Southern Plains Network
RESOURCE BRIEF
National Park Service
U.S. Department of the Interior
Inventory & Monitoring Program

Capulin Volcano National Monument

2011 Grasslands and Fire Effects Monitoring

Grassland vegetation is the most widespread vegetation type occurring in the Southern Plains. Fire, along with climate, is the biggest determinant of whether grasslands preclude forests, and also is a critical natural process and a primary influence on the plant and wildlife communities of national parks. Monitoring grassland vegetation communities and the effects of fire will help Southern Plains park managers better understand the dynamic nature of these ecosystems and provide an early warning of abnormal conditions. This information can help managers make effective decisions, including planning of prairie restoration efforts.

The overall goal of monitoring Southern Plains grassland communities is to help park managers better understand the dynamic nature of grassland vegetation ecosystems and the processes that influence them. Specific objectives are to: (1) determine status and trends in plant species composition (richness and diversity) and community structure (relative abundance, frequency, distribution, ground cover) of remnant, disturbed, and restored grasslands; (2) document the location, extent, and timing of wildland and prescribed fires and management treatments; and (3) determine status and trends in soil structure (erosion potential, infiltration rate, compaction, texture, stability) and soil chemistry (bulk soil carbon to nitrogen ratios).

Methods

A total of six fire and six long-term monitoring transects were established at Capulin Volcano National Monument (NM; Figure 1). The plant communities monitored are: shortgrass steppe and pinyon-juniper woodland, which is being converted to grassland. Thinning treatment has recently been halted as it's effectiveness is being evaluated. These transects will continue to be monitored for the foreseeable future. All long-term transects were monitored during late July in 2010 and 2011. There are existing fire transects, but no data were collected in 2010 and 2011 due to the fire program's schedule.

Results

These early monitoring results provide a baseline to measure future trends and should not be viewed as trends themselves. The extreme rainfall variation between the 2010 and 2011 field season has resulted in noticeable changes in plant response.

NPS

In 2010, all long-term monitoring plots were established at Capulin Volcano NM during late July.

The grassland transects monitored at Capulin Volcano NM contain only native perennial grasses, but their foliar cover is limited. This may be due to the nature of the soils or areas where pinon-juniper has been recently cleared. Patches of disturbance have been observed in the grasslands throughout the park—some naturally occurring (such as from gophers) but many a result of past land uses and burn scars. These disturbance areas provide ideal establishment areas for exotic plants that can then spread to the surrounding landscape. There is a diverse mix of forbs found in the transects, the majority of which are perennials.

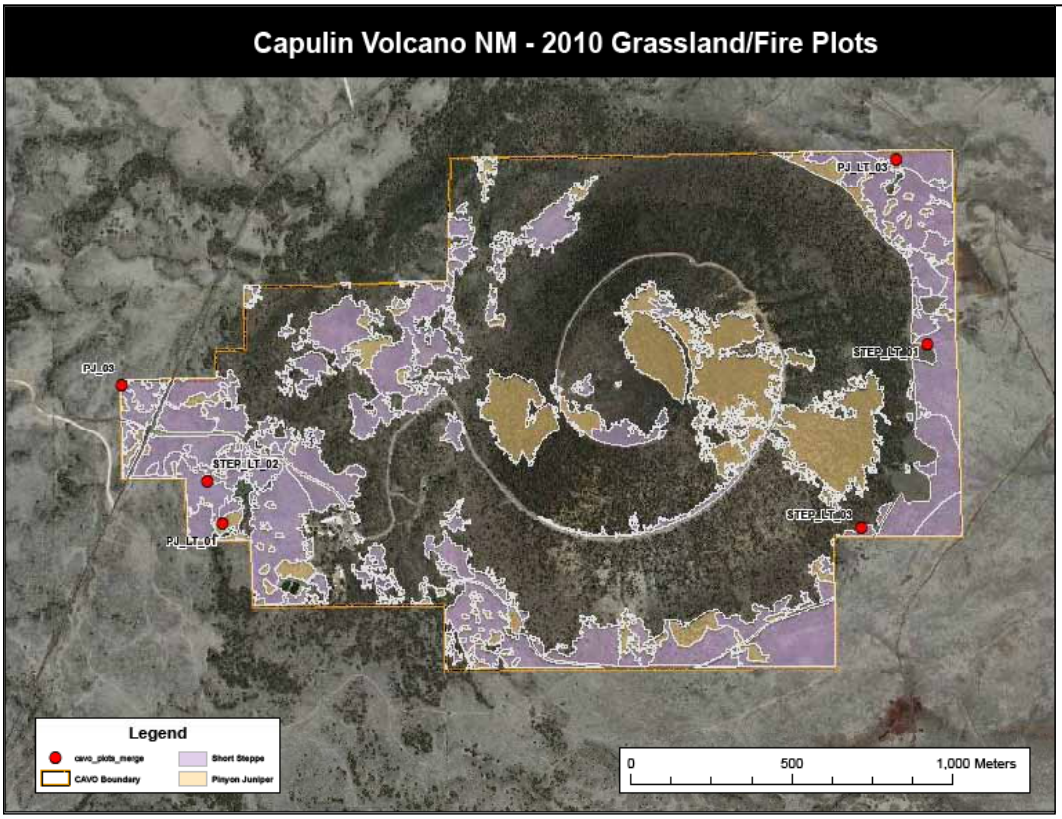

Figure 1. Monitoring transects, Capulin Volcano NM.

Capulin Volcano NM habitats are threatened with exotic plants. While no exotic grasses appeared in the transects, it is known that there are patches of various bromes (*Bromus japonicas*, *B. tectorum*, etc.) that have become dominant and are spreading. While exotic forbs were found in transects, none were encountered in great numbers. Mullein is undergoing active control measures which have resulted in obvious reduction of numbers, but it remains to be seen if this effort has long-term effects. Exotic species present are discussed in greater detail in the Exotic Plant Monitoring Annual Report.

Prescribed burns and thinning treatments have occurred at Capulin Volcano NM since 2005 (Figure 2). The majority of the grasslands in the park have received both treatments, but prescribed burning has not occurred since 2008. Thinning of pinon-juniper has occurred since on the toe-slopes and crest of the cinder cone. There has been no wildfire (at least on the cone) for the past century.

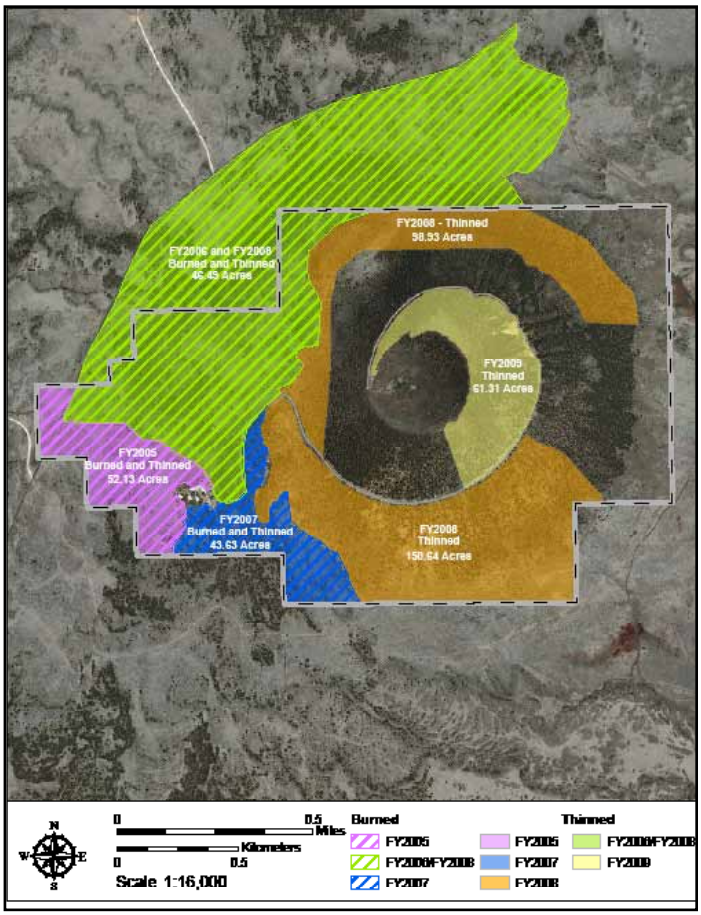

Figure 2. Prescribed treatment or wildland fires since 2005, Capulin Volcano NM.