood Nature Center. This collaboration will provide a suite of engagement opportunities for citizens to actively learn about pollinators, restoration, and their relationship, ranging from citizen science monitoring to K-12 school outings with expert interpretation, to restoration volunteers being introduced to pollinator conservation through plugging of pollinator friendly prairie plants and bumble bee identification. At Fish Creek Open Space, Xerces will lead the pollinator and bumble bee monitoring including a 150-person citizen science program and submit data to web-based Bumble Bee Watch. Maplewood Nature Center will lead and design an interpretation program for 500 K-12 students and others, engaging them in pollinator observation and photography, restoration, and other activities. Greening will conduct prairie enhancement including plugging



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**2015 Main Proposal**

**Project Title:** Restoration for Climate Resilience, Pollinators, Working Lands: MeCCVIII

pollinator-friendly forbs with 50 volunteers. During all citizen engagement and activities, the tie-in between restoration practice and pollinator management will be explored, and results and processes shared. At Central Corridor, Greening will implement haying on distinct plots, collect data on plant diversity, spring forbs, bloom coverage, and soil nitrogen levels on hayed and un-hayed plots; statistically analyze the results and prepare a report. Xerces will design and conduct research comparing pollinator abundance, diversity, and foraging patterns on hayed and un-hayed plots, analyze the results, and with Greening prepare a report on the effects of haying. These reports will help refine haying as a prairie management tool in Minnesota, and its effects on plants and pollinators. At Pilot Knob Hill, Greening will collect data on the effect of burning and grazing on plant diversity, spring forbs, bloom coverage, and soil nitrogen levels, and enhance the site by plugging bumble bee-friendly plants with 20 volunteers. Xerces will implement spring to fall bumble bee monitoring including focused searches for the rusty patch bumble bee and other rare Minnesota species. Together, data will be evaluated, and a case study report prepared.

Outcome	Completion Date
1. 720 citizens engaged, including 500 K-12 students	6/1/18
2. Effect of prairie haying on floristic diversity, soil N, pollinators at Central Corridor determined. Report written, prepared for presentation/publication	6/30/18
3. 3 yr of bumble bee monitoring at Pilot Knob Hill completed, data reported.	6/30/18
4. Effect of burning, grazing on floristic diversity, soil N, at Pilot Knob documented	6/30/18
5. 3 yr Citizen Science monitoring program at Fish Creek completed, data reported	6/30/18

**Activity 3: Effectiveness of Goat Browsing for Restoration**

**Budget: \$50,000**

Goat browsing has the potential to become a cost-effective restoration tool for a number of management objectives in the metro area, including control of a) non-native invasive buckthorn and b) overabundant Canada goldenrod In this activity, we will collect data on browsed and un-browsed plots to evaluate the effectiveness of goat browsing for a) buckthorn control at on about 10 acres at Theodore Wirth Park, and b) about 3 acres of Canada goldenrod control at Pilot Knob Hill.

Outcome	Completion Date
1. Effectiveness of goat browsing for woodland buckthorn control determined	6/30/18
2. Effectiveness of goat browsing for Canada goldenrod control determined.	6/30/18

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

Great River Greening; Lee Frelich, Director, The University of Minnesota Center for Forest Ecology; Xerces Society for Invertebrate Conservation; City of Maplewood Nature Center; City of Minneapolis Parks and Recreation; Metro Conservation Corridors partnership.

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

The findings of these projects will help guide the widespread restoration of oaks in Minnesota, an important and widespread undertaking; help guide the use of haying, a cost-containing prairie management technique, on prairie plants and pollinators; engage 770 citizens; contribute significant data to the continental Bumble Bee Watch database; provide guidance for goat browsing, an emerging management tool in the metro; form a robust partnership working towards common goals that will outlast the funding period; and create future research opportunities.

**C. Timeline Requirements**

This grant is for a three-year timeline assuming viable acorn production, and weather for field work.

## 2015 Detailed Project Budget

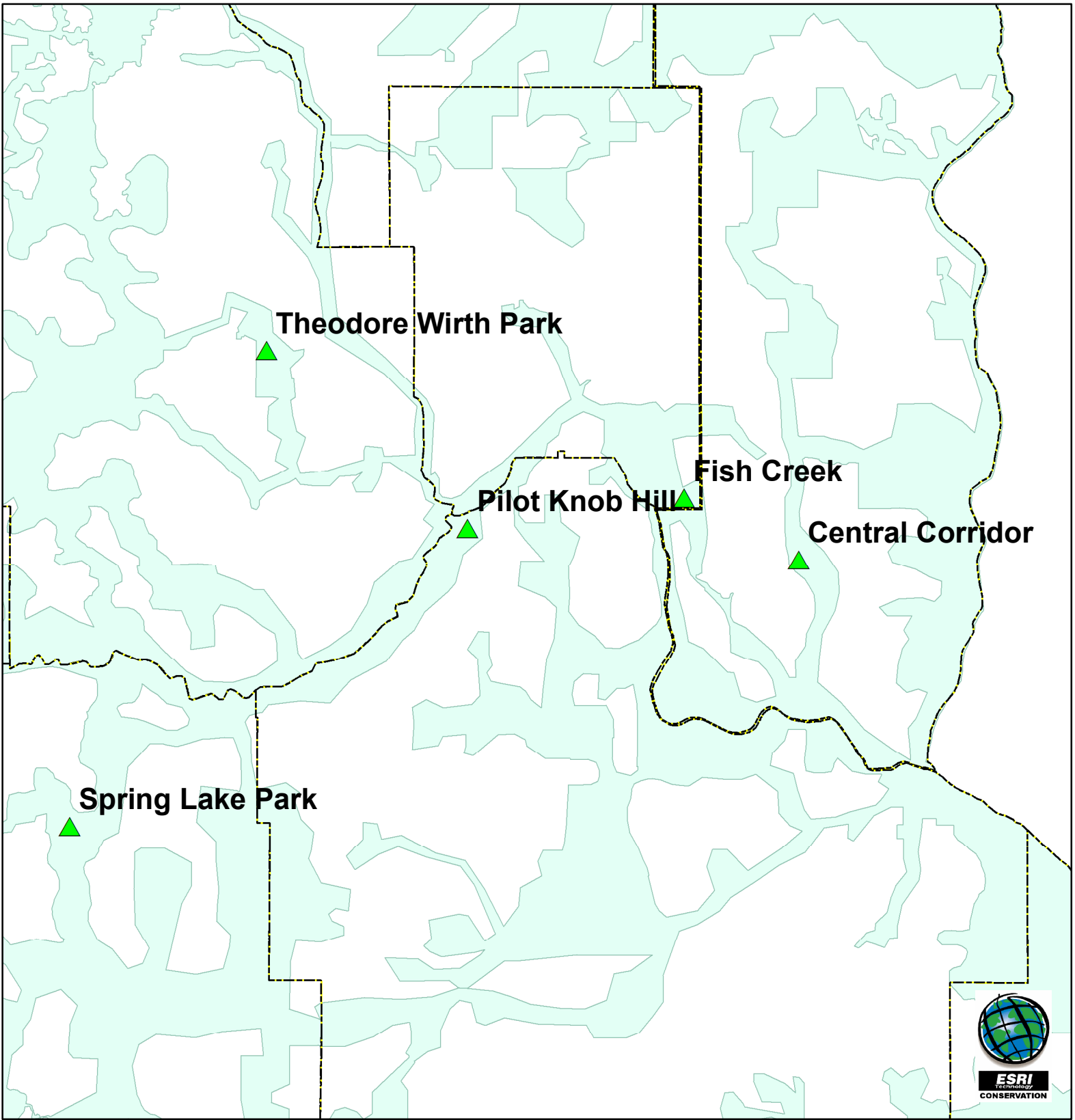
**Project Title:** Innovative Restoration for Climate Resilience, Pollinators, and Working Lands

### IV. TOTAL ENRTF REQUEST BUDGET 3 years

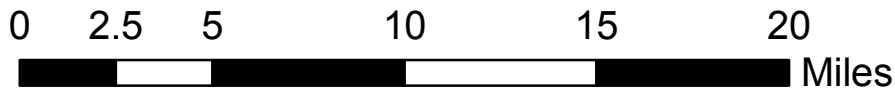
<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b>Personnel:</b>	\$ 156,850
Wiley Buck, Project Manager/Ecologist: \$34,000 (78% salary, 22% benefit);16% FTE for 3 years.	\$ -
Steve Thomforde, Ecologist: \$32,000 (85% salary, 15% benefits); 16% FTE for 3 years	\$ -
TBD, Ecological Assistant: \$61,000 (est. 86% salary, 14% benefits); est. 53% FTE for 3 years	\$ -
Wayne Ostlie, Director of Conservation: \$4,000 (93% salary, 7% benefits); 2% FTE for 3 years.	\$ -
Jen Kader, Volunteer Manager: \$10,000 (87% salary, 13% benefits); 8% FTE for 3 years.	\$ -
Sean Wickhem, Field Coordinator: \$6,000 (86% salary, 14% benefits); 4% FTE for 3 years.	\$ -
Tyler Tretbar, Restoration Technician: \$2,850 (93% salary, 7% benefits); 4% FTE for 3 years	\$ -
William Smith, Director of Finance: \$5,000 (81% salary, 19% benefits); 2% FTE for 3 years.	\$ -
Julia Wells, Administrative Assistant: \$2,000 (86%salary, 14% benefits). 1.4% FTE for 3 years.	\$ -
<b>Contracts:</b> U of MN Center for Forest Ecology. Research Design, Oversight, Data Collection, Analysis, Report Preparation. Activity 1.	\$ 100,000
<b>Contracts:</b> Xerces Society. Design and oversight for citizen science monitoring of pollinators; design, data collection, analysis for monitoring of pollinators. Printing of materials. Activity 2.	\$ 100,150
<b>Contracts:</b> City of Maplewood. Nature Center staff, busing to/from Fish Creek for school group sweep netting and restoration, printed materials. Activity 2.	\$ 30,000
<b>Contracts:</b> Haying services, grazing services, fencing, watering, plugging, custom greenhouse growing services. TBD through competitive process.	\$ 50,000
<b>Equipment/Tools/Supplies:</b> Forb plugs, mulch, fencing to protect trees, acorn purchase.	\$ 13,000
<b>Travel:</b> Mileage for site visits, meetings.	\$ 5,000
<b>Travel:</b> Mileage, meals, lodging for travel to IA,WI or IL for procurement/verification of southern ecotype acorns; to N Dakota for extreme climate ecotype acorns	\$ 1,000
<b>Travel:</b> 2 conference presentations, 1 presenter each. For dissemination.	\$ 1,000
<b>Additional Budget Items:</b> Printing Trust Fund signs, handouts, large maps, posters	\$ 500
<b>Additional Budget Items:</b> Volunteer Event Expenses: Large tent/table/chair/portable toilet rentals; overnight security; purchase of boot brushes and other invasive species sanitation protocol equipment; approved food and beverage; small pop-up tents; safety glasses; work gloves; hand tools.	\$ 1,500
<b>TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =</b>	<b>\$ 459,000</b>

### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ To Be Applied To Project During Project Period:</b> South Washington Watershed District (25K secured); Municipal, County, Private. For restoration implementation.	\$ 75,000	Secured / Pending
<b>Other State \$ To Be Applied To Project During Project Period:</b> Outdoor Heritage Fund via Mpls Parks and Rec for goat browsing implementation at Wirth Park.	\$ 30,000	Pending
<b>In-kind Services To Be Applied To Project During Project Period:</b> Xerces Society, \$5000 of printing pollinator books, field guides, booklets, etc. (development costs >\$100,000) . City of Maplewood \$3000 for staff time. materials, supplies.	\$ 8,000	Secured
<b>Funding History:</b> M.L. 2003 \$ 124,000; M.L. 2005 \$ 100,000; M.L. 2007 \$ 60,000; M.L. 2008 \$ 111,000; M.L. 2009 \$ 155,000; M.L. 2011 \$400,000; M.L. 2013 \$208,000; M.L. 2014 \$300,000 (Pending)	\$ -	See notes
<b>Remaining \$ From Current ENRTF Appropriation:</b> M.L. 2011 \$20,000 Legally Obligated; M.L. 2013 \$150,000 Unspent; M.L. 2014 \$300,000 Pending (41K direct overlap)	\$ -	See notes



# Restoration for Climate Resilience, Pollinators, and Working Lands: MeCC VII





## ORGANIZATION DESCRIPTION

### Great River Greening

Since 1995, Great River Greening has worked to secure the legacy of Minnesota land and water through community-based restoration, stewardship and partnerships. Greening has ecological expertise in natural resource and water quality management, and in community building. Over the years, Greening has engaged more than 33,000 volunteers to restore and care for land and water across 11,000 acres in MN.

**Conservation Programs:** We choose our conservation projects based upon conservation need, ecosystem services provided, and community benefits. Current priorities include critical lands and water in the metro area, enhancing the recreational experience of visitors to parks, natural areas, lakes and, rivers; restoration of the globally endangered oak savanna habitat in east central Minnesota; protection of the water quality of state designated wild & scenic rivers; and collaborative work with farmers in the Minnesota River to improve water quality.

## PROJECT MANAGER QUALIFICATIONS

### Wiley Buck, Restoration Ecologist (10 yrs)

(M.S., Conservation Biology, University of Minnesota)

Wiley is one of Greening's professional ecologists and project managers, overseeing restoration activities across some of the organization's hallmark projects including Pilot Knob Hill and Fish Creek. Wiley leads Greening's prescribed burn program and prescribed grazing implementation, and is currently managing two research projects: cheatgrass control methods for high quality prairies, and oak ecotype survival and growth (with University of St. Thomas). As a grant manager, Wiley oversees Greening's Minnesota Environment and Natural Resources Trust Fund grants as part of the Metro Conservation Corridors partnership. Prior to coming to Greening, Wiley gained his restoration expertise through his experience with McHenry County Conservation District, The Nature Conservancy, Chicago Wilderness, and Minnesota DNR's Scientific and Natural Areas Program (SNA).

## PARTNER QUALIFICATIONS

### Dr. Lee Frelich, Director of the University of Minnesota Center for Hardwood Ecology, in the Forestry, Ecology and Conservation Biology programs.

Dr. Frelich is the author of 50 scientific publications on natural disturbance, forest succession, landscape ecology, tree population dynamics, and old growth forests, and is listed among the top 1% of scientists in the world by the Institute for Scientific Information Science Citation Index, in the Ecology and Environment category. He is the author of innumerable articles, as well as six book chapters and one book, *Forest Dynamics and Disturbance Regimes* (Cambridge University Press, 2002).

### Sarah Foltz Jordan, Conservation Biologist (M.S., Zoology, UW-Madison), Xerces Society.

Based out of central Minnesota, Sarah works in partnership with the NRCS to develop Pollinator Conservation Activity Plans (CAPs) for farms. She also writes status reviews and management plans for rare and threatened species; provides invertebrate conservation expertise and creates management guidelines under a long term partnership with the BLM and US Forest Service (Region 6); and has authored comprehensive documents about the biology and conservation needs of nearly 200 rare invertebrates, including ~30 species of butterflies and bees and been involved in the creation of various pollinator-related educational and outreach materials. Sarah also has extensive teaching experience, and has presented over 30 workshops in Minnesota on bumble bee conservation, insect identification, and citizen science opportunities. Sarah will be presenting at the June 2014 MN DNR Pollinator Workshop.

### Ann Hutchinson, Lead Naturalist at Maplewood Nature Center

Ann has a BS degree in Biology and a minor in Environmental Education from the University of Wisconsin, Steven Point. Having worked in the Environmental Education field for 29 years, she has a special love of hands on learning, believing strongly in the old Chinese proverb "I do, and I understand". Ann is Lead Naturalist for the Maplewood Nature Center and is responsible for the visitor center facility, educational programming, staffing, and integrating the center with city-wide environmental initiatives.