Jen Grauer
Student Research Conference Application

Ecological Niche Modeling of *Pogonomyrmex* Hybrid Lineages

Abstract:

A fundamental goal of ecology is to understand the relationship between environmental factors and species composition. Analysis of habitat and ecological niche modeling can be utilized to more fully understand the impacts of factors such as climate, rainfall, and topography on distribution of hybrid lineages of the harvester ant species *Pogonomyrmex rugosus* and *Pogonomyrmex barbatus*. Previous research on the harvester ants has led to the discovery that these two species are capable of maintaining hybrid lineages in areas of range overlap in the Southwest United States due to genetic caste determination. My project serves to investigate which environmental variables contribute most highly to lineage range and distribution. Samples from colonies of each lineage and parent species were collected across Arizona, New Mexico, Texas, California, and Mexico, and identities of each specimen were determined through DNA extraction and genetic sequencing. I employed large-scale Geographic Information Systems (GIS) data and modeling software to predict the influence of environmental factors on previously collected locality samples. I am currently in the process of obtaining results through construction of a phylogenetic tree and use of Maximum Entropy (MaxEnt) software. Studying differences in habitat will provide a basis for understanding how hybridization between species affects the ecological niches that each population occupies, and how that influences patterns of persistence and range expansion.