# Environment and Natural Resources Trust Fund

2026 Request for Proposal

## General Information

**Proposal ID:** 2026-358

**Proposal Title:** Improving Bat Conservation through Expanded Monitoring and Outreach

## Project Manager Information

**Name:** Michael Whitby

**Organization:** Bat Conservation International

**Office Telephone:** (512) 327-9721

**Email:** mwhitby@batcon.org

## Project Basic Information

**Project Summary:** We will improve migratory bat conservation by expanding monitoring programs in southern Minnesota to inform management and by raising public awareness of bats to inspire backyard conservation actions.

**ENRTF Funds Requested:** $299,000

**Proposed Project Completion:** June 30, 2029

**LCCMR Funding Category:** Small Projects (G)

**Secondary Category:** Fish and Wildlife (D)

## Project Location

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

Region(s): SE, SW,

**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.**

Bats provide ecosystem services to agriculture and forestry, important industries in Minnesota. Pest-insect consumption by bats reduces pesticide use resulting in improved water quality and human health. Unfortunately, many bat populations are declining. Necessary attention has been given to cave-hibernating bats impacted by white-nose syndrome. However, migratory bats are also threatened by anthropogenic stressors including habitat destruction, general insect declines, and fatalities at wind turbines. Population declines have led the USFWS to schedule a species status assessment for the migratory hoary bat which could lead to protection as an endangered species.

Minnesota currently lacks the systematically collected annual monitoring data required to assess the cumulative impacts of anthropogenic stressors on migratory bat populations and to validate the impact of conservation measures. A lack of basic knowledge about the seasonal and daily variability in bat activities and species-specific habitat associations further hinders the implementation of conservation measures. Furthermore, Minnesota has minimal participation in national monitoring efforts that contribute to population-scale conservation efforts.

Negative perceptions and misperceived risks of bats as disease vectors also can lead to a lack of public support, hindering our ability to achieve desired conservation outcomes, recover depleted populations, and restore the critical ecosystem services provided by bats.

**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 enable effective migratory bat conservation in Minnesota through monitoring and outreach. Monitoring will allow us to determine habitat associations and phenology while conducting initial data to determine long-term population trends. We will use national protocols, positioning Minnesota to contribute to national conservation and monitoring efforts while addressing state-specific needs.

We will use passive acoustics to record echolocation of bats, one of the least expensive and comprehensive ways to collect bat data. We will establish and conduct mobile acoustic transects, a method used to evaluate bat habitat use, and collect an abundance index used to estimate migratory bat population trends. We will determine migratory bat phenology and activity patterns through the use of monitoring stations operating during the entire season bats are active – allowing us to determine when conservation actions will be most effective.

Building public support improves conservation efforts. In partnership with the Minnesota Zoo and Hormel Nature Center, we will establish an education program that includes bat walks, which allow the public to experience the hidden world of bats through acoustic detectors. We will also work with the Minnesota Zoo to create a bat garden to demonstrate how the public can garden to benefit pollinators and bats.

**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?**

-Understanding the habitat associations of migratory bats will guide the enhancement and protection of habitats that sustain healthy bat populations.
- Seasonal bat activity patterns inform the timing of conservation efforts that protect and preserve populations. For example, timing is used to protect vulnerable bat species from fatalities at wind turbines while enabling the generation of zero-carbon energy.
-Mobile acoustic transects will improve our understanding of population trends and inform species protection efforts.
-Encouraging bat gardens will enhance habitat for pollinators and bat populations.
-Bat walks will expand public appreciation for bats and promote more effective conservation of species.

## Activities and Milestones

### Activity 1: Expand the Monitoring Network for Migratory Bats

**Activity Budget:** $229,600

**Activity Description:**
We will establish and sample 6-10 continuous monitoring stations and mobile transects in southern Minnesota. Sampling locations will reflect the ecoregions of southern Minnesota (supplemental figure). All data will be uploaded to public repositories (NABat and BatAmp), allowing Minnesota to contribute to range-wide analysis of migratory bat population trends while answering questions of local importance.

Mobile transects support analysis of spatial and temporal trends of migratory bat activity. Each transect will be established following the NABat mobile transect protocol. We will work with local hosts (e.g., nature centers, Minnesota Zoo) to select transect routes that fit the protocol and consider logistical constraints (e.g., travel and personnel time). We will prioritize sampling two historical routes that were sampled by the MNDNR from 2010-2019, allowing the continuation of a long-term data set. Data will be analyzed to assess the spatial distribution and habitat associations of migratory bat species.

Continuous monitoring allows for documentation and analysis of bat phenology and activity patterns of migratory bats. Where appropriate, we will co-locate these stations with existing infrastructure, including ENRTF-supported Motus radio-telemetry towers, nature centers, and state parks. Data will be analyzed with hierarchical models to identify seasonality and weather patterns that influence

**Activity Milestones:**

| Description | Approximate Completion Date |
|---|---|
| Finalize partnerships and design 6-10 routes and continuous monitoring stations for bat population monitoring | December 31, 2026 |
| Conduct first year of acoustic sampling | December 31, 2027 |
| Conduct second year of acoustic sampling | December 31, 2028 |
| Process acoustic data (identify to species where possible and summarize) and upload to NABat | June 30, 2029 |
| Report on bat monitoring efforts including habitat use, phenology, and activity patterns | June 30, 2029 |

### Activity 2: Public engagement on bat species, importance of bats, and conservation efforts

**Activity Budget:** $69,400

**Activity Description:**
With some 1.5 million annual visitors, a strong online presence and social media following, and highly regarded educational programming, the Minnesota Zoo is well-positioned to build awareness about bat conservation in Minnesota. We will capitalize on the Zoo's role as Minnesota's largest environmental educator to share key messages about the ecological role of bats and positively impact public perceptions. Specifically, we will complete evening, summertime bat walks on the Zoo's campus and at Hormel Nature Center in southern Minnesota. BCI has an existing Bat Walks program, enabling Bat Ambassadors to conduct bat walks in their local communities. In 2024, BCI trained >100 ambassadors at 11 organizations in 6 states. We will extend this training to Minnesota-based partners, provide bat detectors, and support the implementation of bat walks in Minnesota.

We also will establish a native plantings demonstration plot on Zoo campus, expanding BCI's existing Bat Gardens program to Minnesota. We will leverage the expertise of local entomologists and adapt existing education materials to reflect plantings that are most relevant to Minnesota, adding to the portfolio of regional planting guides. We will

conduct public workshops on gardening for bats demonstrate how community members can impact bat conservation in their own

**Activity Milestones:**

| Description | Approximate Completion Date |
|---|---|
| Develop and print bat conservation materials to distribute to the public at events | October 31, 2026 |
| Train Zoo staff and partners to conduct bat walks | December 31, 2026 |
| Conduct at least 3 bat walks in 2027 | September 30, 2027 |
| Establish a demonstration garden with native plantings that promote bat and pollinator conservation. | September 30, 2027 |
| Conduct at least 3 bat walks in 2028 | September 30, 2028 |
| Promote bat conservation through ongoing public programming at the Zoo, including gardening workshops | October 31, 2028 |

## Project Partners and Collaborators

| Name | Organization | Role | Receiving Funds |
|---|---|---|---|
| Seth Stapleton | Minnesota Zoo | Sub-Awardee/Collaborator. Education partner. Host of continuous monitoring station and mobile route. | Yes |
| Luke Reese | Hormel Nature Center | Host of long-term monitoring station and mobile route. Education partner. | No |

## 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?**
We will establish monitoring sites through a partner host network that can utilize existing staff and volunteers to continue monitoring efforts beyond the life of the project, supplemented by BCI staff. Costs to continue sampling are minimal compared to the initial establishment. We will seek additional funding from a variety of sources to continue monitoring and processing data and/or expand sampling efforts statewide.

The Zoo will maintain the bat garden as part of its resource management program. We will build capacity to support bat walks among partner organization staff and anticipate that walks will continue beyond this project's life.

## Project Manager and Organization Qualifications

**Project Manager Name:** Michael Whitby

**Job Title:** Director Bats and Wind Energy

**Provide description of the project manager's qualifications to manage the proposed project.**
Michael has 17 years of experience working on bat conservation in academic, public, and private settings studying bat distribution and behavior. Michael specializes in the use of emerging technology and advanced analytical techniques to find practical solutions to widespread conservation challenges. He holds an M.Sc. from Ball State University and a B.Sc. from the University of Maine. Michael lives in Duluth Twp, MN.

Michael is BCI's Director of Bats and Wind-Energy program, leading research focused on promoting a sustainable wind energy industry that allows the co-existence of bat populations and carbon-free energy production. Michael has led numerous large-scale research projects since he joined BCI in 2019, including multi-million-dollar projects and teams that included nearly a dozen technicians. Michael has published 10 peer-reviewed manuscripts and dozens of technical reports and regularly presents results at conferences.

Michael has been a leader in the use of mobile acoustic transects since his Master's thesis, which investigated the benefits and costs of multiple sampling methods. He conducted the mobile acoustic analysis included in the Species Status Assessment of little brown, tri-colored, and northern long-eared bats. He served on the NABat mobile transect working group and has advised multiple agencies on the use of mobile transects.

Selected Publications:
Whitby, Michael D., et al. 2014. "Evaluation of mobile acoustic techniques for bat population monitoring." Acta Chiropterologica.
Whitby, M., et. al. . 2021. In Support of the USFWS 3-Species Status Assessment: Summer Mobile Acoustic Transect Analysis. U.S. Geological Survey data release. US Geological Survey.
Voigt, Christian C., et al. 2024. "Toward solving the global green–green dilemma between wind energy production and

bat conservation." BioScience.
Adams, Amanda M., et al. 2024 "The state of the bats in North America." Annals of the New York Academy of Sciences.

**Organization:** Bat Conservation International

**Organization Description:**
Bat Conservation International (BCI) is a non-profit organization dedicated to the enduring protection of bats and their habitats since 1982. We are committed to engaging with communities and partners in ways that honor and respect local knowledge and practices. BCI is a global leader in finding solutions that support renewable wind energy development while reducing its impacts on bat populations. BCI helped establish the Bats and Wind Energy Cooperative in 2003 to engage researchers, conservation stakeholders, and private industry to identify priorities and solutions that minimize impacts of wind energy development on bats. Over the past two decades, BCI has designed and executed ground-breaking scientific work to test fatality minimization strategies, including smart curtailment algorithms to maximize energy production from wind turbines while minimizing impacts on biodiversity. BCI's Bats and Wind energy research is part of our strategic efforts to conduct high-priority research that informs conservation actions and produces conservation evidence that leads to meaningful outcomes. BCI's chief Scientist Dr. Winifred Frick oversees all scientific research at BCI. Dr. Frick has over 100 scientific publications and is a world leader in bat ecology and data-driven conservation.

## Budget Summary

| Category / Name | Subcategory or Type | Description | Purpose | Gen. Ineligible | % Benefits | # FTE | Classified Staff? | $ Amount |
|---|---|---|---|---|---|---|---|---|
| **Personnel** | | | | | | | | |
| Project Manager | | Minnesota based staff to coordinate project activities, acquire equipment, train staff and partners on data collection. | | | 38% | 0.51 | | $71,000 |
| Education Specialist | | Provide Expertise in Designing Education Programs | | X | 38% | 0.1 | | $11,450 |
| Quantitative Ecologist | | Statistical Analysis of Data | | X | 38% | 0.1 | | $13,000 |
| Minnesota Field Specialist | | Minnesota based seasonal staff to collect acoustic data | | | 10% | 0.5 | | $28,500 |
| Scientific Oversight | | PhD level staff to provide project-specific oversight, assist in review of project methodology, and prepare and edit deliverables. | | X | 38% | 0.05 | | $8,500 |
| | | | | | | | **Sub Total** | **$132,450** |
| **Contracts and Services** | | | | | | | | |
| Minnesota Zoo | Subaward | Funds include: native plants for demonstration bat garden; development and printing of interpretive and educational materials; support for intermittent naturalists to implement bat walks and other educational programming; and in-state travel (lodging, fuel, and food) in Minnesota to support execution of field (mobile transect) activities. | | | | 0.3 | | $49,700 |
| Conservation Metrics Institute | Service Contract | Process Acoustic Data in an Existing pipeline and upload to NABat | | | | 0.1 | | $24,850 |
| | | | | | | | **Sub Total** | **$74,550** |
| **Equipment, Tools, and Supplies** | | | | | | | | |
| | Tools and Supplies | 8 Mobile Transect Bat Detector Setups (Anabat Walkabout, microphone, Car mount) | Activity 1: Mobile acoustic Sampling | | | | | $20,500 |
| | Tools and Supplies | 10 Continuous monitoring station setups (Detector, microphone, cables | Activity 1: Continuously sample bat activity at 10 locations | | | | | $22,500 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Tools and Supplies | 4 Education Detector Setups | Activity 2: Conduct bat walks | | | | | $1,750 |
| | Tools and Supplies | Data storage (4 hard drives, 60 memory cards, 20 memory card protectors) | Activity 1: Store and backup acoustic data | | | | | $5,550 |
| | Tools and Supplies | 8 Mobile Transect Accessories (Car Safety Signage, Dash mount, Etc) | Safely conduct mobile acoustic surveys | | | | | $2,250 |
| | Tools and Supplies | 10 Stationary Detector Acessories (Battery, solar panel, etc) | Power Bat detectors and assure operation | | | | | $5,250 |
| | | | | | | | **Sub Total** | **$57,800** |
| **Capital Expenditures** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Acquisitions and Stewardship** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| **Travel In Minnesota** | | | | | | | | |
| | Conference Registration Miles/ Meals/ Lodging | Minnesota TWS in 2027, 2028, 2029, 1500 miles (500/conference) | Establish partners and disseminate findings of ENTF grant | | | | | $3,250 |
| | Miles/ Meals/ Lodging | Approximately 42 days of sampling, hotel rooms, and per diem, for 1 technician. Includes 8400 miles of travel at the federal rate. | Activity 1: Conduct Mobile Acoustic Transects in 2027 and 2028 | | | | | $12,750 |
| | Miles/ Meals/ Lodging | Approximately 40 days for specialized setup and maintenance of continuous monitoring stations. Includes hotel, per diem, and 12000 miles of travel at the federal rate. | Activity 1: Setup and Maintain continuous monitoring stations | | | | | $13,450 |
| | Miles/ Meals/ Lodging | Two 3-day trips to MN ZOO and Hormel Nature Center for 1 person including hotel, per diem, and 500 miles | Activity 2: Education Training and Events at MN zoo and Hormel Nature Center | | | | | $3,250 |
| | | | | | | | **Sub Total** | **$32,700** |
| **Travel Outside Minnesota** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Printing and Publication** | | | | | | | | |
| | Publication | Article in peer-reviewed Journal | Disseminate findings on habitat use of migratory bats in southern Minnesota | | | | | $1,500 |
| | | | | | | | **Sub Total** | **$1,500** |
| **Other Expenses** | | | | | | | | |
| | | | | | | | **Sub Total** | **-** |
| | | | | | | | **Grand Total** | **$299,000** |

## Classified Staff or Generally Ineligible Expenses

| Category/Name | Subcategory or Type | Description | Justification Ineligible Expense or Classified Staff Request |
|---|---|---|---|
| **Personnel** - Education Specialist | | Provide Expertise in Designing Education Programs | BCI's education specialist leads our Bat Walk and Bat Garden programs. She has designed and facilitated training across the United States and will work with the Zoo to adapt these programs to Minnesota and the Zoo's programming needs. |
| **Personnel** - Quantitative Ecologist | | Statistical Analysis of Data | The quantitative ecologist will also assist the Minnesota-based staff in ensuring the highest-quality analysis is completed. Our quantitative ecologist will contribute directly to this project by analyzing data collected in Minnesota and producing Minnesota-specific deliverables that aid in bat conservation.<br><br>BCI has a world-class staff with extensive knowledge of the proper use of acoustic data and statistical analysis. BCI's team works closely with NABat to ensure that data are collected and analyzed in the most productive and informative ways. To our knowledge, no Minnesota-based ecologist provide the necessary experience to advance this project in a similar way. |
| **Personnel** - Scientific Oversight | | PhD level staff to provide project-specific oversight, assist in review of project methodology, and prepare and edit deliverables. | BCI is a fully remote organization that employes staff around the country. Our chief scientist and director of conservation evidence are world leaders in bat conservation efforts and will assist in assuring that the highest quality work is done in Minnesota and that Minnesota-based deliverables contribute to statewide bat conservation needs.<br><br>NAbat was established in 2014, yet Minnesota has minimal contributions to the program. Contributions in Minnesota are primarily from National Forest partners. Our staff will help transfer expertise to Minnesota-based entities, expanding the capacity of Minnesota to contribute to the program. |

## Non ENRTF Funds

| Category | Specific Source | Use | Status | Amount |
|---|---|---|---|---|
| **State** | | | | |
| | | | **State Sub Total** | **-** |
| **Non-State** | | | | |
| In-Kind | Bat Conservation International | Waiving of 19.64% Federally Negotiated Indirect | Secured | $58,723 |
| | | | **Non State Sub Total** | **$58,723** |
| | | | **Funds Total** | **$58,723** |

**Total Project Cost: $357,723**

**This amount accurately reflects total project cost?**

Yes

## Attachments

### Required Attachments

*Visual Component*

File: 7f28dc03-37b.pdf

*Alternate Text for Visual Component*

Map of the project area, including an infographic with photos of the project sampling methods and examples of population trend and activity analysis....

### Supplemental Attachments

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

| Title | File |
|---|---|
| Letter of Support - Hormel Nature Center | 0f4c1d56-906.pdf |
| Authorization Letter | f40cce02-7b7.pdf |
| IRS Form 990 | 5b237168-c7c.pdf |
| Evidence of good Standing with Secretary of State | 6f33aa8d-c97.pdf |
| Audit Report | 83d0c323-69c.pdf |

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**Do you understand that travel expenses are only approved if they 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 understand the Commissioner's Plan applies.

**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")?**

Yes

**Do you certify that background checks are performed for background check crimes, as defined in Minnesota Statutes, section 299C.61, Subd. 2, on all employees, contractors, and volunteers who have or may have access to a child to whom children's services are provided by your organization?**

Yes

**Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:**

Seth Stapleton, Minnesota Zoo

**Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements**

Yes, I understand