

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Inventory of Forest Structure and Composition and the Development Site-Specific Prescriptions for Two Mechanical Treatment Units in Whiskeytown NRA

**Discipline:** Natural  
**Type of Project:** Technical Assistance  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** University of Montana  
**Effective Dates:** June 1, 2009 - December 31, 2012  
**Funding Amount:** \$28,380 (FY09: 25,000; FY10: 2,500; FY11: \$1,880)

**Investigators and Agency Representative:**

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**Project Abstract:** Whiskeytown National Recreation Area's General Management Plan states that the driving goal for restoration is to have the physical and biological systems approximate early 19<sup>th</sup>-century conditions and processes. Yet, the historic structure and composition of Whiskeytown's landscape has been complicated by an extensive history of anthropogenic influences, including mining, logging and fire suppression. In areas, these factors have collectively or independently resulted in an unnatural accumulation of biomass and ladder fuels, species composition shifts, and an overall change in forest structure and processes. In 2006, a project sponsored by the Northwest Forest Plan (Leonzo and Keyes 2007) provided indispensable data on the range of forest conditions throughout the park and determined that encroachment has occurred extensively throughout the park's forested areas. The impacts seem to be most acute in the existing stands of old-growth pine forests, which are imperiled not only due to competition-induced stress and stand-replacing crown fire, but they are also vulnerable to bark beetle outbreak. The risk of losing these old-growth stands to a stand-replacing fire, or even vigor decline, consequently lends urgency to the consideration of restoration treatments to remediate understory competition and fuel loading. However, current restoration techniques are powerful tools of disturbance and implementing projects without basic information on forest structure and composition can make the development of restoration prescriptions challenging. The goal of this project is to survey the park's forests for potential mechanical treatment sites, develop prescriptions for restoration, and to collect the appropriate data for a timber sale. Specifically, the University of Montana will: 1) work with park staff to delineate treatment units; 2) conduct a rapid quantitative inventory of forest structure and composition of potential mechanical treatments sites; 3) evaluate current forest health based on the degree and extent the stands have deviated from the historic conditions; and, 4) develop prescriptions for silvicultural restoration. Data from this project will be used for the implementation of actual on-the-ground restoration treatments, which is one the primary goals of Whiskeytown's revised Fire Management Plan (2004).

**Outcomes with Completion Dates:** Due Date for Final Report/Products: May 31, 2012. GIS layers depicting polygons (in UTM Nad 27) of potential mechanical treatment units; Digital photos of treatment units and sample sites. A final report that provides the following: 1.) Description of the current stand condition of mechanical treatment units, 2.) Description of the proposed silvicultural restoration strategy for each treatment unit, and 3.) Raw data of the distribution of treatment removals by size and species on a per-acre basis, as measured by number of stems (trees per acre), total cubic volume (ft<sup>3</sup>/acre), and board foot volume (bdft/acre).

**Keywords:** Inventory, forest structure, forest composition, silvicultural restoration, Whiskeytown NRA, University of Montana