



Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-031

Proposal Title: Grassland Bird Conservation: To hay or delay?

Project Manager Information

Name: Alexis Grinde

Organization: U of MN - Duluth - NRRI

Office Telephone: (218) 788-2747

Email: agrinde@d.umn.edu

Project Basic Information

Project Summary: Hay fields can provide critical habitat for imperiled grassland birds, we will develop and assess flexible management strategies that integrate land owner needs while maximizing productivity of breeding grassland birds.

Funds Requested: \$552,000

Proposed Project Completion: 2024-06-30

LCCMR Funding Category: Foundational Natural Resource Data and Information (A)

Project Location

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

Region(s): NW, SW, Central,

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

Region(s): NW, SW, Central,

When will the work impact occur?

During the Project and In the Future

Narrative

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

Grassland bird populations are declining at an alarming rate. Several grassland bird species identified as Species in Greatest Conservation Need (SGCN) by MN DNR have had significant population declines throughout their breeding ranges including Greater Prairie-Chicken, Bobolink, and Western Meadowlark.

- Bobolink: global population decline of 69% from 1966 to 2017.
- Western Meadowlark: global population decline of 45% from 1966-2017 (98% in Minnesota).
- Greater Prairie-Chicken: declined 80% range-wide between the early 1970's to the late 1990's.

The primary cause of these population declines is directly related to habitat loss. Grassland habitat conservation has largely focused on federal programs such as Conservation Reserve Program (CRP) used to create habitat by paying landowners to convert their agricultural lands into grasslands. However, over the past decade, these programs have seen a 70% decline in enrolled lands due to enrollment caps and higher commodity prices in row crops such as corn and soybeans. The long-term, significant declines of grassland bird populations along with the continued loss of grassland habitat is a clear indication that grassland conservation is in dire need of additional information, and development of innovative conservation tools.

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.

This project will develop and assess dynamic conservation strategies to create, retain, and enhance grassland habitat in temporary, flexible and adaptable ways that integrate the needs of landowners and birds alike.

The majority of work on grassland bird research and private lands conservation has occurred on CRP lands, while CRP is a valuable tool, it requires a high level of commitment and funding support that is not appealing or financially accessible to many landowners. Minnesota has roughly 1.2 million acres of agricultural land designated for hay production; 20% more habitat than is currently enrolled in CRP. Hay fields can provide critical habitat for grassland breeding birds in the state providing an excellent opportunity for conservation action and impact. However, the timing of the first hay harvest usually occurs during the peak of the breeding season for most grassland bird species. This likely has significant direct and indirect impacts on adult and juvenile survival. There is a critical need to assess the optimal times to conduct hay harvest that will yield both high value hay products while minimizing impacts to breeding birds.

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?

This project is part of a larger strategy to conserve Minnesota's grassland birds. This approach to grassland conservation will provide an important first step that addresses the commitment and cost limitations associated with CRP and provide alternative conservation options.

Specific project outcomes are to:

1. Quantify how timing of hay harvest relates to changes in breeding grassland bird communities and identify trade-offs related to hay nutritional quality.
2. Evaluate nesting phenology, reproductive success, and juvenile habitat use for Greater Prairie-Chicken, Bobolink and other breeding grassland birds.
3. Develop "wildlife-friendly" dynamic conservation habitat management recommendations for managed hay and grasslands.

Activities and Milestones

Activity 1: Assess timing of haying in grasslands and quantify changes in breeding bird communities.

Activity Budget: \$159,060

Activity Description:

We will select 30 sites across ownerships and grassland land-use gradients (e.g., conservation easements, hobby farms, and intensive hay management) of grasslands in the state. We will conduct breeding bird surveys weekly during the breeding season to quantify species abundance. We will also use autonomous recording units (ARUs) that will provide continuous presence of bird species throughout the season at each site. We will work with the private landowners and document the timing and type of management activities that occur at each site. Together, these data will allow us to quantify changes in bird communities over the breeding season and assess impacts of haying on grassland bird communities.

Activity Milestones:

Description	Completion Date
Identify 30 grassland sites that represent a gradient of hay harvest intensities.	2022-05-31
Conduct breeding bird surveys at sites throughout the 2022 and 2023 breeding seasons.	2023-10-31
Quantify impacts of grassland management on breeding bird communities.	2024-05-31

Activity 2: Quantify the impacts of timing of haying on focal species productivity and habitat use.

Activity Budget: \$295,940

Activity Description:

We will work with project partners to identify four grassland study areas (prioritized by size, amount of grassland habitat across the landscape and distance to leks, compensation agreements). Each study area will have four treatments that will be randomly assigned: control (no haying); high intensity haying (maximize hay production); early haying (June; maximize nutrient content); delayed (July; bird conservation).

We will search for grassland bird nests focusing on Greater Prairie-Chicken, Bobolink, and Western Meadowlark but will also include more common species such as Clay-colored Sparrow and Grasshopper Sparrow to increase the sample size and assess consistency in treatment response across species. We will find and monitor nests to document sources of mortality and failure. We will conduct vegetation surveys to characterize habitat associated with nest locations. As nestling songbirds approach fledging stage, we will tag juveniles with radio-transmitters and they will be tracked using radio telemetry for approximately 20 days post-fledge. Greater Prairie-Chickens will be monitored by tracking hens with broods throughout the brood-rearing period (through late August). These data will show the extent to which fledglings select for specific treatments and differences in distance of daily movements, survival, and habitat features that are associated with grassland management.

Activity Milestones:

Description	Completion Date
Establish study areas and assign haying treatments.	2022-05-31
Track juveniles and record habitat use for 14-21 days during 2022 and 2023 post-breeding season.	2023-09-30
Conduct nest searches and monitor nest and hatchling survival.	2023-09-30
Document changes in nutritional quality of hay over the growing season.	2023-10-31
Quantify impacts of timing of haying on focal species productivity and juvenile habitat use.	2024-05-31

Activity 3: Develop grassland management strategies to maximize grassland bird productivity.

Activity Budget: \$97,000

Activity Description:

Findings from Activities 1 and 2 will be integrated to establish grassland habitat management guidelines that account for the interrelationships among timing of haying treatments, nesting and juvenile habitat use, and survival. Management guidelines will identify “safe dates” for haying grasslands that minimize impacts to breeding grassland birds and ultimately improve, protect, and enhance grassland habitats to maximize breeding season productivity of grassland species.

Activity Milestones:

Description	Completion Date
Development of habitat management guidelines to be used by land owners.	2024-06-30
Compilation and integration of breeding bird community assessment, survival, and habitat use data.	2024-06-30

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Charlotte Roy	MN DNR	Dr. Roy will serve as Co-PI and lead the Greater Prairie-Chicken research. Dr. Roy is a Research Scientist with the Minnesota Department of Natural Resources Section of Wildlife for 13 years, she has led over a dozen research studies to inform the management of natural resources in the state.	Yes

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?

This project is part of a larger strategy to conserve Minnesota's grassland birds. The project will identify conservation actions that complementary alternative to CRP with the overall goal of increasing the quantity and quality of grassland habitat in the state. The project outcomes will add nuance to haying guidelines to maximize benefits of working hay fields while addressing private land owner needs. The result will be the development of low-cost, flexible, high impact tools and guidelines for conserving Minnesota's grassland birds. We will work with our project partners to distribute the guidelines to private landowners across the state.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Mapping Avian Movement in Minnesota	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 03h	\$200,000
Conserving Minnesota's Forest Birds of Management Concern	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 03g	\$500,000

Project Manager and Organization Qualifications

Project Manager Name: Alexis Grinde

Job Title: Wildlife Ecologist

Provide description of the project manager's qualifications to manage the proposed project.

Dr. Grinde is a Wildlife Ecologist and Research Lab Manager at the Natural Resources Research Institute, University of Minnesota Duluth. She has over 15 years of research experience focusing on conservation ecology. Dr. Grinde manages five full-time research scientists and multiple research projects and contracts focusing on the development of management strategies for habitats and wildlife. Her research focuses on conservation ecology including studying the large-scale impacts of environmental change on wildlife, biodiversity, and ecosystem functions. Applications of her research include informing forest management decisions in relation to changing land use patterns and providing recommendations for conservation plans for species of conservation concern.

Organization: U of MN - Duluth - NRRRI

Organization Description:

The Natural Resources Research Institute (NRRRI) is an applied research and economic development engine for the University of Minnesota research enterprise. NRRRI employs over 130 scientists, engineers and technicians to deliver on its mission to deliver research solutions to balance our economy, resources and environment for resilient communities. NRRRI collaborates broadly across the University system, the state and the region to address the challenges of a natural resource based economy.

NRRI scientists have extensive experience in managing large, interdisciplinary projects. Major objectives include the development of tools for environmental assessment and resource management. NRRI's role is as an impartial, science-based resource that develops and translates knowledge by characterizing and defining value-resource opportunities, minimizing waste and environmental impact, maximizing value from natural resource utilization and maintaining/restoring ecosystem function.

The NRRI Avian Ecology Lab is led by Dr. Alexis Grinde (over 15 years of wildlife and education experience) and consists of five full-time research scientists. Our research focuses on the development of economically sustainable conservation strategies and land management guidelines to preserve and enhance the species diversity of Minnesota bird populations and to protect species of conservation concern.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Alexis Grinde, PI		Project management, analysis, and report writing.			26.7%	0.15		\$18,754
Research Scientists		Supervise field work, data collection, and analysis			24.1%	0.75		\$55,665
Field Technicians		Assist with seasonal field work, nest searches, telemetry and vegetation sampling			7.3%	1.2		\$43,539
Undergraduate Research Assistant		Assist field technicians and data entry			0%	0.5		\$13,438
Graduate Research Assistant		Collect data, analyze and write reports and manuscripts.			48.3%	1		\$86,394
							Sub Total	\$217,790
Contracts and Services								
MNDNR	Sub award	MNDNR will be responsible for the Greater Prairie-Chicken portion of the research. Including assisting to identify study sites, lek locations, nest searching, monitoring Greater Prairie-Chicken survival and habitat use in 2022 and 2023 breeding seasons. The will also assist with data analysis, report writing, and outreach to private land owners.				3.5		\$228,374
							Sub Total	\$228,374
Equipment, Tools, and Supplies								
	Tools and Supplies	2 VHF Radio Receivers telemetry receivers (incl. antennas) @ \$4800 ea	Used to track birds tagged with radio transmitters to assess habitat use and survival.					\$9,600
	Tools and Supplies	Consumable field supplies	Batteries, chargers, cords, SD cards.					\$3,439
	Tools and Supplies	320 radio transmitters for songbirds (\$150 ea.; 40 per study area= 160 per year = 320 total)	Attached to juvenile birds to track their movements and survival.					\$48,000

	Tools and Supplies	10 Autonomous Recording Units (\$960 each * 10)	To document presence / absence of breeding birds continuously over time; 24 from previously funded project will be used.					\$9,600
							Sub Total	\$70,639
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel for field work.	Hotels for field season (double occupancy) 80 nights @ 100 / night = \$8000 Travel to and from field sites: 15855 miles x \$0.575/mile = \$9117, Per Diem for field technicians 80 @ \$38.00 / day x 2 = \$6080					\$23,197
							Sub Total	\$23,197
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
		Payment to landowners for compensation	Approximately 4 landowners or approximately 160 acres will be contracted to participate in the study by altering the timing of hay harvest on their lands as assigned. Land owners will be solicited through					\$12,000

			existing relationships among agencies and will be compensated at 1% of the land value (per acre).					
							Sub Total	\$12,000
							Grand Total	\$552,000

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				
In-Kind	Minnesota DNR	Minnesota DNR Research Scientist Charlotte Roy will provide ten percent of her time for two years of value of \$23,709. Dr. Roy will work with Dr. Grinde to direct data collection on greater prairie-chicken responses to haying at different times during the reproductive season. This research will occur concurrent to another study on prairie-chickens that will be enhanced through this work.	Secured	\$23,709
			State Sub Total	\$23,709
Non-State				
In-Kind	UMN unrecovered indirect costs are calculated at the UMN negotiated rate for research of 55% modified total direct costs.	Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with a specific sponsored program or institutional activity. Examples include utilities, building maintenance, clerical salaries, and general supplies. (https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs)	Secured	\$173,676
			Non State Sub Total	\$173,676
			Funds Total	\$197,385

Attachments

Required Attachments

Visual Component

File: [5b1438c2-fb6.pdf](#)

Alternate Text for Visual Component

Title reads "Grassland Bird Conservation: To hay or delay?". Below are three pictures depicting the hay harvest process. Text reads "Problem: Grassland bird populations are declining at an alarming rate." Two grassland bird species are pictured with a summary of population statistics. Text reads "Solution: Hay fields can provide critical habitat for imperiled grassland birds." with a map of the state showing where managed hay fields are located and associated statistics. Final text header reads "This project will develop dynamic conservation strategies to increase grassland habitat by assessing optimal times to conduct hay harvest to yield high value hay products while minimizing impacts to breeding birds."

Optional Attachments

Support Letter or Other

Title	File
Letter of Support from Minnesota Land Trust	a4f28a7f-e98.pdf
Sponsored Projects Transmittal Letter	d50d02d8-ff2.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have patent, royalties, or revenue potential?

No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

Yes, Sponsored Projects Administration

Grassland Bird Conservation: To hay or delay?



Problem: Grassland bird populations are declining at an alarming rate.

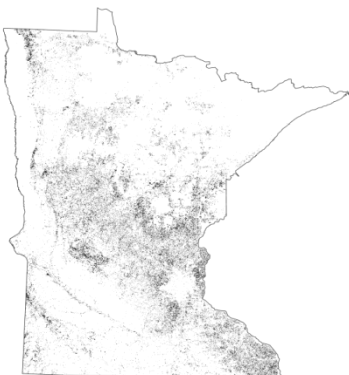


Loss of habitat is the major factor in population declines.

Grassland habitat created by the Conservation Reserve Program in Minnesota has dropped 70% since 2007. During this time period:

- Bobolink declined 59%
- Greater Prairie-Chicken decreased 61%

Solution: Hay fields can provide critical habitat for imperiled grassland birds.



1. Minnesota has roughly 1.2 million acres of agricultural land designated for hay production.
2. Timing of hay harvest has direct and indirect impacts on adult and juvenile survival.

Project Outcomes: This project will develop dynamic conservation strategies to increase grassland habitat by assessing optimal times to conduct hay harvest to yield high value hay products while minimizing impacts to breeding birds.

