

# L-A-D FOUNDATION'S PIONEER FOREST

Engaged in sustainable forest management practices for more than 60 years, Pioneer Forest continues efforts to enhance the adaptive capacity of its Ozark woodland ecosystems.

At 140,000 acres, the L-A-D Foundation's Pioneer Forest is Missouri's largest private land ownership. Since the early 1950s, this forest has employed a conservative, uneven-aged management method known as single-tree selection harvesting. Pioneer's decades-long research of this successful method strongly indicates a truly sustainable forest management practice. Recognizing the importance of fire in managing shortleaf pine, foresters have developed fire prescriptions to reduce woody species encroachment, restore and maintain the targeted ecosystem, and enhance adaptive capacity to better cope with a range of future climates.

### CLIMATE CHANGE AND THE PIONEER FOREST

According to the majority of climate models and a recently completed vulnerability assessment for the Central Hardwoods Region, these climate change impacts are expected in the Missouri Ozarks region by the end of the century:

- Mean annual temperature increases from 2 °F to 7 °F.
- Increased precipitation in winter and spring and potential declines in summer
- Increased frequency and severity of wildfire

These climatic changes will impact local ecosystems on Pioneer Forest. In woodlands, shortleaf pine, post oak, and blackjack oak are projected to benefit from a warmer climate. Other species like black and scarlet oak are projected to be negatively affected by drier summers. Woodlands are adapted to frequent, low-intensity fires, but could be negatively impacted if fires become too severe.

### ADAPTATION ACTIONS

Staff from the L-A-D Foundation used *Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers* to identify actions to enhance the adaptive capacity of pine woodland and glade ecosystems. They

determined that their current restoration-oriented management objectives were still feasible given projected changes in climate and associated impacts, but *that additional adaptation actions will be required to meet them*. Based on these considerations, they identified suitable approaches: **1. Restore fire to fire-dependent systems. 2. Anticipate and respond to species decline. 3. Favor or restore native species that are expected to be better adapted to future conditions.**

These approaches are expected to restore and sustain core habitat even as they gently transition ecosystems to better cope with a range of future climates. The climate-adapted ecosystems should benefit bird species that are already a management concern regionally and nationally and that are likely affected by climate change. Pine woodland and savanna and glade restoration will provide habitats for species at their northern range boundary such as brown-headed nuthatch, red cockaded woodpecker, and Bachman's sparrow, which will likely increase in abundance under warming climates, if habitats are available.

### Pioneer Forest Project Area

**SIZE:** 1,650 acres total

**NATURAL COMMUNITY TYPES:** Shortleaf pine woodland (300 acres) and igneous glade (1350 acres)

This project is located within the Current River Hills subsection of the Missouri Ozark Highlands in south central Missouri between Round Spring and Eminence. The rugged terrain of the Current River Hills features extensive forest and woodlands with high ridges dominated by shortleaf pine and oak.



## PROJECT PARTNERS

Project partners include the US Forest Service, National Park Service, the Central Hardwood Joint Venture, the Northern Institute of Applied Climate Science, the Missouri Department of Conservation, the Missouri Department of Transportation, and university students from various fire ecology programs.



## PROJECT STATUS

Climate change considerations are currently being integrated into forest conservation and management on the Pioneer Forest.

- In summer 2013, Timber Stand Improvement was completed on shortleaf pine woodland with support from the US Forest Service Northeastern Area State and Private Forestry. Maladapted red oak group individuals were removed to favor climate-adapted species such as shortleaf pine.
- Nonnative invasive species, including sericea lespedeza (Korean lespedeza), *Coronilla* (crown vetch), and *Centaurea maculos* (spotted knapweed) are being monitored. The L-A-D Foundation received a nationally-competitive grant from the Wildlife Conservation Society's Adaptation Fund to expand over two years its prescribed burning program to support climate adaptation on woodland and glade ecosystems. Prescribed burning has been completed on 475 acres for 2014.
- NIACS will communicate the outcomes and lessons from this project to a wide variety of land owners, resources managers, and others as part of the Central Hardwoods Climate Change Response Framework.

## MORE INFORMATION

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