Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)

Project Title: **ENRTF ID: 014-A**

Voyageurs Wolf Project – Phase II

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: $ 608,320

Proposed Project Time Period for the Funding Requested: June 30, 2023 (3 yrs)

Summary:

Wolf predation in summer 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.

Name: Joseph Bump

Sponsoring Organization: U of MN

Job Title: Dr.

Department: Fisheries, Wildlife, and Conservation Biology

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St. Paul MN 55108

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Email bump@umn.edu

Web Address https://fwcb.cfans.umn.edu/personnel/joseph-bump

Location:

Region: Northeast

County Name: Koochiching, St. Louis

City / Township: International Fall

Alternate Text for Visual:

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.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____%

PROJECT TITLE: Voyageurs Wolf Project – Phase II

I. PROJECT STATEMENT

- **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 Chronic Wasting Disease managemen.***
- **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.***
- **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 CWD .***

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.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Determine wolf food sources and 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).
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.
ENRTF BUDGET: $300,000

Outcome	Completion Date
1. Capture and collar ~12 wolves annually for 3 years	*November 30, 2021-23 (seasonal)*
2. Estimate wolf predation rates on moose, deer, and beaver.	*June 30, 2023*

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

ENRTF BUDGET: $ 30,320

Outcome	Completion Date
1. Estimates of beaver abundance in each wolf pack territory annually.	*November 30, 2021-23 (seasonal)*

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

ENRTF BUDGET: $258,000

Outcome	Completion Date
1. Modeling/analysis of predation rates and prey abundance.	*June 30, 2023*
2. Formulate management recommendations for relationship among alternative food sources, beaver abundance, and wolf predation rates on moose and deer.	*June 30, 2023*

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

ENRTF BUDGET: $20,000

Outcome	Completion Date
1. Produce outreach and media materials	*June 30, 2023*

III. PROJECT PARTNERS AND COLLABORATORS:

A. Partners receiving ENRTF funding

Name	Title	Affiliation	Role
Thomas Gable	**Post doctoral Associate**	**University of Minnesota**	**Co-PI; field specialist**
Joseph K. Bump	**Project leader**	**University of Minnesota**	**Project PI**

B. Partners NOT receiving ENRTF funding

Name	Title	Affiliation	Role
Steve Windels	**Research Biologist**	**National Park Servie – Please see letter of support for the project**	**NPS collaborator and Co-PI**

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

This project will provide foundational data for wolf, deer, moose, beaver, and CWD management.

V. TIME LINE REQUIREMENTS:

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.

Attachment A: Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
M.L. 2020 Budget Spreadsheet
Legal Citation:
Project Manager: Joseph K. Bump
Project Title: Voyageurs Wolf Project - Phase II
Organization: University of Minnesota
$ 608,320.00
Project Length and Completion Date: 3 years and June 30, 2023
Today's Date: 04-01-2019

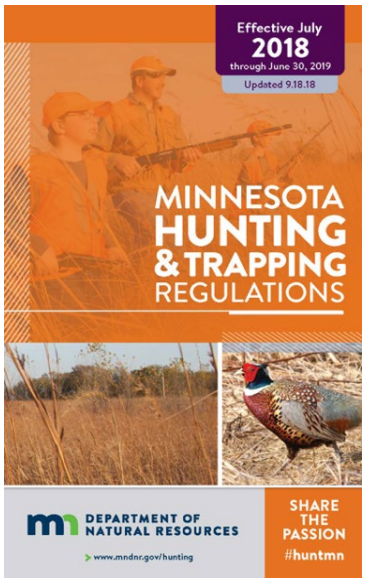
ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits):	$ 334,220	$ -	$ 334,220
1 University of Minnesota Department of Fisheries, Wildlife and Conservation Biology postdoctoral associate (**Thomas Gable**) at 100% FTE for 3 years $223,740 ($180,000 salary, $43,740 fringe). A full-time postdoctoral associate is necessary for leading 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.	$ -	$ -	$ -
1 University of Minnesota Department of Fisheries, Wildlife and Conservation Biology faculty member (**Joseph Bump**) at 8.3% FTE for 3 years $45,560 ($33,500 salary, $12,060 fringe). Bump is responsible for overal project management, organizing all personnel across activities, as well as directly supervising and mentoring project post-doctoral researcher and graduate research assistant.	$ -	$ -	$ -
2 Temporary Wildlife Technicians (TBD) at 50% FTE for 3 years to assist with all aspects of field work $64,920 ($60,000 salary, $4,920 fringe). Experienced field technicians are required to complete field work safely and efficiently, e.g. most field activties require at least two individuals.	$ -	$ -	$ -
Professional/Technical/Service Contracts			
GPS-satellite collar data acquisition and service contract; 12 collars/yr for 3 years; $1000/yr/collar.	$ 36,000	$ -	$ 36,000
Equipment/Tools/Supplies			
GPS-satellite wolf collars; $3000/collar for 36 collars to maintain 2 collars/pack for 3 years. Includes replacements for lost/damaged collars.	$ 108,000	$ -	$ 108,000
Pharmaceuticals for wolf capture $1000/capture * 36 captures	$ 36,000	$ -	$ 36,000
Misc field supplies for navigation, trapping, scat collection, stable isotopes, kill site visitation (GPS units, sample bags, gloves, field notebooks) $3000 per year	$ 9,000	$ -	$ 9,000
Capital Expenditures Over $5,000			
1 Utility snowmobile and trailer	$ 15,000	$ -	$ 15,000
1 Digital Nikon SLR Camera and AFS NIKKOR long-range lens	$ 20,000		$ 20,000
	$ -	$ -	$ -
Fee Title Acquisition			
	$ -	$ -	$ -
Easement Acquisition			
	$ -	$ -	$ -
Professional Services for Acquisition			
	$ -	$ -	$ -
Printing			
Publication page chargers for peer-reviewed journal articles ~3 per year @ $1000/article for 3 years	$ 9,000	$ -	$ 9,000
Travel expenses in Minnesota - in accordance with UMN travel policy			
Summer, vehicle rental, purchase, or mileage (whichever is most eonomical) for 3 years of fieldwork requiring 45,000 miles of travel for capturing and monitoring study animals @ $0.58 per mile = $26,100).	$ 26,100	$ -	$ 26,100
Other			
Flight time for annual beaver census ($100/hr) 50 hours/yr for 3 years. Rate for NPS-owned aircraft per Federal govt. guidelines.	$ 15,000	$ -	$ 15,000
COLUMN TOTAL	$ 608,320	$ -	$ 608,320

SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
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	$ 48,500	$ 18,500	$ 30,000
State: 1 University of Minnesota Department of Fisheries, Wildlife and Conservation Biology graduate research assistant at 50% FTE for 2 years ($47,000 salary, $38,000 fringe and tuition)	pending	$ 85,000	$ -	$ 85,000
In kind:				
Un-recovered indirect costs (54% MTDC)	pending	$ 292,852	$ -	$ 292,852
National Park Service has supported project management; supplemental wolf monitoring and kill sites visits; field supplies and equipment; boat and vehicle use; housing for personnel; pilot salary and flight costs for winter moose and wolf suveys and fall beaver surveys.	pending	$ 176,000	$ 176,000	$ -

Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent	Budget	Spent	Balance
ENRTF awards - none	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -

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:

- 11 publications; 2 more submitted; 5 more in preparation.
- 27 presentations to professional and popular audiences.
- Data shared directly with MN DNR and Tribal natural resource agencies.
- >13,000 Facebook followers in only 5 months, >3 million 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

Voyageurs Wolf Project – Phase II

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. 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 at least 11 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.

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; Rapid Communications in Mass Spectrometry; Current Anthropology; Naturwissenschaften.

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