

Biology Seminar

By: Sharlene Santana

University of Washington, Seattle | Associate Professor, Department of Biology

<http://faculty.washington.edu/ssantana/wordpress/>

From molecules to clades: Integrative studies of bat diversification



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Zoom Seminar:

<https://washington.zoom.us/j/94183485628?pwd=eS96WVE3YWt1aFU0U3BXR20zb3ZXUT09>

My research program addresses two fundamental questions in evolutionary biology: how do the observable characteristics of organisms (e.g., morphology, behavior) evolve and adapt in response to ecological pressures? And, how does this evolutionary process facilitate or constrain the diversification of lineages? I largely focus on bats to answer these questions because, with over 1,400 ecologically and morphologically diverse species, they provide a natural experiment to investigate

the sources of diversification. During my tenure at UW, my lab has built a research program that examines the morphology, behavior, performance, and ecology (i.e., ecomorphology) of bats within an evolutionary context. This highly integrative approach has allowed us to identify ecomorphological mechanisms that allowed bats, and groups within bats, to diversify into many species. Concurrently, we have extended this framework to explore the importance of bat species –particularly those that consume fruit– as agents of evolutionary change on plant traits, and as critical links that tie together ecological networks.

Our work combines approaches across a wide variety of disciplines and settings. In the lab, we have refined imaging procedures to quantify hard and soft tissue morphology, created computational models to simulate function and predict performance, developed and applied molecular assays to quantify ecological traits, and advanced statistical tools for evolutionary analyses. In the field, we have developed observational and experimental approaches to document the behavior and performance of free-ranging bats, and collected natural history data and biological samples. While doing so, my lab has built research infrastructure for UW and the scientific community in the form of equipment, digital resources, specimens, and research pipelines, along with a foundation for our own future work. In this talk, I will summarize recent significant contributions my lab has made in two of our major areas of study, the ecomorphological diversification of bats, and the coevolution between fruit bats and plant chemistry.

