

Predicting Sky Island Forest Vulnerability to Climate Change

October 13, 2014



With the support of the South Central Climate Science Center, Dr. Dylan Schwilk (<http://schwilk.org/>), Associate Professor at Texas Tech University, and his research team are working to produce a generalizable framework for predicting tree species susceptibility to drought, climate change and fire in the unique montane forests and woodlands of west Texas. The Sky Island Forests of the southwestern United States comprise one of the most diverse temperate

forest ecosystems in the world. These mountain ranges are key animal habitats and important stepping-stones for migration. Drought has led to significant tree death throughout the southwest and climate predictions are that this region will face a hotter, more arid climate in the future.

Although simple models of plant response to warming climates predict vegetation moving to cooler and wetter locations (in mountainous locations, “marching” upslope); the mechanisms explaining species-specific responses to changes in temperature and water availability are most likely much more complex. Dr. Schwilk’s work aims both to identify susceptible species and to inform mitigation strategies, especially in fire management.

Thus far, Dr. Schwilk’s team has learned that fire response strategies are linked to desiccation tolerance in Sky Island Oaks (Schwilk et al 2013), that trees re-sprouting after fire can alter their water conducting tissue appropriately to the new supply and demand constraints, and that striking patterns of cold air drainage may complicate predictions of upslope movement under climate warming.

Guadalupe Mountains photo from the summer of 2014 field season courtesy of Dr. Schwilk.

To read the full article, click [here](#).