



School of Natural Resources
and the Environment

Seminar Series: Fall 2023

ADAPTATION AND ACCLIMATION TO CLIMATE CHANGE IN RIPARIAN FORESTS OF THE SOUTHWEST

SPEAKER: Rebecca Best, Northern Arizona University

DATE: Wednesday, November 15th

TIME: 3:00-4:00 pm

LOCATION: ENR2 S210 & Zoom

ABSTRACT:

Climate change is impacting the performance and phenotypic expression of many species, as well as the strength of species interactions. By focusing on foundation species with large effects on multiple types of associated communities, we may be able to disentangle direct and indirect links between changing climate, organismal phenotypes, and ecosystem functioning. To determine how predictable future riparian forests might be we asked (1) how evolutionary history and current climate can together predict tree traits, and (2) how those tree traits translate to impacts on communities. We used a set of three common gardens across Arizona, planted with the same populations of Fremont cottonwood trees, as well as a simulated herbivory experiment within each garden.

First, we found interactive effects of tree population and growing conditions on many tree traits, and that the predictability of a population's environmental response varied among traits. Second, ecological effects of trait variation also differed across communities, from endophytes to foliar insects to aquatic detritivores. These results show the importance but also the challenges of translating genetic and environmental effects on organisms into predictions for future ecosystems. With continued synthesis of these results, we aim to assist managers in forecasting higher level ecological consequences of key restoration decisions.



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