

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Fire History of Great Sand Dunes National Park and Preserve

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: July 1, 2011 - July 31, 2014
Funding Amount: \$90, 500

Investigators and Agency Representative:

NPS Contact: Nathan Williamson, Fire Ecologist, Rocky Mountain National Park, 1000 Highway 36, Estes Park, CO, 80517; Phone: 970-586-1434, Fax: 970-586-1318; nathan_williamson@nps.gov

Investigator: Jason Sibold, Department of Anthropology, Colorado State University, Fort Collins, CO 90523; 970/491-4801; Jason.sibold@colostate.edu

Project Abstract: Fire history will be reconstructed from lower to upper treeline in the Medano Creek drainage of Great Sand Dunes National Park and Preserve (GRSA). Utilizing the existing GRSA vegetation map, forest patch boundaries will be investigated following the assumption that differences in forest patch attributes correspond to differences in fire history. Of particular interest to GRSA land managers is the fire history of the grasslands/shrublands east of the forested Sangre de Cristo Mountains. The ecotonal forests of the lower slopes of the Sangre de Cristo Mountains will be sampled to provide an indication of fire frequency of the adjacent non-forested areas.

Within forest patches, tree core and fire scar samples will be collected to date both stand-replacing and surface fire events. Scarred trees will be sampled non-destructively (partial cross-sections will be removed with a handsaw. All samples will be processed according to standard dendrochronological techniques. These data will be used to develop a fire history GIS layer which in turn will be used to compute fire regime statistics for individual vegetation types within GRSA.

Outcomes with Completion Dates: Winter/Spring 2013/14: Complete final analysis and report for the NPS.

1. A GIS layer of fire history for the areas sampled.
2. A publication in a peer-reviewed journal that presents the fire history and specific fire regime descriptors including fire return intervals, fire rotation, fire size, and temporal changes in the fire regime that are associated with and potentially the result of changes in land use.
3. Presentations to GRSA land managers (initial project description, mid-project update, and final presentations), the scientific community, and the general public that describe the fire history of GRSA, impacts of human land use on altering natural patterns of fire, and potential need for ecosystem restoration.
4. Final report to the park, IMR fire program and RM CESU.

Keywords: fire history, Medano Creek, Great Sand Dunes National Park and Preserve, Colorado State University