

Dr. Riley Bernard, with the University of Wyoming, and her students are busy preparing for the upcoming summer field season. Please read the project updates below and learn about some of the incredible bat research being conducted across the state and beyond!

Bats and Bridges Project – Master’s student: Logan Detweiler

- a. This project is investigating the use of Wyoming Department of Transportation (WYDOT) managed bridges as artificial bat roosts in the state of Wyoming. Our aim is to answer a variety of questions that will aid in the conservation and management of Wyoming and western chiropteran species. Prior to the 1960’s, bridges were often overlooked as potential roosting habitat for bats in North America. It is now widely accepted that bridges of different designs and material provide optimal roosting microclimates for various bat species throughout the world. The specific goals of our project are to:
 - i. Determine if bats use transportation structures, such as bridges, in Wyoming. This includes determining what bridge characteristics are most likely to predict use by bats; the type of roosts (maternity, day vs night roosts); timing and emergence of bats at bridge roosts.
 - ii. Determine the landscape characteristics that correspond with bridge use by bats
 - iii. Determine if bridge roosts in Wyoming are conducive to *Pseudogymnoascus destructans* proliferation. If so, are WNS mitigation measures feasible at bridge roosts?
 - iv. Identify if bridges pose a risk to bat survival via increased likelihood of bat-vehicle collisions.
- b. The bats and bridge project is funded by Wyoming Game and Fish Department, Wyoming Department of Transportation, Wyoming Governor’s Big Game License Coalition Grant, University of Wyoming Department of Zoology and Physiology, and the University of Wyoming IDeA Networks for Biomedical Research Excellence (INBRE).

Special species status assessment on Camp Guernsey Joint Military Base – Master’s student: Nicholas Kovacs

- a. The goal of our study is to investigate the seasonal roosting ecology and migratory behavior of three species at risk of becoming endangered due to WNS: *Myotis septentrionalis*, *Myotis lucifugus*, and *Perimyotis subflavus*. This study will fill critical gaps in our knowledge of these species’ life histories in the West, aid in population recovery planning, allow for the development of regulatory mechanisms and mitigation strategies to promote species persistence, and permit the establishment of management alternatives that conserve, maintain, and improve critical habitat in the western extent of these species’ ranges.
- b. Our specific objectives are to:
 - i. Determine if *M. septentrionalis* are present on Camp Guernsey Joint Training Center.
 - ii. Classify summer roost selection and habitat use of *M. lucifugus*, *M. septentrionalis*, and *P. subflavus* at three spatial scales (i.e., roost tree, stand, and landscape).

- iii. Investigate the migratory behavior and overwintering locations of *M. lucifugus*, *M. septentrionalis*, and *P. subflavus* that utilize Camp Guernsey and adjacent lands in summer.
 - iv. Estimate female *M. septentrionalis*, *M. lucifugus*, and *P. subflavus* arrival at spring/summer maternity season diurnal roost sites following migration.
- c. The project on Camp Guernsey is funded by the Wyoming Military Department and the US Fish and Wildlife Service

Northern long-eared bat roost selection and habitat assessment – Master’s student: Renee Lile, Co-PI: Ian Abernethy, WYNDD

- a. The primary protection mechanism put in place by the ESA protections afforded to *M. septentrionalis* are centered on limiting disturbance activities in the vicinity of summer day roost trees and within known hibernacula. The proposed work will occur on public lands in the Black Hills where *M. septentrionalis* is known to occur and where it is suspected that *M. septentrionalis* raise young (inferred by the capture of pregnant and lactating female and juvenile bats). Given the importance of roost structures to the persistence of the species, resource managers from the National Park Service are interested in characterizing summer day roosts and surrounding habitat that may influence roost selection. The project will provide critical information needed for protection of the federally threatened *M. septentrionalis*. Maternity roost location data is necessary for the parks to meet their Section 7 obligations under the Endangered Species Act, and to make sound management decisions regarding forest management and visitor use. Once roost structures have been identified, they may be protected from management actions such as timber harvest, hazard tree removal due to pine beetle infestation or fuel load reduction treatments that may otherwise negatively impact populations in South Dakota. Additionally, characterization of roost structures and local habitat attributes promoting their occupancy may inform forest management practices in the region which will in turn benefit the species.
- b. Objectives:
 - i. Locate and characterize maternity roosts used by female *Myotis septentrionalis*.
 - ii. Characterize habitat within and surrounding roosts to identify important microhabitat and microclimate components that influence the selection of roosts.
 - iii. Conduct a basic inventory of bat species that occur within the study area.
 - iv. Evaluate all bats captured for signs of white-nose syndrome (WNS) infection.
 - v. Collect guano from bats for species and subspecies genetic identification as well as diet analysis.
 - vi. Track bats using radiotelemetry to determine habitat use (primary and alternative roosts as well as foraging grounds) and migration.
- c. The female Northern long-eared bat project is funded by the National Park Service (Mt. Rushmore, Jewel Cave, & Wind Cave) and the Wyoming Chapter of the Wildlife Society (student research funds for R. Lile).