

Title: Undergraduate Student Assistantship in Seed Biology

Location: Montana State University, Bozeman, Montana, USA

Compensation: 1-2 undergraduate research credits, co-authorship of research paper

Application deadline: June 12, 2023

The Borokini lab in the Ecology Department at Montana State University seeks two undergraduate students to investigate the effect of various treatments (cold stratification, warm pre-germination, and growth hormone) on germination success of *Ivesia webberi*, a U.S. federally threatened herbaceous plant in the Great Basin Desert.

This study is a remnant of a U.S. Fish and Wildlife Service funded project to increase the empirical knowledge on *Ivesia webberi* to guide conservation efforts. Several studies were conducted to answer the following questions: (a) do viability of *I. webberi* seeds vary along population census size or microsatellite genetic diversity level? (b) what is the rate of viability loss in *I. webberi* seeds over three years storage? (c) can we reliably assess viability of *I. webberi* seeds using non-destructive methods? (d) what treatments enhance dormancy release and facilitate optimal germination of *I. webberi* seeds? (e) what is the temporal threshold for the effects of seed germination treatments in *I. webberi*? Methods, data collection, and analysis related to questions a-c are completed, while the remaining two questions require data analysis on existing data to complete the study. An undergraduate student will explore various regression models to identify the effect of various treatments on *I. webberi* seed germination (question d). The second undergraduate student will use Cox proportional hazards model to predict time-to germination of *I. webberi* seeds under various treatments.

Findings from this experiment will be published in a peer-reviewed journal, with the hopes of including the undergraduate students as co-authors. These findings will benefit management of this range-restricted and threatened species, particularly the post-fire management and restoration of *I. webberi* habitat.

The two undergraduate students are expected to register for 1-2 credits in BIOE 490R or BIOE 492. The position begins on August 28, 2023. This project can also be used as undergraduate thesis, if applicable.

Research in the Borokini lab focuses broadly on spatiotemporal distribution of plant diversity and identifying the eco-evolutionary processes driving biodiversity patterns. An integration of spatial, ecological, and phylogenetic data, gathered through a combination of field observations, herbarium studies, laboratory methods, and long-term comparative experiments, are used to answer relevant questions. More information is available at <https://tbisrael.wixsite.com/website>.

Qualifications: Applicants should be juniors or seniors in Ecology or related departments or academic units in Life Sciences at Montana State University, and should have taken at least one statistics course covering, but not limited to, regression models. Preferred candidates should have experience in quantitative data analyses using R statistical software, strong written and oral communication skills, and desire to work both independently and collaboratively with others.

Contact: To apply, please send an email with the subject " Undergraduate Student Assistantship Application" to: Dr. Israel Borokini (iborokini@berkeley.edu) that contains the following: (1) one-page personal statement describing your academic and research experience, future career plans, and how this position fits with your career plans, (2) curriculum vitae, and (3) unofficial copy of university transcripts. Inquiries about the position are welcome.