2024 Cost-Share Proposal Form for NorthWestern Energy (NWE) Project 2188 TAC Funds

Project Title: Breeding bird monitoring on the Madison and Missouri Rivers

Date: October 24, 2023

Applicability to Project 2188 License Article(s):

This project meets the purpose and intent of Project 2188 License Article 423 by measuring bird community change over time as an indicator of riparian conditions for wildlife, identifying habitat and environmental factors critical for maintaining bird populations, providing feedback on techniques employed to enhance native plants and wildlife populations, and monitoring wildlife response at enhancement project sites funded by the Missouri-Madison Wildlife Technical Advisory Committee (Wild TAC).

Priority Classification:

This project meets the criteria for a Priority 1 project because monitoring is located within riparian habitats of the main stem of the Missouri and Madison River and floodplain wetland complexes, as well as Priority 2 because locations also include habitat enhancement and protection project areas within 1 mile of the mainstem.

Project Sponsor (submitted by): University of Montana Bird Ecology Lab

Location of Proposed Project:

Habitat project areas on the Missouri River near Ulm, on the Madison River at O'Dell Creek five miles south of Ennis, and lower Moore Creek (Figure 1). Geographic coordinates in decimal degrees for project areas:

Ulm: 47.406°N, -111.504°W

Moore Creek: 45.395°N, 111.717°W

O'Dell Creek: 45.247 °N, -111.727 °W

Total Project Cost: $59,315

TAC Funds (Cost-Share) Requested for Project: $31,630

I. Introduction

Since 2004, the University of Montana (UM), with funding from Northwestern Energy and the Bureau of Land Management (BLM), has monitored bird populations and riparian vegetation conditions on over 500 miles of the Madison and Missouri Rivers. Birds are ideal indicators of natural resource conditions because they have diverse habitat requirements, are easily surveyed, and provide feedback from an entire community rather than a single species[1,2]. In addition, birds are a priority for monitoring in riparian areas, because riparian and wetland habitats support a large number of bird species during breeding, dispersal, and migration, including at least 134 (55%) of Montana's 245 bird species and 30 of the 66 Montana Species of Concern. As the largest river system in the

[1] Carigan, V., and M.A. Villard. 2002. Selecting indicator species to monitor ecological integrity: a review. Environmental Monitoring and Assessment 78:45–61.

[2] Hutto, R.L. 1998. Using landbirds as an indicator species group. Pp. 75-92 in Marzluff, J.M. and R. Sallabanks (eds.), Avian conservation: research and management. Island Press, Covelo, CA.

state, the Madison and Missouri rivers are critical to the future of Montana's bird populations. To date we have recorded 32,091 individual birds and 159 species, including seven BLM Sensitive species, 25 Montana Species of Concern, and 29 U.S. Fish and Wildlife Birds of Management Concern.

Habitat Project Monitoring--We propose to continue monitoring breeding bird populations within habitat enhancement and protection projects funded by the Wild TAC (Fig. 1). We plan to conduct monitoring at O'Dell Creek habitat project area on a mix of public and private lands located five miles south of Ennis on the Madison River. We also propose to collect baseline data on the status of breeding bird populations at two new habitat projects: on private property near Ulm on the Missouri River, and on private property on Moore Creek within the Madison River floodplain.

Figure 1. Location of habitat enhancement and protection project areas (yellow points) proposed for monitoring in 2024.

Cuckoo Species Monitoring--Since 2012, we have worked with partners to collect data on the population status and distributions of Black-billed (*Coccyzus erythropthalmus*) and Yellow-billed (*Coccyzus americanus*) Cuckoos. BLM lists Black-billed cuckoos as a Sensitive Species, and the western distinct population segment of the Yellow-billed cuckoo is federally listed as Threatened. Both species are Montana Species of Concern (S3B) and designated as high inventory need in Montana. Surveys have proven logistically challenging because cuckoos are difficult to detect in a single survey and much of their habitat is hard to access. Since 2021 we have tested the use of new acoustic technology, autonomous recording units (ARU's) in riparian habitats on the Upper Missouri Breaks section of the Missouri River to improve detections for these species. This year we propose to complete analysis of data collected over the last three years in collaboration with Dr. Erim Gomez in the Wildlife Program at the University of Montana, the Smithsonian Institute, and Montana Fish Wildlife and Parks. Results will provide recommendations for future monitoring and document potential breeding habitats within the Upper Missouri River Breaks section of the Missouri River.

This proposal builds on 20 years of monitoring investment by Northwestern Energy and partners and contributes scientifically robust measures of wildlife response to habitat enhancement and protection projects supported by the Wildlife TAC, as required by 2188 license 423 and described in the updated 2188 Five Year Wildlife Plan. Continued monitoring will capitalize on this long-term dataset, providing a valuable tool for managers to evaluate the status and trends of migratory bird species and habitat conditions, providing critical feedback on best practices for land managers working to restore wildlife habitats along Montana's large rivers.

II. Objectives

1. Evaluate the status of bird populations and habitat conditions within new habitat enhancement and protection projects funded by the Wild TAC near Ulm and on Moore Creek.
2. Monitor long-term bird community response to habitat enhancement and protection projects within the O'Dell Creek project area since 2006.
3. Complete analyses of breeding distributions and habitat preferences of Black-billed Cuckoos on the Missouri River and provide recommendations for future monitoring of Black-billed and Yellow-billed Cuckoos using Automated Recording Units (ARU's).

III. Methods

The methods used for field sampling and analyses are described briefly below. Refer to our 2007 report[3] summarizing monitoring protocols for more detailed information.

Bird Surveys-- We will conduct point count surveys of birds during the breeding season (May- July) within 5 hours of sunrise on days with minimal precipitation and wind. Observers will record all birds seen or heard during a 10-minute period, and distances to birds will be measured using a rangefinder. We will conduct vantage surveys and/or area searches for waterfowl and other waterbirds using open water wetlands in the project areas. At O'Dell Creek, we will also broadcast playbacks for four secretive marshbird species at least two times during the breeding season (American Bittern, Earred Grebe, Sora, and Virginia Rail).

Data Analyses--We will evaluate avian response to restoration by comparing baseline data collected prior to project start to changes over time using a Before-After-Control-Impact (BACI) study design, with long-term monitoring sites serving as untreated controls[4]. BACI sampling designs are particularly useful tools for evaluating bird assemblage responses to riparian restoration because they address the problem of high natural variability and year-to-year changes in river systems by effectively separating the absolute year-to-year change from treatment effects.

A graduate student from the University of Montana will analyze ARU recordings to identify Black-billed Cuckoo vocalizations using the machine learning classifier developed based on our recordings in 2021. They will compare likelihood of detecting Black-billed Cuckoo presence using playback and ARU survey methods, and will evaluate habitat preferences of Black-billed Cuckoos using occupancy modeling.

---

[3] Fletcher, R. A. Cilimburg, and R. Hutto. 2007. Evaluating habitat restoration at O'dell creek using bird communities. 2007 report to PPL Wildlife TAC, 16p.

[4] Schwarz C.J. 1998. Studies of Uncontrolled Events. In: Statistical Methods for Adaptive Management Studies. Res. Br, B.C. Min. For., Res. Br., Victoria, BC, Land Manage. Handb. No 42.

IV. Schedule

This project will begin 1 May 2022 and will run until 30 April 2023 (see table below).

2024	
May	Field planning, coordination with local partners and private landowners, hire and train field technicians
June-Aug	Collect field data on birds and vegetation
Sep-Oct	Data entry and data management
Nov-Dec	Summarize field effort and present to Wild TAC
2025	
Jan-Feb	Complete data analyses
April	Submit final report to Wild TAC

V. Personnel

Anna Noson (Research Director, UMBEL) will serve as Principal Investigator of the project. Anna Noson will supervise field data collection and complete reporting and dissemination of findings. UMBEL staff will assist with hiring, field training, data collection, and data management. We will hire one temporary technician from May-August to collect and enter field data. The Division of Biological Sciences will provide facilities and equipment at the University of Montana.

VI. Project budget

	TAC Funds Requested	**Total Project Cost**
Direct Labor	$23,084	$43,910
Travel and Living	$3,970	$6,506
Materials and supplies	$450	$650
Direct Overhead	$4,126	$8,249
Total	$31,630	$59,315

Cost-share funding sources and amounts for this project:

$27,685 from USDA Bureau of Land Management (5-year agreement in place through 2027).

VII. Deliverables

Results will be summarized in a Final Report that will include:

1. Bird population and habitat condition status within identified restoration project areas.
2. Bird population and community change associated with habitat restoration activities within the O'Dell Creek project area;
3. Distribution information and survey recommendations for Black-billed and Yellow-billed Cuckoo species in floodplain riparian habitats on the Missouri River.

VIII. Cultural Resources.

N/A- no land-disturbing activity or building modification will occur as a result of this project.

IX. Water Rights.

N/A- no development, restoration, or enhancement of wetlands will occur as a result of this project.