

### UA Sense of Place Trip #3: Desert Washes and Urban Flooding

Trip #3 explores desert washes and how humans live next to them. Hydrological measurements are made along Rillito Creek, a major tributary to the Santa Cruz River. The amount of water that the Rillito can carry, i.e., maximum instantaneous discharge, is calculated from channel gradient, flow width and depth, and hydraulic roughness using a simple open-channel hydraulic equation like the Manning formula (Chow, 1959; Barnes, 1967). In addition to improving quantitative skills, “back-of-the-envelope” calculations reveal patterns and interactions between elements of the landscape (Manduca et al., 2008). Ultimately, flooding is viewed as neither bad nor good, but rather as a natural process that does the job of moving water and sediment.

The Rillito also offers a chance to practice dendrochronology, the study of tree rings (Fritts, 1976). Cottonwood (*Populus* sp.) grows in the dry wash bed itself, but only at the mercy of flooding. An increment borer is brought along for students to try nondestructive sampling (Grissino-Mayer, 2003). Ring growth of trees growing in washes can indicate past flooding, thereby establishing frequency and discharge values (McCord, 1996). Realizing how easy it can be to collect data in the field is empowering.

Prehistoric farming is addressed. Fort Lowell Park is the site of a Hohokam community located along the edge of the Rillito and its tributaries (Gregonis and Reinhard, 1979). The importance of flooding and deposition of nutrient-rich silt for sustainable agriculture is evident. This theme is repeated at Catalina State Park, where another Hohokam village was located near seasonally flooding watercourses (Swartz and Doelle, 1996). These Hohokam sites were located above floodplains, so flooding was restricted to agricultural fields and away from residences, showing how flood hazard is influenced by where people place themselves on the landscape.

Fort Lowell Park also has a grove of pecan trees. Southern Arizona is home to large tracts of pecans, making the region important for pecan production. However, growing pecans in the desert poses a dilemma: How to reconcile water use of thirsty, broadleaf trees in this arid ecoregion? Catalina State Park also has trees, native mesquite (*Prosopis* sp.) in this case. Mesquite is one of many legume species of the Sonoran Desert (Daniels and Meixner, 1999) and is truly a magnificent species (Rogers, 2000).

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