

## **Project Summary**

### **Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title:** Fire and Vegetation History in Grand Teton National Park

**Discipline:** Natural

**Type of Project:** Research

**Funding Agency:** National Park Service

**Other Partners/Cooperators:** Montana State University

**Effective Dates:** 9/1/2005 - 12/30/2007

**Funding Amount:** \$10,000.00

**Investigators and Agency Representative:**

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**Project Abstract:**

Fire is a significant natural disturbance in nearly every terrestrial ecosystem, and it is widely recognized as an important part of forests in the western United States. The occurrence of large and severe fires has raised questions about the nature of prehistoric fire regimes prior to extensive land-use activities. Charcoal records are useful to study the fire-history of an area because they span a long period of time and are associated with pollen records that provide information on the vegetation history of an area. Most vegetation and fire history investigations have been conducted in middle- and high-elevation forests because that is where suitable lakes are located. By contrast, few lakes are available to reconstruct the long-term fire and vegetation history at low elevations. Low-elevation forests in the western U.S. are especially sensitive to drought and land-use activities at present, yet little is known about the relation between fire, vegetation and climate in maintaining these forests or the role of humans in altering fire regimes in the past and present.

Montana State University investigators will work with Grand Teton NP staff to study the fire, vegetation and climate history of the last 2000 years in low-elevation forest and steppe within Jackson Hole in Grand Teton National Park based on an analysis of charcoal, pollen, and plant macrofossil records from four lakes. Our investigation will add to existing information on past fire, vegetation, and climatic change in the region, and allow us to compare the environmental history of Jackson Hole with that of other areas within the Greater Yellowstone area. Our focus is on the environmental changes of the last 2000 years, which is a critical period for understanding the current landscape of Grand Teton National Park. The records of fire and vegetation history obtained in this study will provide information on the ecological response of lower forest and steppe communities in the Park to past climate changes occurring on decadal to centennial timescales. The project will also provide new information on the influence of Native Americans and Euro-Americans activity as well as Park management policies on low-elevation plant communities.

**Outcomes with Completion Dates:**

This research will be the focus of Jacobs' masters thesis at Montana State University, and lay the groundwork for her doctoral research. The results will be published in scientific, peer-reviewed journals and in popular scientific magazines. We will present our results in conferences and workshops aimed at informing Park scientists and resource managers. The data generated in this study will be made available to the Park Service in annual reports and published articles, and submitted to the NOAA-NCDC World Data Center for Paleoclimatology, a public database.

**Keywords:** fire and vegetation history, lake sediments, climate history, Grand Teton National Park, Montana State University

**For Administrative Use Only:**

Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: