



Environment and Natural Resources Trust Fund (ENRTF)

M.L. 2020 ENRTF Work Plan (Main Document)

Today's Date: August 23, 2019

Date of Next Status Update Report: April 1, 2021

Date of Work Plan Approval:

Project Completion Date: June 30, 2023

Does this submission include an amendment request? ___

PROJECT TITLE:

Project Manager: Dr. Rebecca Montgomery

Organization: University of Minnesota

College, Department, or Division: College of Food, Agricultural and Natural Resource Science,
Department of Forest Resources

Mailing Address: 1530 Cleveland Ave. N. Green Hall 115

City, State, Zip Code: St. Paul, MN 55108

Project Manager Direct Telephone Number: 612-624-7249

Email Address: rebeccam@umn.edu

Web Address: ecophys.umn.edu

Location: Carlton, St. Louis, Aitken Counties, Northeast

Total Project Budget: \$147,000

Amount Spent: \$0

Balance: \$147,000

Legal Citation: M.L. 2020, Chp. xx, Sec. xx, Subd. xx

Appropriation Language:

PROJECT STATEMENT:

We propose to extend our Phase I project that compares the response of brushland vegetation and the bird community to prescribed burns conducted in the spring, summer, and fall to include 3 and 5 year post-fire surveys. Our Phase I project documents vegetation and bird responses 1 and 2 years after fire, and builds a nice foundation, but later post-burn surveys are needed to understand how the season of burning influences the ability to effectively maintain open brushland conditions over longer time periods. Bird and vegetation responses 3 and 5 years after burns will help understand how the response to burning changes over time and if the season of burning produces different long-term effects on the brushland ecosystem.

Brushlands cover approximately ~8.5 million acres (20% land surface) in Minnesota and provide critical habitat for over 250 wildlife species, including >80 species on the Minnesota Department of Natural Resources (DNR) list of Species of Greatest Conservation Need (SGCN) including 38 birds, 17 mammals, 12 reptiles, 2 amphibians, and 12 insects. Numerous game species also use brushland habitats including sharp-tailed grouse, American woodcock, white-tailed deer, and furbearers.

Prior to European settlement, Minnesota's brushlands were maintained by frequent wildfires. These burns happened frequently in summer and fall due to lightning strikes and fires set by Native Americans. Today, brushlands are maintained by prescribed burns conducted primarily in the spring. Prescribed fires in spring are less hot and are easy to control. However, cooler fires may be less effective in achieving habitat goals of maintaining open conditions by preventing the conversion of brushland to forest.

Why don't managers burn brushlands more often in summer and fall? Burning in summer and fall seasons is more challenging because conditions are less frequently suitable for burning. Thus, without science clearly illustrating the benefits of summer and fall fires, little incentive exists to take on the additional challenge of trying to accomplish burns when burn windows are less frequent. Showing benefits of a more varied burn season schedule will help justify changes to existing management, ultimately benefiting wildlife.

Prior to Phase I, we knew very little about effects of burning in different seasons on brushland vegetation. Results to date provide preliminary support for implementing burns in multiple seasons. We have recorded 105 bird species, including 26 SGCNs, and documented several new county records for plant species including 2 state threatened species. However, we are limited in the inferences we can make with data from only 1-2 years post-fire. Fall and summer fires appear to create patchiness in the vegetation due to variation in where the fire burned hotter and cooler. This patchiness supports more species. However, re-sprouting occurred 1 year after spring and fall fires.

We will compare the longer-term effects of spring, summer, and fall prescribed burns on brushland breeding birds and vegetation in 1200 acres of brushland in central and NE Minnesota. Our project will:

- provide data on the habitat benefits of spring, summer, and fall burns
- develop best management practices for maintaining healthy brushland habitat
- improve brushland habitat management to meet the needs of diverse wildlife and native plant species

II. OVERALL PROJECT STATUS UPDATES:

First Update April 1, 2021

Second Update October 1, 2021

Third Update April 1, 2022

Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end (June 30) and August 15, 2023

III. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1 Title: Assess vegetation and bird responses 3-5 year after prescribed burns on 1200 acres of brushland habitat in central/NE Minnesota

Description: In phase I, our DNR partners conducted prescribed burns at 4 sites in each of 3 seasons: spring, summer and fall (10 burns total). Due to weather, these burns were implemented over 3 different years (2016, 2017, 2018), limiting initial plans for multiple years of post-fire data at all sites. To date we have data for either 1 or 2 years following burning for vegetation and birds. Here, we request funding to extend both plant and bird surveys, gaining valuable information for all sites 3 and 5 years after burns. The project has been very successful to date and garnered a lot of interest and attention. What remains unknown is how long the effect of fire will be seen in plant and bird communities and how that might vary with season of fire.

ACTIVITY 1 ENRTF BUDGET: \$137,000

Outcome	Completion Date
1. 1200 acres surveyed for birds 3 and 5 years after spring, summer, & fall fires	<i>July 2022</i>
2. 1200 acres surveyed for vegetation response 3 and 5 years after spring, summer, & fall fire	<i>August 2022</i>
3. Dataset of fire effects and vegetation response compiled and analyzed	<i>February 2023</i>

First Update April 1, 2021

Second Update October 1, 2021

Third Update April 1, 2022

Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end (June 30) and August 15, 2023

ACTIVITY 2 Title: Enhance manager guide for brushland habitat

Description: We will update the best management practices guide developed in Phase I. The goal of management of these ecosystems is to restore and maintain diverse brushland habitat for non-game and game wildlife species. Having data from 3 and 5 years post burn would provide a much stronger basis for developing new prescriptions that incorporate season. Our DNR partners currently burn at least once every 5 years. Thus, collecting data on effect of seasons 3 and 5 years post-fire would cover the entire range of post-burn conditions normally associated with current management.

ACTIVITY 2 ENRTF BUDGET: \$10,000

Outcome	Completion Date
1. Workshop with DNR staff and stakeholders to update best management practices developed in Phase I	<i>March 2023</i>
2. Updated management guidelines for using prescribed fire to maintain brushland	<i>June 2023</i>

First Update April 1, 2021

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Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end (June 30) and August 15, 2023

IV. DISSEMINATION:

Description:

Results of this study will be presented at local, regional, and national meetings (e.g. Sustainable Forests Education Cooperative Annual Research Round-up, The Wildlife Society). Findings will be published in peer-reviewed journals, in outreach newsletters (e.g., the Lake States Fire Science Consortium), and posted annually on the Minnesota Department of Natural Resources (MN DNR) website in the Summaries of Wildlife Research Findings section found at <http://www.dnr.state.mn.us/publications/wildlife/index.html>. Project description and results will also be available through websites of the University of Minnesota's Department of Forest Resources (<http://www.forestry.umn.edu/>) and Center for Forest Ecology (<http://cffe.cfans.umn.edu/>).

Research will form the basis of an M.S. thesis that will be publically available through the University of Minnesota.

As described in Activity 2, webinars and workshops aimed at developing BMP and management guidelines also disseminate results. BMP and management guidelines will be made publically available on the MN DNR website (<http://www.dnr.state.mn.us>) and in paper form when requested.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the [ENRTF Acknowledgement Guidelines](#).

First Update April 1, 2021

Second Update October 1, 2021

Third Update April 1, 2022

Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end (June 30) and August 15, 2023

V. ADDITIONAL BUDGET INFORMATION:

A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than \$5,000: N/A

Explanation of Use of Classified Staff: N/A

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

Enter Total Estimated Personnel Hours for entire duration of project: 4080	Divide total personnel hours by 2,080 hours in 1 yr = TOTAL FTE: 1.96
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Total Number of Full-time Equivalent (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:

Enter Total Estimated Contract Personnel Hours for entire duration of project: N/A	Divide total contract hours by 2,080 hours in 1 yr = TOTAL FTE: N/A
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VI. PROJECT PARTNERS:

A. Partners outside of project manager’s organization receiving ENRTF funding

N/A All those funded are within the project manager’s organization

B. Partners outside of project manager’s organization NOT receiving ENRTF funding

Charlotte Roy (MN DNR) and Lindsey Shartell (MN DNR), provide expertise on habitat characteristics for wildlife.

VII. LONG-TERM- IMPLEMENTATION AND FUNDING:

Upon completion of Phase II of the project, research sites will return to DNR fire management rotation informed by the data collected in this study. Understanding how effects vary over time will help set burn season schedules to meet desired management goals for habitat and wildlife.

VIII. REPORTING REQUIREMENTS:

- Project status update reports will be submitted April 1 and October 1 each year of the project
- A final report and associated products will be submitted between June 30 and August 15, 2023

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:

- A. Budget Spreadsheet
- B. Visual Component or Map
- C. Parcel List Spreadsheet
- D. Acquisition, Easements, and Restoration Requirements
- E. Research Addendum

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



Legal Citation:

Project Manager: Rebecca Montgomery

Project Title: Prescribed Burning for Brushland-dependent Species-Phase II

Organization: University of Minnesota

Project Budget: \$147,000

Project Length and Completion Date: 3 years; June 30, 2023

Today's Date: August 23, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 131,928	\$ -	\$ 131,928
Project manager (4% time), 74% salary 26% benefits, 2 yrs, Dr. Rebecca Montgomery; \$15,620				
Field coordinator (4% time), 74% salary 26% benefits, 2 yrs, Dr. Lee Frelich; \$7231				
Research Technicians (2 summers; 4 persons x 9 weeks x 40 h/week x 15/h + fringe); 66% salary, 36% benefits); \$60,000				
Salary and fringe (45.9%) for 1 graduate student for 2 years (0.25 FTE; \$49,077)				
		\$ -	\$ -	\$ -
Equipment/Tools/Supplies				
Tablet rental for data entry, waders for high water work		\$ 1,072	\$ -	\$ 1,072
		\$ -	\$ -	\$ -
Printing				
		\$ -	\$ -	\$ -
Travel expenses in Minnesota - in accordance with UMN Travel Policy				
University Fleet Rental (2 yrs * 4000\$ = \$8000); Lodging at Cloquet Forestry Center for four people (2 yrs * 3 months * 250\$ per month * 4 people = 6000\$)		\$ 14,000	\$ -	\$ 14,000
Other				
		\$ -	\$ -	\$ -
COLUMN TOTAL		\$ 147,000	\$ -	\$ 147,000
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State:		\$ -	\$ -	\$ -
State:		\$ -	\$ -	\$ -
In kind:		\$ 96,460	\$ -	\$ 96,460
Dr. Charlotte Roy's time (5% time) and Dr. Lindsey Shartell's time (5%), 66% salary 34% benefit, 2 years , \$17,080	pending			
Unrecovered indirect costs @ 54% of modified total direct cost base of \$147,000 = \$79,380	pending			
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS				
	Amount legally obligated but not yet spent	Budget	Spent	Balance
M.L. 2016, Chp. 186, Sec. 2, Subd. 08d; Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species		\$ 267,000	\$ 241,000	\$ 26,000

Prescribed Burning for Brushland-dependent Species-Phase II

Management goal: Maintain open conditions that support >250 wildlife species including >80 species of greatest conservation need

Problem 1: Fire suppression leads to overgrown brushlands and loss of open conditions

Solution: Use prescribed burning to mimic historical patterns of wildfire



Overgrown Brushland



Prescribed fire in spring

Problem 2: Historically, wildfires occurred in all seasons: spring, summer and fall. Prescribed burns occur in spring. Cooler spring fires due to moist condition may hinder effective achievement of management goals.

Solution: Provide data on the impacts of summer and fall burns to support science-based guidelines for maintaining healthy brushland habitat.

Activity 1. Assess vegetation and bird response 3-5 years after prescribed burns on 1200 acres of brushland habitat in central/NE Minnesota



Activity 2. Enhance manager's guide for brushland habitat



