



MOUNT RUSHMORE NATIONAL MEMORIAL 2012 RESOURCE BRIEF



Above: Effects of mountain pine beetles are evident on many trees, and piles of woody debris await ideal prescribed burning conditions.

Right: Forest thinning has led to more sunlight reaching the forest floor in many places.

PLANT COMMUNITY MONITORING

Overview: The Northern Great Plains Inventory and Monitoring Network staff completed the second year of plant community monitoring at Mount Rushmore National Memorial (NMEM) in 2012. This was a much drier year than 2011 throughout the region, which usually results in less vegetation cover and shorter plant height. However, the herbaceous layer of vegetation at Mount Rushmore NMEM appeared to be more vibrant in 2012.

Compared to 2011, vegetative cover in Mount Rushmore NMEM increased by 73%, and average height of the herbaceous layer increased 31%. On average, there were 4 native plant species per square meter plot, unchanged from 2011 numbers.

Highlights: The surprising finding of greater herbaceous cover despite drier conditions may indicate that plants on the forest floor had been limited by sunlight availability, rather than by low moisture or nutrient levels. Due to fire suppression throughout the 20th century, the forest overstory of Mount Rushmore NMEM (and much of the surrounding Black Hills) had grown dense. However, the park started an aggressive forest thinning/fuels reduction project in 2010 due to fire hazard and mountain pine beetle threat. Increased vitality of ground level vegetation may be a desirable by-product of this effort, provided the disturbance doesn't give invasive species a foothold.

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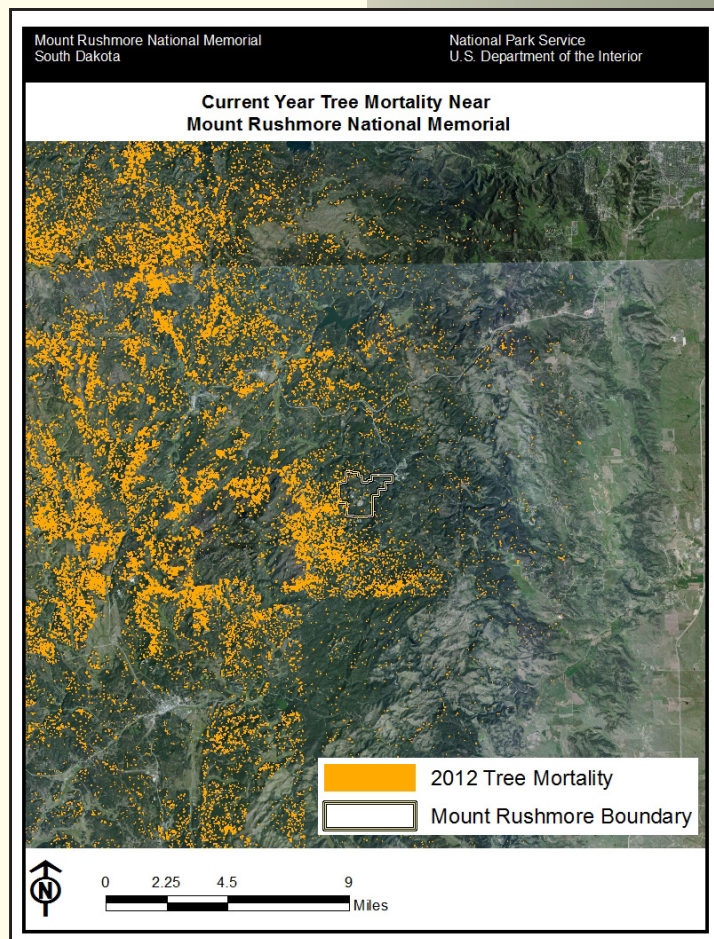
Condition Indicator	Current Status/Trend	Rationale for Resource Condition
Plant Community		
Upland Plant Community Structure and Composition		While the park has a low diversity of native plants and a low cover of understory plants, this is consistent with older ponderosa pine forests with high conservation value.
Exotic Plant Early Detection and Management		Monitoring efforts showed low cover of exotic species in many areas of the park.
Forest Condition		
Forest Insects and Disease		Despite aggressive efforts to thin the forest, the effects of mountain pine beetles were found in 19 of 60 plots surveyed in 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". Line thickness indicates confidence with dashed lines indicating "low confidence" and thick solid lines indicating "high confidence". Arrow indicates trend where applicable.		



FOREST HEALTH MONITORING

Overview: Mountain pine beetles (*Dendroctonus ponderosae*) have emerged as a serious threat to forest health in the Black Hills region, and large areas of forest now have standing dead trees. Ponderosa pine (*Pinus ponderosa*) forests that have grown dense and have an abundance of mature trees are most susceptible to attack by the beetles. Much of Mount Rushmore NMEM has had a dense forest canopy, but the park has been trying for a several decades both by cutting trees and performing prescribed burns to reduce the density of the forest and the amount of fuel loads to decrease fire danger and improve the ecological health of the forest. Efforts have intensified in this regard since 2010, but the effects of mountain pine beetles are still evident in the park.

Highlights: The US Forest Service conducted aerial surveys to assess tree mortality in 2012. The scale of the impact on the surrounding landscape is astounding, and Mount Rushmore NMEM is on the edge of some of the heaviest infestations in the Black Hills National Forest. Ground-based surveys conducted in late summer of 2012 by the Northern Great Plains Fire Effects Program and the Inventory and Monitoring Network found evidence of mountain pine beetles in 19 of 60 randomly located plots within the park.

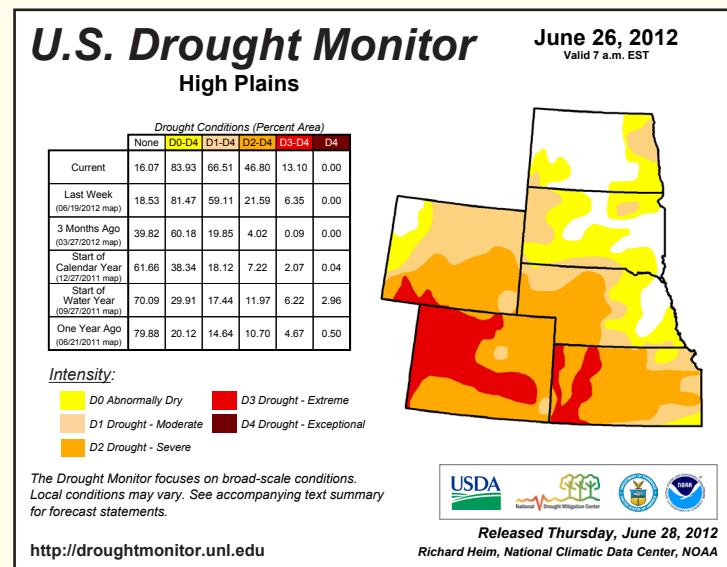


Top: Areas near Mount Rushmore experienced some of the highest tree mortality in the Black Hills. Tree mortality data courtesy of Black Hills National Forest.

Bottom: Drought conditions at Mount Rushmore NMEM during June when NGPN surveyed vegetation.

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: Mount Rushmore NMEM experienced abnormally dry conditions in July 2012 when vegetation monitoring took place. The drought worsened throughout the summer and fall. By the end of 2012, the area was experiencing an extreme drought.

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