Permit 2018-009

Name:
Randy Mitchell

Department or Organization:
Biology, UA

Email Address:
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Web Address where the public can learn more about this proposed activity (optional):
https://blogs.uakron.edu/mitchell/

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:
Pollination Ecology and the Evolution of selfing in Monkeyflower, Mimulus ringens

Date/Dates requested:
June 2018-Oct 2021

Number of people in group:
4

I am requesting permission to use a Research Area.
Yes

I am requesting permission to use a Sensitive Area.
Yes

I am requesting permission to use areas outside of the designated Research or Sensitive Areas.
Yes

I would like to use the Martin Center for Field Studies and Environmental Education for this prop...
Yes

Will the activity involve destructive sampling/collecting?
No

Which Research Areas?

Which Sensitive Areas?
Bath Pond

Garden Bowl
Tamarack Bog / Wetland

Which areas outside of the designated Research or Sensitive Areas?
Public Access areas of Bath Nature Preserve
Steiner's Woods
Panzner Wetlands

Please indicate any preparation or set-up you will need in the Martin Center for Field Studies an...
none

Provide a brief description of (1) your proposed activities, (2) goals, and (3) impacts of your u...
The potential for self-fertilization is a critical part of the plant life cycle that can affect the viability and vigor of plant populations. The rate of selfing is affected by pollinator visitation, plant traits, and other factors, but understanding of this is limited. In particular, there is not now a good explanation for why some plants have evolved to self-pollinate, others to cross-pollinate, and most have evolved to do some of both. I and my collaborators were awarded a research grant from the National Science Foundation to investigate this topic in Square-Stem Monkeyflower (Mimulus ringens). We are here requesting permission to do some of our study in your parks.

Mimulus ringens is a common component of wetlands throughout Eastern North America. This perennial herb, flowers July-September, and is pollinated almost exclusively by native Bumble Bees. We intend to study over a dozen natural Monkeyflower populations across the region, including some on your properties. For this work we will document pollination ecology, seed production, and selfing rate at each site. We will install 4-10 tall stakes (3-6' tall) to establish reference points, and then use pinflags or other markers to temporarily identify ~100 plants during the flowering season. We will tag flowers on 20-30 of these plants with small plastic tags, and when fruits are ripe (a month or so after pollination) collect them to allow us to count seeds and perform genetic analysis to evaluate the rate of self-pollination. We will also observe pollinators, measure flower size and shape on each plant, collect a leaf for genetic evaluation, and evaluate the surrounding vegetation and flowers. We do not plan to collect or kill any pollinators for identification, because we can readily identify to species free-flying Bumble Bees. At the end of the season we will remove our flags and all other materials except some unobtrusive permanent markers to facilitate demographic monitoring in. There should be little to no permanent impact of our research on the population, and we will work diligently to prevent any negative impacts on the park.

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