Public Abstract

First Name:Katy

Middle Name:Elizabeth

Last Name:Klymus

Adviser's First Name:Carl

Adviser's Last Name:Gerhardt

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Department:Biological Sciences

Degree:PhD

Title:Phylogenetic and behavioral differentiation in the canyon treefrog, Hyla arenicolor

My research interests lie in understanding the process of speciation. In my dissertation I set out to do this by examining the first step in potential speciation, population differentiation. In my dissertation research I examined both genetic and behavioral differentiation within the wide-ranging canyon treefrog, Hyla arenicolor. I documented variation in male advertisement calls throughout the range, assessed the role of female preference in promoting behavioral reproductive isolation, and inferred evolutionary relationship among populations using molecular genetic markers. I describe biologically significant differences in call properties among the geographically distant Mexican lineages relative to differences found among populations in the USA. Results from female playback tests show that differences in pulse rate, call rate and call duration observed among the Mexican lineages were large enough to cause females from USA populations to discriminate against these calls, suggesting a role for behavioral reproductive isolation through female preference in the continued divergence of these lineages. Using molecular phylogenetic techniques, I found evidence for past hybridization and mtDNA introgression between two H. arenicolor populations and the sister species, H. eximia. Overall, my results provide insight into the complex evolutionary history of this group, have implications for the study of character evolution in this group, and emphasize the need for phylogeographic studies to expand sampling to include closely related, co-existing species.