Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Quantifying riparian canopy structure and developing a baseline for monitoring and restoration using terrestrial LIDAR surveys

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Student Participation: Yes
Effective Dates: 4/1/2016 to 6/30/2017
Funding Amount: $12,970

Investigators and Agency Representative:
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Project Abstract: 1. Develop a probabilistic sampling framework for estimating riparian canopy attributes. The approach will produce a statistically valid framework for measuring trends in canopy height, volume, and density for key areas of management concern over time. 2. Use this framework to sample the three-dimensional structure of riparian communities using terrestrial laser scanning. The sampling efficiency, quantity, and quality of canopy measurements from TLS far exceeds that possible through manual measurements. The resulting data will provide reliable and repeatable estimates of canopy structure useful for monitoring and for defining structural references for restoration or beaver habitat suitability assessment. 3. Incorporate complementary data to develop new ways of efficiently estimating key ecological attributes. Data from existing research and monitoring locations will be analyzed with TLS data to develop efficient and accurate ways of estimating key ecosystem attributes useful for habitat monitoring and assessment. In addition, we will use TLS to calibrate and test the efficacy of software used to create 3D point clouds from standard photographs, which is a promising but largely untested alternative to TLS for 3D imaging.

The scientific community external to NPS will gain new natural resource knowledge through this research project.

Keywords: Riparian canopy structure, LIDAR, Rocky Mountain National Park, Colorado State University