



Environment and Natural Resources Trust Fund

M.L. 2020 Approved Work Plan

General Information

ID Number: 2020-052

Staff Lead: Corrie Layfield

Date this document submitted to LCCMR: August 13, 2021

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

Project Budget: \$147,000

Project Manager Information

Name: Rebecca Montgomery

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

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Project Reporting

Date Work Plan Approved by LCCMR: August 13, 2021

Reporting Schedule: April 1 / October 1 of each year.

Project Completion: June 30, 2024

Final Report Due Date: August 14, 2024

Legal Information

Legal Citation: M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08i

Appropriation Language: \$147,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota to compare the effects of spring, summer, and fall burns on birds and vegetation and to provide guidelines for maintaining healthy brushland habitat for a diversity of wildlife and plant species.

Appropriation End Date: June 30, 2024

Narrative

Project Summary: Brushlands provide critical habitat for >250 wildlife species. We compare effects of spring, summer and fall burns on birds and vegetation, providing much needed management guidelines for this key habitat.

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

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 MNDNR list of Species of Greatest Conservation Need (SGCN). 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 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. Managers don't usually burn brushlands in summer and fall because of more challenging conditions that 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 fall and summer burns. Showing benefits of more varied burning will help justify changes to existing management, ultimately benefiting wildlife.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

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. 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.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

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

Project Location

What is the best scale for describing where your work will take place?

Region(s): NE

What is the best scale to describe the area impacted by your work?

Region(s): NE

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

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

Activity Budget: \$137,000

Activity 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 to 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 Milestones:

Description	Completion Date
1200 acres surveyed for birds 3 and 5 years after spring, summer, & fall fires	June 30, 2023
1200 acres surveyed for vegetation response 3 and 5 years after spring, summer, & fall fire	August 31, 2023
Dataset of fire effects and vegetation response compiled and analyzed	February 28, 2024

Activity 2: Enhance manager guide for brushland habitat

Activity Budget: \$10,000

Activity 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 Milestones:

Description	Completion Date
Workshop with DNR staff and stakeholders to update best management practices developed in Phase I	March 31, 2024
Updated management guidelines for using prescribed fire to maintain brushland habitat	June 30, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Charlotte Roy	Department of Natural Resources	Provide expertise on habitat characteristics for wildlife.	No
Lindsey Shartell	Department of Natural Resources	Provide expertise on habitat characteristics for wildlife.	No
Lee Frelich	University of Minnesota	Provide expertise on fire ecology and vegetation community assessment. Project coordination and co-advise graduate student.	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

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.

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

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. As part of Phase I, we had a workshop with managers that laid the foundation for creating a best management practices report and learning network.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
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Assessing Species Vulnerability to Climate Change Using Phenology	M.L. 2014, Chp. 226, Sec. 2, Subd. 05e	\$175,000
Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species	M.L. 2016, Chp. 186, Sec. 2, Subd. 08d	\$267,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Project manager		Lead all aspects of the project			36.5%	0.12		\$15,620
Ecologist		Coordinate field work; provide expertise on fire ecology, community ecology; co-advise graduate student			36.5%	0.12		\$7,231
4 research technicians		conduct field research			31.8%	2.1		\$60,000
Research specialist		Conduct data analyses, train field staff in bird methods			36.5%	0.5		\$53,674
							Sub Total	\$136,525
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Tools and Supplies	GPS units, waders (1 per person/year), rite in the rain paper for datasheets	Navigation and safety at sites, work in high water conditions, collection of data under varied weather conditions.					\$1,142
							Sub Total	\$1,142
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								

	Miles/ Meals/ Lodging	University fleet rental (2 yrs @ \$3000/yr and lodging at Cloquet Forestry Center (2 yrs @ 1667/year)	We require a high clearance vehicle for site access and housing for summer staff near field sites.					\$9,333
							Sub Total	\$9,333
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$147,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
In-Kind	Unrecovered indirect costs @ 54% of modified total direct cost base of \$147,000 = \$79,380	Keep the University workspaces that support the work going including buildings, libraries, field facilities.	Potential	\$79,380
			Non State Sub Total	\$79,380
			Funds Total	\$79,380

Attachments

Required Attachments

Visual Component

File: [c3592aac-1f0.docx](#)

Alternate Text for Visual Component

Images of brushland and prescribed burn; project goals, activities and outcomes; map of open lands and study sites....

Optional Attachments

Support Letter or Other

Title	File
Background Check Form	86fa0627-b99.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

Changed dates for deliverables. Reduced the travel to two summers of field work due to changing timing related to delay of funding. Added funds to research technician from travel to reflect the need for an M.S. level student to deal with unbalanced research design resulting from the delay in funding.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I agree to the UMN Policy.

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

Yes, Sponsored Projects Administration

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

