



## Environment and Natural Resources Trust Fund

### 2022 Request for Proposal

#### General Information

**Proposal ID:** 2022-172

**Proposal Title:** Addressing Conflict between Wild Canids and People

#### Project Manager Information

**Name:** David Fulton

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

**Office Telephone:** (612) 625-5256

**Email:** dcfulton@umn.edu

#### Project Basic Information

**Project Summary:** The project will study resident's beliefs, attitudes and behaviors toward coyotes and foxes in the Metro and Central Regions to develop outreach activities and strategies for human-carnivore conflict management.

**Funds Requested:** \$326,000

**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?**

Region(s): Metro, 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.**

Despite the increase of foxes and coyotes in and around towns and cities in Minnesota, little is known about these animals or their interactions with people in this context. A current project (Mapping habitat use and disease of urban carnivores) funded by the Environment and Natural Resources Trust Fund (ENRTF) will: 1) identify the abundance, distribution, and diet of coyotes, red foxes, and gray foxes in an urban context; and 2) determine the prevalence of diseases within these populations and whether the movement patterns of these animals may create hotspots of risk to pets or people. That project is essential to developing management strategies for coyote and fox populations in an suburban/urban context. But another important step is understanding and addressing human-wildlife conflicts between people and coyotes/foxes as well as disagreements among people concerning how best to manage them on the exurban-urban gradient. Social science information is needed to develop effective outreach programs and management plans to ensure the health and safety of people and their pets are protected and that coyotes and foxes are managed in a way that has public support within these communities. This study will be the first of its kind in the state.

**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.**

The proposed project collects information to understand people's knowledge, experiences, attitudes, and preferences for managing coyotes/foxes in the Metro Area and St. Cloud, MN area.. This information will help minimize the potential for conflicts between people and coyotes/foxes as well as conflict among people concerning how best to manage coyotes/foxes in exurban/suburban/urban areas. The objectives of the proposed study are to: 1) Identify the attitudes, experiences, beliefs, perceptions of risk, and behaviors that residents have related to coyotes and foxes and their preferences for management strategies for the species; 2) Integrate the findings from the mapping of habitat use and disease to develop an understanding of the spatial distribution of the tolerance, potential for conflict, and perceived risks of living with coyotes and foxes; 3) Identify the potential for conflict between humans and wild canids and among stakeholder groups concerning management strategies. We will collect information from Metro Area and St. Cloud area residents using mixed-mode surveys to understand how humans perceive coyotes/foxes and why they hold their specific attitudes and perceptions of coyotes/foxes. Such information is essential to developing effective conflict mitigation strategies and outreach activities to influence attitudes and behaviors.

**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 integrate social information developed through the proposed study with information about coyotes/foxes concerning habitat, diet, and disease to provide spatially explicit knowledge concerning the potential for conflict and best management practices. We will work closely with other partners (e.g., Three Rivers Park District, Friends of the Mississippi, and Wood Lake Nature Center) to develop guidelines for management approaches for minimizing human-conflict with coyotes and foxes, enhancing benefits from the presence of these species, and ensuring public health and safety. We will develop and deliver outreach and educational activities to the public to achieve these outcomes.

## Activities and Milestones

### Activity 1: Design and implement social survey concerning coyotes and foxes with 10-county Metro Region and greater St. Cloud area

**Activity Budget:** \$205,211

#### Activity Description:

We build on current efforts by conducting outreach workshops with study partners and the public to summarize the state of knowledge concerning coyote and fox populations in the Metro area and to facilitate development of a social survey of the public in the Metro Region and Central Region around St. Cloud MN. Participants in the outreach workshops will help to identify key topics and concerns that must be addressed in the survey. We will collect information from residents using a social survey focused on the attitudes, experiences, beliefs, risk perceptions, and behaviors related to coyotes and foxes and management strategies. We will use best practices for survey implementation using a mixed-mode approach through mail and online contacts and data collection. The target completed sample size will be  $n = 5000$ . Sampling effort will be guided by findings from the mapping study of coyotes and foxes with sampling effort proportional to the human population in the areas where distributions of these species are highest. Standard statistical analyses will be used to develop summary information for the social survey. Survey information will be integrated with habitat and disease information to inform management plans and outreach activities.

#### Activity Milestones:

Description	Completion Date
Host outreach workshops for survey design	December 31 2022
Design survey instrument	March 31 2023
Implement survey instrument and collect data	June 30 2023

### Activity 2: Analysis and integration of social information, habitat, and disease information to develop management guidelines

**Activity Budget:** \$63,848

#### Activity Description:

We will analyze data collected from the online social survey and summarize respondents' beliefs, attitudes, risk perceptions, and behaviors related to coyotes and foxes. We will use the integrated data from the habitat/disease mapping project and the social survey to develop management guidelines for coyote and foxes that focus on minimizing conflict between humans and these species as well as minimizing the potential for social conflict among the diverse stakeholders in the Metro Region and greater St. Cloud area of the Central Region. We will conduct workshops with staff from area land management agencies and nature centers, such as Three Rivers Park District, Friends of the Mississippi, Wood Lake Nature Center, to identify desired outcomes from outreach efforts and to develop outreach materials for the general public in communities with coyotes and foxes as well as web-based outreach information that can be broadly accessed.

#### Activity Milestones:

Description	Completion Date
Analyze data from social surveys	August 31 2023
Write draft summary report and develop summary presentations for social survey results	December 31 2023
Integrate habitat, disease, and social science data into spatial database	December 31 2023

### Activity 3: Develop management guidelines, outreach materials and assess outcomes of coyote and fox outreach material on general public attitudes and behavior

**Activity Budget:** \$56,941

#### **Activity Description:**

Working closely with land and wildlife managers and environmental educators from partner organizations (e.g., Three Rivers Park District ), we will develop management guidelines for addressing human-carnivore conflicts in the Metro Region and St. Cloud area of the Central Region including exurban areas. We will also develop outreach materials to be used by local land managers and nature centers and as web-based information materials to address human knowledge, attitudes, and behaviors concerning coyotes and foxes. We will assess the efficacy of outreach materials on through experiments with live workshop audiences and online presentation of information. We will use experimental treatments and controls with pre-test/post-test evaluations (n=500) to determine the influence of outreach materials on participants' knowledge, attitudes, and behavior in the near term (days) and mid-term (several weeks) to help determine the influence of outreach materials in influencing public knowledge, attitudes, behavior concerning coyotes and foxes. These activities will help ensure that potential negative impacts of coyotes and foxes to people and pets are minimized. It can also help improve residents understanding of wildlife and the potential benefits associated with carnivores.

#### **Activity Milestones:**

Description	Completion Date
Develop guidelines for managing human-carnivore conflicts	June 30 2024
Develop outreach materials to address human-carnivore conflicts	June 30 2024
Evaluation efficacy of outreach materials in changing knowledge, attitudes, and behaviors	June 30 2024
Final report summarizes outcomes of the study	June 30 2024

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
John Moriarty	Three Rivers Parks District	Mr. Moriarty will assist in developing management guidelines and outreach materials through coordination of workshops at Three Rivers Parks District	No
James Forester	University of Minnesota- College of Food, Agriculture and Natural Resource Sciences (CFANS)	During FY21 and FY22 Dr. Forester will play a lead role in directing the integration of ecological information from an ongoing study on coyote and fox distribution in the Twin Cities metro with social information in the current study.	Yes
Meggan Craft	University of Minnesota- College of Biological Sciences	During FY21 and FY22 Dr. Craft will play a lead role in integrating information about coyote and fox disease in the Twin Cities metro area with social science information collected in the current study.	Yes
Nicholas McCann	University of Minnesota- CFANS	During FY 23, Dr. McCann will assist with integration of habitat, disease, and social science information within a spatially explicit database to facilitate development of management guidelines and outreach activities. He will assist coordination and evaluation of outreach activities. Dr. McCann's involvement insures continuity with the current urban coyote/fox project.	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?**

This project provides information to develop long-term guidance for identifying, addressing, and minimizing the potential for conflict between humans and urban canids, as well as among stakeholders interested in and impacted by management of coyotes and foxes in the Metro and Central regions. It provides a framework for addressing similar wildlife management issues throughout Minnesota. In addition, the project can assist land and wildlife managers to develop outreach efforts directed at helping a exurban-urban public develop an appreciation of the benefits that wildlife provide to people and further public understanding of ecological and natural history knowledge.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Restoration of Elk to Northeastern Minnesota	M.L. 2016, Chp. 186, Sec. 2, Subd. 03l	\$300,000
Mapping Habitat Use and Disease of Urban Carnivores	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03g	\$500,000

## Project Manager and Organization Qualifications

**Project Manager Name:** David Fulton

**Job Title:** Adjunct Professor

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

Dr. Fulton completed a PhD at Colorado State University (1996), worked as a wildlife planner for Alaska Department of

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Fish and Game (1997-98), and joined the USGS's Minnesota Cooperative Fish and Wildlife Research Unit in 1998 as the assistant unit leader in 1998. He is a leading expert on the human dimensions of wildlife and conservation social science with over 70 peer-reviewed publications. He has over 25 years of experience in conducting several dozen applied social science research projects with graduate students to better understand human values, attitudes, beliefs, and behaviors concerning wildlife, wildlife management, and human-wildlife conflict. Most of his research projects are conducted in close collaboration with local, state, and federal wildlife management agencies to address key issues of wildlife management confronting these agencies. Results of his research are used to guide development of management agency policies and actions to improve public trust management of wildlife. He works closely with agency researchers and managers to ensure that research studies are designed to address agency problem-solving while at the same time incorporating and developing relevant social sciences theory. In Minnesota, he has worked closely with the Minnesota DNR and the U.S. Fish and Wildlife Service concerning management of fish, wildlife, and their habitats. Findings from his research projects have been used to guide development of diverse programs including management plans for bear, deer, elk, fur bearer trapping, grouse, waterfowl, and wolves. In addition, he has helped both agencies develop site specific management and outreach plans concerning visitor use of federal wildlife refuges and state wildlife management areas as well as specific issues and programs such as use of lead ammunition, aquatic habitat management, chronic wasting disease management, and recreational fishing, hunting, and viewing programs.

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

**Organization Description:**

The Department of Fisheries, Wildlife, and Conservation Biology (CFANS, University of Minnesota) 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. The department is home to the Minnesota Cooperative Fisheries and Wildlife Research Unit (Coop Unit), a partnership of the U.S. Geological Survey, the University of Minnesota, the Minnesota DNR, and the Wildlife Management Institute. The Coop Unit emphasizes research on impacts of human activities on aquatic and terrestrial ecosystems that are of state, regional, and national significance. The research program addresses not only the biological, but also social and economic aspects of both game and nongame fisheries and wildlife management in the context of maintenance of biological diversity, and integrity and sustainability of ecosystems.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Post doctoral research associate (FWCB)		Design, implement, report results, of social surveys and present outreach education efforts			25.4%	2		\$152,193
James Forester/Associate Professor/Co-PI		Provide lead in integrating ecological information with social information.			36.5%	0.16		\$27,150
Meggan Craft/Associate Professor/Co-PI		Provide lead role in integrating disease information with social science information			36.5%	0.16		\$35,799
							<b>Sub Total</b>	<b>\$215,142</b>
<b>Contracts and Services</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	University of Minnesota mailing and addressing services will send out 100,000 contact letters	Mail contact letters will be used to recruit study participants					\$75,000
	Tools and Supplies	Survey sample	Randomized list of 25,000 households in the study area to ensure a generalizable sample					\$8,388
							<b>Sub Total</b>	<b>\$83,388</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	<b>-</b>
<b>Travel In Minnesota</b>								

	Miles/ Meals/ Lodging	2000 miles x 0.56 = 1120	Mileage for meetings with collaborators, outreach workshops.					\$1,120
	Conference Registration Miles/ Meals/ Lodging	Formal presentation by graduate student at state chapter Wildlife Society meeting	Presenting at the Minnesota Chapter of The Wildlife Society will highlight the research in the state and serve and outreach function					\$500
							<b>Sub Total</b>	<b>\$1,620</b>
<b>Travel Outside Minnesota</b>								
	Conference Registration Miles/ Meals/ Lodging	Graduate student participation at professional society to make a formal presentation	Graduate student will make a formal presentation at national level professional society research conference	X				\$850
							<b>Sub Total</b>	<b>\$850</b>
<b>Printing and Publication</b>								
	Printing	University Printing Services will print 100,000 contact envelopes and contact letters.	Contact letters will be used to recruit study participants to complete the online survey					\$25,000
							<b>Sub Total</b>	<b>\$25,000</b>
<b>Other Expenses</b>								
							<b>Sub Total</b>	<b>-</b>
							<b>Grand Total</b>	<b>\$326,000</b>



## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
<b>Travel Outside Minnesota</b>	Conference Registration Miles/Meals/Lodging	Graduate student participation at professional society to make a formal presentation	Presenting study findings at national professional societies will highlight the research and provide a valuable training experience for the student

## Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
<b>State</b>				
			<b>State Sub Total</b>	-
<b>Non-State</b>				
In-Kind	U.S. Geological Survey, Minnesota Cooperative Fish and Wildlife Research Unit	In-kind salary and benefits for David Fulton. 10% of \$200,000 for 2.0 years	Secured	\$40,000
			<b>Non State Sub Total</b>	<b>\$40,000</b>
			<b>Funds Total</b>	<b>\$40,000</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [1c56bdc5-8c1.pdf](#)

#### *Alternate Text for Visual Component*

Graphic depicting a map of the study area and images of a coyote, red fox, and people in discussion....

### Optional Attachments

#### *Support Letter or Other*

Title	File
Support Letter Three Rivers-Moriarty	<a href="#">5f3a5556-a9e.pdf</a>
UMN Approval Letter Fulton signed	<a href="#">c935fc58-033.pdf</a>

## 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



*Majestic? Dangerous? Game?* How do Minnesotans perceive coyotes & foxes, & their management?



### Ask residents about coyotes & foxes

- Attitudes
- Experiences
- Beliefs
- Preferences for management

### Map key results

- Tolerance
- Potential conflict
- Perceived risk

### ID conflict areas

- Between people & wild canids
- Among stakeholders groups