



SCOTTS BLUFF NATIONAL MONUMENT 2012 RESOURCE BRIEF

PLANT COMMUNITY MONITORING

Overview: The Northern Great Plains Inventory and Monitoring Network staff completed the second year of plant community monitoring at Scotts Bluff National Monument (NM) in 2012. This was a much drier year than 2011 throughout the region, resulting in less vegetation cover, shorter plant height, and a thicker litter layer.

Compared to 2011, vegetative cover in Scotts Bluff NM decreased by 31%, and average height of the herbaceous layer decreased 38%. On average, there were 4 native plant species per square meter plot. Exotic plants remain a challenge at the park, with the non-native cheatgrass (*Bromus tectorum*) being the most abundant species found.

Highlights: Despite the dry conditions and resulting lower vegetative cover, I&M staff actually documented a higher total number of species in Scotts Bluff NM in 2012 (93

species) than in 2011 (79 species). It is possible that the dry conditions favored native plants that are accustomed to periodic severe droughts that are historically common in the Great Plains region.



Above: Seasonal field staff sampling vegetation at Scotts Bluff NM.

Right: Prairie sunflower (*Helianthus petiolaris*), one of the most common wildflowers in Scotts Bluff NM.

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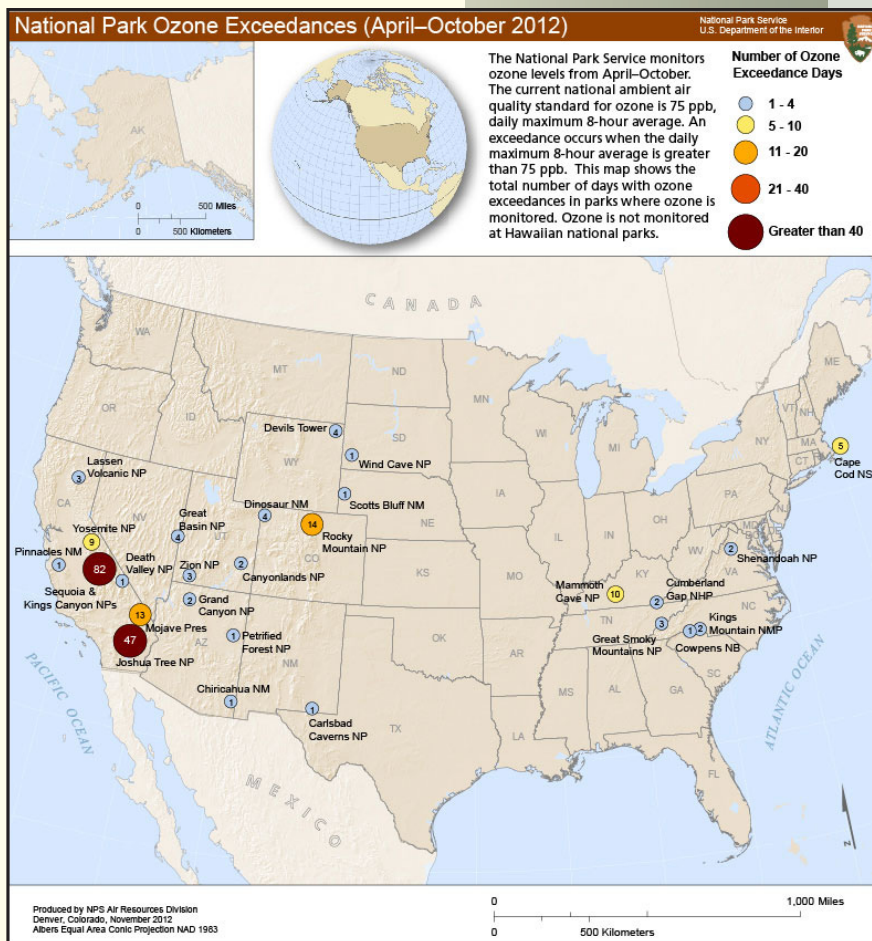
Condition Indicator	Current Status/Trend	Rationale for Resource Condition
Plant Community		
Upland Plant Community Structure and Composition	●	Overall species diversity and herbaceous cover was fair, and the diversity of native plants fell within the natural range of variation for northern mixed-grass prairie.
Exotic Plant Early Detection and Management	●	Monitoring efforts showed high cover of exotic species in many areas of the park. Non-native annual brome grasses were some of the most abundant species in the park.
Air Quality		
Ozone Exceedance Days	●	Ground-level ozone was considered a moderate concern for sensitive groups on 1 day in August of 2012.
Note: Table based on State of the Parks Reports - see annual report for more details. Green indicates "good condition", yellow indicates "caution", and red indicates "significant concern".		



AIR QUALITY MONITORING

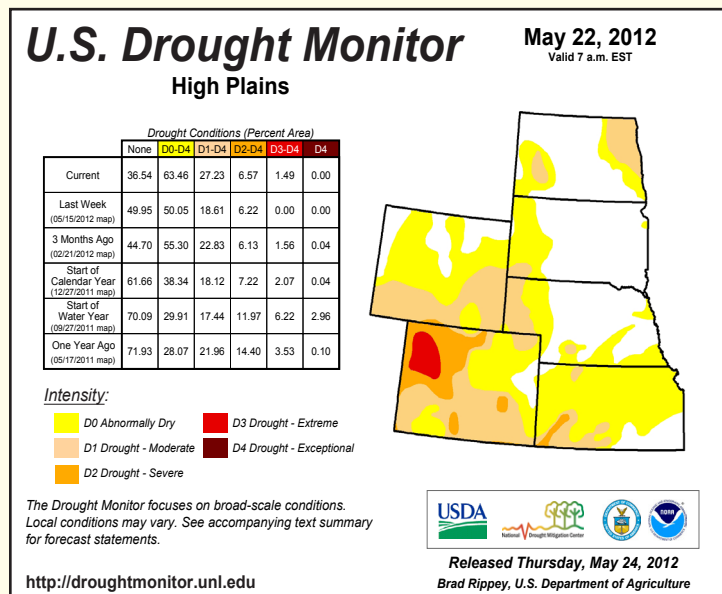
Overview: Ground-level ozone is one of the most widespread pollutants affecting vegetation and public health in the U.S. In humans, exposure to ozone can cause respiratory problems and impairment of the body's immune system. Several plant species that occur at Scotts Bluff NM are known to be sensitive to ozone, including ponderosa pine. Summer ozone levels have been monitored in Scotts Bluff NM since 2010. To protect human health and vegetation, the US Environmental Protection Agency (EPA) has set a national standard for ozone of 75 parts per billion (ppb) averaged over an 8-hour period.

Highlights: During the summer of 2012, Scotts Bluff NM exceeded the EPA standard on 1 day in August. At the time of this exceedance, the air quality in the park was considered acceptable; but there was a moderate health concern for people who are unusually sensitive to air pollution. Large wildfires burning approximately 60 miles north of Scotts Bluff NM contributed noticeably to the poor air quality on the day when ozone thresholds were exceeded.



WEATHER AND CLIMATE MONITORING

Overview: Weather is a fundamental driver of ecosystems in the northern Great Plains. Trends in temperature and precipitation may help explain trends seen in other resources such as plant communities.



Highlights: Scotts Bluff NM experienced moderate drought conditions in May 2012 when vegetation monitoring took place. The drought worsened throughout the summer and fall. By the end of 2012, the area was experiencing an exceptional drought.

Top: Map of National Park Ozone Exceedances 2012. Courtesy of NPS Air Resources Division.

Bottom: Drought conditions at Scotts Bluff NM during May when NGPN surveyed vegetation.

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Network Parks: Agate Fossil Beds NM • Badlands NP • Devils Tower NM • Fort Laramie NHS • Fort Union Trading Post NHS • Jewel Cave NM • Knife River Indian Villages NHS • Missouri NRR • Mount Rushmore NM • Niobrara NSR • Scotts Bluff NM • Theodore Roosevelt NP • Wind Cave NP