



## Environment and Natural Resources Trust Fund

M.L. 2022 Approved Work Plan

### General Information

**ID Number:** 2022-122

**Staff Lead:** Mike Campana

**Date this document submitted to LCCMR:** June 22, 2022

**Project Title:** Distribution and Movements of Fishers in Southern Minnesota

**Project Budget:** \$340,000

### Project Manager Information

**Name:** Michael Joyce

**Organization:** U of MN - Duluth - NRRI

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### Project Reporting

**Date Work Plan Approved by LCCMR:** June 27, 2022

**Reporting Schedule:** March 1 / September 1 of each year.

**Project Completion:** June 30, 2025

**Final Report Due Date:** August 14, 2025

### Legal Information

**Legal Citation:** M.L. 2022, Chp. 94, Art. , Sec. 2, Subd. 03f

**Appropriation Language:** \$340,000 the second year is from the trust fund to the Board of Regents of the University of Minnesota for the Natural Resources Research Institute in Duluth to determine the distribution, status, and habitat use of fishers in southern Minnesota to inform fisher management. agreements specified in this section.

**Appropriation End Date:** June 30, 2025

## Narrative

**Project Summary:** We will determine the distribution, status, and habitat use of fishers in the southern half of Minnesota to provide the information needed to manage fishers in this region.

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Minnesota's core fisher population has declined by 50% over the last 20 years. Despite this decline, fishers have simultaneously expanded their range into the southern half of Minnesota, with verified sightings of fishers in the Twin Cities Metro and southeastern Minnesota increasing over the last 15 years. Although the increasing frequency of sightings suggests fishers are doing well in the southern half of Minnesota, there have never been studies conducted on fishers in this region. Consequently, it is not known whether these sightings represent a resident population or occasional dispersing fishers, or how fisher density and ecology in this region compares to fisher populations in northern Minnesota.

With the recent expansion of fishers, land managers and natural resource professionals have expressed interest in learning more about fisher ecology in this region to allow them to better incorporate fisher needs into their management plans, develop future conservation goals, evaluate the need for protective measures, or consider potential harvest seasons.

News of fisher presence in southern Minnesota has been met with strong public interest, including excitement, curiosity, and concern about potential effects on prey populations (e.g., turkeys). Data are needed to address the public's interest, questions, and concerns about fishers.

**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.**

We will evaluate the status of fishers in the southern half of Minnesota to address key knowledge gaps about fisher ecology in this region. We have assembled a large group of project partners representing diverse organizations. Partners will provide input and in-kind support on this project to help collect data that they and others can use to manage fishers.

We will work with our network of partners to conduct a large-scale fisher survey, deploy GPS collars on fishers in the southern half of Minnesota, and track movements and habitat selection of fishers in this region. We will use the data we collect to:

1. Describe fisher distribution and population status in southern Minnesota
2. Evaluate fisher movements and habitat selection in southern Minnesota
3. Estimate how many fishers could live in existing habitat in southern Minnesota
4. Provide the information needed to manage fishers in this region

This project will address key knowledge gaps and objectives identified by land managers in this region, ensuring that the results will have high management value.

Our results will be of high public interest and value. We will conduct public outreach to inform the public about the project, gather feedback, and disseminate project results.

**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 will provide the first evaluation of fisher populations in the southern half of Minnesota. We will generate foundational data that county, state, and federal land managers will use to manage fishers in this region, including potential management for conservation or harvest. Because fishers appear to be doing better in this region than in

northern Minnesota, where the core population has declined by 50% over the last 20 years, comparison of results from this project to data collected from past and ongoing fisher research in northern Minnesota will provide further insight into causes of the fisher population decline.

## Project Location

**What is the best scale for describing where your work will take place?**

Region(s): Metro, SE, Central, SW,

**What is the best scale to describe the area impacted by your work?**

Region(s): Metro, SE, Central, SW,

**When will the work impact occur?**

During the Project and In the Future

## Activities and Milestones

### Activity 1: Determine status and distribution of fishers in the southern half of Minnesota.

**Activity Budget:** \$147,500

#### Activity Description:

We will use a remote camera survey to determine the distribution and status of fishers in southern Minnesota. We will conduct the survey in each of the first two years of the study. One study area will overlap the Twin Cities Metro, where fisher status is uncertain. A second study area will be in southeastern Minnesota, where there is evidence of a resident population. Fishers have previously been documented in both study areas, but no previous study of fisher distribution or status has been conducted in either area. We will compare survey results from the two areas to help inform fisher status in the Twin Cities Metro. We will also use iNaturalist and outreach events to solicit fisher sightings from the public for public engagement and to bolster our survey efforts. A subset of survey locations will have devices to capture hair samples from fishers, which will be used to describe fisher diets using stable isotopes (see Activity 2). We will disseminate results of this activity to the public through an informational website, webinars, and other outreach events. We will disseminate results to land managers through annual updates and professional presentations at state and local meetings.

#### Activity Milestones:

Description	Approximate Completion Date
Conduct public outreach to solicit feedback and additional fisher sightings	May 31, 2023
Conduct and summarize results of first annual camera survey to determine fisher distribution	July 31, 2023
Conduct and summarize results of second annual camera survey to determine fisher distribution	July 31, 2024
Evaluate status of fishers from survey data	June 30, 2025

### Activity 2: Determine movements, habitat use, and diet of fishers in southern Minnesota.

**Activity Budget:** \$192,500

#### Activity Description:

The ability of fishers to persist in southern Minnesota will depend on their ability to use fragmented forests. Currently, we do not know how much viable fisher habitat exists in this region. We will deploy GPS collars on 28 fishers across this region and use GPS collar data to describe fisher movements and habitat use to understand what habitats fishers are using, how they move in the fragmented, human-dominated forests in the southern half of Minnesota, and how many fishers this area could support. We will summarize home range sizes, survival and causes of mortality. We will also document reproduction of females and estimate litter sizes. Finally, we will collect hair samples from live-captured fishers and use fisher hair samples collected in Activities 1 and 2 along with samples from potential prey to describe fisher diets using stable isotope analysis. Understanding fisher diet is important to address public concern about the impact of fishers on potential prey such as turkeys. Activity 2 will provide valuable baseline data on fisher ecology in the southern half of Minnesota that would be used to manage fishers in this region. We will perform public outreach to obtain public feedback and share project results.

#### Activity Milestones:

Description	Approximate Completion Date
Summarize all data from GPS-collared fishers from first year of study	September 30, 2023
Deploy GPS collars on 28 fishers over 2 capture seasons	April 30, 2024
Summarize all data from GPS-collared fishers from the second year of study	September 30, 2024
Collect and analyze diet samples from radio-collared fishers and prey	March 31, 2025

Describe fisher habitat use and movements in our study region	May 31, 2025
Describe fisher reproductive habitat and litter sizes in southern Minnesota	May 31, 2025
Estimate how many fishers could live in existing habitat in southern Minnesota.	June 30, 2025

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. Caitlin Potter	Cedar Creek Ecosystem Science Reserve	Providing input on survey design and helping to oversee surveys at Cedar Creek Ecosystem Science Reserve.	No
Dr. Roger Powell	North Carolina State University (retired; lives in Ely, MN)	Providing input and in-kind support on the project, including field work, data-analysis, and writing.	No
Scott Hagen	Dakota County	Providing input and data from their ongoing fisher monitoring on Dakota County lands.	No
John Moriarty	Three Rivers Park District	Providing input and support on the project, with an emphasis on helping design surveys on Three Rivers Park District lands.	No
Dr. Seth Stapleton	Minnesota Zoo	Providing input and support on the project and assisting with field work in Dakota County.	No
Nancy Duncan	National Park Service	Providing input and in-kind support on the project. Will conduct surveys at Mississippi NRRRA.	No
Steven Hogg	Three Rivers Park District	Providing input and support on the project, with an emphasis on helping design surveys on Three Rivers Park District lands.	No
Neil Smarjesse	National Park Service	Providing input and in-kind support on the project. Will conduct surveys at Mississippi NRRRA.	No
Dr. Michael Joyce	UMD-NRRI	Project manager overseeing all aspects of this project including coordinating field work, data management, analysis, and reporting.	Yes

## Dissemination

### **Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.**

Our results will be of high public interest and value. We will conduct public outreach to inform the public about the project, to gather feedback, and to disseminate project results. We will create a website to distribute information to the public, but this will be done after the project starts. The website will be modelled after other websites we maintain. We will also disseminate results to the public via webinars and other outreach events.

We will disseminate results to land managers through annual updates and professional presentations at state and local meetings. Additionally, we will present project results to the larger scientific community at local (e.g., Minnesota Chapter of The Wildlife Society's annual state meeting, Cloquet Forestry Center's annual Forestry and Wildlife Research Review), regional (e.g., Midwest Furbearer Workshop, Midwest Fish and Wildlife Conference), and international (e.g., annual meetings of The Wildlife Society and the American Society of Mammalogists) scientific meetings. Travel to scientific meetings held outside of Minnesota will not be paid for by project funding. We will also prepare and submit papers for publication in peer-reviewed journals (e.g., the Journal of Wildlife Management, Journal of Mammalogy, etc.).

We will likely have periodic contact with print and broadcast media. These contacts will be documented as they occur.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the ENRTF Acknowledgement Guidelines.

## 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?**

This proposal is part of a larger effort to understand fisher ecology in Minnesota. This project will generate foundational data on fishers that DNR and others can use to manage fishers in an area that fishers have not occupied since the early 1900s. This project will complement ongoing and future research on fishers in Minnesota (ENRTF-funded fisher den box project; bobcat-fisher interaction project recommended for funding by LCCMR in 2019). Examining fisher ecology in an area where they appear to be doing well may provide insight into the fisher population decline in northern Minnesota.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Den Boxes for Fishers and other Nesting Wildlife	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03i	\$190,000

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Michael Joyce, Researcher 5		Project Manager			26.9%	0.24		\$21,299
Masters Graduate Student		Complete MS thesis on project			46%	1.13		\$102,666
Technician, Researcher 3		Field and lab work			24.2%	1.41		\$80,091
Undergraduate research assistant		Field and lab work			0%	1.05		\$26,208
Cedar Creek Technician		Field work to conduct surveys and telemetry work for the project at Cedar Creek Ecosystem Science Reserve			7.7%	0.12		\$4,000
							<b>Sub Total</b>	<b>\$234,264</b>
<b>Contracts and Services</b>								
Friends of the Mississippi River	Sub award	Professional contract for locating fishers and accessing private properties in the Metro area for the survey and telemetry.				0.09		\$10,562
TBD	Professional or Technical Service Contract	Analysis of diet composition at stable isotope laboratory (200 samples @ \$16 per sample).				0.2		\$3,200
TBD	Professional or Technical Service Contract	GPS data downloads for fisher GPS collars.				0.1		\$2,400
							<b>Sub Total</b>	<b>\$16,162</b>
<b>Equipment, Tools, and Supplies</b>								
	Equipment	28 GPS collars for fishers (~\$1,625 each)	To collect movement and habitat selection data from fishers					\$45,500



	Tools and Supplies	Supplies for live-capture and telemetry, including bait, pharmaceuticals, batteries for GPS, etc.	Essential tools and equipment for safely trapping and radio-collaring fishers					\$2,500
	Tools and Supplies	Supplies for conducting fisher surveys, including bait, supplies to build survey stations, and supplies to handle samples collected at survey stations.	Supplies are essential to conduct the non-invasive camera survey to map fisher distribution and evaluate fisher status					\$3,849
	Tools and Supplies	Remote cameras and supplies (48 cameras @ \$175/camera plus AA batteries and SDHC cards)	Essential for camera survey and for documenting reproduction where it occurs.					\$9,725
							<b>Sub Total</b>	<b>\$61,574</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	Travel for field work on survey, live-capture, and monitoring study animals including mileage (75%) and lodging for technician, PI, and graduate student. Mileage will be reimbursed at \$0.585/mile (MN state rate).	Collect field data					\$28,000
							<b>Sub Total</b>	<b>\$28,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
							<b>Sub Total</b>	-
<b>Other Expenses</b>								
							<b>Sub Total</b>	-

							<b>Grand Total</b>	<b>\$340,000</b>
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Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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## Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
<b>State</b>				
			<b>State Sub Total</b>	-
<b>Non-State</b>				
In-Kind	UMN unrecovered indirect costs are calculated at the UMN negotiated rate for research of 55% modified total direct costs.	Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with a specific sponsored program or institutional activity. Examples include utilities, building maintenance, clerical salaries, and general supplies. ( <a href="https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs">https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs</a> )	Secured	\$168,390
			<b>Non State Sub Total</b>	<b>\$168,390</b>
			<b>Funds Total</b>	<b>\$168,390</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [321b685e-0ab.pdf](#)

#### *Alternate Text for Visual Component*

Map of the southern half of Minnesota showing locations of verified sightings of fishers documented since 2005 (top); examples of pictures of fishers from 3 of the sightings on the map with text highlighting the over-arching goal of the study (bottom)....

### Optional Attachments

#### *Support Letter or Other*

Title	File
Letter of Support from the National Park Service/Mississippi River National River Recreation Area	<a href="#">4b9c74e5-00a.pdf</a>
Letter of Support from Dr. Roger Powell	<a href="#">13686589-181.pdf</a>
UMD Sponsored Projects Transmittal Letter	<a href="#">509f70cc-610.pdf</a>
Background check form	<a href="#">3818c9fb-a67.pdf</a>
Research Addendum	<a href="#">3b7992db-b4a.pdf</a>

## Difference between Proposal and Work Plan

### *Describe changes from Proposal to Work Plan Stage*

Changes to address reduction in funding:

We made 4 changes to the budget to address the \$7,000 reduction in funding from the proposal. First, we reduced the number of GPS collars from 30 to 28 (\$3,250 saved). Second, we reduced the GPS remote download service based on the reduction in collars (\$750 reduction). Third, we reduced travel costs by \$2,000. Lastly, we reduced funding to Friends of the Mississippi River by \$1,000. These changes represent minimal changes to the project activities that will not affect our ability to meet the overall project objectives. We changed the proposal text as needed throughout to reflect these changes (e.g., Changed the milestone in Activity 2 pertaining to the number of GPS collars we will deploy).

We also added an ENRTF appropriation awarded after this proposal was originally submitted (M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 03i. Bobcat and fisher habitat use and interactions).

Changes to address comments and revisions requested by LCCMR:

Comments 1 and 4: We have re-classified these budget items in the work plan as requested.

Comment 2: The DNR's population model is intended to track the core fisher population within the harvest zone, which covers about the northern half of the state. Data used to monitor the core population is only collected in the harvest zone. Thus, the southern fisher population is not explicitly included in the DNR's population model. I have revised the Narrative text to indicate that the decline was in the core population. I could not add many more details about these nuances in the text as the word limits are tight.

Comment 3: I added additional milestones for each activity within the first year and a half of the study.



## Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

**Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?**

N/A

**Do you agree travel expenses must follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?**

Yes, I agree to the UMN Policy.

**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?**

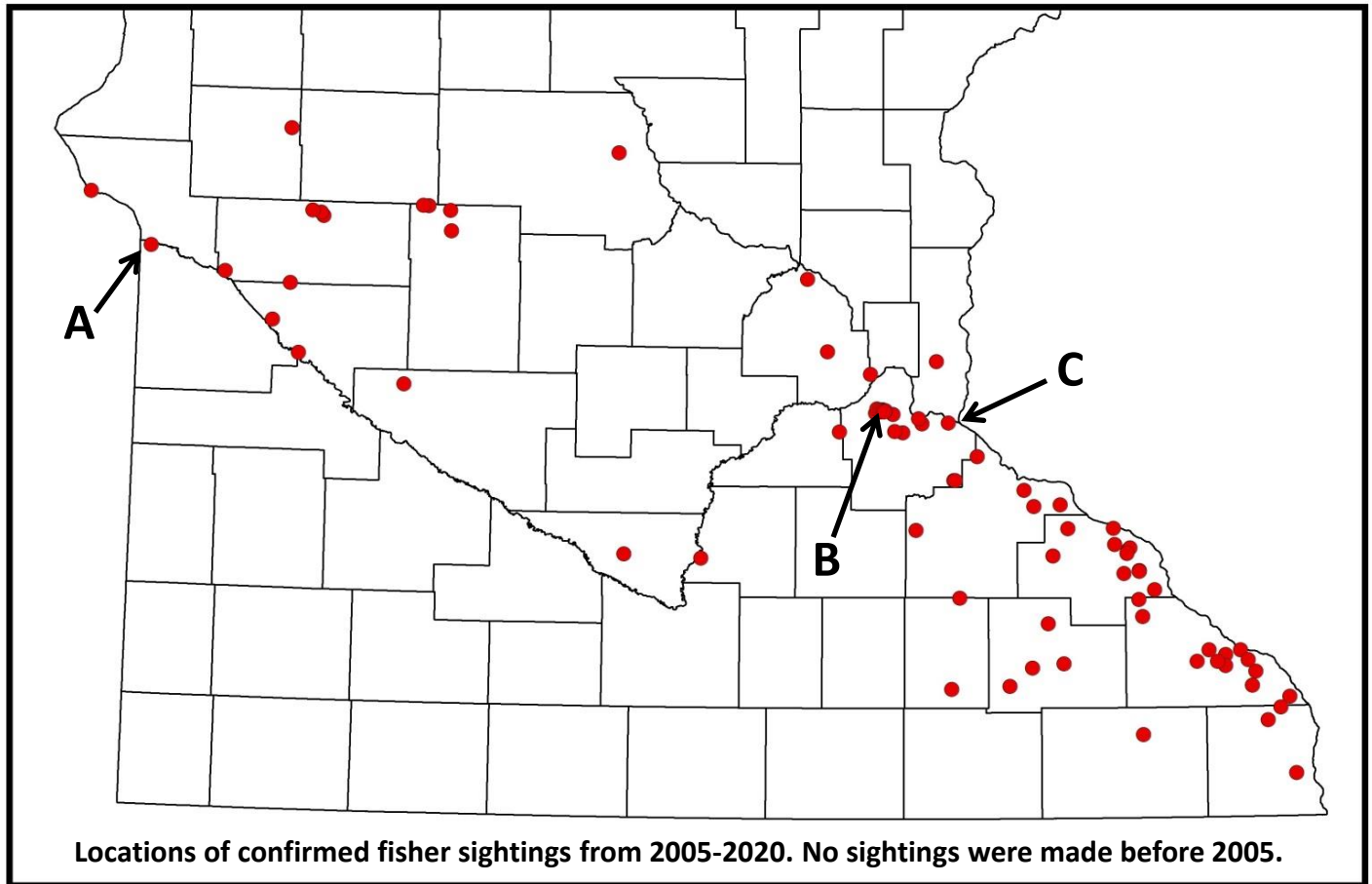
Yes

**Does the organization have a fiscal agent for this project?**

Yes, Sponsored Projects Administration

# Distribution and movements of fishers in southern Minnesota

Verified sightings of fishers have increased in southern Minnesota over the last 6 years



We will determine the distribution, status, and habitat use of fishers in the southern half of Minnesota to provide the information needed to manage fishers in this region