Environment and Natural Resources Trust Fund

2022 Request for Proposal

General Information

Proposal ID: 2022-149

Proposal Title: Offal Wildlife Watching: How Do Hunters Provision Scavengers?

Project Manager Information

Name: Joseph Bump

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

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Project Basic Information

Project Summary: This is a citizen-science project driven by hunters. We'll recruit hunters statewide and provide remote cameras to deploy at field-dressed deer gut piles to study scavengers, hunter provisioning, and CWD.

Funds Requested: $531,000

Proposed Project Completion: June 30 2024

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.

There's a tremendous opportunity for Minnesota deer hunters to help collect data about scavenger species that consume what successful hunters leave behind in the field. Every year hunters harvest ~200,000 deer across the state and almost all hunters field-dress their deer immediately, i.e. they remove the internal organs, or offal, from the deer to cool the carcass down quickly to avoid spoiling. Virtually all offal is left in the field, resulting in more than 4-million pounds of nutritious resources that are consumed by numerous wildlife species.

Yet, there are no Minnesota data on scavenger dynamics at hunter-provided deer offal. How many species use deer offal? Which species use offal the most? How long does offal last on the landscape? Are there risks to specific scavenger species, such as bald eagles, that involve consumption of contaminants? Are there potential disease exposure and transmission issues, such as chronic wasting disease? Do answers to these questions vary across biomes from the boreal northeast to the farms and prairies of the southwest?

Answers to these questions will inform wildlife monitoring and management statewide. And our solution to the problem will enlist those perfectly suited to help solve the problem - hunters.

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 seek funding to develop a statewide citizen science program that will address this knowledge gap by recruiting and providing remote cameras to hunters to deploy at their field-dressed deer offal piles. There is no other way to efficiently collect sufficient images statewide other than working with hunters. Images will then be gathered from hunters, archived, and analyzed to address management questions.

We have already piloted this program over three hunting seasons, during which we recruited ~280 hunters that were eager to help. Images were gathered from ~140 hunters that harvested deer, thereby demonstrating a successful approach. Yet, hunter participation is lower than what is needed and our spatial coverage across the state is inadequate.

Minnesota has distinct biomes and variable human densities that range from wilderness to a major metropolitan area. Deer hunting occurs in each of these areas and as a result, hunter provided offal is made available to scavengers across the state. We will develop a program to manage volunteer recruitment, training, data collection and storage, assessment of key questions, and outreach.

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

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 two main outcomes: 1) producing data that fill a knowledge gap needed for better wildlife protection and preservation (including potential exposure to contaminants/disease), and 2) creating a novel and meaningful program for hunter participation in citizen science and enhancement of natural resources. This project will result in a comprehensive understanding of scavenger at hunter provided offal. With the significant added increase in cameras and participants, we will be able to generate statewide data to capture variation in scavenger responses. With this information, we can better understand the benefits and potential risks of offal resources for scavengers.

Activities and Milestones

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

Activity Budget: $130,000

Activity Description:
The objective of this activity is to attract, inform, and enlist the help of volunteer hunters to participate in the Offal Wildlife Watching project statewide. To accomplish this objective we will facilitate volunteer recruitment and training through well designed events and resources. This will involve tasks such as traveling statewide to diverse groups including the Minnesota Master Naturalists Program, Minnesota Deer Hunters Association, Minnesota Backcountry Hunters and Anglers, Bluffland Whitetails Association, 4-H, Tribal Nations, and The Wildlife Society. We will also expand our social media presence and design informative media and handouts related to project recruitment. As an outcome, we have a goal of doubling our annual participation to ~400 and increasing our spatial coverage to better represent all of Minnesota's habitats.

Activity Milestones:

Description	Completion Date
Master Naturalist Advanced Training	August 31 2022
Recruit and train 250 volunteers for 2022 hunting season	November 30 2022
Master Naturalist Advanced Training	August 31 2023
Recruit and train 250 volunteers for 2023 hunting season	November 30 2023

Activity 2: Image data collection via hunter deployed remote camera traps at deer offal piles, followed by data entry, archive, and analysis.

Activity Budget: $350,000

Activity Description:
The first objective of this activity is to work with hunter volunteers to collect images via deployed remote camera traps at deer offal piles. Once images have been recorded, our next objective is to gather images from hunters, back them up and archive copies, enter individual hunter site data, and analyze images to answer key management questions such as: How many species use deer offal? Which species use offal the most? How long does offal last on the landscape?

To accomplish these objectives, we will have remote camera kits to share with hunters that need them. Images will be collected from hunters remotely online, via mail, and in person. Data will be backed up and archived in two ways: with external hard drives and high density storage at the University of Minnesota's Supercomputing Institute. A postdoctoral researcher with extensive experience with the project will be 100% dedicated to data analysis.

Activity Milestones:

Description	Completion Date
Order, program, and prepare 500 remote camera trapping kits	September 30 2022
Image data collecting from hunters 2022	February 28 2023
Image backup and archive 2023	March 31 2023
Image data collecting from hunters 2023	February 28 2024
Image backup and archive 2023	March 31 2024
Data analysis and summary (ongoing)	June 30 2024

Activity 3: Dissemination of results and public outreach via social media, presentations, publications, and popular articles.

Activity Budget: $51,000

Activity Description:

The objective of this activity is to share project results with hunter volunteers and disseminate information to the public. To accomplish this objective 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 Naturalist and other groups engaged with Minnesota natural resources stewardship.

Activity Milestones:

Description	Completion Date
Present at the 2022 Minnesota Chapter of The Wildlife Society meeting	February 28 2023
Present at the 2023 Minnesota Chapter of The Wildlife Society meeting	February 28 2024
Present at 2023 Minnesota Master Naturalist Gathering Partners conference	May 31 2024
Present at 2024 Minnesota Master Naturalist Gathering Partners conference	June 30 2024
Present for the Minnesota Deer Hunters Association	June 30 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Nathan Meyer	University of Minnesota	Extension Program Leader focused on forestry, fisheries and wildlife programming and outreach who will supervise hunter recruitment and training efforts.	Yes
Amy Rager	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
Craig Engwall	Minnesota Deer Hunters Association (MDHA)	Lead liaison with MDHA. Mr. Engwall is the Executive Director of the Minnesota Deer Hunters Association (MDHA)	No
Nicole Pokorney	University of Minnesota	Lead liaison with Minnesota 4-H. Ms. Pokorney is an Extension educator with Center for Youth Development.	No
Matthew Lee	Minnesota chapter of Backcountry Hunters and Anglers (BHA)	Lead liaison with the Minnesota chapter of BHA. Mr. Lee is the BHA Minnesota chapter chair.	No
Taylor Bestor	Bluffland Whitetails Association	Lead liaison with Bluffland Whitetails Association. Mr. Bestor is the President of Bluffland Whitetails association.	No
Dr. Tiffany Wolf and Dr. Peter Larsen	Minnesota Center for Prion Research and Outreach	To explore ways in which hunter collaboration may be leveraged for Chronic Wasting Disease research (CWD) and to support additional opportunities it may offer to advance CWD research.	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 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
Mapping Aquatic Habitats for Moose	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03l	$199,000

Project Manager and Organization Qualifications

Project Manager Name: Joseph Bump

Job Title: Associate Professor, Gullion Chair; Director of Graduate Studies, Conservation Science Program

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

PROJECT MANAGER QUALIFICATIONS:

Dr. Joseph K. Bump is an Associate Professor and the Gordon W. Gullion Chair in Forest Wildlife Research and Education in the Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota. Dr. Bump's expertise is in wildlife ecology, management, and conservation, with a focus on large mammals. He has worked on carcass ecology and scavenger related research and management for the past 17 years. Most recently his doctoral student initiated and piloted the "Offal Wildlife Watching" project, which involves Minnesota deer hunter participation in collecting data on scavenger use of gut piles from field-dressed deer. This work is directly relevant to understanding wildlife community exposure to possible disease and environmental contaminant nodes.

Professional preparation

Michigan Technological University, Ph.D., Forest Science - wildlife ecology focus, Rolf O. Peterson, 2008
University of Wyoming, M.Sc., Zoology and Physiology, Statistics minor, James R. Lovvorn, 2003
University of Michigan, B.Sc., Biology with Honors Thesis, Gerald R. Smith, 1999

Editorships at peer-review journals in the field

2013 - present Subject Matter Editor, PLOS ONE
2011 – present Subject Matter Editor, Oikos

Journal peer review

Science; Proceedings of the Royal Society; Ecology Letters; Ecology; Ecography; Ecological Research; Oecologia; Oikos; Journal of Animal Ecology; PLOS ONE; Journal of Mammalogy; Animal Behavior; Journal of Wildlife Management; Wildlife Monographs; Current Anthropology.

PROJECT MANAGER RESPONSIBILITIES:

Dr. Joseph K. Bump will provide overall leadership, coordination, and oversight for each aspect of this project. Bump will be the primary advisor and mentor for postdoctoral research associate and co-advisor to field technicians supported by this project.

ORGANIZATION DESCRIPTION:

The Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota Twin Cities provides world-class training and expertise to contribute to the management, conservation, and sustainable use of fisheries and wildlife resources.

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		Responsible for overall project management and supervision of project post-doctoral researcher.			36.5%	0.16		$30,180
Co-Principle Investigator and Project Postdoctoral 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.			25.4%	2		$150,480
Extension Program Leader		Responsible for overall project management within the Minnesota Master Naturalist Program.			36.5%	0.1		$11,226
Extension Educator		Co-leads project Activities within the Minnesota Master Naturalist Program.			36.5%	0.1		$10,508
Extension Program Associate		Leads hunter recruitment, training, and coordination. Manages camera inventory and data acquisition.			31.8%	1.6		$106,098
							Sub Total	**$308,492**
Contracts and Services								
University of Minnesota Supercomputing Institute	Internal services or fees (uncommon)	The University of Minnesota Supercomputing Institute will provide high density data storage and backup for the hundreds of thousands of images and videos that project Activities will generate. The Institute will also provide data management consulting.				0.02		$4,400
							Sub Total	**$4,400**
Equipment, Tools, and Supplies								
	Equipment	500 remote camera kits: camera, security case, cable lock, mount, batteries, memory cards @ $335 ea.	Needed to capture high definition images and video of wildlife at offal sites across Minnesota.					$167,500
	Equipment	4 digital SLR camera kits: single lens reflex camera arrays with triggers, flashes, and 4K video capacity	Needed to generate 4K video for highest quality animal behavior interpretation and audio visual					$24,000

		to generate high quality materials for outreach @ $6000 each.	material for public outreach and social media.					
	Tools and Supplies	10 external hard drives: 8TB drives that are portable @ $150 each	Mobil data storage capacity for field, lab, and office data maintenance and analysis.					$1,500
	Tools and Supplies	Postage fees	Needed to mail camera kits and memory cards to and from hunter volunteers to distribute supplies and collect data.					$1,800
							Sub Total	**$194,800**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	1 vehicle rental for 2 years at 10,000 miles of travel @ $0.56 per mile = 5,600).	Needed for hunter recruitment, training, remote camera workshops & delivery, data recovery, public outreach, and project presentations.					$5,600
							Sub Total	**$5,600**
Travel Outside Minnesota								
	Conference Registration Miles/ Meals/ Lodging	Travel support for PI and Co-PI to attend one professional meeting each year for 2 years.	Needed for presentation of project methods, results, and implications at relevant professional meetings. For example, Annual meeting of The Wildlife Society.	X				$4,100
							Sub Total	**$4,100**
Printing and Publication								
	Publication	Publication page chargers for peer-reviewed journals: 3 per year @ $2000/article for 2 years	Needed to pay for publication of project related science articles					$12,000

	Printing	Hunter recruitment flyers and announcements in print media	Needed to broadly recruit hunters to participants in project Activities.					$1,608
							Sub Total	**$13,608**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$531,000**

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	Travel support for PI and Co-PI to attend one professional meeting each year for 2 years.	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	$290,000
			State Sub Total	**$290,000**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**$290,000**

Attachments

Required Attachments

Visual Component

File: a5c7f446-b77.pdf

Alternate Text for Visual Component

This is a citizen-science project driven by hunters. We will recruit hunters statewide and provide remote cameras to deploy at field-dressed deer gut piles to study scavengers and hunter provisioning. The visual illustrates that this project will:
- Advance knowledge about scavenger communities at hunter provided gut piles.
- Better understand the potential for wildlife disease spread and contaminant exposure.
- Statewide hunter participation across Minnesota biomes and human densities.
- Man...

Optional Attachments

Support Letter or Other

Title	File
UMN approval letter to submit	afb76ce9-1c2.pdf
Letter of support and collaboration from Minnesota 4-H	90e49005-562.pdf
Letter of support and collaboration from Back Country Hunters and Anglers	0463ba4f-738.pdf
Letter of support and collaboration from Bluffland Whitetails Association	ad0d5602-4ff.pdf
Letter of support and collaboration from Minnesota Dear Hunters Association (MDHA)	86d01782-a2b.pdf
Letter of support and collaboration from Minnesota Center for Prion Research and Outreach (MNPRO)	5802dac2-7e6.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

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

OFFAL WILDLIFE WATCHING

How Do Hunters Provision Scavengers?

Recruiting hunters statewide to provide remote cameras to deploy at field-dressed deer gut piles (offal) to study scavengers and hunter provisioning:

Opportunity & Management Need:

- Advance knowledge about scavenger communities at hunter provided gut piles.
- Better understand the potential for wildlife disease spread and contaminant exposure.

Hunters as Citizen Scientists:

- Statewide hunter participation across Minnesota biomes and human densities.
- Manage volunteer recruitment, training, collection and management of the data.

Project Outcomes:

- Data that fill a knowledge gap needed for better wildlife management and protection
- Creation of a novel program for hunter participation in citizen science.

Photos from 2 years of pilot research >> proven approach for success.