



Forest Community Monitoring at Pea Ridge National Military Park

Importance: *Setting the stage*

Pea Ridge NMP manages the oak-hickory forest surrounding the battlefield as a natural backdrop for the historical events. The managers want to reflect the natural forest at the time of the battle to contribute to interpretation of the event. The park manages areas closest to the battlefield for their interpretive value, while they manage forests further from the battlefield for forest community integrity.

The native oak-hickory forest is a fire dependent community. Fire impedes forest succession from oak-hickory to shade tolerant trees. The lack of fire can reduce integrity of the oak-hickory forest.



Long Term Monitoring: *Monitoring forest succession and integrity*¹

The Heartland Network Inventory and Monitoring Program scientists divided the oak-hickory forest into two separate forest types, an Ozark oak-hickory type (*Quercus* spp) and a post-oak/blackjack oak (*Q. stellatotype/Q. marilandica*) type. They established seven monitoring sites within the two types. The scientists then evaluated the amount and kind of plants in the overstory canopy, the understory shrub and the herbaceous layer. Particular attention was given to the distribution of trees among overstory size classes (Figure 1). The scientists can then determine if the forest is an assemblage of large, widely spaced trees or small, tightly crowded trees.

Status and Trends: *Baseline data help establish fire management goals*

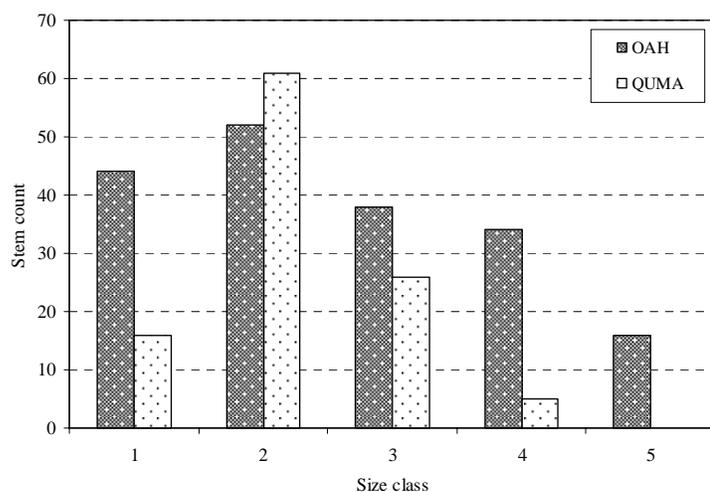
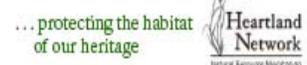


Figure 1: Total stem count for each size class (1 = smallest trees and 5 = largest trees) by forest type (OAH corresponds to oak-hickory forest and QUMA refers to the post oak-blackjack oak forest type).

This study establishes a baseline condition for the forest and helps managers address fire management goals and monitoring objectives. Additionally, scientists observed:

1. Young trees reaching into the overstory have filled openings between large oaks. The reduced light penetration inhibits regeneration of oak-hickory forest by favoring shade tolerant species.
2. Fire suppression has affected the forest community composition and structure at Pea Ridge NMP. This alters the forest so that it is less representative of the scene as it appeared in 1862.

Heartland Network Inventory and Monitoring Program of the National Park Service. Visit www1.nature.nps.gov/im/units/hln/index.htm.



¹ James, K. 2008. Forest Community Monitoring Baseline Report, Pea Ridge National Military Park. Natural Resource Technical Report NPS/HTLN/NRTR—2008/082. National Park Service, Fort Collins, Colorado. D-53