Tayler Rocha

Successional Sequence of Water Quality and Macroinvertebrates in a Playa Wetland System

The goal of this project is to describe the lentic succession of a playa basin after a flood event, analyze its hydrology, and compare it to existing mature wetlands. The experimental basin lies halfway between the San Luis Lakes and Blanca Wetlands complexes. Water quality and macroinvertebrate samples were taken on 8/31 and 9/14/12 from both experimental and control sites, and analyzed at the Bureau of Reclamation water quality lab. Basin perimeters were mapped on 8/31, 9/08, and 9/14/12 using a Trimble Geoexplorer 2004 and ArcGIS software. It was found that most water quality parameters increased as time and distance from the inlet pipe increased, and the semi-permanent wetland control (C2) more closely resembled the experimental basin then did the playa control (C1). Macroinvertebrate abundance increased through time, and the greatest diversity was sampled near areas with ancestral playa pans as opposed to areas receiving water for the first time in decades. Overall, biomass was greater in the upper basin but macroinvertebrates in lower basin were larger. Total biomass estimates for the combined basins would yield 1015.5 kg of insect forage. It was also found that of the 189996.2 m3 of delivered water, only 38.7% of it remained on the ground during active flooding, yielding a total basin volume of ~52000 m3. For land managers making decisions about wetland management, water table levels, evaporation rates, timing, and presence of ancestral pans should be considered when planning water application for the benefit of migratory and nesting waterfowl.