

SUCCESS OF ACTIVE REVEGETATION AFTER *TAMARIX* SPP. REMOVAL IN SOUTHWESTERN RIPARIAN ECOSYSTEMS: A QUANTITATIVE ASSESSMENT OF PAST RESTORATION PROJECTS

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Abstract

Infestation by the non-native tree *Tamarix* spp. has made habitat restoration projects necessary to maintain the ecological integrity of many riparian communities in the Southwest. These restoration projects may include *Tamarix* removal, manipulation of hydrographs, and active revegetation of native species. There is no single strategy for achieving success in these projects; rather success will vary by site based on specific site characteristics and methods used. Revegetation success, plant species diversity, and vegetative cover were evaluated at 28 sites in New Mexico, Arizona, and Nevada where active revegetation was completed after *Tamarix* removal. These data were incorporated into regression tree models with predictor variables that included number of years since removal (1-18 years) and multiple management, climate, soils, and hydrological variables to determine success of *Tamarix* control, revegetation success, and plant community responses. Our results suggest that there are easily measurable site characteristics that lead to greater native cover and richness, planting success, and *Tamarix* control. Lower soil salinity and pH and coarser soil texture as well as proximity to permanent water, sufficient precipitation, and good drainage all favored native species. Additionally, success increased with time since *Tamarix* removal, both increasing native cover and richness and decreasing *Tamarix* cover. Overall, those site characteristics that promoted native species success were the same as those that contributed to a lower cover of *Tamarix*. These quantitative models are intended to assist researchers and land managers to design more effective riparian restoration efforts in this critical arid lands ecosystem.

Key words: revegetation, riparian restoration, *Tamarix*, invasion ecology, arid ecosystems, regression tree analysis