Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Remove Final Levee Segment to Complete Restoration of Wetland-Riparian Habitat along Lower Glorieta Creek, Pecos National Historical Park

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 5/1/2013 – 12/31/2015
Funding Amount: $141,995 [FY14: $10,000; FY13: $131,995]

Investigators and Agency Representative:
NPS Contact: Joel Wagner, National Park Service, Water Resources Division, P.O. Box 25287, Denver, CO 80225, (303) 969-2955, joel_wagner@nps.gov

Investigator: David Cooper, Department of Forest, Rangeland and Watershed Stewardship, Colorado State University, Fort Collins, CO 80523, Phone: 303-499-6441; dcooper@rm.incc.net

Project Abstract: Pecos National Historical Park (PECO) is responsible for managing riparian and wetland habitats along lower Glorieta Creek, a tributary of the Pecos Wild and Scenic River. Prior to becoming part of the park, the lower creek's floodplain and terraces were mined for sand and gravel. Once mining ended in the mid-1980s, former landowners bulldozed the remaining material into levees and reservoirs for livestock watering. In the late 1990s, PECO and WRD staff determined that these remnant structures were a significant natural resource threat. During floods, fish would be swept from Glorieta Creek into the reservoirs and be trapped and left to die as the reservoirs dried down. Flood flows also threatened to erode the unmaintained and deteriorating levees, posing a constant risk of massive sediment deposition in Glorieta Creek and the Pecos Wild and Scenic River (confluence is one-half mile downstream, within PECO).

In 1998-1999, WRD staff and collaborators from Colorado State University (CSU) developed a restoration plan for the site that would create a more stable, functional riparian-wetland ecosystem. The restoration work performed during 1999-2000, involved extensive levee removal, site re-grading and planting of native willows, cottonwoods, sedges and rushes to create native riparian-wetland habitat (Figure 1).

Although the majority of the levees were removed in 1999, portions of the upper levee along Glorieta Creek were left in place to protect the newly excavated and planted site from being eroded by floods until soil-stabilizing vegetation could take hold (Figures 1 and 2). During a site assessment in 2007, the WRD-CSU restoration team determined that sufficient plant establishment had occurred to allow the removal of the remaining levee separating Glorieta Creek from the adjacent, restored floodplain. This would provide an opportunity to fully restore natural channel-floodplain processes and functions. It would also eliminate the ongoing threat of levee erosion during floods, which could result in massive sediment deposition into the restored wetland-riparian area, Glorieta Creek, and the Pecos Wild and Scenic River immediately downstream.

Using funding from the NPS 20% Recreation Fee Program, CSU cooperators worked with WRD staff in 2009-2011 to complete design drawings, description of materials needed and cost estimates for this final restoration phase.

Project steps for the proposed final restoration project include:

1. Complete the levee removal at the lower Glorieta Creek site (Phase 1).
2. Re-grade the levee footprint to elevations suitable for the establishment of wetland-riparian vegetation (Phase 1).
3. Perform seeding and erosion control for the disposal area and access road (Phase 1).
4. Grow out and plant native wetland-riparian plants in the footprint of the former levee (Phase 2).

The project is "shovel-ready" in that environmental compliance is complete and the CSU cooperators have already designed the final phase of the site project. CSU will supervise and monitor the final restoration (Phase 1) and revegetation (Phase 2, if funded), with substantial involvement by NPS staff.

Outcomes with Completion Dates: December 2015

Keywords: restoration, wetland ecology, hydrology, Pecos National Historical Park (PECO), Colorado State University