



JEWEL CAVE NATIONAL MONUMENT 2012 RESOURCE BRIEF



Above: Seasonal field staff sampling vegetation at Jewel Cave NM.

Right: Though not the most scenic site, plot #21 recorded more species than any other plot in the whole network.

PLANT COMMUNITY MONITORING

Overview: The Northern Great Plains Inventory and Monitoring Network staff completed the second year of plant community monitoring at Jewel Cave 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 Jewel Cave NM decreased by 39%, and average height of the herbaceous layer decreased 4%. On average, there were 9 native plant species per square meter plot.

Highlights: Biodiversity was greater at Jewel Cave NM than at any other park within the Northern Great Plains Network. Jewel Cave NM recorded a higher average number of species per plot as well as a greater number of native species in 1m² plots. The park has actively managed exotic species, largely

without chemical means in order to protect underground cave resources. Most plots exhibited <10% exotic cover, with Kentucky bluegrass (*Poa pratensis*) being the most common exotic species.



Condition Indicator	Current Status/Trend	Rationale for Resource Condition
Plant Community		
Upland Plant Community Structure and Composition	●	Overall species diversity and herbaceous cover was good, and the diversity of native plants falls within the natural range of variation for mixed-grass prairie.
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	↓	While signs of mountain pine beetle weren't found in plots surveyed in 2012, infestations have been found within the park and are prevalent throughout the Black Hills.
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". Arrow indicates trend if applicable.		

Protocol Contacts:

Isabel_Ashton@nps.gov
Plant Ecologist
605-341-2806

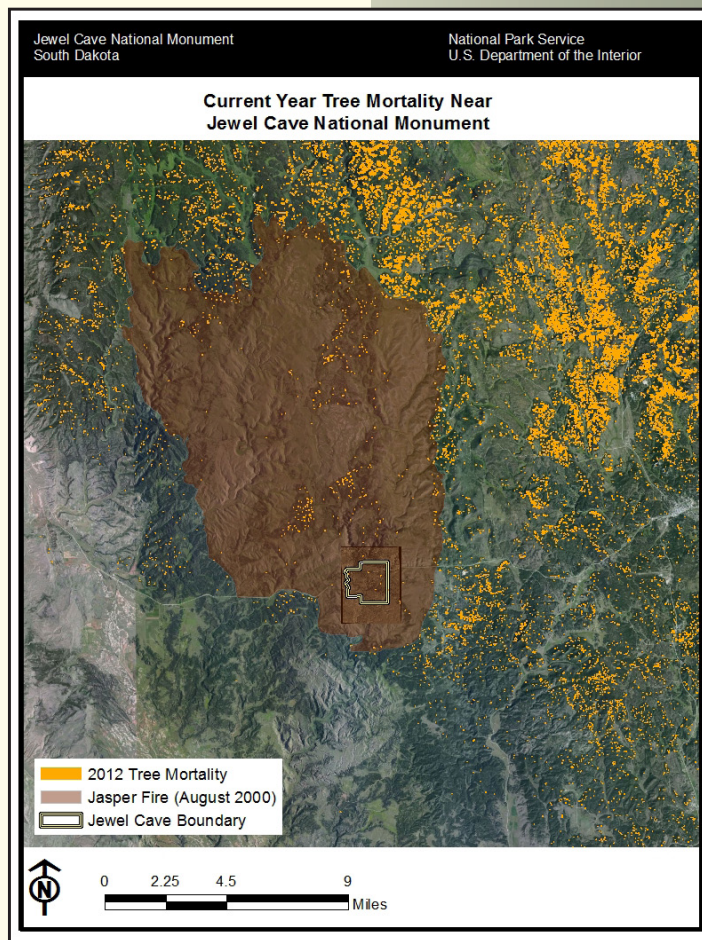
Michael_Prowatzke@nps.gov
Plant Biological Technician
605-341-2805



FOREST HEALTH MONITORING

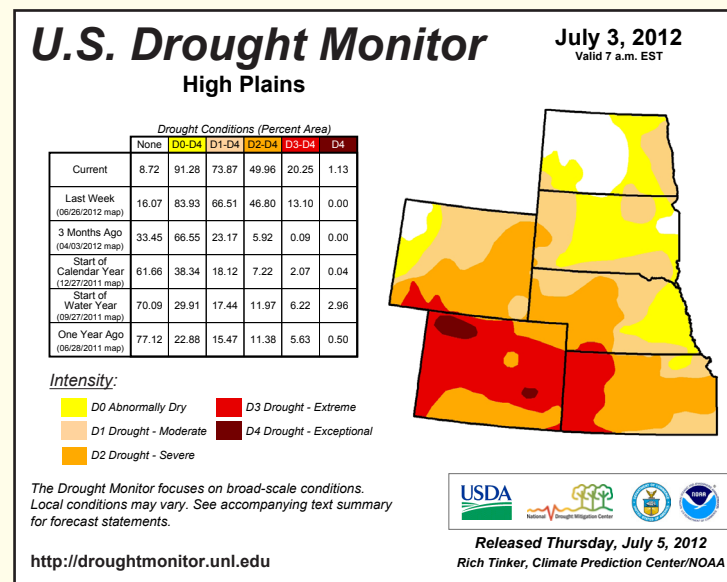
Overview: Mountain pine beetles (*Dendroctonus ponderosae*) have emerged as a serious threat to forest health in the Black Hills region, and large areas of forest now have standing dead trees. Ponderosa pine (*Pinus ponderosa*) forests that have grown dense and have an abundance of mature trees are most susceptible to attack by the beetles. Since the Jasper Fire of 2000, most areas of Jewel Cave NM and the surrounding landscape have had very low densities of live ponderosa pine trees.

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, but the sharply delineated area of the Jasper Fire is still evident 12 years later. Though mountain pine beetle impacts are less within the burned area's perimeter, they have been found in isolated pockets of mature trees both inside and outside Jewel Cave NM.



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: Jewel Cave NM experienced moderate drought 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.

Top: Tree mortality near Jewel Cave NM. The severe Jasper Fire reduced, but did not eliminate, the threat of mountain pine beetle. Tree mortality data courtesy of Black Hills National Forest.

Bottom: Drought conditions at Jewel Cave NM during July when NGPN surveyed vegetation.

Protocol Contacts:

Kara.Paintner@nps.gov
Network Coordinator
605-341-2807

