



## Impact of Multiple Disturbances at Manley Woods, Wilson's Creek NB

### **Importance: Management after catastrophic disturbance**

Ecological disturbance on a catastrophic level helps to shape natural plant communities in southwest Missouri. Wind-throw, wildland fire, flooding, drought, and ice storms all occur periodically, but rarely do several disturbances affect the same locality within a short period. However, the Ozark Highlands region has seen several catastrophic events including tornados, fires, floods, and ice storms, successively on the same piece of land since 2003. Natural resource managers at Wilson's Creek National Battlefield must understand the change in vegetation composition and the recovery rates resulting from multiple, severe disturbances to properly preserve natural and cultural landscape resources.



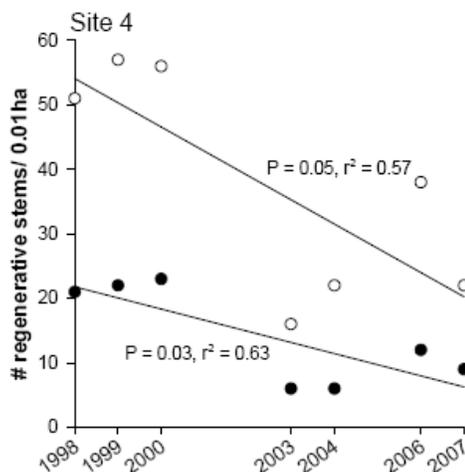
*Prescribed fire at Wilson's Creek NB*

### **Long Term Monitoring<sup>1</sup>: Measuring change**

Manley Woods in Wilson's Creek National Battlefield experienced a damaging tornado in 2003. The impacted area included long-term monitoring sites with three years of data prior to and after the tornado. The same land experienced three additional disturbances during the post-tornado period, including salvage logging, prescribed fire and severe ice storm. The Heartland Network Inventory and Monitoring Program scientists analyzed composition of the overstory (tree canopy), understory plant communities and the changes in fuel loading (burnable material that carries wildland fire) to determine the impacts of multiple, sequential, severe disturbances on Manley Woods forest communities.

### **Status and Trends:**

The tornado resulted in high fuel loads at Manley Woods. Fuel reduction activities, log removal, and prescribed fire, reduced mean fuel loads by nearly half. The tornado reduced overstory density as well, creating a savanna-like forest structure. Regeneration by seedling and sapling declined from 2003 to 2007. Additionally, scientists found:



1. Nature hastened the attainment of desired landscape in Manley Woods by creating a patchy distribution of communities that approach a savanna-like structure.
2. The tornado affected overstory structure significantly, but it also influenced the community composition and tree regeneration. In 2007, understory species composition seemed to be returning to pre-disturbance compositions.
3. Although species diversity declined from 2003 to 2006, diversity recovered post disturbance. Exotic species abundance did not increase significantly through the sampling period.

Heartland Network Inventory and Monitoring Program of the National Park Service. Visit [www.nps.gov/im/units/htln/index.htm](http://www.nps.gov/im/units/htln/index.htm)

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