

CFR/FRWC Undergraduate Research Program Faculty Application

PROJECT TITLE: Investigation of bat roost characteristics, senescence and use on Sam D. Hamilton Noxubee National Wildlife Refuge

UNDERGRADUATE MENTOR: Drs. Scott A. Rush (PI), Mike Colvin and Chris Ayers
Departmental/Unit Affiliation: Wildlife, Fisheries and Aquaculture
Email: scott.rush@msstate.edu

PROJECT ABSTRACT

This project is designed for an undergraduate student to collect and evaluate data on bat roosting ecology at the Sam D. Hamilton Noxubee National Wildlife Refuge (NWR). The student participant will be actively involved in data collection, curating, and analysis. This project is designed to meet 5 objectives we believe are requisite for undergraduate students to be successful post-graduation in a STEM field. The objectives for the undergraduate participant are: 1) acquire field experience, 2) interact with established natural resource professionals, 3) manage and curate data, 4) generate and evaluate hypotheses using data, and 5) communicate research project results to scientific and lay persons.

Objective 1, Field experiences acquired: Student will work with refuge employees and university scientists to learn how to identify bats in roosts, how to track bats tagged with radio-telemetry transmitters, and to identify key characteristics of roost trees that bats use at different times of the year. The student will learn hands-on skills, network with faculty and refuge staff, and further their understanding of the ecology of bats.

Objective 2, Interaction with natural resource professionals: Students will interact with refuge managers, biologists, and university scientists in order to perform research duties. Additionally, project PIs are invested in ensuring successful ongoing research and will therefore interact closely with undergraduate participant.

Objective 3, Manage and curate datasets: Skills to manage and curate data are increasingly important to science fields. This project will use an existing dataset of more than 600 trees that were previously measured for basal cavity and bat use. The student researcher will be exposed to how sampling designs are developed and how tradeoffs of finite sampling resources and the data acquisition can be evaluated. Lastly, the undergraduate participant will be exposed to appropriate storage and curation of this long term dataset, a skill that is in demand in the ecology profession.

Objective 4, Generate and evaluate hypotheses using data: Developing and testing hypotheses is critical to increasing our ability to manage animal populations. The student participant will be exposed to state of the art analytical approaches, from which they can posit hypotheses that can then be evaluated using the data collected. Data will be used to form predictive models of how long roost trees can be expected to be used, probability they will still be standing for future use, and how many trees may be available for use as roosts. This is important information for understanding the current state and potential for adaptive management of important resources for this group of animals.

Anticipated Outcomes/Impacts: This research project will encourage the student participant to pursue lines of inquiry related to the data collected. We anticipate that the results of these inquiries will be published as at least one peer-reviewed paper targeted to ecological and/or wildlife management journals, and communicated at scientific meetings (e.g., Wildlife Society, Shackouls Honors College Undergraduate Research Symposium) as well as to interested local groups (e.g., Friends of the Noxubee NWR).