

Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: A Landscape Approach to Aspen Restoration: Understanding the Role of Biophysical Setting in Aspen Community Dynamics
Type of Project: Research
Funding Agency: National Park Service, Yellowstone National Park
Effective Dates: June 1, 2001 - June 1, 2002
Funding Amount: \$ 10,000
Investigators and Agency Representative: INVESTIGATOR: Andrew Hansen, Montana State University, 406-994-6046 PARK CONTACT: Roy Renkin, 307-344-2161, Roy Renkin@nps.gov
Project Abstract: Aspen stands are declining throughout the western United States. Fire suppression and competition with conifers, high levels of ungulate herbivory, and climatic variability have all been implicated in the decline of aspen. The role of biophysical factors such as temperature, soil moisture, and soil nutrients in controlling aspen performance is not well understood. This study will address three hypotheses: (1) Growth rates and productivity of aspen stands vary relative to biophysical setting (2) The aerial distribution of aspen varies as a function of biophysical setting (3) Rates of aspen loss in the landscape differ as a function of biophysical setting. The study area will be in southwest Montana and northeast Wyoming including areas of Yellowstone National Park, Gallatin National Forest, Helena National Forest, Beaverhead-Deerlodge National Forest and the Bridger-Teton National Forest. Field sampling during the summer of 2001 will focus on areas of Yellowstone National Park and the Gallatin National Forest. During the summer of 2002, field sampling will be conducted in suitable sites in the other national forests. The aerial distribution of aspen in Gallatin National Forest and Yellowstone National Park will be plotted relative to elevation, aspect, and soil parent material in a GIS. Aspen stands identified from these maps will be stratified by elevation, aspect, and soil parent material to identify potential study sites. These potential study sites will then be cross-referenced by aerial photographs to confirm the presence of aspen. Once sites are cross-referenced, field sampling sites will be randomly chosen within each stratum.
Outcomes with completion dates: This project will result in: a completed master's thesis on the environmental controls on aspen distribution and performance, a manuscript will be submitted to a scientific journal for publication, recommendations for the management and restoration of aspen stands within the study area, a GIS-based model that may be used by managers as a tool for aspen and wildlife habitat management decisions
Keywords: Yellowstone National Park, aspen, restoration, aspen biophysical setting, aspen community dynamics
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