

Microbial ecology of tropical rain forests before and after Hurricane Maria across and human land use gradient in Puerto Rico

Supervisors

- Principal Investigator: Krista McGuire, Ph.D., Associate Professor of Biology, Institute of Ecology and Evolution
- Research Associate: Terra Hiebert, Ph.D., Department of Biology, Institute of Ecology and Evolution

Project Description

This project will investigate the composition of beneficial and antagonistic soil microbes before and after hurricane disturbance. In diverse tropical tree communities, the Janzen-Connell hypothesis is one of the major theories evoked to explain coexistence in diverse tropical rain forests, and predicts that species-specific natural enemies modulate commonness and rarity in trees. An underlying assumption of this mechanism is an accumulation of species-specific pathogens that decrease the survival of seeds and seedlings establishing near a parent tree. However, few studies directly test plant-microbial specificity and ignore interactions with mycorrhizal fungi, and compounding natural and human disturbance on these processes. We propose to explicitly test this underlying assumption and subsequent strength of Janzen-Connell effects across a human land use gradient following the aftermath of hurricane Maria using DNA sequencing to look at changes in beneficial versus antagonistic soil microbes.

Potential Benefits to Students

- Gain experience in lab techniques to process soil samples, perform DNA extractions, and PCR amplifications
- Learn about important ecological theories related to tropical forest diversity
- Gain experience with bioinformatics and sequence analysis
- Earn research credit for transcripts and resumes

Student Prerequisites and Commitments

- No previous lab experience necessary
- Expected to commit 6-9 hours per week in the laboratory
- Demonstration of dependability, professionalism, and integrity in lab environment
- Attend weekly lab meetings

Application Procedure

- E-mail Drs. Terra Hiebert (terrah@uoregon.edu) and Krista McGuire (kmcguire@uoregon.edu) with your CV or resume and explain why you would like to be considered for this position
- Set up an in-person interview to discuss research specifics