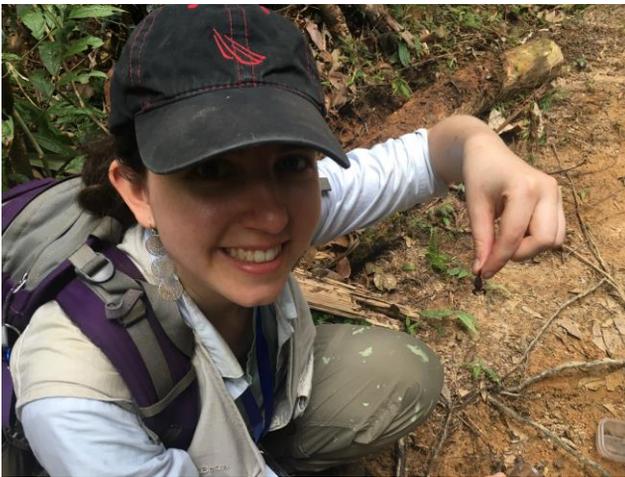


SEMINAR

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Hosted by A/P Li Daiqin

# Systematics and Biogeography of Southeast Asian Scorpions



**By Stephanie F. Loria**

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*About Speaker: Stephanie Loria is a postdoctoral researcher in the Scorpion Systematics Research Group at the American Museum of Natural History (AMNH). In 2011, she joined the Richard Gilder Graduate School and Scorpion Systematics Research Group at the AMNH to pursue her Ph.D. in Comparative Biology. After her Ph.D., she has taught undergraduates at the State University of New York College at Old Westbury and high school students in the After School Program at the AMNH. She also served as a postdoctoral research scientist in the Arachnology Lab at the California Academy of Sciences studying scorpion neuroanatomy using MicroCT scans. Presently, she is continuing her work on Southeast Asian scorpions and has recently begun projects on the systematics and biogeography of Southeast Asian millipedes.*

The high species diversity and high proportion of endemic species in Southeast Asia can best be explained by this region's geological history. Most biogeographical studies of Southeast Asian taxa have focused largely on vertebrates, however, a better tactic would be to study organisms that are relatively older and have poorer dispersal abilities - one such organism is the scorpion. The scorpion fauna of Southeast Asia and nearby Australasia and South Asia includes ~300 species in more than 30 genera across seven families. Despite this diversity, most research on Southeast Asian scorpions focuses on alpha-taxonomy, and there is no understanding of how scorpions diversified in this region. In this talk, I present the first phylogeny of the monophyletic, basal scorpion family Chaerilidae, which presently includes a single genus with 42 morphologically diverse species, restricted to the tropical and temperate rainforests of South and Southeast Asia, and often narrowly endemic to one or a few localities. This phylogeny is based on a combined dataset including both mitochondrial and nuclear loci, and ~140 morphological characters. Results of this analysis provide a hypothesis for the diversification of Chaerilidae and have implications for the systematics of the family. To understand how chaerilid diversification compares with the diversification of other Southeast Asian scorpion taxa, a biogeographical analysis of five other Southeast Asian scorpion clades is undertaken using DNA from > 400 specimens. Results of this biogeographical analysis identify congruent diversification patterns among scorpion clades that coincide with the geological literature; these findings potentially provide a reference point for future evolutionary studies on scorpions in Southeast Asia.