Permit 2021-006

Response Summary:

Name:
Alissa Coonfield

Department or Organization:
Biology

Email Address:
ajc263@uakron.edu

Are you requesting renewal of a previously approved permit applicaton?
No

Type of activities at The University of Akron Field Station and Bath Nature Preserve
Research

Title of project or class name and course number:
Vibrational

Date/Dates requested:
July 19th - October 31

Number of people in group:
2

I am requesting permission to use a Research Area.
Yes

I am requesting permission to use a Sensitive Area.
No

I am requesting permission to use areas outside of the designated Research or Sensitive Areas.
No

I would like to use the Martin Center for Field Studies and Environmental Education for this prop...
No

Will the activity involve destructive sampling/collecting?
Yes

Which Research Areas?
18 Acres
Beefy's Woods
Garden Pond
Grandview Alley

Round Top
South Woods

Please explain how the material will be collected (including equipment), and an estimate of how m...
Spiders of several species (including Parasteatoda tepidariorum, Argiope trifasciata, and others TBD) will be collected in vials and relocated to the spider lab on campus for further study. We will likely collect no more than 40 spiders of each species.

Provide a brief description of (1) your proposed activities, (2) goals, and (3) impacts of your u...
For this study, we plan to collect native spiders to study their prey-capture behaviors and the vibrational properties of the webs they build.
Many spiders build webs to capture prey and receive information from their surrounding environment. The information spiders receive from their webs comes in the form of vibrations, which can be produced by trapped prey, mates, competitors, predators, or environmental threats. Based on the types of vibrations detected, the spider will determine how to properly respond to each stimulus. Further, different web characteristics can influence how effectively the structure transmits vibrations.

Some of the specific goals of this study are to:
-Understand which pairings of vibrational characteristics (frequency, amplitude, and temporality) elicit specific prey-capture behaviors.
-Learn more about the influence of web architecture, web geometry, and the presence of different silk types on the vibration transmission in spider webs.
-Understand how web decorations (also known as stabilimenta) may influence vibration transmission and predatory behavior in Argiope trifasciata.

After collecting spiders from Bath Nature Preserve, we will house them in the lab and allow them to build webs. Using a pairing of high speed videography and coding, we will measure the efficacy of vibration transmission in different web and silk types. We will also catalogue the behaviors of the spiders in response to different types of vibrations.
This information will help us understand more about spiders, their behavior, and the incredible structures they build. The results of these studies will be presented to the scientific community either via presentation at a conference or publication in a peer-reviewed journal.

By checking this box, I agree to the above terms and state that all of the above information is c...
I agree