

PHYLOGENETIC AND BEHAVIORAL DIFFERENTIATION IN THE  
CANYON TREEFROG, *HYLA ARENICOLOR*

Katy E. Klymus  
H. Carl Gerhardt, Dissertation Supervisor

ABSTRACT

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 intraspecific phylogenies using both sequence data and AFLP markers. I describe biologically significant differences in call properties among the geographically distant Mexican lineages relative to differences found among the USA populations. 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 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, syntopic species.