

SUMMER RESEARCH EXPERIENCE FOR UNDERGRADUATES ON SEXUAL SELECTION IN INSECTS (REU)

This REU is funded by the National Science Foundation and provides a 10-week all expenses paid research opportunity for students to engage in evolutionary ecology research with insects at the Smithsonian Tropical Research Institute in Panama.

Students will gain valuable hands-on research experience while meeting, sharing meals with, and talking science with researchers from around the world

10 June 2020 to 19 August 2020

Research topic: Reproductive trade-offs between costly sexually selected weapons and other traits in the broad-headed bug genus *Hyalymenus* Amyot & Serville (Insecta: Hemiptera: Alydidae)



The above image shows the extravagant hind legs of a male in a species of *Hyalymenus*.

In many species, males engage in competitive behaviors with weapons for access to high-quality territories and mates. However, weapons may be costly to develop and maintain and likely compete with other traits for limited resources. Furthermore, when females mate with multiple males, investing resources in weapons may not significantly increase reproductive success. In such cases, males may invest more resources in reproductive tissues, such as testes size, to compete with sperm from other males in the female reproductive tract.

Leaf-footed and broad-headed bugs (Hemiptera: Coreoidea) have become a model in studying trade-offs between weapons and testes. Males in several species use their hind legs as weapons, which they can naturally self-amputate (autotomy) when they are injured or to escape predators or a bad molt. If a male were to lose a weapon, would he be able to reallocate resources towards increased testes growth? This study seeks to answer this question in a species of the genus *Hyalymenus*, which is part of a larger comparative study analyzing trade-offs between weapons and testes across leaf-footed bugs.

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Qualifications & Responsibilities

We are seeking two undergraduate students that are committed, reliable, independent, and team-oriented with a positive attitude and great work ethic to conduct this study. Some previous research experience and coursework in biology are preferred, though no formal experience with insects or insect science is required. All US citizens and permanent residents are welcome to apply.

Student must: 1) be comfortable handling live and dead insects, 2) are able to conduct fieldwork in rainforest under tropical conditions (hot and humid), 3) be extremely detail-oriented, 4) take initiative in learning the study organism and research project, 5) understand what needs to be done and complete tasks with maximal effort, 6) be able to perform frequent computer-based work and fieldwork, 7) exhibit exceptional note-taking and organizational skills, and 8) be independent once trained.

Student will be trained in fieldwork, insect husbandry, rearing, autotomy, imaging, dissections, and measurements. Student will also be required to dedicate part of their weekly research hours to one-hour lab meetings (one per week), go to weekly science seminars at the Smithsonian in Panama City with other students, and present a summary of project findings or primary scientific literature towards the end of the REU.



Research Team

Drs. Christine W. Miller, Michael Forthman, and Ummat Somjee are committed to excellence in the mentoring of undergraduate researchers. We have collectively mentored over 150 undergraduates in the past eleven years. Undergraduate students have authored peer-reviewed publications, presented at local and national meetings, and won local and national awards. The successful applicants will work with the research team throughout the REU. Please visit www.millerlab.net and mforthman.weebly.com for more information on the research team.

Application Deadline is March 15, 2020

Interested applicants should submit a CV or resume, unofficial transcripts, contact information for two references, and a 500-word (or less) statement of interest to Drs. Michael Forthman (mforthman@ufl.edu) **AND** Ummat Somjee (ummat.s@gmail.com).

