Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-311

Proposal Title: Assessing Neonicotinoids in Pheasants and Their Grassland Habitats

Project Manager Information

Name: Steven Woodley

Organization: MN DNR - Fish and Wildlife Division

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Project Basic Information

Project Summary: We will evaluate the temporal and spatial prevalence of neonicotinoids in wild pheasants and their habitats in Minnesota by collecting samples during distinct periods of agricultural activity.

ENRTF Funds Requested: $513,000

Proposed Project Completion: June 30, 2028

LCCMR Funding Category: Fish and Wildlife (D)

Project Location

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

Region(s): SW

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

Statewide

When will the work impact occur?

In the Future

Narrative

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

Neonicotinoids (neonics) are a class of systemic insecticides that reportedly pose fewer environmental risks than other pesticides used in crop production. However, evidence increasingly indicates that neonics adversely affect non-target wildlife, including pollinators and birds, more than previously thought. Neonics can persist in soil for up to three years and are water-soluble, allowing them to remain in the environment and spread easily. Consequently, concern is growing regarding their impact on wildlife and prairie habitats.

In Minnesota, previous research on neonics in wildlife has focused primarily on grouse and white-tailed deer. Ring-necked pheasants are an economically significant game species, yet the prevalence of neonics in wild pheasants is unknown. Additionally, little research attention has been paid to the prevalence and concentrations of neonics in Minnesota's prairie habitats, on which gamebirds, songbirds, pollinators, and many other species of grassland-associated wildlife depend. Pheasants have a varied diet but their primary food includes arthropods, seeds, and plant foliage, especially in spring and summer when farming activities occur. Due to their diverse diet and range throughout Minnesota's prairie/farmland region where neonics are used extensively, pheasants are likely exposed to neonics and may serve as indicators of exposure to neonics for other grassland wildlife.

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

Our study will provide baseline information on the prevalence and concentrations of neonics in pheasants and their associated grassland habitats across southwestern Minnesota. The study is designed to assess spatial and temporal differences in neonic concentrations in pheasants and environmental samples taken from MNDNR-managed grasslands. Specifically, our specific research objectives are to determine the prevalence and concentration of neonics (1) in the muscle, liver, crop, and gizzard contents of pheasants collected during spring and fall from both smaller and larger acreage MNDNR-managed grasslands, and (2) in arthropod, forb, and soil samples collected from the margins and interior areas of these grasslands across four distinct agricultural periods: pre-planting, post-planting, mid-growing, and harvest each year.

In 2024, we successfully completed a pilot study collecting pheasants and environmental samples as outlined in the objectives above at 6 (3 large and 3 small acreage) MNDNR-managed grasslands in southwest Minnesota. With adequate financial support, we may extend this research through 2028 and collect additional samples, thereby increasing the statistical power of the study.

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 study focuses on pheasants, but our design adopts a comprehensive ecological approach because we will gather data on potential environmental routes of exposure to neonics for game and non-game species alike. The temporal aspect will enable us to measure how neonic concentrations fluctuate throughout the growing season, offering insights into the risks posed to wildlife, including gamebirds, songbirds (e.g., Henslow's sparrows), and pollinators (e.g., rusty-patched bumblebees, monarchs) at various stages of their life cycles. The spatial aspect will help us evaluate potential edge effects of neonics. Ultimately, results can be used to refine habitat management and landscape.

Activities and Milestones

Activity 1: Quantifying the prevalence and concentrations of neonics in pheasants, arthropods, forbs, and soils temporally and spatially

Activity Budget: $513,000

Activity Description:
Objective 1 and 2: Determine the prevalence and concentration of neonics in pheasants, arthropods, forbs, and soils from smaller and larger acreage MNDNR-managed grasslands.
We will collect up to 60 male pheasants (roosters) annually (30 in spring and 30 in fall) from our study sites using trained dogs and firearms. For neonic testing, we will remove the crop and gizzard contents (e.g., seeds, arthropods, grit), breasts, and liver from each rooster. We will collect arthropods along the margin and interior areas of our study sites using standardized sweep netting and pitfall trap methods at four periods of the breeding season in combination with the agricultural growing season. Using a standardized quadrate, we will estimate canopy cover of total grass, litter, bare ground, and forbs, while also recording the most prevalent growth stage of forbs (e.g., flowering, fruiting) at 15 locations along the margin and 15 locations within the grassland interior area. After estimating cover and noting the prevalent forb growth, we will harvest the above-ground biomass of all forbs within the quadrat. Additionally, we will collect soil samples at each vegetation sampling location. All samples will be stored at -80°C before being shipped for neonic analyses.

Activity Milestones:

Description	Approximate Completion Date
Collect arthropods, forbs, and soils	October 31, 2026
Pheasant collection and dissections	November 30, 2026
Ship samples to lab	December 31, 2026
Receive results from lab	April 30, 2027
Start dissemination of results: ≥1 oral presentation to managers	June 30, 2028

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 work be funded?

This foundational study provides baseline data on the prevalence and concentrations of neonics in wild pheasants and their grassland habitat, while also offering insights into environmental exposure routes that are significant for other game and nongame species too. Furthermore, our study will illuminate the role of habitat fragmentation in wildlife exposure to neonics. Given that the objectives of the Minnesota Prairie Conservation Plan and the Minnesota Pheasant Action Plan (2025-2030) focus on protecting, restoring, managing, and enhancing larger grassland habitat complexes, the findings from our study can inform MNDNR managers and our partners in guiding habitat and landscape planning efforts.

Project Manager and Organization Qualifications

Project Manager Name: Steven Woodley

Job Title: Senior Wildlife Research Biologist

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

Dr. Steven Woodley is a Senior Wildlife Research Biologist with the Farmland Wildlife Populations and Research Group at the Minnesota Department of Natural Resources (MNDNR). He earned his Ph.D. in Environmental and Natural Resource Sciences from Washington State University. Woodley joined MNDNR in February 2023, and by October 2023, he had designed a study and secured funding through MNDNR's Section of Wildlife to lead and manage an innovative research project on neonicotinoid concentrations in wild pheasants and their grassland habitats. Prior to his position at MNDNR, Woodley held postdoctoral positions where he designed and led community ecology studies across various environments, ranging from coastal wetlands in Louisiana to dryland agricultural-grassland-sagebrush habitats in central Washington. As a postdoctoral researcher, he trained, mentored, and supervised 10 early-career undergraduate technicians, 7 graduate students, and 3 professional field staff. Woodley has published four papers as the first author, with two additional papers currently under review (one as the first author and one as the third author) along with three more in development (two as the first author and one as the third author). He also has extensive experience collaborating with federal, state, and local agencies, as well as working with producers in agricultural landscapes to conduct research activities successfully.

Organization: MN DNR - Fish and Wildlife Division

Organization Description:

The Minnesota Department of Natural Resources Fish and Wildlife Division's mission is to conserve, manage, and enhance the state's wildlife, fish, and habitats.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
2 field technicians		Assist with field data collection			30%	0.58	X	$50,184
							Sub Total	**$50,184**
Contracts and Services								
U.S. Department of Agricultural/Agricultural Marketing Service – National Science Lab	Service Contract	The lab will be contracted via a Joint Powers Agreement to run chemical analyses on all pheasant, soil, plant, and arthropod samples collected during the 2026 field season. Additional samples collected during 2025 field season will be banked and also tested during FY27.				0.1		$440,000
FedEx	Service Contract	FedEx will be used to ship samples (overnight express) to the USDA/AMS-NSL lab.				0		$2,000
							Sub Total	**$442,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Dry ice	For storing samples in a cooler in the field and for shipping samples to the USDA lab for analysis.					$1,500
							Sub Total	**$1,500**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	For FY27: 40 days of travel at 255 miles per day, plus housing (hotels) and meals for 2 people for 10 days within the 40 days of travel.	Travel (miles, lodging, meal per diem) to conduct fieldwork during FY27. (MN DNR will fund travel for previous fiscal years.)					$10,064

							Sub Total	**$10,064**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Minnesota DNR Direct and Necessary Costs	DNR's direct and necessary costs pay for activities that are directly related to and necessary for accomplishing appropriated projects: People Support ($1,188), Safety Support ($188), Financial Support ($733), Communication Support ($1,902), IT Support ($3,870), and Planning Support ($1,371)					$9,252
							Sub Total	**$9,252**
							Grand Total	**$513,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - 2 field technicians		Assist with field data collection	**Classified :** We do not have enough capacity with our permanent staff to meet this workload need. Therefore, classified staff will be temporary staff who are hired to meet the seasonal workload of the data collection. Once field work is completed, these positions will end.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Special appropriation from the Heritage Enhancement account to MNDNR's Section of Wildlife to "examine the effects of neonicotinoid exposure on the reproduction and survival of Minnesota's game species, including deer and prairie chickens." (This is a one-time special appropriation via HF2310, 4th Engrossment – 93rd Legislature [2023-2024]; Section 3, Subd 6, i). Part of this special appropriation is being used to support the first 2.5 field seasons (spanning three fiscal years, FY24-FY26) of our study.	Funding to conduct the project during the first two full field seasons (2024-2025) and the first half of the 2026 field season (FY24-FY26), including cost of technician salaries, equipment and supply purchases, shipping costs, USDA lab analyses (2024-2025 data only), and travel including fleet.	Pending	$463,691
In-Kind	Game and Fish Fund: MS 97A.055	DNR Staff Time: Steven Woodley (Senior Wildlife Research Biologist): 60% FTE over 4.5 years to lead all aspects of project design, implementation, analysis, and dissemination; Nicole Davros (Farmland Wildlife Research Group Supervisor): 10% FTE over 2.5 years to provide input on study design, data analyses, and writing/editing of project documents.	Secured	$237,780
In-Kind	MNDNR Nongame Program Wildlife Funds (WildHome Grant) for FY25	Funding will be used to augment some lab costs.	Secured	$7,500
In-Kind	MNDNR Nongame Program Wildlife Funds (WildHome Grant) for FY26-FY27	Funding will be used to augment some lab costs.	Pending	$15,000
			State Sub Total	**$723,971**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**$723,971**

Total Project Cost: $1,236,971

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: d3f25f9d-6f5.pdf

Alternate Text for Visual Component

The infographic titled “Assessing Neonicotinoids in Pheasants and Their Associated Habitats,” states, “increasing evidence that neonicotinoids have harmful effects on birds and pollinators” and illustrates pathways in which neonicotinoids move from a neonicotinoid treated soybean via drift, runoff, and leaching to soil, forbs, arthropods, and birds in an adjacent prairie-grassland....

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they 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 understand the Commissioner's Plan applies.

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

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?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

Dr. Steven E. Woodley, Minnesota Department of Natural Resources - Fish and Wildlife Division

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand