Environment and Natural Resources Trust Fund

2025 Request for Proposal

General Information

Proposal ID: 2025-123

Proposal Title: Small-Mammals and Hunter Participation: Expanded Offal Wildlife Watching

Project Manager Information

Name: Ellen Candler

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

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Project Basic Information

Project Summary: This project creates a comprehensive picture of the offal community from scavengers and disease to hunters themselves, through hunter participation and experiments.

ENRTF Funds Requested: $563,000

Proposed Project Completion: June 30, 2028

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?

Statewide

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.

Nearly 200,000 white-tailed deer are killed yearly by hunters in Minnesota. The offal (gut piles) that are left afield are used by many scavengers. The Offal Wildlife Watching (OWW) project works with hunters to collect images of scavengers that interact with hunter-provided offal. The OWW project has recorded at least 55 scavenger species, however, remote cameras are not suitable for identifying small mammals, such as mice, that frequent hunter-provided offal and are often reservoirs for zoonotic disease. Without a complete understanding of the offal scavenger community, management related to survival, contamination, and disease in the offal food web will not be complete.

Hunters are also an important aspect of the offal community. The OWW project relies on volunteer hunters to deploy cameras. Data identifying barriers and motivations to hunter participation does not exist. Additionally, ways in which results from the project can be used to motivate positive behaviors have not been measured. Answers to these hunter related questions will not only help the OWW project, but future participatory science research as well.

This project will create a complete picture of the suite of scavengers that benefit from hunter-provided offal, measure barriers, motivations, and messaging impacts on hunters' decisions.

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.

Along with hunters helping understand offal scavenging using remote cameras, we seek funding to research small mammals at offal, hunter motivations for participation, and messaging influencing ammunition choice. This will address a knowledge gap related to scavenger diversity at hunter-provided offal, identify barriers to hunter participation in research, and identify how research may motivate behaviors.

The Offal Wildlife Watching project created a program that effectively collects data on most offal scavengers, but the methods used are not effective in collecting information on small mammals. We have yet to identify motivations and barriers to hunter participation in OWW or apply our results to create messaging about scavenger contamination exposure. This research will significantly expand work already being conducted through the OWW project.

Minnesota has distinct biomes that range from wilderness to a major metropolitan area. Deer hunting occurs in each, and thus, hunter-provided offal is made available to scavengers across Minnesota. We will sample small mammals in each of these biomes as well as hunters' motivations and the effectiveness of different messaging.

Partners: Minnesota Master Naturalist Program, 4-H, Minnesota Deer Hunters Association, Backcountry Hunters & Anglers, Bluffland Whitetails Association, Minnesota Center for Prion Research and Outreach, U of M Raptor Center.

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 has four main outcomes, 1) continue collecting scavenger data at hunter-provided offal across Minnesota, 2) identify small mammal scavenger occurrence and CWD prevalence at hunter-provided gut piles across Minnesota, 3) understand motivations and barriers to participation in OWW, and 4) better understand the impact that messaging and images has on hunter and ammunition choice.

This project will result in a more complete picture of the impacts that hunter-provided offal have on the full community, like mice, owls, and hunters. With this information, we can better understand the benefits and impacts of hunter-provided offal on both humans and animals.

Activities and Milestones

Activity 1: Recruit and train volunteer hunters to participate in the Offal Wildlife Watching project and disseminate results.

Activity Budget: $153,707

Activity Description:
The first objective of this activity is to continue to inform and enlist the help of volunteer hunters to deploy remote cameras as part of the Offal Wildlife Watching project. To accomplish this objective, we will facilitate volunteer recruitment and training through well-designed events and resources and provide volunteers with remote cameras to deploy, collect, and archive images. This will involve tasks such as traveling statewide to diverse groups including the Minnesota Master Naturalists, Minnesota Deer Hunters Association, Minnesota Backcountry Hunters and Anglers, Bluffland Whitetails Association, and 4-H. We will also expand our social media presence and design informative media and materials related to project recruitment. As an outcome, we aim to diversify our participation by reaching out more explicitly to tribal nations and the Hmong community.

The second objective is to disseminate results of this project. To accomplish this, we will prepare popular and scientific presentations that will be given to participating groups and hunters. We will prepare popular articles such as those featured in the Minnesota Conservation Volunteer and manuscripts for publication in peer-reviewed journals. We will create content for social media outlets and training for Minnesota Master Naturalists and other groups engaged with Minnesota natural resources stewardship.

Activity Milestones:

Description	Approximate Completion Date
Minnesota Master Naturalist Advanced Training	September 30, 2025
Collect and backup images collected from hunters each season	February 28, 2027
Present at Gathering Partners	May 31, 2027
Recruit and train 200 hunters each hunting season	December 31, 2027
Present at the Minnesota Chapter of The Wildlife Society meeting	March 31, 2028
Disseminate the findings to hunters from the images collected each year	June 30, 2028

Activity 2: Assess the occurrence of small mammals at hunter-provided offal in Minnesota

Activity Budget: $265,560

Activity Description:
The first goal of this activity is to measure the occurrence of small mammals at hunter-provided offal in different biomes and the Twin Cities metro area of Minnesota. We will experimentally place locally sourced gut piles in the Twin Cities metro area, the Coniferous, Deciduous, Tallgrass Aspen, and Prairie biomes. Each offal site will be paired with a similar control site without offal. At each site, we will establish a grid of ~100 Sherman traps that will be used to capture small mammals such as mice and voles. Upon capture, each small mammal will be marked, biological samples collected, and the small mammal will be released. We will also place acoustic monitors and remote cameras at each site to detect other scavengers nearby.

The second goal of this activity is to analyze biological samples for Chronic Wasting Disease (CWD) prions. We will partner with the Minnesota Center for Prion Research and Outreach to test hair, scat, and tissue samples for CWD prions.

Activity Milestones:

Description	Approximate Completion Date
Select experimental sites	August 31, 2025
Acquire 4 gut piles to set at experimental sites	November 30, 2025
Establish and sample experimental and control sites for small mammals	November 30, 2025
Acquire 4 gut piles to set at experimental sites	November 30, 2026
Establish and sample experimental and control sites for small mammals	November 30, 2026
Analyze data from both seasons	June 30, 2028

Activity 3: Assess impacts that the OWW project has on the decision of hunters to participate in research and positive hunting activities

Activity Budget: $143,733

Activity Description:
The goal of this activity is to better understand the impact that OWW has on hunter decisions. The first objective is to survey hunters about motivations and barriers to participation in the project. The OWW project has successfully recruited more than 200 hunters to deploy cameras at offal after field dressing a deer. However, some choose not to participate. Determining barriers to participation will help project leaders reach more hunters and ensure the longevity of this project. This objective will also give us the opportunity to ask participants about their willingness to participate further (e.g. collect soil samples for environmental CWD testing).

The second objective is to determine if a combination of messaging and images impacts hunters' future ammunition decisions. Research has demonstrated that lead ammunition used for hunting can leave residue in gut piles and meat. This lead has negative and sometimes fatal impacts on consumer species. Using the more than 300,000 images of at least 55 different scavenger species over six hunting seasons, we will develop a messaging experiment that will be used to measure a change in a hunter's ammunition decision when presented with scavenger images and messaging about known impacts of lead.

Activity Milestones:

Description	Approximate Completion Date
Develop participant survey	September 30, 2025
Distribute survey to selected respondents	December 31, 2025
Develop Lead experiment	May 31, 2026
Distribute experimental questionnaire to sample of hunters	December 31, 2026
Analyze and report results	June 30, 2028

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Amy Rager (or alternate at UMN extension)	University of Minnesota	Extension Program Leader focused on forestry, fisheries and wildlife programming, and outreach. Ms. Rager will assist in hunter recruitment and training efforts, and outreach efforts especially among members of the Minnesota Master Naturalist program.	Yes
Nicole Pokorney	University of Minnesota	Lead liaison with Minnesota 4-H. Ms. Pokorney is an Extension educator with Center for Youth Development.	No
Eli Mansfield	Minnesota chapter of Backcountry Hunters and Anglers (BHA)	Lead liaison with the Minnesota chapter of BHA. Mr. Mansfield is the BHA Minnesota chapter chair.	No
Dr. Stuart Lichtenberg	Minnesota Center for Prion Research and Outreach	To explore prevalence of CWD in small mammals at experimentally set gut piles.	Yes
Dr. Victoria Hall	University of Minnesota Raptor Center	Lead liaison with the Raptor Center. They are interested in exploring the impacts that messaging using images of scavengers impact hunter ammunition decisions	No

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?

Our goal is to develop this program into a long-term University of Minnesota Extension program that not only continues to engage hunters in the Offal Wildlife Watching project but expands the program to bear hunter bait piles and hunter surveys as well. A point of expansion would be to assess why some hunters are currently choosing to participate while others do not, which may better allow us to engage more hunters. Such an ongoing effort would likely involve a phase two funding proposal submitted ENRTF and University of Minnesota support. We'll collaborate with the Minnesota Center for Prion Research long-term.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Offal Wildlife Watching: How Do Hunters Provision Scavengers?	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 03g	$473,000

Project Manager and Organization Qualifications

Project Manager Name: Ellen Candler

Job Title: Post Doctoral Associate

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

Dr. Ellen Candler completed her dissertation research combining experimental, observational, and human dimensions methods to investigate scavenger visitation to hunter bait piles in Michigan and Minnesota. She graduated from the University of Minnesota with a PhD in Conservation Science and a focus in Wildlife Ecology and Management in 2021. In 2018, she developed the Offal Wildlife Watching with the help of the Minnesota Master Naturalist program. She asked hunters to set remote cameras at gut piles immediately after they field-dressed their deer. She was interested in

understanding what scavenger species visited. In addition to Minnesota Master Naturalists, she reached out to other hunting groups such as the Minnesota Deer Hunter's Association, the Minnesota chapter of Backcountry Hunters and Anglers, and Bluffland Whitetails Association. After the first year of success and interest from hunters, she continued for subsequent years. Her current postdoctoral experience co-leading the Offal wildlife watching project and her past dissertation experience makes her highly qualified to lead this project and expand the focus to include experimental and Human Dimension questions. In addition to research experience, Ellen is a member of the hunting community. Her experience in this community makes her uniquely qualified to both understand the system and work with volunteer hunters.

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

Organization Description:
The Department of Fisheries, Wildlife, and Conservation Biology (FWCB) comprises a multidisciplinary group of scholars working on applied and fundamental problems related to the ecology of free-ranging wild animals, management of harvested and invasive species, and documentation and conservation of biodiversity. The mission of FWCB is to foster a high-quality natural environment by contributing to the management, protection, and sustainable use of fisheries and wildlife resources through teaching, research, and outreach. Our goals are to respond to societal needs for information and education pertaining to the conservation of our natural resources and to ensure excellent teaching, research, and outreach programs. Most of the research we pursue is intended to fill a critical gap in knowledge that will improve conservation and natural resource decisions.

FWCB has a long tradition of public engagement. Our science is connected to Minnesota and the other locations in which we work around the world. FWCB is a hub of innovation for citizen science, which empowers people to formally contribute to conservation problem-solving. Our key citizen science programs, such as Minnesota Master Naturalists and Minnesota Aquatic Invasive Detectors, have statewide reach and impact. This project will have statewide impact as well.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Principle Investigator and project Researcher		Leads data collection, management, and analyses required to achieve project Activities. Leads peer-reviewed manuscripts and professional presentations. Leads public outreach and broader impacts with media.			37.1%	2		$209,763
Co-Principle Investigator		Responsible for supervision of project researcher.			37.1%	0.04		$9,850
Extension Educator		Co-leads project Activities within the Minnesota Master Naturalist Program.			50.38%	0.16		$22,497
Extension Program Associate		Leads hunter recruitment, training, and coordination. Manages camera inventory and data acquisition.			33.5%	2		$143,983
VetMed researcher		Leads tissue sampling and analysis			37.1%	0.06		$6,982
Field technician		assists with field sampling for small mammals			33.5%	0.02		$21,360
							Sub Total	**$414,435**
Contracts and Services								
Minnesota Center for Prion Reserach and Outreach	Professional or Technical Service Contract	CWD testing for 3400 small mammal biological samples (tissue; $20,000) and 25% of a technicians time ($30,000)				0.2		$50,000
							Sub Total	**$50,000**
Equipment, Tools, and Supplies								
	Equipment	50 remote camera kits: camera, security case, cable lock, mount, batteries, memory cards @ $270 ea.	Needed to capture high definition images and video of wildlife at offal sites across Minnesota.					$13,500
	Equipment	10 acoustic monitors @ $900 each	Needed to record other scavengers at experimental sites where small					$9,000

			mammal trapping is occurring. Needed primarily because not all sites will be baited with a gut piles preventing good images of all animals in the area.					
	Equipment	20 small mammal trapping kits (bait, cotton, scale, zip lock bags, eag tags, gloves, tweezers, wirl paks)@ 39.25 each	equipment needed for small mammal trapping					$911
	Equipment	1000 Sherman traps @$30 each	Needed to trap small mammals					$30,000
	Tools and Supplies	Survey distributing software for 2620 respondents @$1.25 per respondent	This service is needed to assist in sampling hunters for the hunter messaging experiment					$3,275
	Tools and Supplies	equipment cleaning supplies: compressed air, bleach, isopropal alcohol, kim wipes	supplies needed for cleaning cameras, traps, and other tools					$118
	Tools and Supplies	battery tester	needed to test used rechargeable batteries for longevity					$80
	Tools and Supplies	shipping or cameras to volunteer participants	needed to ship cameras to hunter volunteers					$4,300
							Sub Total	**$61,184**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Conference Registration Miles/ Meals/ Lodging	conference registration for 2 people @ $170 each for each year= $680, lodging-8 nights X 2 rooms X $200/room=$3,200, meals-2 people x 8 days travel @ $59.25, 4 full days @ $79=$1,580, miles-1 personal vehicle for 2 years at 5,000 miles of travel @ $0.67 per mile = 3,350), miles-1 rental vehicle for 40 days at $62/day over two years for 5,000 miles at $0.18 per mile = $3,380	Needed for hunter recruitment, training, remote camera workshops & delivery, data recovery, public outreach, project presentations, and small mammal sampling					$12,190
							Sub Total	**$12,190**

Travel Outside Minnesota								
	Conference Registration Miles/ Meals/ Lodging	conference attendance for 2 people @ $300 each for each year= $1,200, lodging-6 nights X 2 rooms X $250/room=$3,000, meals-2 people x 4 days travel @ $59.25, 4 full days @ $79=$1,106, airfare-2 people each year at $1000=$4,000, rental car-1 rental vehicle for 8 days at $70/day = $560	Needed for presentation of project methods, results, and implications at relevant professional meetings. For example, Annual meeting of The Wildlife Society.	X				$10,091
							Sub Total	**$10,091**
Printing and Publication								
	Publication	Publication page charges for peer-reviewed journals: 3 per year @ $2000/article for 2 years	Needed to pay for publication of project related science articles					$13,000
	Printing	Hunter recruitment flyers and announcements in print media	Needed to broadly recruit hunters to participants in project Activities.					$1,700
	Printing	color printer for outreach materials	printer needed print outreach materials in color					$400
							Sub Total	**$15,100**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$563,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Travel Outside Minnesota	Conference Registration Miles/Meals/Lodging	conference attendance for 2 people @ $300 each for each year= $1,200, lodging-6 nights X 2 rooms X $250/room=$3,000, meals-2 people x 4 days travel @ $59.25, 4 full days @ $79=$1,106, airfare-2 people each year at $1000=$4,000, rental car-1 rental vehicle for 8 days at $70/day = $560	Needed to disseminate project methods, results, and implications at relevant professional meetings that are held nationally. For example, Annual meeting of The Wildlife Society. This will broaden the impact of this project to a national audience and raise the profile of the ENRTF on the national stage.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Un-recovered indirect costs (55% MTDC)	University of Minnesota resources used to support this project.	Secured	$309,650
			State Sub Total	**$309,650**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**$309,650**

Total Project Cost: $872,650

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: f0801141-e18.pdf

Alternate Text for Visual Component

This project creates a comprehensive picture of the offal community from scavengers and disease to hunters themselves, through hunter participation and experiments. The visual illustrates that this project will:
- Advance knowledge about scavenger communities at hunter-provided offal
-Involve hunters in research
-Measure barriers, motivations, and messaging impacts on hunters...

Supplemental Attachments

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

Title	File
MN chapter of Backcountry Hunters and Anglers letter of support	2725f2c1-56b.pdf
University of Minnesota Raptor Center letter of support	b4b0cda1-9f4.pdf
UMN SPA approval	4f66b95c-e2d.pdf
4-H letter of support	0f0d7d86-b69.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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?

Yes, Sponsored Projects Administration

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:

Joseph Bump-University of Minnesota Department of Fisheries, Wildlife and Conservation Biology, Amy Rager-University of Minnesota Extension, Grace Milanowski-University of Minnesota Extension, Stuart Lichtenberg-Minnesota Center for Prion Research and Outreach