

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Evaluating River Morphologic Changes for Restoration Planning, Design and Monitoring using Airborne LiDAR, Upper Colorado River, Rocky Mountain National Park

Discipline: Natural
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: 6/1/2012 - 6/30/2014
Funding Amount: \$55,410

Investigators and Agency Representative:

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Project Abstract: High flows during summer 2011 along the Upper Colorado River in Rocky Mountain National Park (RMNP) mobilized and transported substantial quantities of 2003 debris flow material within the impacted zones. Channel changes including widening, avulsions, incision, and bar deposition occurred along Lulu Creek and the Colorado River. Existing maps based on 2004 laser scanning Light Detection and Ranging (LiDAR) are no longer accurate. The proposed research will acquire new LiDAR to generate accurate base maps for restoration purposes, and quantify channel morphologic changes within the system for improved understanding of the spatial and temporal variability in sediment transport and deposition. Acquiring new LiDAR that reflects the topography following high discharges in 2011 is critical for continued restoration planning, for improved quantification of sediment transfer and redistribution along Lulu Creek and the Colorado River, for estimates of sediment removal by potential restoration contractors, and for post-restoration monitoring baseline topography. One Master's student beginning in fall 2012 will conduct the channel morphologic analysis under my supervision.

Outcomes with Completion Dates:

1. September 30, 2012-Ground control points for the LiDAR resurvey will be emplaced.
2. October 31, 2012-LiDAR flown.
3. May 2013 Completion of LiDAR Analysis
4. Draft final project report November 30, 2013
5. Final project report December 31, 2013

Keywords: Rocky Mountain National Park, Colorado State University, Upper Colorado River, mapping, Light Detection and Ranging (LiDAR), channel morphology, restoration, planning and design