

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Regeneration Status and Dynamics of Rare Ponderosa Pine (*Pinus ponderosa*) Stands in Western Rocky Mountain National Park

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University
Effective Dates: July 15, 2010 – October 31, 2011
Funding Amount: \$20,033

Investigators and Agency Representative:

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

Project Abstract: The extensive mortality in lodgepole pine (*Pinus contorta*) forests resulting from the recent mountain pine beetle (MPB; *Dendroctonus ponderosae*) outbreak in northern Colorado is striking and unprecedented; however, ecosystem restoration action is likely not required because of the significant number of surviving trees even in the most severely affected stands. In contrast, rare stands of ponderosa pine (*Pinus ponderosa*) in the Colorado River headwaters west of the Continental Divide in the Northern Colorado Front Range are at risk of local extinction from the outbreak. Only two documented ponderosa stands exist in the Colorado River headwaters region, and based on a brief survey of one stand in Rocky Mountain National Park (ROMO) in 2009 it appears as though no ponderosa pine survived the current MPB outbreak (Sibold unpublished data). The combination of limited to nonexistent ponderosa seed sources in the Colorado River headwaters and the inability of ponderosa seeds to disperse long distances (e.g. across the Front Range) suggest that it is doubtful ponderosa pine will recover in the area without management intervention. Because the MPB outbreak and resulting apparent local extinction of ponderosa pine are likely the result of interactions between climate change and land-use history (Bentz et al., 2009), this event is an early example of projected climate change impacts on forest ecosystems (Overpeck et al. 1990). As such it provides an ideal case study for ROMO to explore management responses to address climate change impacts on forest ecosystems (Millar et al. 2007; Baron et al. 2009). The proposed research will focus on ponderosa pine in the North Inlet Valley of ROMO with the goals of documenting the current status and identifying local-scale ponderosa pine regeneration dynamics. Study results will provide information to address a third goal of exploring potential ecosystem management responses to climate change driven ecosystem change.

Outcomes with Completion Dates: June 30, 2011

Products:

1. One page quarterly reports will be sent to the NPS key official.
2. Two hard copies, and one electronic copy will be delivered to the key official at the conclusion of the project.
3. The Principal Investigator or graduate student associated with the project will present two talks to ROMO/NPS staff on dates to be identified.

Keywords: Ponderosa Pine (*Pinus Ponderosa*), mountain pine beetle, mortality, regeneration, Western Rocky Mountain National Park, Colorado State University