

Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-332

Proposal Title: Survival and Movement of Deer in Minnesota's Prairies

Project Manager Information

Name: Tyler Obermoller Organization: MN DNR - Fish and Wildlife Division Office Telephone: (507) 578-8919 Email: tyler.obermoller@state.mn.us

Project Basic Information

Project Summary: Monitoring GPS-collared deer and examining survival, causes of mortality, predator impacts, and disease movement in CWD positive zones is important to determine deer health and inform future management.

ENRTF Funds Requested: \$1,872,000

Proposed Project Completion: June 30, 2030

LCCMR Funding Category: Fish and Wildlife (D)

Project Location

- What is the best scale for describing where your work will take place? Region(s): NW, Central,
- What is the best scale to describe the area impacted by your work? Statewide

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.

White-tailed deer are an important game species in Minnesota, providing recreational and economic opportunities. Statewide monitoring and management are critical to maintaining herd health. However, vital rate and cause-specific mortality studies in Minnesota's northern farmland zones are outdated, with no previous collaring studies conducted in this region. Since Minnesota manages deer using a harvest-based population model, up-to-date vital rate estimates are essential for setting accurate harvest regulations. Life history studies can also help assess population growth potential and identify limiting factors such as disease and predation.

Additionally, chronic wasting disease (CWD) has recently expanded into new sections Minnesota's western border. Little is known about the source of this expansion or how deer move throughout the region, making research-based management decisions difficult. Additionally, ongoing research is imperative to deer health, as previous CWD positive areas have experienced population declines without proper management and disease suppression.

Public concern over predator impacts, particularly from canids (e.g., coyotes, wolves) has also increased. Understanding specific causes of mortality and predator dynamics is of great interest to Minnesota's hunters. Furthermore, little research exists on canid movement and habitat use in these regions with most studies focused in the northern forest.

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.

We propose a multi-study area with white-tailed deer of multiple age classes to update vital rate estimates in the farmland and transition zones. We propose GPS-collaring adults, juveniles, and newborn fawns to obtain critical life history information for deer population modeling. These data will improve accuracy of harvest limit recommendations to meet population goals. GPS collars will also allow assessment of seasonal movement and habitat use.

Additionally, we will build a habitat model incorporating landscape characteristics to predict deer movements and identify wintering areas, informing locations of future CWD management. We will also assess specific causes of mortality (e.g., predation, disease, vehicle-collision, hunting) to evaluate predator impacts on population dynamics. We will also GPS collar predators to understand their hunting behaviors and analyze how white-tailed deer adjust their behavior to evade detection, increasing understanding of predator-prey interactions.

Specifically, we will capture adult and juvenile male and female deer using a helicopter capture crew. Pregnant adult females will receive a vaginal implant transmitter to track birthing events and aid in GPS-collaring newborn fawns. Newborn fawns are especially vulnerable to predation; therefore we will closely monitor newborn fawns for mortality events to provide insight on predator impacts in this region.

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?

We will determine survival rates, pregnancy rates, movement (e.g., dispersal, migration) and habitat use of juvenile and adult white-tailed deer. Results will improve the DNR's harvest-based population model and determine proper harvest regulations to meet population goals. We will also determine deer travel corridors to inform DNR CWD management. We will determine causes of mortality and assess the impacts predators have on our deer populations in the understudied farmland and transition zones. This project will improve DNR deer management essential for the health and preservation of white-tailed deer in Minnesota.

Activities and Milestones

Activity 1: Estimate movement, habitat use, survival and causes of mortality of white-tailed deer in northwestern Minnesota

Activity Budget: \$1,606,972

Activity Description:

We will contract with a helicopter capture company to locate and GPS collar 100 adult and juvenile (8 months of age) white-tailed deer each January–February for two years. We will collect biological samples and morphological measurements at capture to assess overall health and body size. We will also use vaginal implant transmitters on pregnant adult females to determine birth events and subsequently locate and GPS collar 50 newborns fawns each May–June for two years and monitor for survival. The GPS collars will be equipped with mortality sensors and send a notification for investigators and determination of specific causes of mortality (e.g., health-related, predator, exposure/starvation). We will use the GPS collar location information to estimate seasonal movement and habitat use to inform chronic wasting disease (CWD) management efforts.

Activity Milestones:

Description	Approximate Completion Date
Capture and collar adult and juvenile (8 months of age) white-tailed deer (January-February 2027, 2028)	February 28, 2028
Capture and collar newborn deer fawns (May-June 2027, 2028)	June 30, 2028
Perform survival and cause-specific mortality analyses for population modeling	December 31, 2029
Conduct habitat and movement analyses for CWD management efforts	December 31, 2029
Survival and causes of mortality monitoring	June 30, 2030
Interpret results and begin manuscripts	June 30, 2030

Activity 2: Estimate movement and habitat use of white-tailed deer predators in northwestern Minnesota

Activity Budget: \$265,028

Activity Description:

We will collaborate with fellow canid biologists to continue and expand ongoing GPS-collaring efforts in northwestern Minnesota. Specifically, we will GPS collar 20 additional canids (e.g., wolves and coyotes) each year for two years. At capture, we will collect biological samples and morphological measurements to assess overall health and body size. The GPS collars will record activity and location data that will allow us to estimate seasonal movement patterns, habitat use, and predation events. Additionally, we will analyze location data to identify and investigate clusters of locations, including potential opportunistic and GPS-collared deer mortality sites to better understand how predators navigate the landscape to locate white-tailed deer. We will also collect canid scats to quantify seasonal diet selection and assess their impact on deer population dynamics. Furthermore, we will examine how deer adjust their behavior to reduce encounter rates with predators. We will also integrate location data and scat collection to determine seasonal diet composition and gain deeper insight into predator-prey interactions.

Activity Milestones:

Description	Approximate Completion Date
Capture and collar canids (July 2027, 2028)	August 31, 2028
Conduct seasonal habitat and movement analyses	December 31, 2029
Monitor canid activity, movement and survival	June 30, 2030

Project Partners and Collaborators

Name	Organization	Role	Receiving
			Funds
Dr. Michelle	MNDNR - Fish	Advise on project design, provide consultation on CWD management	No
Carstensen	and Wildlife		
	Division		
Erik	MNDNR - Fish	Provide consultation on CWD management	No
Hildebrand	and Wildlife		
	Division		
Dr. Mary	MNDNR - Fish	MNDNR Veterinarian, assist with capture logistics, animal welfare, capture drugs	No
Wood	and Wildlife		
	Division		
Dr. John Erb	MNDNR - Fish	Project consultation, DNR canid biologist, assist with canid capture and	No
	and Wildlife	monitoring logistics.	
	Division		
Dr. Amanda	MNDNR - Fish	Project consultation, MNDNR ungulate research scientist - Forest Region, help	No
McGraw	and Wildlife	with capture and monitoring logistics	
	Division		

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?

Survival results will be directly implemented into the DNR deer population model to inform harvest season setting. Survival and cause-specific mortality results will be analyzed to determine overall population health. Movement and habitat use results will be distributed to DNR's Wildlife Health Program to determine best locations for future CWD management and monitoring efforts. Multiple manuscripts will be published on deer survival and causes of mortality and habitat use, wolf movement and habitat use, and predator-prey relationships. If additional work is needed, I will develop a proposal for the internal DNR funding process to request additional funding for future objectives.

Project Manager and Organization Qualifications

Project Manager Name: Tyler Obermoller

Job Title: Ungulate Research Scientist

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

My position with the Minnesota Department of Natural Resources is an ungulate (deer and elk) research scientist, this position and the expertise of the project manager is to provide high-level technical expertise on the ecology, research, and monitoring of farmland ungulates (primarily white-tailed deer and elk), to develop and evaluate new research and analytical methods; and to design, execute, and report on complex and collaborative research and survey projects to provide new knowledge that can be applied to the management of and harvest frameworks for ungulates. My experience and specialization is with movement, behavior and survival studies to better understand potential limiting factors influencing population dynamics.

Additionally, I have conducted or been part of past studies examining survival, causes of mortality, and movement. Specifically, I was a key figure on the moose calf survival and causes of mortality study (2013-2017). We GPS-collared newborn moose calves and monitored them for survival and specific causes of mortality. We also measured bedsite and habitat use to better understand how calves can avoid predator detection.

I also was a collaborator on the chronic wasting disease (CWD) movement study (2017-2018) in southeastern

Minnesota. We GPS-collared adult and juvenile deer to understand their movements in a CWD-positive zone. This study allowed us to determine movement rates and better understand immigration and emigration rates to help the Wildlife Health Program's CWD management plan.

In 2019, I was the principle investigator for a fawn survival and movement study (2019-2025) in southcentral Minnesota. We used a thermal-infrared drone to locate and GPS-collar newborn fawns for survival monitoring. We examined for specific causes of mortality, examined bedsite selection and habitat use and compared to predator evasion tactics, and determined how fawn's adjusted their behavior to reduce their risk of being detecting by coyotes.

Organization: MN DNR - Fish and Wildlife Division

Organization Description:

Farmland Wildlife Research Division.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineli	% Bene	# FTE	Class ified	\$ Amount
				gible	fits		Staff?	
Personnel								1
DNR NR		Field support for capture operations, coordinate			40%	3		\$292,820
Specialist		mortality investigations, assist technicians and grad						
(Wildlife 3		student with field work, monitor white-tailed deer						
year)		and predators						
3 Natural		Assist with deer and canid captures, mortality			40%	6		\$209,180
Resource		investigations, data entry						
Technicians								
							Sub Total	\$502,000
Contracts and Services								
Minnesota	Service	Aviation support for locating deer for captures				_		\$57,600
DNR	Contract	Availon support for locating acci for captures.						\$57,000
Enforcement	contract							
Division								
	Service	A beliconter capture company will capture and collar				_		\$251,600
100	Contract	100 deer per year for 2 years at \$1258/deer						\$251,000
Liniversity of	Service	Conduct necronsies of collared deer to determine				0		\$9,600
Minnesota	Contract	cause of death (\$200/each 16 deer/year 3 years)				0		<i>\$3,</i> 000
Veterinarian	contract							
Diagnostic								
Lah								
	Service	We will take saliva swahs from predator hite wounds				_		\$2.250
National	Contract	to DNA test for specific predators (\$30/swah @25						<i>72,230</i>
Genomics	contract	swahs/3 years)						
Center								
	Service	Provides support for M.S. student (\$50.450/year 2				0		\$100,900
100	Contract	vears)				Ŭ		<i>Ş</i> 100,500
	Service	Statistical Consulting (4-6 weeks of statistical				0		\$19.050
100	Contract	consulting)				Ŭ		<i>Ş15,050</i>
	Contract						Sub	\$441.000
							Total	Ş441,000
Equipment,								
Tools, and								
Supplies								

	Faultaneant	CDC collers for 100 deer (veer at \$2280 /ceeh	Manitarian may an anto of door for	1			Ć45C 000
	Equipment	GPS collars for 100 deer/year at \$2280/each	Monitoring movements of deer for				\$456,000
		(includes data transmission charges), for 3 years	survival, fawning, and investigating				
			cause of death				
	Equipment	GPS collars for 50 newborn fawns/year at \$775/each	Monitoring movements of deer fawns				\$77,500
		(includes data transmission charges), for 2 years	for survival and investigating cause of				
			death				
	Equipment	Vaginal implant transmitters identify fawn birthing	temperature and movement sensor to				\$24,300
		events	identify fawn birthing events				
	Equipment	GPS collars for 20 canids/year at \$2280/each	Monitoring movements of canids to		Ì		\$91,200
		(includes data transmission charges), for 2 years	determine predator seasonal				. ,
		(movement and habitat use				
	Fauinment	Capture supplies (e.g., drugs, capture tools, shipping	Chemically immobilize deer and canids				\$42,000
	Equipment	mortality supplies sleds land access supplies	during cantures supplies to conduct				Ş42,000
		(letters stamps) etc.)	cantures mortality investigations and				
			collect hiological camples, capid diat				
			composition				
						Cult	¢604.000
						Sub	\$691,000
a	-					 Total	
Capital							
Expenditures							
						Sub	-
						Total	
Acquisitions							
and							
Stewardship							
						Sub	-
						Total	
Travel In							
Minnesota							
	Miles/Meals/	Fleet costs for project team (30.000, 0.94/mile, 2	Travel to conduct deer and canid				\$65.800
	Lodging	vears: 10,000, 0,94/mile, 1 vear)	capture operations respond to				+/
			mortalities and collect biological				
			samples or transport carcasses to the				
			laboratory				
	Miles/Meals/	Lodging (botels) and meals for project team during	Project team will be deployed during				\$36,000
	Lodging	field capture deployments	door and canid canture operations and				JJ0,000
	LOUGING		mortality responses that will require				
			mortality responses that will require				
			overnight lodging and meal				
			reimpurements				4
	Miles/ Meals/	Seasonal technician housing costs for canid and fawn	Housing for 3 technicians, 2 years				Ş20,200
	Lodging	captures					

					Sub Total	\$122,000
Travel Outside Minnesota						
					Sub Total	-
Printing and Publication						
	Publication	Publishing charges for peer reviewed articles 6 total at a cost of \$2,000 per article	Publishing scientific results of the project.			\$12,000
					Sub Total	\$12,000
Other Expenses						
		Direct and Necessary Costs (only applies to DNR portion of the funding)	HR Support (\$18,200), Safety Support (\$3,000), Financial Support (\$19500), Communication Support (\$1,900), IT Support (\$60,000), and Planning Support (\$1,400).			\$104,000
					Sub Total	\$104,000
					Grand Total	\$1,872,000

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	Game and Fish Fund	MNDNR Farmland Research Group: Dr. Tyler Obermoller, project management, fieldwork, data analysis, writing, outreach; 36 mos, 50% effort	Secured	\$118,500
In-Kind	Game and Fish Fund	MNDNR Farmland Research Group: Rachael Wiedmeier, project management, fieldwork, data analysis; 36 mos, 25% effort	Secured	\$90,000
In-Kind	Game and Fish Fund	MNDNR Farmland Research Group: Brian Haroldson, project management, fieldwork, outreach; 24 mos, 10% effort	Secured	\$6,000
In-Kind	Game and Fish Fund	MNDNR Wildlife Health Program: Dr. Michelle Carstensen, project consultation, health screening and necropsy support, analyses; 36 mos, 5% effort	Secured	\$17,100
In-Kind	Game and Fish Fund	MNDNR Wildlife Health Program: Erik Hildebrand, project consultation, analyses; 36 mos, 5% effort	Secured	\$13,650
In-Kind	Game and Fish Fund	MNDNR Wildlife Health Program, Dr. Mary Wood, Veterinarian, project consultation	Secured	\$15,000
In-Kind	Game and Fish Fund	MNDNR Ungulate Research Scientist, Dr. Amanda McGraw, project consultation, 36 mos, 5% effort	Secured	\$14,000
			State Sub Total	\$274,250
Non-State				
			Non State Sub Total	-
			Funds Total	\$274,250

Total Project Cost: \$2,146,250

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component File: <u>43ada9ff-574.pdf</u>

Alternate Text for Visual Component

The visual graphic highlights the key objectives the study will achieve and include: inform chronic wasting disease monitoring and management, determine survival for all age classes to inform DNR population modeling, identify causes of mortality and potential predator impacts, and estimate pregnancy rates and fawn survival....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Letter of Support Sisseton-Wahpeton Oyate Lake Traverse	a3242da1-2c2.pdf
Reservation (2)	
Letter of Support Sisseton-Wahpeton Oyate Lake Traverse	<u>3fefab76-5a2.pdf</u>
Reservation (1)	

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:

Tyler R. Obermoller

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