Environment and Natural Resources Trust Fund

2022 Request for Proposal

General Information

Proposal ID: 2022-148

Proposal Title: Voyageurs Wolf Project - Phase II

Project Manager Information

Name: Joseph Bump

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

Office Telephone: (612) 624-2255

Email: bump@umn.edu

Project Basic Information

Project Summary: Wolf predation in summer is almost unknown but critical to deer, moose, wolf, and disease management. We'll measure wolf predation rates on these species and promote Voyageurs' region wildlife.

Funds Requested: $694,000

Proposed Project Completion: June 30 2025

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): NE, 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.

Research need: Before the Voyageurs Wolf Project began, almost nothing was known of the details of summer wolf predation on deer, moose, or other species in MN. Most of what we know about wolf predation is from studies in winter, which does not likely apply to spring, summer, and fall. Phase I of this project documented alternative food sources such as beavers, fish, berries, and laid the foundation for understanding summer wolf predation. Phase II will build on this foundation, with an emphasis on gathering key data on wolf predation that will assist deer and disease management.

Goal & proven success: We will study spring to fall feeding ecology of wolves and measure wolf predation rates on key big games species in an area with abundant alternative food sources, especially beaver. We will evaluate the relationship between beaver abundance and wolf predation rates on moose and deer. We will use cutting edge audio-visual materials to broadly share the ecological story of Voyageurs wolves and Minnesota's Northwoods region. We have developed novel methods to successfully document summer feeding ecology and demonstrated significant outreach success, e.g. NY Times., PBS Nature.

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.

Management of iconic and highly valued Minnesota wildlife: Deer and moose are iconic MN species, with huge economic, recreational, and cultural importance. We know that wherever deer, moose, and wolves coexist, knowledge and understanding of their interactions, and often complex, ecological relationships, are absolutely integral to the most effective and sound management of all three species. Because these species are intricately linked, they have strong influences on each other's population performance (i.e., survival rates and reproductive success), which directly affects annual variation in their numbers (MN DNR 2017). Understanding wolf predation on deer is a key aspect of the Minnesota White-Tailed Deer Management Plan 2019-2028 and is critical to determining the best management for practices for mitigating deer related diseases.

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 specific, direct activities outcomes are to:

1. Determine wolf predation rates on beavers, adult and calf moose, and adult and fawn deer for each of the wolf packs that in the Greater Voyageurs Ecosystem (GVE); applicable across forest regions of MN.
2. Determine beaver populations within each wolf pack in GVE annually.
3. Evaluate the relationship between beaver abundance and wolf predation rates on moose and deer.
4. Create educational material for outreach to the general public and promotion of Minnesota wildlife and the Greater Voyageurs Ecosystem.

Activities and Milestones

Activity 1: Determine wolf food sources and predation rates on major prey for GVE wolf packs

Activity Budget: $328,299

Activity Description:
Within each of the wolf packs (the number varies each year) whose territory fall in the GVE, we aim to capture and GPS-collar at 1-2 wolves/pack. Wolf kill sites will be identified from clusters of GPS-collar locations (uploaded daily by satellite) and extensive ground crew inspection with proven, novel methods.

Activity Milestones:

Description	Completion Date
Capture and collar ~12 wolves annually for 3 years	June 30 2025
Estimate wolf predation rates on moose, deer, and beaver.	June 30 2025

Activity 2: Determine beaver populations within each wolf pack in Greater Voyageurs Ecosystem

Activity Budget: $15,000

Activity Description:
Annual fall beaver cache surveys will be completed using fixed-wing aircraft. Each active beaver lodge will be identified and mapped using real-time GIS software. Beaver abundance data gathered for this project can be related to other beaver population work done in the GVE from the 1950s-present.

Activity Milestones:

Description	Completion Date
Estimates of beaver abundance in each wolf pack territory annually.	June 30 2024

Activity 3: Evaluate the relationship between beaver abundance and wolf predation rates on moose and deer.

Activity Budget: $320,701

Activity Description:
Beaver abundance varies across the GVE landscape and therefore varies among wolf packs. We will evaluate how differences in the abundance of beavers affects wolf predation rates on moose and deer of different sex and age classes (fawn/calves, yearlings, prime adults, old adults). This will directly assist deer and moose management in Minnesota and is a key metric identified in the Minnesota White-Tailed Deer Management Plan 2019-2028.

Activity Milestones:

Description	Completion Date
Formulate management recommendations	April 30 2024
Modeling/analysis of predation rates and prey abundance.	June 30 2024

Activity 4: Create educational material for outreach to the general public and promotion of Minnesota wildlife and the Greater Voyageurs Ecosystem.

Activity Budget: $30,000

Activity Description:
On an ongoing basis, we will produce material such as captioned photos, videos, social media content, dynamic graphs, maps, illustrations, presentations, and press releases highlighting the natural history of Minnesota wildlife and the unique value of the Greater Voyageurs Ecosystem and Northwoods Minnesota.

Activity Milestones:

Description	Completion Date
Produce outreach and media materials	June 30 2024

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 will provide foundational data for wolf, deer, moose, beaver, and disease management. Although three years of support are requested, we view this funding as foundational. ENRTF support for this phase of the Voyageurs Wolf Project will increase the likelihood that the project can continue longer-term. ENRTF funding for this project will help ensure continued support the Department of Fisheries, Wildlife, and Conservation Biology at the University of Minnesota, Voyageurs National Park, Northern Michigan University, Van Sloun Foundation, The Bell Museum, and numerous small donors and volunteers.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Effects of Wolf Predation on Beaver, Moose, and Deer	M.L. 2017, Chp. 96, Sec. 2, Subd. 03l	$293,000
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 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.

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

Bump's expertise is in wildlife ecology, management, and conservation, with a focus on large mammals. He has worked on wolf related research and management since 2003. Most recently, he and graduate students (Thomas Gable, Austin Homkes), and National Park Service research collaborator (Dr. Steve Windels) established the Voyageurs Wolf Project, which has generated statewide, national, and international attention. To date the project has resulted in over a dozen peer-reviewed publications, numerous presentations, and directly informed state and federal management and conservation. Media interest has included high profile outlets such as the Minnesota Star Tribune, New York Times, PBS Nature, and National Geographic. Bump is an active member in The Wildlife Society, Ecological Society of America, and the American Society of Mammalogists.

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

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. Our goal is to use innovative teaching, research, and outreach to respond to societal needs for information and education pertaining to natural resources.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Joseph K. Bump		Principle Investigator responsible for responsible for overall project management, organizing all personnel across activities, as well as directly supervising and mentoring project post-doctoral researcher and graduate research assistant.			36.5%	24.9		$45,560
Full-time Postdoctoral Associate		Field Leader responsible for field work, data management, and analyses required to achieve project Activities. Thomas Gable has been critical to the success of the Voyageurs Wolf Project to date and is committed to continuing with the project under the advising of Bump.			25.4%	300		$223,740
Field Biologist		An experienced field biologist is required to complete field work safely and efficiently, e.g. most field activities require at least two individuals.			31.8%	300		$150,000
							Sub Total	**$419,300**
Contracts and Services								
Vectronic Aerospace, Inc.	Professional or Technical Service Contract	GPS-satellite collar data acquisition and service contract; 12 collars/yr for 3 years; $1000/yr/collar. This service is required in order to receive data from GPS-collared animals in real time from satellites. This contract will insure the the project receives critical location data for each collared animal.				-		$36,000
							Sub Total	**$36,000**
Equipment, Tools, and Supplies								
	Equipment	GPS-satellite wolf collars; $3000/collar for 36 collars to maintain 2 collars/pack for 3 years. Includes replacements for lost/damaged collars.	GPS-collars are required to obtain the location data necessary to meet project Activities and Milestones.					$108,000
	Tools and Supplies	Pharmaceuticals for wolf capture $1000/capture * 36 captures	Proper drugs are required for chemical immobilization and handling of trapped animals.					$36,000

	Tools and Supplies	Field supplies for navigation, trapping, scat collection, stable isotopes, kill site visitation (GPS units, sample bags, gloves, field notebooks): $3000 per year	The purpose to the field supplies is to meet the everyday needs of various aspects of field work, such as navigation, trapping, scat collection, stable isotopes, kill site visitation.					$9,000
	Tools and Supplies	Utility trailer for transporting snowmobile and other project equipment.	A trailer is necessary for transporting snowmobiles and project equipment safely and legally.					$3,000
							Sub Total	**$156,000**
Capital Expenditures								
		1 utility snowmobile	The purpose of the snowmobile and trailer is to enable early and late season field work, i.e. efficient movement among field sites across snow covered ground and lakes.					$12,000
		One 4 x 4 vehicle	A 4x4 vehicle, e.g. is critical to all aspects of the project field work and data collection, e.g. access to sites, wolf trapping safely and effectively, boat and snowmobile transportation and launching.					$30,500
							Sub Total	**$42,500**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Miles traveled to complete field work. Summer mileage for 3 years of fieldwork requiring 45,000 miles of travel for capturing and monitoring study animals @ $0.56 per mile = $25,200).	The purpose of this travel support is to provide the transportation support to complete field work.					$25,200
							Sub Total	**$25,200**
Travel Outside Minnesota								

							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Flight time for annual beaver census ($100/hr) 50 hours/yr for 3 years. Rate for NPS-owned aircraft per Federal govt. guidelines.	The purpose of this expense is cover flight time necessary to complete the beaver census each year.					$15,000
							Sub Total	**$15,000**
							Grand Total	**$694,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
Cash	1 University of Minnesota Department of Fisheries, Wildlife and Conservation Biology graduate research assistant at 50% FTE for 3 years ($78,000 salary, $67,500 fringe and tuition)	Graduate Student Research Assistantship to support project Activities.	Pending	$145,500
In-Kind	Un-recovered indirect costs (54% MTDC) at the University of Minnesota	Foregone, Uun-recovered indirect costs.	Pending	$292,852
			State Sub Total	**$438,352**
Non-State				
Cash	Van Sloun Foundation, Bell Museum, Voyageurs National Park Association, Rainy Lake Conservancy, Sturgeon River Chapter of the Minnesota Deer Hunters Association and numerous small donors and hardworking volunteers.	Non-State: Donors to the Voyaguers Wolf Project have supported the purchase of boats, motors, and trailors; remote cameras, batteries, and mounting brackets; collars.	Pending	$68,500
			Non State Sub Total	**$68,500**
			Funds Total	**$506,852**

Attachments

Required Attachments

Visual Component

File: e9a6ec84-89b.pdf

Alternate Text for Visual Component

Summer wolf predation is almost unknown but critical to deer, moose, wolf, and CWD management. With novel, proven methods, we'll study wolf predation in summer and promote Voyageurs' region wildlife....

Optional Attachments

Support Letter or Other

Title	File
UMN approval to submit	04976750-77a.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?

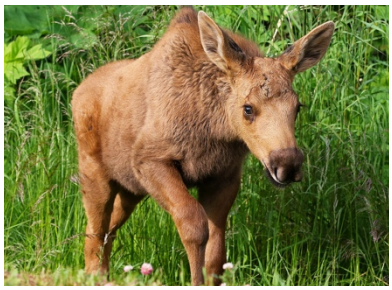
Yes

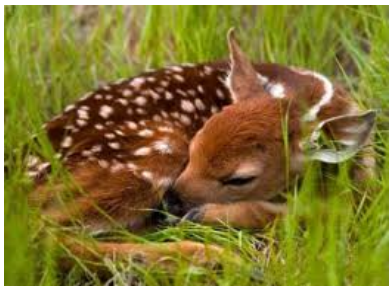
Does the organization have a fiscal agent for this project?

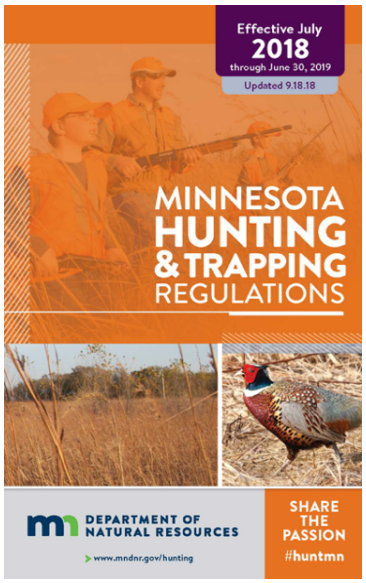
Yes, Sponsored Projects Administration

Voyageurs Wolf Project – Phase II

Management need: Deer and moose are iconic MN species, with huge economic, recreational, and cultural importance. Deer and Chronic Wasting Disease (CWD) management especially needs to understand wolf predation in summer, which is unknown compared to winter.







Deliverables: Key data on summer wolf diet, reproduction, and packs will be collected & shared with managers across northern MN where deer and moose overlap.

Proven methods: Summer wolf diets are hard to study, but we developed novel methods and preliminary results show that the summer diet of wolves is highly dynamic, especially with high beaver, fish, and berry availability. We'll use multiple approaches to inform deer, moose, CWD, and wolf management.

Proven productivity: So far, we've produced:

- 16 publications
- 34 presentations to professional and popular audiences.
- Data shared directly with MN DNR and Tribal natural resource agencies.
- ~100,000 Facebook followers; million of people reached.

Promoting Minnesota Wildlife & Wild Places: We've attracted media attention from major newspapers (e.g. MN Star Tribune, NY Times) and large audience TV (PBS Nature, National Geographic) to promote Minnesota's wildlife, Minnesota's Northwoods, and the Greater Voyageurs Ecosystem. Promoting wildlife and wild places in Minnesota is a project activity.

VOYAGEURS WOLF PROJECT