



## Plant Community Trends at Homestead National Monument of America

### Importance: *Prairie and forest, the focus of natural resource management*

Boundless prairie and majestic oaks characterized the landscape that early settlers found in America's Heartland. Homestead NMA restored native prairie on 100 acres of agricultural fields to represent this historic scene. Efforts began in 1939, making the Homestead NMA prairie the second oldest prairie restoration in the United States. Additionally, a natural remnant of critically imperiled bur oak (*Quercus macrocarpa*) forest makes Homestead NMA a repository of Midwestern historical landscape.

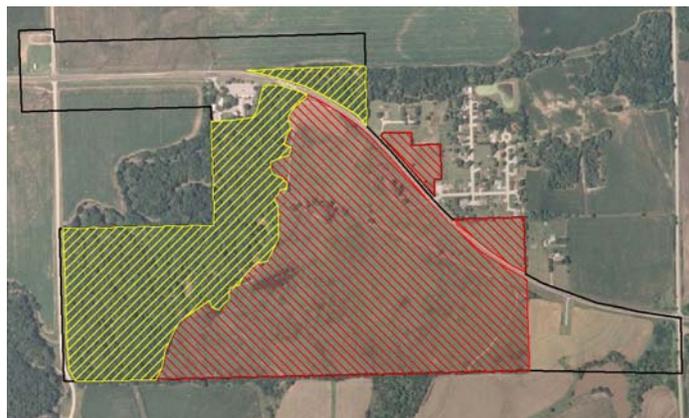


Figure 1: Prairie delineated by red hatching and bur oak forest by yellow.

### Long Term Monitoring: *Detect and describe changes in communities*<sup>1</sup>

Plant community monitoring quantifies species composition, structure, and diversity within prairie and forest communities. The Heartland Inventory and Monitoring Network collected species abundance and foliar cover (area within the shadow of a plant) data for prairie and forest understory vegetation. Additionally, scientists monitored overstory trees in the successional forest in 2000, 2002, 2005 and 2009 and the bur oak woodland in 2005 and 2009.

### Status and Trends: *Stability with challenges*

The plant communities monitored at the park remain stable. Although there had been a decline in diversity in the prairie, seemingly, that has stabilized. Additionally, scientists found that:

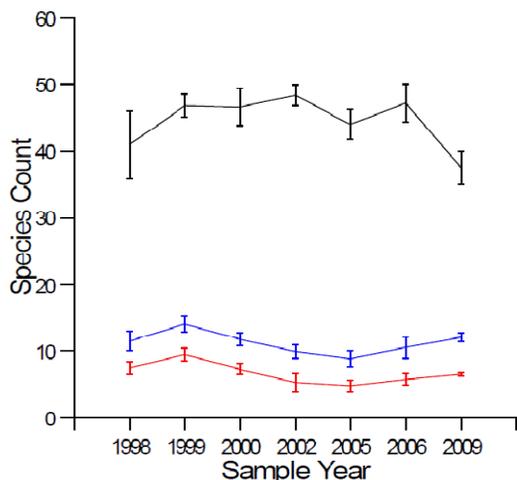


Figure 2: Prairie monitoring provided mean number of species, measured by species richness (black) and by two diversity measures (Shannon number, blue; and Simpson's number, red). Error bars are  $\pm 1$  standard error of mean.

1. Although bur oak seedlings have been detected in the understory during each of the last three sample years, regeneration is primarily by hackberry in both bur oak woodland and successional forest.
2. The understory of both forest-type sites had sparse native forb cover, although native forb cover improved during the last three sample years.
3. Invasive species remain a concern in the prairie with woody encroachment observed throughout the prairie.
4. Establishment and recruitment of bur oak is required to maintain the existing bur oak woodland and to transition the successional forest into the desired bur oak woodland type.

<sup>1</sup> James, K. M.. 2011. Vegetation community monitoring at Homestead National Monument of America, Nebraska: 1998-2009. Natural Resource Data Series NPS/HTLN/NRDS—2011/144. National Park Service, Fort Collins, Colorado.