

Environment and Natural Resources Trust Fund 2016 Request for Proposals (RFP)

Project Title:

ENRTF ID: 169-F

Restoration/Monitoring of Winona's 40-acre Blufflands Natural Area

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

Total Project Budget: \$ 99,427

Proposed Project Time Period for the Funding Requested: 3 years, July 2016 to June 2019

Summary:

WSU will restore critical Blufflands oak savannah (97% lost in MN) and dry bluff prairie (99% lost) by goat grazing, replanting native species, monitoring recovery, and creating/delivering demonstration workshops.

Name: Neal Mundahl

Sponsoring Organization: Winona State University

Address: 175 West Mark Street
Winona MN 55987

Telephone Number: (507) 457-5695

Email nmundahl@winona.edu

Web Address www.winona.edu

Location

Region: SE

County Name: Fillmore, Houston, Olmsted, Wabasha, Winona

City / Township: Winona

Alternate Text for Visual:

Photos of 1) a buckthorn-infested savannah on Garvin Heights, 2) students studying a dry bluff prairie on Garvin heights, and 3) an aerial view of the Garvin Heights project area and nearby sites for workshop experimentation on the bluffs overlooking Winona, MN

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



PROJECT TITLE: Restoration/Monitoring of Winona's 40-acre Blufflands Natural Area

I. PROJECT STATEMENT: The 40 acres of dry bluff prairie, bur oak savannah, and bordering oak-basswood forest within Garvin Heights Natural Area will be restored by removing invasive plants (via goat grazing and MN Conservation Corps) and replanting with native species, monitored to assess ecological recovery, enhanced with new and expanded environmental education signage for site visitors, and explained and demonstrated with hands-on workshops for regional landowners and other stakeholders.

This restoration site is of special significance because:

- It contains a mix of dry bluff prairies and bur oak savannahs, ecosystems becoming increasingly rare throughout southeastern Minnesota and the greater Driftless Area Ecoregion.
- It is an accessible, high-visibility location, situated in a City park that attracts 40,000 to 50,000 residents and visitors annually during all seasons.
- It can serve as a model for invasive species management and habitat restoration to a large public audience and provide opportunities for landowner education.

This project is unique because:

- Under faculty mentorship, undergraduate and graduate students will delineate habitats and collect pre- and post-restoration community data to assess the success of the restoration effort.
- The project will blend innovative (goat grazing) and conventional invasive plant control (with significant public volunteer effort: Friends of the WSU Landscape Arboretum) in a highly visible, public location, allowing the public to observe and experience the entire process.
- It will educate regional landowners and others about invasive plant management via workshops, using the project site as the model and nearby sites for experiential learning/application of techniques.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: *Habitat delineation via GPS/GIS, pre- and post-restoration inventory and monitoring of invasive, native, and rare/indicator species, and educational signage development and placement*

Budget: \$46,984

Dry bluff prairies, bur oak savannahs, and oak-basswood woodlands will be delineated and mapped (GPS/GIS) throughout the project site. All habitats will be monitored to inventory existing plant communities prior to and after restoration and to determine the abundance of rare, threatened, and/or indicator species (plants, birds, pollinators), to assess the success of the restoration. New and expanded educational signage will be developed and installed within each habitat.

Outcome	Completion Date
1. <i>Habitat delineation via GPS/GIS</i>	2017
2. <i>Pre-restoration inventory of existing plant communities</i>	2017
3. <i>Pre-restoration assessments of rare, threatened, and/or indicator species</i>	2017
4. <i>Post-restoration inventories of recovering plant communities</i>	2019
5. <i>Post-restoration assessments of restored rare, threatened, and/or indicator species</i>	2019
6. <i>Development and placement of educational signage</i>	2019

Activity 2: *Invasive plant removal by goats and CC of MN, and reseeding/replanting of 40 acres of bluff prairies, savannahs, and bordering woodlands*

Budget: \$45,000

Buckthorn, honeysuckle, oriental bittersweet, and red cedar will be removed from dry bluff prairies, bur oak savannahs, and oak-basswood forests by grazing goats, the Conservation Corps of Minnesota, and community volunteers. Prairies and savannahs will be restored by seeding and planting with native forbs (emphasizing flowering species to enhance pollinator populations) and grasses, and savannahs and forests will be restored by



Environment and Natural Resources Trust Fund (ENRTF)

2016 Main Proposal

Project Title: *Restoration/Monitoring of Winona's 40-acre Blufflands Natural Area*

planting bur oak saplings and other tree species as needed to enhance natural reproduction.

Outcome	Completion Date
1. <i>Invasive plants removed by goats, CC of MN, volunteers</i>	2018
2. <i>Bluff prairies and savannahs reseeded and planted</i>	2019
3. <i>Bur oak saplings, other species planted in savannahs and woodlands</i>	2019

Activity 3: Invasive management workshop development and initial delivery to regional landowners, interested public Budget: \$7,443

One-day and two-day, hands-on workshops will be developed for and presented to regional landowners and other stakeholders to explain and demonstrate the process and methodology of invasive plant management and habitat restoration. Workshops will use 1) the project site as a model and 2) nearby City-owned (Bluffs Park) and University-leased (Krueger Woods) lands for hands-on, experiential learning and experimentation.

Outcome	Completion Date
1. <i>One-day and two-day management/restoration workshops developed</i>	2017
2. <i>Management/restoration workshops delivered to public</i>	2018, 2019

III. PROJECT STRATEGY

A. Project Team/Partners

Project Team/Partners Receiving Funds

Faculty mentoring student research: **Neal Mundahl** (WSU Department of Biology, Ecologist, project manager),

Bruno Borsari (WSU Land Steward, workshop and interpretive signage development)

Graduate and Undergraduate student researchers (undergraduate salaries from private donations)

Driftless Land Stewardship LLC (Goat grazing management)

Dustin Looman, MN DNR and Conservation Corps of Minnesota (Invasive plant removal, consultation)

Prairie Moon Nursery (Seed, plant source, consultation)

Project Team/Partners Not Receiving Funds

City of Winona (Park maintenance)

Gerald Landby (WSU Landscape Services and Arboretum Director); **Carol Jefferson** (Plant Ecologist, Department of Biology emerita: historical site consultant, past species inventories, MN DNR contacts); **William Beatty** (WSU Department of Geosciences: GIS); **WSU Arboretum and Land Stewardship Committee** (institutional facilitation)

B. Project Impact and Long-Term Strategy The Garvin Heights Natural Area project site is located in the central part of the Blufflands Subsection of the Paleozoic Plateau. The Blufflands has the most Species in Greatest Conservation Need (SGCN) of any subsection in Minnesota, including 82 species that are federal or state endangered, threatened, or of special concern. Oak savannahs and prairies are key habitats for SGCN within the Blufflands, but most (97% and 99%, respectively) have been lost since the 1890s. The proposed project will restore and enhance bur oak savannahs and dry bluff prairies, protect additional cliff and bluff habitats, and enhance pollinator populations by managing invasive plants and replanting with native species. The high-visibility project site will showcase invasive species management and habitat restoration to a large public audience, inventory/monitor for SGCN, encourage public participation in the restoration, and provide additional and continuing opportunities for landowner education in invasives management and habitat restoration. Winona State University and the City of Winona are committed to retaining project lands in a restored state for continuing education of students, the public, and regional stakeholders.

C. Timeline Requirements

1st year – habitat delineation, plant inventories, invasive species removal, educational signage development;

2nd year – invasive species “mop-up”, native species reseeding/planting, begin post-monitoring, educational signage production, placement, workshop development and initiation; 3rd year – continue post-monitoring, native species reseeding/planting, educational signage production, placement, workshop offerings

2016 Detailed Project Budget
Project Title: Winona State University Garvin Heights Natural Lands Restoration and Monitoring

IV. TOTAL ENRTF REQUEST BUDGET over 3 years

<u>BUDGET ITEM</u>	<u>Totals</u>
Personnel:	
<i>WSU faculty are on 9-month teaching contracts. The following are 2-week summer appointments for one year.</i>	
Project Manager (84% salary, 16% benefits; 2 weeks; 1 position)	\$6,484.00
Land Steward (84% salary, 16% benefits; 2 weeks; 1 position)	\$5,443.00
<i>Student employees</i>	
Graduate student (GA stipend; 24 months; 1 position)	\$37,500.00
Personnel Subtotal	\$49,427.00
Professional/Technical/Service Contracts:	
Driftless Land Stewardship (goat grazing of invasives)	\$20,000.00
Conservation Corps of Minnesota (invasive plant removal)	\$13,000.00
Contracts Subtotal	\$33,000.00
Equipment/Tools/Supplies:	
Field equipment (GPS units, cameras, inventory supplies)	\$2,000.00
Educational signage	\$1,000.00
Workshop materials/supplies	\$2,000.00
Prairie/savannah seeds	\$9,000.00
Native trees	\$3,000.00
E/T/S Subtotal	\$17,000.00
Acquisition (Fee Title or Permanent Easements):	N/A
Travel:	N/A
Additional Budget Items:	N/A

TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST = \$99,427.00

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ To Be Applied To Project During Project Period:		
Private donations	\$11,000.00	Secured
Other State \$ To Be Applied To Project During Project Period:	N/A	N/A
In-Kind Services To Be Applied To Project During Project Period:		
Americorps via Conservation Corps MN	\$13,000.00	Secured
Arboretum Director salary/benefits (10% annual; WSU Facilities Services)	\$29,209.00	Secured
City of Winona (park maintenance, security)	\$24,000.00	Secured
Land Steward salary/benefits (10% academic year)	\$31,262.00	Secured
Project Manager salary/benefits (research supervision, 20% academic year)	\$77,378.00	Secured
Funding History:	N/A	N/A
Remaining \$ From Current ENRTF Appropriation:	N/A	N/A



Top left: Buckthorn-infested bur oak savannah on Garvin Heights

Top right: Students studying dry bluff prairie on Garvin Heights

Bottom: Garvin Heights project area (center oval), and nearby Krueger Woods (right) and Bluffsides Park (left) for workshop experimentation, on bluffs overlooking Winona, MN.

Project Manager Qualifications and Organization Description

Project Manager:

Neal Mundahl, Department of Biology, Winona State University

PhD in Zoology, 1984, Miami University, Oxford, OH

MS in Biological Sciences, 1980, Michigan Technological University, Houghton, MI

BA in Biology-Environmental Science, 1978, Winona State University, Winona, MN

1997-present Professor, Department of Biology, Winona State University

1994-1997 Associate Professor, Department of Biology, Winona State University

1989-1994 Assistant Professor, Department of Biology, Winona State University

1984-1989 Visiting Assistant Professor, Department of Zoology, Miami University

Funding: Past 20 years: 13 funded external grants, total funding \$355,360

Teaching: Plant Ecology, Vertebrate Biology, Ornithology, Limnology, Ecology Laboratory

Supervisory experience: Graduate students: 1; undergraduate student researchers: 171; summer research assistants: 42

Publications: Book chapters: 2; peer-reviewed research articles: 34

Service to field of ecology: Past year: manuscript reviewer for 4 journals, 3 book chapters; treasurer for Mississippi River Research Consortium; consultant for WinCres Chapter Trout Unlimited, Winona County Invasive Species Advisory Group, Whitewater State Park, Whitewater-Winona Watershed, City of Winona (Lake Winona management)

Organization Description:

Founded in 1858, Winona State University (WSU) is a comprehensive, 4-year, public university with approximately 8,800 students. The oldest member of the Minnesota State Colleges and Universities System, WSU offers 80 undergraduate, pre-professional, licensure, graduate, and doctorate programs. The WSU Professional Science Master's Degree Program in Applied Research and Management began in 2012 to integrate hands-on science and technical training with management skill development.

The WSU Landscape Arboretum was established to provide an environment that supports public enjoyment, education, recreation, and research, and it is being maintained to function as a living classroom and laboratory for generations to come. The Arboretum encompasses 70 acres of landscaped campus and 225 acres of natural bluffs (Garvin Heights, Krueger Woods). The natural lands are situated on 500-ft-high bluffs overlooking the City of Winona, within sight of the WSU campus. The mission of the Arboretum is coordinated by a Landscape Services and Arboretum Director and facilitated by a Land Steward and an Arboretum and Land Stewardship Committee comprised of WSU employees and area citizens. Garvin Heights is maintained in cooperation with the City of Winona, and hosts 40,000 to 50,000 visitors each year.