

Faculty Member Contact Information

Name	Brett Fredericksen, PhD
Contact Info	
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Department	Biological Sciences

1 Funded, 3 Unfunded URCA Assistant(s)

Are you willing to work with students from outside of your discipline? If yes, which other disciplines?

- Yes

How many hours per week will your student(s) be required to work in this position?
(Minimum is 6 hours per week; typical is 9)

- 6-9

Will it be possible for your student(s) to earn course credit?

- Yes, in BIO 492M for senior students or regular course credit through the biology department for student dependent credit hours.

Location of research/creative activities:

- Lab, greenhouse, or field. All local to SIUE and Edwardsville

Brief description of the nature of the research/creative activity?

- My lab focuses on projects related to plant ecology and plant physiology. I answer questions related to plant stress and biodiversity in forest and urban ecosystems. We have two overarching projects that we are recruiting students for at this time. The first project focuses on the invasive shrub Amur honeysuckle and its impacts on forest biodiversity. Honeysuckle is a nasty plant that can produce chemicals that restrict the ability of surrounding native plants to grow resulting in honeysuckle taking over wide areas of forest. Our projects focuses on finding native species best suited to resist honeysuckle and compare honeysuckle's negative effects to other native shrubs. The second project focuses on a tree called pin oak and it's relationship with a gall forming wasp. These wasps cause large growths on the trees that reduce the trees health and aesthetic value.

Pin oaks are commonly planted in urban environments and our collaborative team of researchers would like to figure out what predisposes a pin oak to suffer from these outbreaks of gall-forming wasps. Our study will focus on spatial mapping of infested trees around the Edwardsville area and learning about the biology of the wasp itself.

Brief description of student responsibilities?

- In my lab, students will work across several research settings, including work in the lab, greenhouse, and field. In the lab, students will quantify plant traits like biomass, leaf size and shape, and physiological parameters like photosynthetic rates. In the greenhouse, students will be responsible for plant care, growth measurements, and maintaining a robust experimental design. In the field, students will identify plants and quantify environmental variables such as canopy cover and biodiversity metrics.

URCA Assistant positions are designed to provide students with *research or creative activities* experience. As such, there should be measurable, appropriate outcome goals. What exactly should your student(s) have learned by the end of this experience?

- By the end of the semester, students will have an understanding of the day-to-day operations of a research lab. They will learn how to record data in a systematic and reproducible manner such that other researchers can interpret and add to the data. Students will be able to identify their study species, understand the basics of experimental design, and conduct baseline statistical analysis. All students will present some aspects of their data to their lab or the wider research community. At the student's request, they may begin to pursue independent research projects within the overall study areas of the lab.

Requirements of Students

If the position(s) require students to be available at certain times each week (as opposed to them being able to set their own hours) please indicate all required days and times:

- Applicants should have blocks of time of at least 2-3 hours in their schedule to conduct measurements if working in the field.

If the location of the research/creative activities involves off-campus work, must students provide their own transportation?

- Students do not need to have specific availability but will require the ability to be outdoors in the woods for long periods of time. Access to a car is also a benefit but not required. You can carpool with lab members when needed.

Must students have taken any prerequisite classes? Please list classes and preferred grades:

- Students should have taken or be enrolled in BIO 150/151. An equivalent biology course is acceptable. Experience taking plant taxonomy and/or ecology are preferred but not required.

Other requirements or notes to applicants:

- Applicants should have a keen interest in plants and the environment and strong ability to work independently once trained and as part of a team of fellow undergraduate researchers.