**Riparian Summit 2017**

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We are requesting both a speaking slot (for Greco) and a poster session (for McConnell)

Addresses topics of interest: 1, 2, 4, and 6, but mainly 4 (Tools and methods to advance riparian management)

**ABSTRACT**

Title: Floodplain and riparian vegetation analysis of lower Putah Creek to inform ecological restoration, design and conservation using a height-above-river spatial analysis technique

A height-above-river (HAR) analysis was performed on approximately 50 km (31 mi) of lower Putah Creek in the Central Valley, California, using a high-resolution LiDAR dataset from 2005. HAR is a topographic analysis tool that measures the area of floodplain at various elevations above summer base flow (i.e., the relative elevation to the nearest average low-flow channel). The continuous geospatial raster data were classified into 11 elevation classes. Results from the HAR analysis show distinct inset floodplain patterns in the lowest 7 classes within the incised channel. Many clearly identifiable areas in the low-flow channel that are lacking floodplains in the three lowest elevation class are likely former in-channel gravel mining areas in need of floodplain restoration (>10 sites). Using the HAR elevation surface, a riparian vegetation distribution analysis was also conducted. From four publicly accessible sites below the Putah Creek diversion dam near the city of Winters, we collected the geographic coordinates of various species of woody riparian vegetation species using an off-set DGPS unit. Preliminary example results from this analysis show that elderberry has a mean HAR distribution of 27.3 ft (SD = 9.9; min = 0.9, max = 47.8; n = 437) indicating it is mainly a mid- to upper terrace species. For cottonwood we examined large old trees (>24 inches DBH) and smaller young trees (<24 inches DBH) and found a mean HAR distribution of 15.0 ft (SD = 6.0; min = 7.0, max = 25.1; n = 34) and 11.7 (SD = 5.8; min = 0, max = 21.3; n = 22), respectfully. These differences in cottonwood distribution are likely due to the changed flow regime from the construction of Monticello Dam in the 1950s. The floodplain vegetation distribution data can be used to create planting plans for restored floodplains. Management implications will be discussed.