**PROJECT TITLE:**

Enhancing Bat Recovery and Survival by Optimizing Artificial Roosting Structures

**I. PROJECT STATEMENT**

White-nose Syndrome (WNS) is a devastating disease responsible for the deaths of millions of bats in eastern North America. In Minnesota, WNS has caused declines of over 90% in Minnesota’s populations of hibernating bats. Bats are infected during winter hibernation, but those that survive have a chance to recover and raise young during the summer. Summer roosting sites are one of the most important habitat components for Minnesota’s hibernating bat species. Natural roosts typically consist of tree cavities or loose bark. Unfortunately, roost in dead trees and even live trees are ephemeral and not always in optimal locations. Artificial roost structures, appropriately designed and located, provide critical habitat where natural roosts have been lost or do not exist (Mering and Chambers, 2014).

This project will (1) assess bat use of existing artificial bat roost structures on state park and state recreation area lands; and (2) identify characteristics of successful bat roosts. Characteristics include such things as: artificial roost structure design, location and orientation, internal temperature and humidity, bat species utilization and approximate numbers. Results of this assessment will be used to install or relocate artificial bat roost structures in optimal locations for bat utilization and reproduction on state park and state recreation area lands.

Outcomes of this project will be shared with the North American WNS Conservation and Recovery Working Group which is developing best management practices for artificial bat roosts. Their findings will be distributed throughout the United States and Canada as part of accomplishing action item 3.4 (3.4.4) in Implementation of the National Plan for Assisting States, Federal Agencies and Tribes in Managing White-Nose Syndrome in Bats.

Results will also be shared by the MN Dept. of Natural Resources to aid citizens and staff in construction, placement and maintenance of artificial roost structures for maximum benefit to Minnesota’s hibernating bats. This effort will help landowners and land managers by providing strategies to relocate bats roosting in structures which need to be demolished or renovated.

Mering, E. D. and C. L. Chambers. 2014. Thinking outside the box: a review of artificial roosts for bats. Wildlife Society Bulletin 38: 741-751.

Multi-Agency, 2014 - Implementation of the National Plan for Assisting States, Federal Agencies and Tribes in Managing White-Nose Syndrome in Bats. <https://s3.amazonaws.com/org.whitenosesyndrome.assets/prod/2aa0e9e0-8122-11e8-a212-178e58894de5-WNS%20Implementation%20Plan%202016.pdf>. Accessed 4/10/19.

**II. PROJECT ACTIVITIES AND OUTCOMES**

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| **Activity 1: Assessment and Analysis of Artificial Roost Structures, and Application of Information to Optimize Bat Occupancy and Reproduction**  **Description:** *This project will collect and analyze data on existing artificial bat roost structures on state park and state recreation area lands. These data will be used to install or relocate existing roosting structures to maximize bat utilization. Best management practices for constructing, installing and maintaining bat roosting structures will be communicated to the public via the DNR website and other outreach products. The information will also be shared with the North American WNS Conservation and Recovery Working Group which is assembling similar data from across the United States and Canada.*  **ENRTF BUDGET: $190,271** |  |

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| **Outcome** | **Completion Date** |
| *1. Inventory of existing artificial bat roosting structures on state park and SRA lands.* | *Fall 2020* |
| *2. Summarize data and identify locations of structures to monitor* | *Spring 2021* |
| *3. Construct and install certain structure styles, locations or orientations if needed* | *Spring 2021* |
| *4. Collect environmental and bat utilization data* | *Fall 2021* |
| *5. Analyze data to identify optimal roost structure parameters for bat utilization* | *Spring 2022* |
| *6. Install or relocate structures at optimal locations, orientation and style* | *Fall 2022* |
| *7. Continue data compilation and initiate web page and outreach products* | *Spring 2023* |
| *8. Monitor structures installed to provide optimal conditions for bat utilization* | *Fall 2023* |
| *9. Summarize findings and finalize web page and outreach products* | *June 2024* |

**III. PROJECT PARTNERS AND COLLABORATORS:**

Minnesota Biological Survey, MNDNR

WNS Conservation and Recovery Working Group

**IV. LONG-TERM IMPLEMENTATION AND FUNDING:**

Outcomes from this project will increase the number of bats surviving WNS and raising offspring in state park and state recreation area lands. The Division of Parks and Trails has adequate funding and staffing to ensure that structures are regularly maintained so as to provide optimal roost sites for the foreseeable future. It will also provide best management practices that can be utilized by citizens, other agencies and organizations to provide more and better summer roosting sites for Minnesota’s hibernating bat species. Information developed as part of this project will be incorporated into the work of the North American WNS Conservation and Recovery Working Group to provide guidelines for artificial roosts that will be distributed by this group throughout the United States and Canada.

**V. SEE ADDITIONAL PROPOSAL COMPONENTS:**

**A. Proposal Budget Spreadsheet**

**B. Visual Component or Map**

**F. Project Manager Qualifications and Organization Description**