

**Environment and Natural Resources Trust Fund**

# 2022 Request for Proposal

## **General Information**

**Proposal ID:** 2022-068

**Proposal Title:** Minnesota Mammal Atlas

## **Project Manager Information**

**Name:** Ron Moen

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

**Office Telephone:** (218) 788-2610

**Email:** rmoen@d.umn.edu

## **Project Basic Information**

**Project Summary:** The Minnesota Mammal Atlas will be a one-stop solution for knowledge on all Minnesota mammal species

**Funds Requested:** $116,000

**Proposed Project Completion:** June 30 2024

**LCCMR Funding Category:** Small Projects (H) **Secondary 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.**

The Problem: There is no single clearinghouse for current information on mammals in Minnesota. The definitive book on Minnesota mammals is 39 years old. A field guide is 15 years old. The MNDNR website has overview summaries for 48 species. Literature searches for 10 mammal species found 1,349 papers referencing Minnesota. The ENRTF has invested over $35 million in 51 projects with a mammal component.

The Opportunity: Create a Minnesota Mammal Atlas that provides efficient and effective access to data and knowledge on the 80+ mammal species that live in Minnesota.

One example: Minnesota has lost 8 mammal species since the 1800s. Over the next 50 years, we could lose an additional 18 species and 37 species will expand northward. Where would you find out which species will remain, or what new species might move into Minnesota?

As a professional Mammalogist, I could answer those questions better than most, but it would be desirable to have answers to those questions (and many more) with a few mouse clicks. Being able to access ENRTF funded research on mammals with a few mouse clicks instead of sifting through thousands of google search results would be nice.

**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.**

Our solution is the Minnesota Mammal Atlas (MMA), which will summarize and synthesize knowledge and data on all Minnesota mammal species. Current knowledge, including natural history, historical distribution and abundance, future distribution, habitat use, and photographs will be available for each species, with links to relevant literature.

Example information sources include Mammals of Minnesota and similar books, published research, M.S. theses, Ph.D. dissertations, and gray literature. We will include descriptions of available distribution data (e.g., ENRTF funded projects like the Bell Museum Biodiversity Atlas and the Minnesota Biological Survey).

The ENRTF has invested $2.4 million into 3 Atlas projects with biological components (birds, bees, and biodiversity). Phase 1 of the MMA is initial planning we are doing now. For MMA Phase 2 we are requesting only $116,000 over two years to develop a fully-functional and complete MMA. After documenting the value of MMA Phase 2 to users, we will request about $200,000 to add additional resources and make design changes based on user feedback.

We envision the MMA to be a one-stop solution to learn about the mammals of Minnesota, with live links to other species information sources as appropriate.

**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?**

The project outcome is the Minnesota Mammal Atlas, which will provide a comprehensive summary of existing knowledge and data on each mammal species in Minnesota. The MMA will be an efficient method for natural resource managers and the citizens of Minnesota to access data on all Minnesota mammal species. The Minnesota Mammal Atlas content would be immediately accessible and useful for protection, conservation, preservation, and enhancement of the state’s natural resources.

## **Activities and Milestones**

### **Activity 1: Develop Minnesota Mammal Atlas (MMA) website**

**Activity Budget:** $116,000

**Activity Description:**The activity has three parts:

Part 1: Create an account for each Minnesota Mammal species
Part 2: Create MMA website with species accounts
Part 3: Update based on user feedback, new research, and dissemination

In Part 1, we will use existing resources to create a comprehensive species account for each species. Each species account will require 2 to 3 days to complete. We have already compiled and written some of the material for teaching (e.g., https://beaver.nrri.umn.edu/MNMammals/) or other projects.

In Part 2 we will create the website, with multiple content pages in each species account. We will use existing websites (e.g., Minnesota Breeding Bird Atlas, ENRTF funded) and past experience with mammal specific websites (for teaching Mammalogy, and the Canada lynx, moose, and carnivore websites) to design the MMA.

The timeline of Activity Milestones results in completion of Phase 2 of the MMA website in 1.5 years. In Part 3, we will do at least one update based on user feedback after targeted distribution to an advisory board and dissemination to educators, agencies, and Minnesota citizens.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Finish Species accounts for 40 Minnesota Mammal species | March 31 2023 |
| Initial release of Minnesota Mammal Atlas website (not all species done) | March 31 2023 |
| Finish species accounts for remaining Minnesota Mammal species | December 31 2023 |
| Complete website with all Minnesota Mammal species published | December 31 2023 |
| Website updates and documentation of use | 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?**We will build the Minnesota Mammal Atlas (MMA) in four phases.

Phase 1, 2021 - 2022: Initial Design (e.g., https://mnmammals.d.umn.edu/, https://beaver.nrri.umn.edu/MNMammals/)
Phase 2, 2022 - 2024: This proposal, completes the MMA and demonstrates value to Minnesota
Phase 3: 2024 – 2026: Updates and additions with new funding (2024 – 2026, source TBD)
Phase 4: 2026 – 2036: Maintenance

The MMA will be hosted by the University of Minnesota for the foreseeable future, and we would develop maintenance funding from agencies or foundations for future updates estimated at about $10K / year.

## **Other ENRTF Appropriations Awarded in the Last Six Years**

|  |  |  |
| --- | --- | --- |
| **Name** | **Appropriation** | **Amount Awarded** |
| Endangered Bats, White-Nose Syndrome, and Forest Habitat | M.L. 2015, Chp. 76, Sec. 2, Subd. 03i | $1,250,000 |
| Genetic and Camera Techniques to Estimate Carnivore Populations | M.L. 2015, Chp. 76, Sec. 2, Subd. 03l | $200,000 |

## **Project Manager and Organization Qualifications**

**Project Manager Name:** Ron Moen

**Job Title:** Associate Professor / Senior Research Associate

**Provide description of the project manager’s qualifications to manage the proposed project.**Key Qualifications: Ron is a Wildlife Ecologist and Research Lab Manager at the Natural Resources Research Institute, University of Minnesota Duluth. He has over 25 years of research experience focusing on mammals, telemetry, and wildlife ecology.

EDUCATION:

 Ph.D., 1995. University of Minnesota, Wildlife Conservation.
 M.S., 1988. University of Minnesota, Wildlife. Plant Physiology Minor.
 B.S., 1984. Cornell University, Division of Biological Sciences.

RELEVANT RESEARCH EXPERIENCE:

Dr. Moen has worked on and managed research projects on many different species while at NRRI, with over $4 million of research projects on Minnesota mammals funded. In addition, Dr. Moen has taught Mammalogy at the University of Minnesota Duluth since 2003, and guided over 20 graduate students doing research on mammals in Minnesota to M.S. and Ph.D. degrees.

PUBLICATIONS ON MAMMALS (Examples, > 50 peer-reviewed, > 60 Technical Reports):

Moen, R.A., C.L. Burdett, and G.J. Niemi. 2008. Movement and Habitat use of Canada Lynx during denning in Minnesota.
 Journal of Wildlife Management 72:1507-1513.

Moen, R., G.J. Niemi, and C. Burdett. 2008. Canada lynx in the Great Lakes. NRRI Technical Report No. NRRI/TR-2008/14.

McCann, N. and R.A. Moen. 2011. Mapping potential core areas for lynx (Lynx canadensis) using snowshoe hare
 (Lepus americanus) pellet counts and satellite imagery. Canadian Journal of Zoology 89:509-516.

Ditmer, M.A., J.R. Fieberg, R.A. Moen, S.K. Windels, S.P. Stapleton, and T.R. Harris. 2018. Moose movement rates
 are altered by wolf presence in two ecosystems. Ecology and Evolution 8(17):9017-9033.

Moen, R., and M. Swingen. (2018). Historical northern long-eared bat occurrence in Minnesota based on
 acoustic surveys. NRRI Technical Report No. NRRI/TR-2018-40.

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

**Organization Description:**The Natural Resources Research Institute (NRRI) is an applied research and economic development engine for the University of Minnesota research enterprise. NRRI employs over 130 scientists, engineers and technicians to deliver on its mission to deliver integrated research solutions that value our resources, environment and economy for a sustainable and resilient future. NRRI collaborates broadly across the University system, the state and the region to address the challenges of a natural resource based economy.

NRRI researchers have extensive experience in managing large, interdisciplinary projects. NRRI’s role is as an impartial, science-based resource that develops and translates knowledge. Projects include characterizing and defining resource opportunities, minimizing waste and environmental impact, maximizing value from natural resources and maintaining/restoring ecosystem function.

## **Budget Summary**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category / Name** | **Subcategory or Type** | **Description** | **Purpose** | **Gen. Ineli gible** | **% Bene fits** | **# FTE** | **Class ified Staff?** | **$ Amount** |
| **Personnel** |  |  |  |  |  |  |  |  |
| Project Manager |  | Manage project, develop information content |  |  | 26.7% | 0.2 |  | $32,358 |
| Content developer |  | Develop website content and design, assist with content creation |  |  | 26.7% | 0.66 |  | $57,234 |
| Website developer |  | Website design |  |  | 24.1% | 0.16 |  | $12,938 |
| Undergraduate Research Assistant |  | Assist with literature searches, content development |  |  | 0% | 0.4 |  | $10,202 |
|  |  |  |  |  |  |  | **Sub Total** | **$112,732** |
| **Contracts and Services** |  |  |  |  |  |  |  |  |
| University of Minnesota Duluth | Internal services or fees (uncommon) | NRRI GIS Lab fee. Standard user fee for access to NRRI GIS lab |  |  |  | - |  | $200 |
|  |  |  |  |  |  |  | **Sub Total** | **$200** |
| **Equipment, Tools, and Supplies** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Capital Expenditures** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Acquisitions and Stewardship** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel In Minnesota** |  |  |  |  |  |  |  |  |
|  | Miles/ Meals/ Lodging | Meetings to demonstrate Minnesota Mammal Resource website. | Costs include mileage, hotel, per diem using the current GSA approved rate. |  |  |  |  | $800 |
|  | Conference Registration Miles/ Meals/ Lodging | Conference attendance (e.g., The Wildlife Society meetings, DNR Roundtable). Costs include conference registration fee and GSA approved rates for mileage, hotel, per diem. | Presentations/Discussion on Minnesota Mammal Resource website |  |  |  |  | $769 |
|  |  |  |  |  |  |  | **Sub Total** | **$1,569** |
| **Travel Outside Minnesota** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Printing and Publication** |  |  |  |  |  |  |  |  |
|  | Publication | Page charges for manuscripts describing the MMR process/website | Demonstrate utility and increase use |  |  |  |  | $1,499 |
|  |  |  |  |  |  |  | **Sub Total** | **$1,499** |
| **Other Expenses** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
|  |  |  |  |  |  |  | **Grand Total** | **$116,000** |

### **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** |  |  |  |  |
|  |  |  | **State Sub Total** | **-** |
| **Non-State** |  |  |  |  |
| 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. (https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs) | Secured | $63,800 |
|  |  |  | **Non State Sub Total** | **$63,800** |
|  |  |  | **Funds Total** | **$63,800** |

## **Attachments**

### **Required Attachments**

#### ***Visual Component***

File: [bf7b46ee-727.pdf](https://lccmrprojectmgmt.leg.mn/media/map/bf7b46ee-727.pdf)

#### ***Alternate Text for Visual Component***

Figure showing mock up of species account for Minnesota Mammal Atlas and past websites we have developed on mammals....

### **Optional Attachments**

#### ***Support Letter or Other***

|  |  |
| --- | --- |
| **Title** | **File** |
| UMD Sponsored Projects Transmittal Letter | [2872e100-1a4.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/2872e100-1a4.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?**
 Yes

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**
 No

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**
 No

**Does your project include original, hypothesis-driven research?**
 No

**Does the organization have a fiscal agent for this project?**
 Yes, Sponsored Projects Administration