

Native and Invasive Competition for Water Resources at an Intermittent Reach of the San Pedro River, Arizona

Roberta McGuire
USDA-ARS-Southwest Watershed Research Center

ABSTRACT

Transpiration studies on salt cedar (*Tamarix ramosissima*) indicate its water use is considerably greater than native trees; however these results have varied on temporal and spatial scales making it difficult to draw firm conclusions especially in co-occurring communities. We measured whole plant transpiration in co-occurring communities of native cottonwood (*Populus fremontii*) and Arizona ash (*Fraxinus velutina*) trees and invasive salt cedar (*Tamarix ramosissima*) at an intermittent reach of the San Pedro River in southeastern Arizona to better understand their competition for water and plant physiological responses in a stressed environment. Transpiration response to declining groundwater levels and climatic variables were monitored using the heat balance sap flow technique during the dry hot pre-monsoon season. Riparian restoration efforts aimed at "water salvage" have focused on salt cedar removal to encourage return of native riparian forests. There is need to define environments and conditions in which *Tamarix* removal is unnecessary as its water use may not be significant.