

F22.026: Cave-Roosting Bats on Wupatki National Monument: Acoustic Monitoring Data Analysis

Faculty mentor: Jut Wynne

Overview

The Interns-to-Scholars student will support a graduate research project investigating the ecology of Townsend's big-eared bat (*Corynorhinus townsendii*) on Wupatki National Monument. The goal of the study is to model the influence of biotic and abiotic factors on bat activity in northern Arizona. The results will be combined with those of additional radio telemetry and dietary analysis studies to build a comprehensive understanding of this species' ecology in the region and to predict the potential effects of climate change on their use of pinyon-juniper and grassland habitats. This species is threatened by habitat loss, drought, and white-nose syndrome (WNS), a virulent fungal disease that has devastated eastern bat populations. This work will additionally serve as an ecological baseline of activity before the arrival of WNS to Arizona. Further study will allow us to understand how the disease may affect bat populations in the arid Southwest. The I2S student will be focusing on the acoustic monitoring aspect of the project. They will have the opportunity to join a graduate student in the field to collect acoustic data from multiple acoustic monitoring units in the field. Much of the student's time will be focused on processing acoustic data and manually vetting acoustic calls to identify them to group or species for subsequent analysis and modeling.

What the student will DO and LEARN

The I2S student will be trained in acoustic detector deployment and data collection, as well as acoustic data processing and analysis. They will be trained to use the acoustic analysis software Kaleidoscope Pro to process large numbers of acoustic files and then manually vet the automatic IDs for accuracy and consistency. This process is essential to the accuracy of bat activity modelling and the overall success of the project. Throughout the internship, the student will also gain an understanding of bioacoustics, acoustic study design, bat ecology, and wildlife monitoring. Acoustic monitoring is a common way to monitor bats and is only getting cheaper and more accessible each year. The skills developed during this position can be used for a later research project and will improve the intern's competitiveness in the field of conservation biology. Through this work, the student will be helping to build tools that will be used by federal resource managers to manage the Wupatki National Monument and Coconino National Forest for bats in the light of a 30-year drought and rapidly changing climate. The student is additionally welcome to join the graduate student for any other aspect of the project happening during their internship, potentially including bat mist netting, radio tracking, or fecal DNA metabarcoding. These opportunities are dependent on the status of the project and project funding at the time of the internship, so are not guaranteed.

Additional benefits

Stated above.

Additional qualifications

An interest in wildlife biology, conservation, and the environment, as well as a basic understanding of ecology and wildlife biology. Attention to detail, patience and curiosity towards bat biology and wildlife research. Coursework in ecology would be beneficial.

Time commitment

6 hrs/week for 30 weeks