



COOPERATIVE ECOSYSTEM STUDIES UNITS  
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## Fire on the Great Plains: Documenting Fire History in National Parks, Monuments and Historic Sites

Fire has long played an important role on the vast, open Great Plains. In protected areas, resource managers need to understand the history of fire in order to make decisions to keep the grasslands healthy and thriving. The purpose of this CESU study was to create a chronology of fires in national park units in the Great Plains through observations of fire scars on trees.



■ **Fire is a part of the Great Plains ecosystem.** George Catlin depicted the burning prairie in 1832 in a painting titled *Prairie Bluffs Burning*. (Smithsonian American Art Museum)

Fires are an integral part of the land, influencing species diversity, ecosystem services such as nutrient cycles and decomposition, and the humans that inhabit and protect these places. Land managers need to understand fire regimes to successfully manage public lands.

To identify the range of historic fires across the Great Plains, the U.S. Geological Survey and the National Park Service selected park units to study based on their size, tree species, and known recent

fire history. The researchers took core samples from fire scarred trees—mainly ponderosa pines and oak trees—and analyzed the tree rings to determine the year a fire burned. They cross-checked the data to ensure accuracy and created a fire history using statistical analyses. In sites with an unknown recent fire history, the researchers used topography, human density, and the amount of fuel present to estimate the historic fire regimes of the area.

### Great Plains Cooperative Ecosystem Studies Unit

#### ■ Project Partners

UNIVERSITY OF  
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University of Missouri

**USGS**  
science for a changing world



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#### ■ Project Reports

*A Quantitative Analysis of Fire History at National Park Units in the Great Plains*

#### ■ Project Type

Research



■ **Land managers use fire as a tool.** Fire can help protect human life and property, improve habitat, and increase species diversity.  
*(Catherine Hibbard/USFWS)*

### Fire Is a Tool

Both human and lightning-caused fire is inevitable on the nation's grasslands, and federal land managers need a fire plan to be prepared for all fire scenarios. This study gave land managers data to understand how fires have behaved in the past so they can make informed hypotheses on how fires of the future will burn. It also gave land managers information about how to best restore species and landscapes that depend on fire. By knowing the history, fire fighters and land managers can use fire as a tool to protect human life and property, improve habitat, and restore species diversity.



Karina Mullen wrote this project spotlight in August 2011. It was part of an education project between Colorado State University and the CESU Network National Office. Cooperative Ecosystem Studies Units provide research, technical assistance, and education to federal land management, environmental, and research agencies and their partners. Their broad scope includes the biological, physical, social, cultural, and engineering disciplines needed to address natural and cultural resource management issues at multiple scales and in an ecosystem context. There are seventeen CESUs, each composed of federal agencies, a host university, and partner institutions, which are linked together in a CESU network. For more information, see [www.cesu.org](http://www.cesu.org) or contact Dr. Thomas E. Fish, CESU National Coordinator, at [tom\\_fish@nps.gov](mailto:tom_fish@nps.gov).