Environment and Natural Resources Trust Fund

M.L. 2024 Approved Work Plan

General Information

ID Number: 2024-163

Staff Lead: Lisa Bigaouette

Date this document submitted to LCCMR: June 5, 2024

Project Title: Status of Bats and Roost Trees after White-Nose Syndrome

Project Budget: $195,000

Project Manager Information

Name: Ron Moen

Organization: U of MN - Duluth - NRRI

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Project Reporting

Date Work Plan Approved by LCCMR: June 20, 2024

Reporting Schedule: June 1 / December 1 of each year.

Project Completion: December 31, 2026

Final Report Due Date: February 14, 2027

Legal Information

Legal Citation: M.L. 2024, Chp. 83, Sec. 2, Subd. 03o

Appropriation Language: $195,000 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 study changes in maternity roost trees and bat populations in the forested areas of Minnesota and to evaluate the effects of years of white-nose syndrome on Minnesota bats.

Appropriation End Date: June 30, 2027

Narrative

Project Summary: We will deploy acoustic detectors and revisit roost trees identified in our previous ENRTF project to measure effect of seven years of white-nose syndrome on Minnesota bats.

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

Just after white-nose syndrome (WNS) arrived in Minnesota, we found 238 roost trees used by northern long-eared bats, and we deployed acoustic detectors at 303 sites throughout Minnesota (see proposal graphic) in our 2015 ENRTF project Endangered Bats, White-Nose Syndrome, and Forest Habitat (M.L. 2015, Chp. 76, Sec. 2, Subd. 03i).

Since 2015 WNS has continued its offense against bats. In northeastern Minnesota Myotis species have declined from almost 90% of calls in 2015 to < 1% of calls in 2022, declined from about 20 calls/night to 1 call per night on average, and are no longer even recorded at some sites.

The northern long-eared bat status was changed to Endangered on March 31, 2023. The little brown bat and the tri-colored bat will probably be listed in 2023. These bat species, and the big brown bat, are Minnesota Species of Special Concern.

The MNDNR helped write a Habitat Conservation Plan that provides a framework to protect bat species while allowing state, county, municipal, and private landowners to conduct forest management activities. An example impact on forestry is harvest restrictions around known roost trees.

Updated data on roost tree persistence and bat distribution will help inform future management actions.

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.

Acoustic data from northeast Minnesota shows that Myotis populations have declined. Data from our prior ENRTF project provides a powerful resource to determine the extent of the decline in other parts of Minnesota. In this project we would re-deploy acoustic detectors on the same locations they were deployed in 2015-2017, providing an updated snapshot of the current distribution and relative abundance of each bat species.

At the same time, we would locate the maternity roost trees we identified from 2015 to 2017 and determine if those trees are still standing and usable by bats. Based on a study in Alberta, up to half of these roost trees could be gone! We will also deploy acoustic detectors at some roost trees to determine if bats are still present.

This data from acoustic detectors and maternity roost trees will help inform management decisions on bat habitat use and population status, and will also be informative for the Lake States Forest Management Bat Habitat Conservation Plan. For example, the decline in bats we have measured in NE MN supports the HCP approach of considering the impacts of forestry on covered bat species at a landscape scale rather than at the stand level.

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?

Foundational data on bat species distribution and relative abundance is needed to help conserve and enhance our bat populations. The historical acoustic data set from our ENRTF project is an ideal opportunity to identify impacts of WNS on bats from a comparative perspective.

Because maternity roost trees are a part of ESA protections, knowing how long maternity roost trees persist is a critical piece of data. Documentation of roost tree disappearance is as important as identifying roost trees.

For each outcome we will produce a technical report for rapid dissemination of results and a peer-reviewed paper.

Project Location

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

Region(s): Central, Metro, NE, NW, SE,

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

Region(s): Central, NE, NW, SE, Metro,

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Determine persistence of maternity roost trees and repeat acoustic detector surveys 5 years after WNS

Activity Budget: $195,000

Activity Description:
We will document changes in maternity roost trees and bat species presence by revisiting locations from the 2015-2017 ENRTF-funded bat project. We found 268 maternity roost trees and deployed acoustic detectors at about 300 sites in that project.

Each maternity roost tree will be re-located once and bat detectors will be used on at least 10% of the roost trees that are still standing to determine if bats are still found by the roost trees. Acoustic detectors were not used at roost trees in the previous project.

We will also deploy acoustic detectors in the same locations that we deployed acoustic detectors from 2015 to 2017. The approximately 300 deployments in this new project will show changes in relative abundance and species composition of bats across the forested area of Minnesota. Resurveying previous acoustic detector sites is more cost effective than deploying detectors at completely new sites.

Acoustic detectors will be deployed for at least 7 days at each site to match the 2015-2017 ENRTF-funded bat project protocol. We will match the dates of deployment at each location as close as possible. Logistically, we will deploy acoustic detectors about 40, 130, and 130 times in 2024, 2025, and 2026, respectively.

Activity Milestones:

Description	Approximate Completion Date
Relocate 30 maternity roost trees, deploy acoustic detectors at 40 sites, and process acoustic files.	December 31, 2024
Disseminate preliminary results to the public via outreach and media	April 30, 2025
Relocate 120 maternity roost trees, deploy acoustic detectors at 130 sites, and process acoustic files.	November 30, 2025
Relocate 120 maternity roost trees, deploy acoustic detectors at 130 sites, and process acoustic files.	September 30, 2026
Complete all analyses and project technical reports	December 31, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. Michael Joyce	UMD-NRRI	Co-investigator. Will provide input and support on all aspects of this project and will work with project manager to oversee all aspects of this project.	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.
I expect that results (Roost tree persistence, Bat species distribution and relative abundance) of this project will be used in the following ways:
1. Given to MN DNR (Ecological Services, Forestry) in the form of technical reports. I will also keep DNR personnel informed during the project because of the direct management implications of changes in roost trees and bat species with respect to threatened and endangered status of species.
2. Given to site-specific locations (e.g., state parks, state forests, research areas) as technical reports.
3. Given to industry groups which have already shown an interest in the project.
4. Interactions with media. In the past all of my research projects have appeared in newspapers, on TV, on radio, and on websites as a way of sharing results with the public. If I am not contacted by media, I will develop press releases with NRRI media team.
5. Data will be permanently archived at NRRI and could be available to others depending on a data sharing agreement and intended use.
Attribution language will follow ENRTF management 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 project is unique in that it will leverage existing acoustic data collected by a previous ENRTF-funded bat project to update foundational data on Minnesota bat species. Minnesota Forest Industries and Sappi North America support the project (see Letters of Support) and we have designed the project in consultation with DNR personnel. One benefit of the project is that foundational data on relative abundance of bat species and persistence of roost trees increases certainty in economic planning for businesses and for the MN DNR.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Ron Moen, Research Scientist/Professor		Project Manager			26.9%	0.2		$33,735
Michael Joyce, Research Scientist		Co-Investigator			26.9%	0.22		$25,012
Wildlife Technician		Field and office work			24.24%	0.63		$31,057
M.S. Graduate Student		Conducting field work, data management, data analysis, and writing. The student will contribute to all aspects of this project.			19.1%	0.16		$8,917
Seasonal Wildlife Technician		Conducts field and office work			7.64%	0.85		$32,987
Undergraduate research assistant		Conducts field and office work			0%	0.72		$22,292
							Sub Total	**$154,000**
Contracts and Services								
							Sub Total	**-**
Equipment, Tools, and Supplies								
	Equipment	New acoustic detectors with microphones (10 @ $1,400 ea) and 10 replacement microphones for existing acoustic detectors (@ $200 ea).	To conduct acoustic surveys for bats					$16,000
	Tools and Supplies	Supplies for acoustic surveys (batteries, bait, locks/straps, etc.)	To conduct acoustic surveys for bats					$3,000
							Sub Total	**$19,000**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								

							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel for fieldwork, including mileage (75%) and lodging for technician, researcher, and undergraduate research assistant. Mileage will be reimbursed using the University approved travel rate for NRRI personnel. Lodging is estimated between $90 and $110 per night, less if camping is possible. Some trips will involve longer-distance travel and require overnight expenses (camping or motel) and food expenses.	Collect field data for project					$20,000
							Sub Total	**$20,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
							Sub Total	**-**
Other Expenses								
		Page Charges	Cost to publish papers					$2,000
							Sub Total	**$2,000**
							Grand Total	**$195,000**

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	$107,250
			Non State Sub Total	**$107,250**
			Funds Total	**$107,250**

Attachments

Required Attachments

Visual Component

File: ae4e0be8-f48.pdf

Alternate Text for Visual Component

The visual component has a Minnesota map with locations where 238 roost trees were found in our previous ENRTF bat project. The 303 acoustic detector locations were distributed similarly. Also pictured are one bat that we put a transmitter on, a roost tree cluster, and an acoustic detector....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Minnesota Forest Industries (MFI) Letter of Support	bd020f8a-338.pdf
Sappi Letter of Support	b4f184ce-2d4.pdf
UMN Transmittal Letter	cbb4d0ba-c0e.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

I realized it was better to identify regions than to say statewide because we will not be working in the southwest corner of the state. The original project was limited to the forested region of Minnesota.

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 Commissioner's Plan.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

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?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No