

**Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 022-A

Enhancing Bird and Insect Recovery in Oak Savannas

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: \$ 238,000

Proposed Project Time Period for the Funding Requested: June 30, 2022 (2 yrs)

Summary:

Our GOALS are to determine the amount, type and intensity of restoration techniques needed to support two unique, imperiled animal communities in Minnesota's oak savannas: birds and insects.

Name: Francesca Cuthbert

Sponsoring Organization: U of MN

Job Title: Dr.

Department: Department of Fisheries, Wildlife and Conservation Biology

Address: 324 Hodson Hall
St. Paul MN 55108

Telephone Number: (612) 624-1756

Email cuthb001@umn.edu

Web Address: _____

Location:

Region: Central, Metro

County Name: Anoka, Dakota, Hennepin, Isanti, Scott

City / Township:

Alternate Text for Visual:

Restoration choices affect recovery of birds and insects. (hypothetical: blue lines are positive effects of restoration choice, red lines are negative, line width corresponds to strength of change)

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



PROJECT TITLE: Enhancing bird and insect recovery in oak savannas

I. PROJECT STATEMENT

Oak savannas are among the rarest plant communities on Earth, and in Minnesota, represent only 0.1% of their historical range. Oak savannas are a major transitional area between forest and grassland communities and provide a diversity of habitats for a large number of plant, animal, and insect species. Fragmented patches of oak savanna exist across Minnesota, and there is considerable interest and effort from land managers to preserve and restore this rare ecosystem.

Current restoration efforts have largely emphasized the use of prescribed fire, mowing, and ungulate grazing to re-establish the forces that historically built and maintained the fundamental structure of oak savannas. However, these techniques have largely focused on restoration of plant communities and little is known about how these efforts ultimately affect animal and insect populations, particularly several species of birds and insects that are oak savanna specialists, including the Karner Blue Butterfly, Leonard's Skipper, Northern Barrens Tiger Beetle, Bobolink, Horned Lark, Eastern Meadowlark, and several grassland sparrow species. It remains unclear whether and how restoration techniques can support these and other imperiled species in oak savannas.

Our **GOALS** are to **determine the amount, type and intensity of restoration techniques needed to support two unique, imperiled animal communities in Minnesota's oak savannas: birds and insects.** A focus on these two communities is ideal because substantial historical data exists on them in Minnesota and at one of our study sites and we therefore are well-positioned to compare past population parameters to data collected as part of this study. Most insect conservation efforts target single species at risk while insect communities as a whole are largely ignored. However, as current declines in important insect species indicate (e.g. native pollinators), a community-level approach is urgently needed. By treating insect communities as an explicit conservation goal, we dramatically increase the biodiversity restored, and can address community-level concerns, including species of concern. By contrast, birds are well-known and well-studied, and garner great interest from the public. Despite this, many bird species, particularly grassland songbirds and savanna specialists like the red-headed woodpecker, have undergone substantial and precipitous declines over the past 50 years. By improving the restoration and a management of grassland habitats—including oak savannas—these bird and insect declines can be slowed or arrested.

Efforts to restore oak savannas through the use of prescribed fire, mowing, and grazing are ongoing at a number of sites in Minnesota, but their emphasis on restoring only plant and soil communities has resulted in a general lack of information on how these efforts may also benefit bird and insect communities that depend on these habitats. Here, we aim to bridge this knowledge gap through **the following OUTCOMES:**

1. Determine the amount, type and intensity of restoration methods needed to support imperiled bird and insect communities in Minnesota's oak savannas.
2. Develop best practices and recommendations to support restoration of bird and insect communities in oak savannas throughout Minnesota and the Midwest.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Conduct surveys for birds and insects at multiple oak savanna restoration sites in Minnesota.

ENRTF BUDGET: \$119,000

We will conduct point count surveys for birds, as well as sweep net and pit trap surveys for insects at four oak savanna restoration sites in Minnesota: two sites at the Cedar Creek Ecosystem Reserve (hereafter Cedar Creek) and two sites within the Three Rivers Park District in the Twin Cities Metro area. Management techniques differ at each site and represent different levels of intervention, and our study design takes advantage of this existing variation in restoration effort to study the effect



**Environment and Natural Resources Trust Fund (ENRTF)
2020 Main Proposal**

of different techniques on insect and bird diversity. Surveys will be conducted by the postdoctoral researchers and field technicians. Insects collected as part of this project will also be used in education programs at Cedar Creek, along with other findings from this study, intended to educate and engage k-12 students and members of the public on the role of plants, animals, and people in oak savanna restoration.

Outcome	Completion Date
<i>1. Conduct point count surveys for birds at each restoration site</i>	<i>September 2021</i>
<i>2. Conduct sweep net and pit trap surveys for insects at each restoration site</i>	<i>September 2021</i>

Activity 2: Determine effectiveness of restoration techniques on bird and insect communities.

ENRTF BUDGET: \$119,000

We will compare present-day bird and insect diversity and abundance data with historical data collected at Cedar Creek between 1970 and 2000 to determine the effects of various restoration techniques on oak savanna bird and insect communities, and develop guidelines to optimize restoration efforts for these groups. The postdoctoral researchers will lead data analysis, writing and dissemination of management plan to local, state, and federal management agencies and the public. This work will have immediate practical benefits for oak savanna restoration across the state (e.g. ongoing oak savanna restoration efforts at St Croix State Park and other parks currently planning or involved in habitat restoration).

Outcome	Completion Date
<i>1. Determine the effectiveness of different restoration efforts, and develop guidelines to optimize restoration efforts for bird and insect communities in Minnesota’s oak savannas</i>	<i>February 2022</i>
<i>2. Dissemination of findings to management agencies and the public</i>	<i>July 2022</i>

III. PROJECT PARTNERS AND COLLABORATORS:

This project will be conducted cooperatively through the University of MN. Project partners include University of MN/Cedar Creek principal investigators and the Three Rivers Park District. Funds received from this ENRTF request will be received by the University of MN in an agreement with Dr. Cuthbert. Dr. Potter will serve as a University of MN collaborator, John Moriarty will serve as Three Rivers Park District collaborator, Dr. West and Dr. Wells will serve as the Postdoctoral Researchers conducting the research project.

A. Partners receiving ENRTF funding

Elena West, Postdoctoral Researcher
Michael Wells, Postdoctoral Researcher

B. Partners NOT receiving ENRTF funding

Dr. Francesca Cuthbert, Department of Fisheries, Wildlife and Conservation, University of Minnesota, Project Manager
Dr. Caitlin Barale Potter, Cedar Creek Ecosystem Science Reserve, University of Minnesota (Activities 1 and 2)
John Moriarty, Director, Three Rivers Park District (Activities 1 and 2)

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

Results from this project will provide oak savanna restoration efforts targeted at bird and insect communities and will be disseminated to local, state, and federal management agencies, published in the peer-reviewed literature, and made available to the general public via outreach events and popular articles.

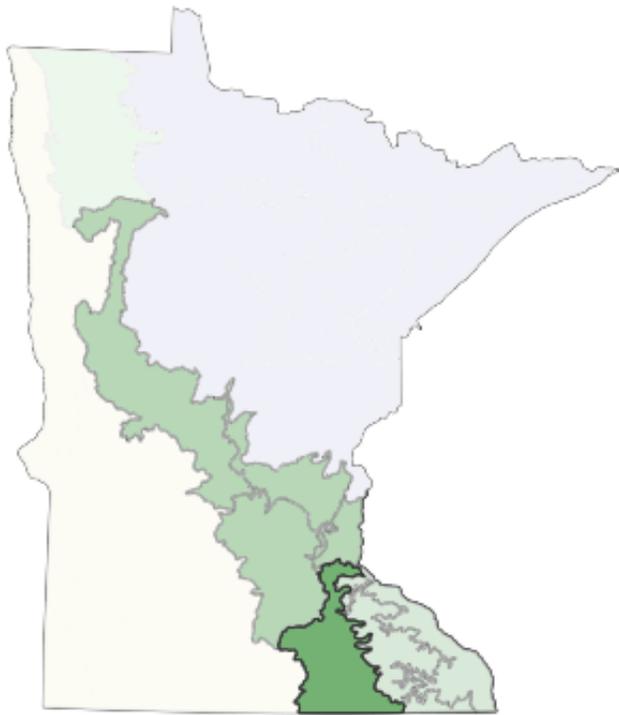
Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund
 M.L. 2020 Budget Spreadsheet



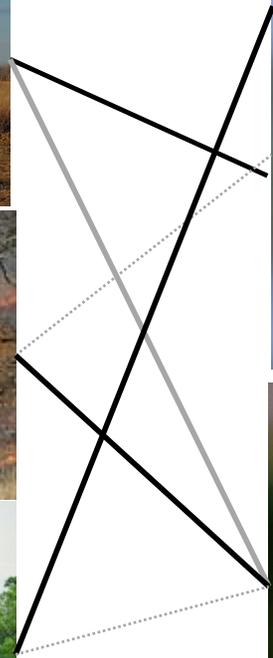
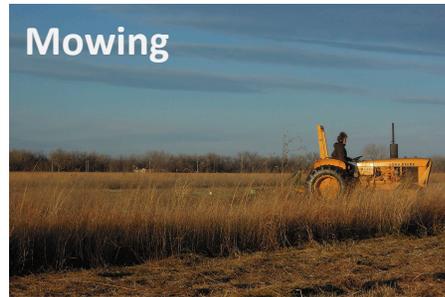
Legal Citation:
 Project Manager: Dr. Francesca Cuthbert
 Project Title: Enhancing bird and insect recovery in oak savannas
 Organization: University of Minnesota
 Project Budget: \$238,000
 Project Length and Completion Date: 2 years; June 30 2022
 Today's Date: April 9, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 231,000	\$ -	\$ 231,000
Mike Wells and Elena West, Postdoctoral Researchers, Wells 100% FTE for 2 years, West 75% FTE for 2 years, (80% salary, 20% benefits), \$214,000				
2 field technicians per year (2020 and 2021) @ 7 weeks per year, 13% FTE for each of 2 years (92% salary, 8% benefits), \$17,000				
Equipment/Tools/Supplies				
Range Finders (4 @ \$150 each)		\$ 600	\$ -	\$ 600
Insect sampling supplies (sweep nets, ground and flying-insect traps)		\$ 1,000		\$ 1,000
Insect ID and education (insect pinning and preserving supplies; development of educational handouts and signage for the public and volunteers)		\$ 2,000		\$ 2,000
Travel expenses in Minnesota (field technicians and postdoc travel to research sites):				
4-wheel drive vehicle mileage [1 (2020 and 2021) vehicle @ \$0.58/mile x approximately 200 miles/day x 15 days/year] - in accordance with UMN Travel Policy		\$ 3,400	\$ -	\$ 3,400
COLUMN TOTAL		\$ 238,000	\$ -	\$ 238,000
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State:		\$ -	\$ -	\$ -
State:		\$ -	\$ -	\$ -
In kind: Indirect costs associated with this proposal waived by University of Minnesota @54% MDTC		\$ 128,000	\$ -	\$ 128,000
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS				
	Amount legally obligated but not yet spent	Budget	Spent	Balance
		\$ -	\$ -	\$ -

PROJECT TITLE: Enhancing bird and insect recovery in oak savannas



Historical Oak Savanna Range



- Oak Savanna is currently ~1% of the historical range. There is great interest in restoring oak savanna habitats, and animal communities are an essential part of recovery.
- Restoration of Oak Savannah is accomplished using combinations of mowing, grazing and burning.
- These restoration choices affect recovery of animal communities. Our **GOAL** is to determine how restoration choices affect the recovery of bird and insect communities, which are not well understood (hypothetical: black lines are positive effects of restoration choice, grey lines are negative, line width corresponds to strength of change).

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Project Manager Qualifications & Organization Description

Dr. Francesca J. Cuthbert received her PhD in Ecology at the University of Minnesota and is currently a Professor in the Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota-Twin Cities. She is also a Scientific Investigator at the University of Michigan Biological Station during the summer. For the past 30 years her research has focused on avian biology and conservation. Most of her research involves working closely with federal and state agency biologists to facilitate conservation and management in the Great Lakes Region. She has advised > than 50 MS and PhD students and published >100 peer-reviewed research papers. Dr. Cuthbert is a past President of the Waterbird Society, Member of the Waterbird Conservation Council of the Americas and a Fellow in the American Ornithological Society.

Dr. Cuthbert will serve as project coordinator, working with collaborators at Cedar Creek, and the Three Rivers Parks District to conduct the proposed research. Dr. West has 12 years of experience surveying and identifying birds in a field setting. Dr. Wells has 10 years of experience surveying and identifying birds, as well as 5 years of experience surveying, working with, and identifying insects. Drs. Wells and West will co-lead the field portion and data analysis of this project. Drs. Wells and West will co-lead the writing and dissemination of the recovery plan for robust insect and bird communities on oak savanna. Dr. Potter (Cedar Creek) will help coordinate field logistics and development of project protocols, as well as assist in writing and dissemination of the recovery plan for robust insect and bird communities on oak savanna. Mr. Moriarty has been the senior manager of Wildlife at Three Rivers Park District for the last 6 years and is in charge of prairie, wetland, and savanna restorations and management. John manages wildlife surveys for nongame and game species at Three Rivers and will help coordinate field logistics and development of project protocols, as well as assist in writing and dissemination of the recovery plan for robust insect and bird communities on oak savanna.

University of Minnesota

The University of Minnesota is a land-grant institution of higher education, and ENRTF funding granted for this project would be managed by the University of Minnesota.