

# History and Composition of the Interior Highlands Shortleaf Pine Restoration Initiative

*A presentation to the Shortleaf Pine Conference  
1 October 2019*

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# Shortleaf Pine Interests in Missouri

- Positive response from grass-forbs after a wildfire in pine woodlands in the early 1980s excited MTNF staff
- DD Savanna (118 acres) and Grassy Pond Savanna (139 acres) selected as early pine woodland demonstration areas.
  - DD Savanna burned spring of 1987, 1989 and 1992 following pine *thinning with horses* in 1986.
  - Grassy Pond burned spring of 1988, 1989 and 1992 following understory thinning.

# Red-cockaded Woodpecker Recovery Plan



First penned in 1985

helped identify *the scale* at which restoration would be needed, as well as the *structural characteristics* that managers would need to work toward.

The Ouachita National Forest, with a small population of the woodpecker, committed to the restoration of some 250,000 acres of shortleaf pine-bluestem ecosystems with the revisions of their forest plans in 1994, 1996, 2002 and 2005.

# Shortleaf Pine Interests in Missouri

- **Ecologists Doug Ladd and Blane Heumann (TNC), Paul Nelson and Ken McCarty (MO DNR) and Rick Thom and Tim Nigh (MDC) natural heritage assessments in the late 1980s;**
- **Lead to shortleaf pine restoration becoming more widely discussed among the larger conservation community.**
- **Although some MDC and MoDNR lands offered great promise (e.g. Hawn State Park) it was thought that the only opportunities to recover Missouri's historic pineries at a large or "landscape" scale were in the Mark Twain National Forest.**

# Shortleaf Pine Interests in Missouri

- In 1998, managers began work to identify sites and landscapes with the best restoration potential.
- TNC developed a rapid ecological assessment technique to identify sites with the best restoration potential
- Determined that the only opportunities to recover Missouri's historic pineries at a large or "landscape" scale were on the Mark Twain National Forest
- The assessment led to the selection of the Pineknott project area in Carter County, Missouri, initially targeting a tract of more than 12,000 acres (thinning and burning weren't fully implemented until 2006.)

# Missouri-Arkansas Partnerships

- **By the early 2000s, pine-bluestem and pine-oak restoration had gained traction in both Missouri and Arkansas.**
- **By 2005, both states had completed their first State Wildlife Action Plans, which emphasized natural community restoration of glade-woodland complexes, oak woodlands, and pine and oak-pine woodlands.**
- **Cross-border Doris Duke Foundation grant helped to accelerate the habitat work, but also to fostered better regional communication and coordination.**
- **Once those funds were expended, however, outside funds for restoration work remained largely unavailable and the partnership ceased to meet.**

# Collaborative Forest Landscape Restoration Program

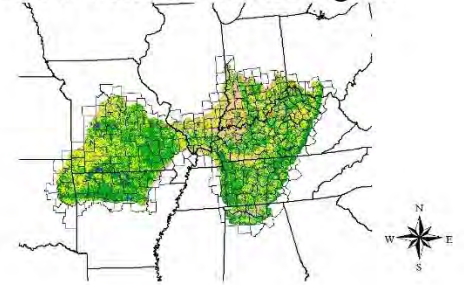
- Title IV of the Federal 2009 Omnibus Public Land Management Act,
- Administered by the U.S. Forest Service, to intended to encourage *collaborative, science-based ecosystem restoration* of priority forest landscapes *on and around* National Forest lands across the United States,
- Re-establishing natural fire regimes,
- Up to \$40 million could be appropriated annually from 2009-2019, with up to 4 million a year over ten years available for any particular project,
- CFLRP reauthorized in the 2018 Farm Bill, doubling the authorized funding to \$80 million per year. Opportunity for new projects as well as extensions of current projects.



# *Central Hardwoods Joint Venture*

*partnerships for conservation*

The Central Hardwoods  
Bird Conservation Region



***focuses efforts on sustaining or increasing populations  
of high-priority bird species of conservation concern***





# **The Central Hardwoods JV Management Board**

- **American Bird Conservancy**
- **Arkansas Game and Fish Commission**
- **Kentucky Department of Fish and Wildlife Resources**
- **Missouri Department of Conservation**
- **National Wild Turkey Federation**
- **Northern Bobwhite Conservation Initiative**
- **Oklahoma Department of Wildlife**
- **Tennessee Wildlife Resources Agency**
- **U.S.D.A. Forest Service**
- **U.S. Fish and Wildlife Service**

# CHJV Helped Coordinate MTNF Proposal, Funded in 2012

Mark Twain National Forest  
Eastern Region

MoPWR

12 Landscape Strategy- Page 1

## PROPOSAL FOR COLLABORATIVE FOREST LANDSCAPE RESTORATION PROGRAM

MISSOURI PINE-OAK WOODLANDS RESTORATION PROJECT  
(MoPWR)



*MARK TWAIN NATIONAL FOREST  
EASTERN REGION  
MAY 5, 2010*

# **Development of the Interior Highlands SLP Restoration Initiative**

- **The opportunity for CFLRP \$\$\$, with emphasis on partnerships and collaboration brought people together again,**
- **Separate partnerships formed in the Missouri Ozarks, Arkansas Ozarks, and Ouachitas in support of each national forest's CFLRP proposal,**
- **IHSLPI came together in January 2011, with CHJV coordinating,**
- **Group wanted to develop DFCs; subcommittee met in May 2011; presented in April 2012,**
- **By April meeting, all three National Forests in the region had been awarded more than \$2 million in funding, via the CFLRP or related programs, for restoration work in 2012, with the potential for that amount or more each year, through 2019.**

# Geography of the Interior Highlands

## Shortleaf Pine Initiative



# **Shortleaf Pine Meeting Attendees, January 2011**

- **Arkansas Game and Fish – 1**
- **Arkansas Natural Heritage Commission – 2**
- **Center for Advanced Spatial Technology, U of A – 1**
- **Longleaf Alliance - 1**
- **Mark Twain National Forest – 2**
- **Missouri Department of Conservation – 8**
- **Missouri Department of Natural Resources – 2**
- **National Bobwhite Conservation Initiative - 1**
- **National Park Service - 1**
- **Natural Resources Conservation Service – 2**
- **Ozark National Forest - 1**
- **The Nature Conservancy – 2**
- **U.S.D.A. Forest Service Research - 2**
- **U.S. Fish and Wildlife Service – 1**

# Interior Highlands Acreage Goals for Public Lands

Community Type	At or Near Desired Condition	Restoration Implemented	Restoration Planned But Not Started
Shortleaf Pine-Bluestem	215,000	215,000	125,000
Pine-Oak	65,000	70,000	110,000
Oak-Pine	2000	20,000	40,000

# **USFS/NRCS Joint Chief's Landscape Restoration Partnership Programs**

- **Added \$\$\$ for NF and Private Land Restoration**
- **Expands FS landscape restoration to surrounding private lands**
- **Supports Wyden Act and Good Neighbor Authority efforts**
- **Provides opportunity to partner with additional agencies and organizations to address common goals**

# USFS/NRCS Joint Chief's Landscape Restoration Partnership Programs

## Arkansas

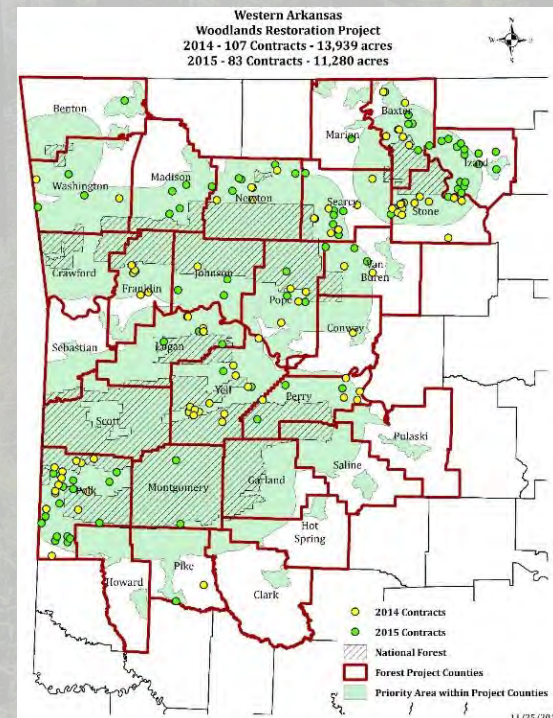
- Western AR Woodland Restoration Project (2014-2016)
- \$1.4 million/year
- 29 Counties
- Restore open woodland thru

FSI and Rxfire

### Project totals

- 253 EQIP contracts
- 36,000 acres treated

FSI and RxFire





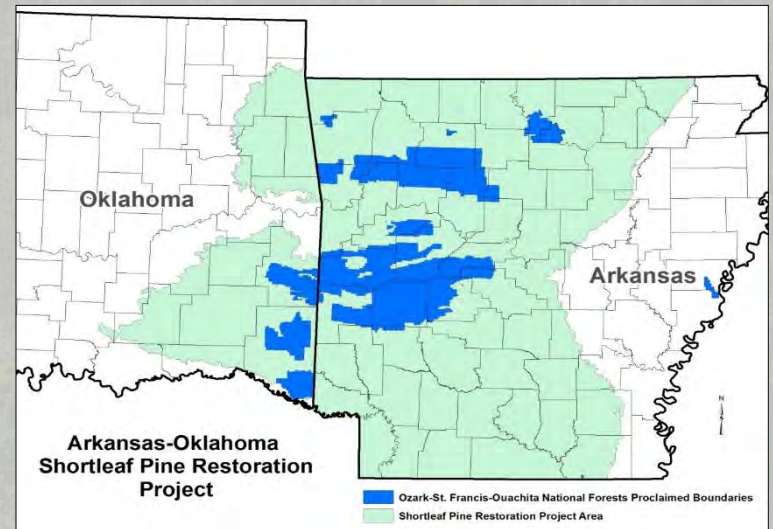
# USFS/NRCS Joint Chief's Landscape Restoration Partnership Programs

## Arkansas/Oklahoma

- **AR/OK Woodland Restoration Project (2016-2019)**
  - Duplicates WAWRP but expands to OK
  - \$1.4 million annually
  - FSI and RxFire for  
Woodland Restoration
  - Emphasis on Shortleaf Pine

**OK 2016: 16 contracts, 208,000 acres**

**AR funding began in 2017**



# **Desired Future Conditions Team**

**Arkansas Game and Fish – Martin Blaney**

**Arkansas Natural Heritage Commission – Tom Foti**

**Mark Twain National Forest – Paul Nelson**

**Missouri Department of Conservation – Rich Blatz**

**Ouachita National Forest – Mary Lane, Susan Hooks, Mitzi Cole**

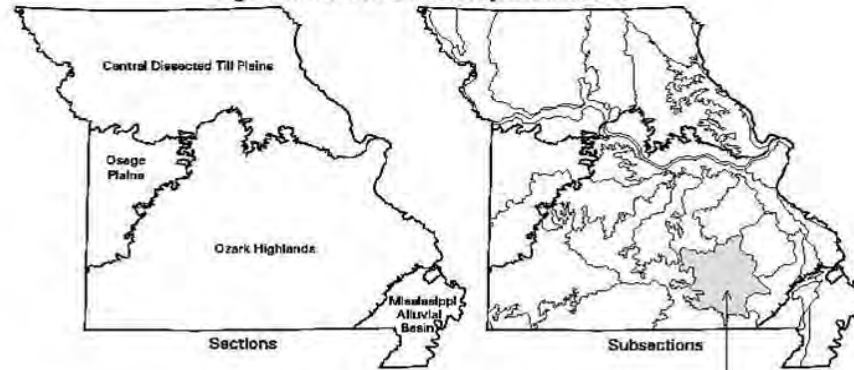
**Ozark National Forest – William Carramero**

**University of Missouri, Columbia – Mike Stambaugh**

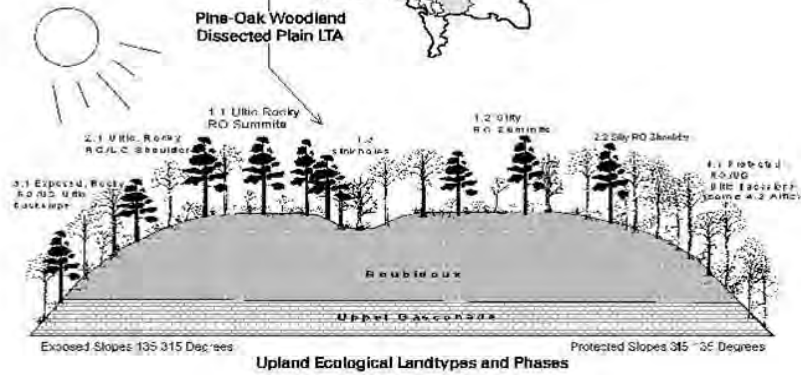
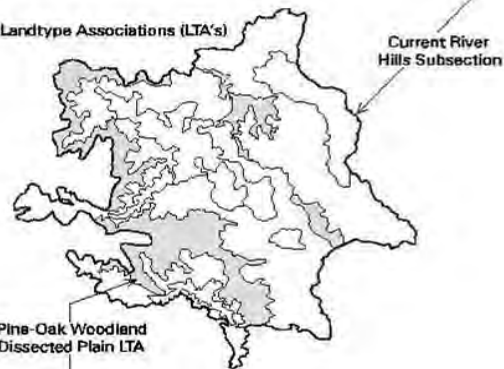
# Shortleaf Community Types

- **Shortleaf pine-bluestem**: most open canopy condition (frequent fires of varying intensity and seasonality) The herbaceous ground cover abundant. Occurs on less dissected landscapes, larger areas of relatively gentle topography allows for greater and more frequent disturbances, especially from fire. Pine comprises roughly 85% of the canopy and canopy cover typically ranges from 30-60%.
- **Shortleaf pine-oak**: pine comprises more than 50% of the stand or landscape.
  - Dry-Mesic Pine-Oak community, pine mixes with oak species (either can be dominant) on more deeply dissected hills, even on upper north-facing slopes, and canopy varies from 50 - 80%,
  - Dry Pine-Oak, pine mixes with oak species on steep, south-facing upper slopes and ridgetops, and canopy varies from 30-50%.
- **Oak-shortleaf pine**: oak comprises more than 50% of the stand or landscape.
  - Dry-Mesic Pine-Oak community, pine mixes with oak species (either can be dominant) on more deeply dissected hills, even on upper north-facing slopes, and canopy varies from 50 - 80%.

Figure 1. USFS ECS Hierarchy and Missouri



Landtype Associations (LTA's)



# Desired Future Conditions for Shortleaf-Pine Community Types

DFC's address:

Basal Area    Canopy Cover

Midstory    Understory

Ground Layer

# Summary of DFCs for mature, open condition SLP communities

Community Type	Canopy Closure (%)	Basal Area* (ft <sup>2</sup> /ac)	Trees Per Acre*	Midstory Density (%)	Understory Cover (%)	Ground Layer Cover (%)
Shortleaf Pine-Bluestem	30-60	35-70	26-52	<10	<10	80-100
Dry Mesic Shortleaf Pine-Oak Woodland	50-80	60-95	44-70	<30	<30	50-80
Dry Shortleaf Pine-Oak	30-50	35-60	26-44	15	20-80 North <30 South	40-60
*Calculated Based on an average DBH of 16", will vary with average stand DBH see table 1 A						

# Desired Future Conditions for Shortleaf-Pine Bluestem

- *Desired age and structural characteristics, landscape level:*

Early seral open – 15%

Mid-seral open – 35%

Mature open – 45%

Mid-seral closed – 3%

Mature closed – 2%

**(With about 85% pine across the landscape)**

# Desired Future Conditions for Shortleaf-Pine Community Types

## *Disturbance Regimes:*

- **Consider Frequency, Intensity, Seasonality**
- **Historic regimes vs. restoration work; historically very hot and large fires roughly every 20 years, with less intense fires varying over time with population densities and landscape conditions.**



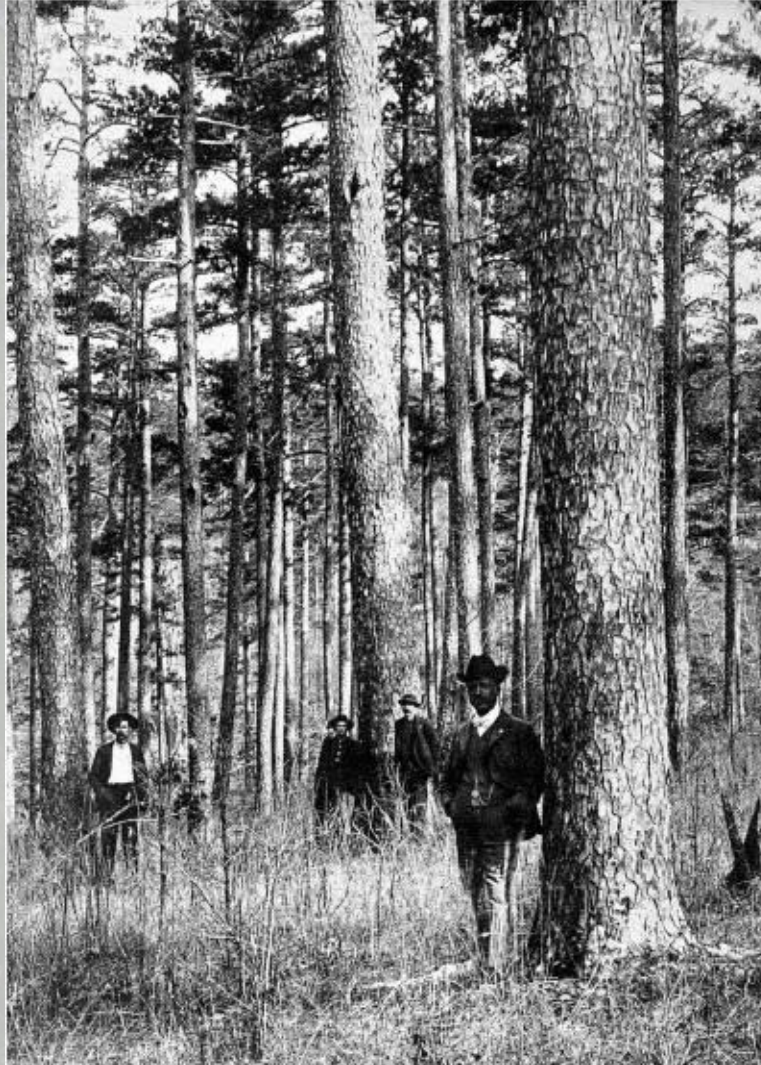
# The Missouri Pine-Oak Restoration Project

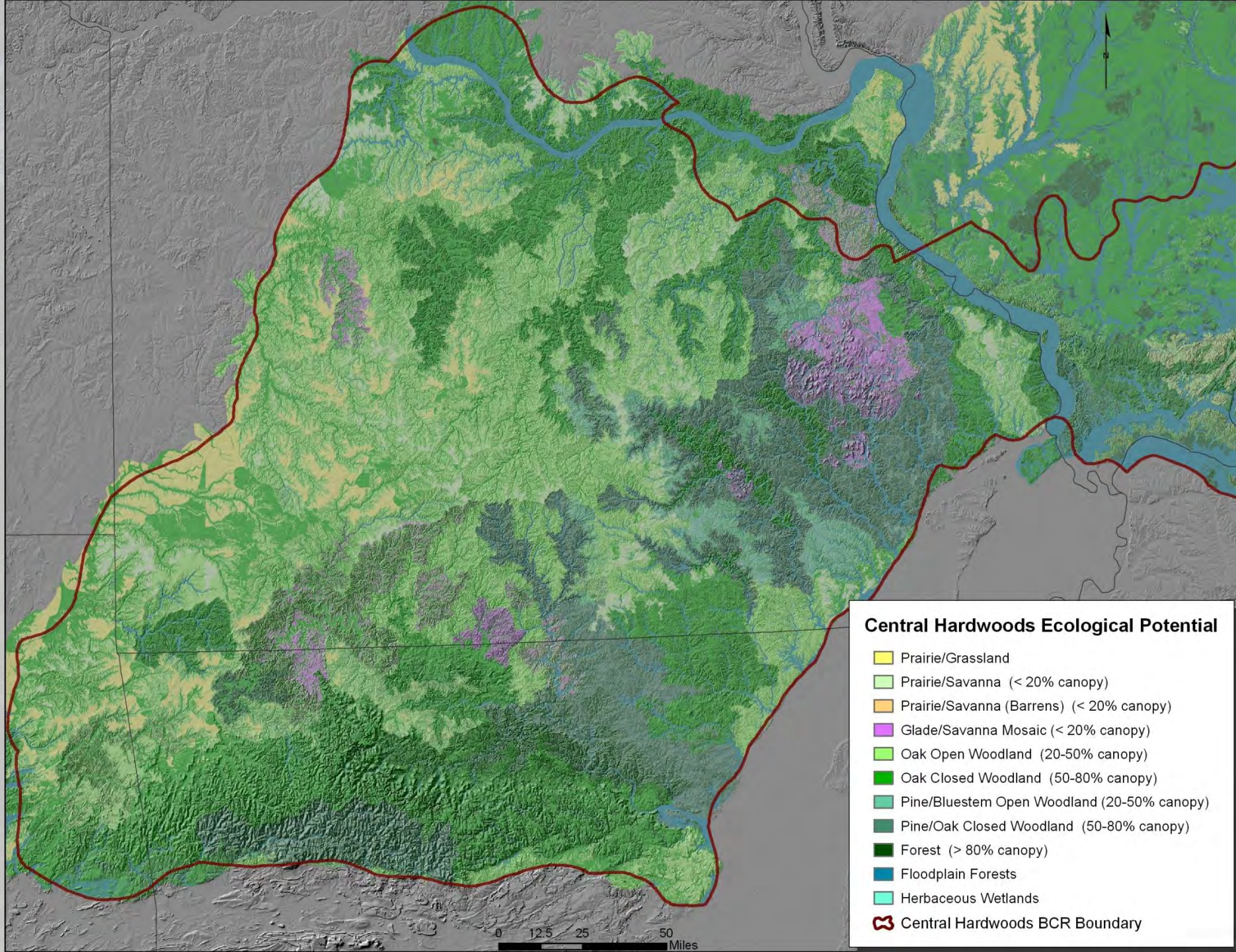
- 126 thousand acres within the Mark Twain National Forest (8% of MTNF; 0.8% of MO forests).
- \$20 million will be invested in project: 50% CFLRP and 50% Knutson-Vandenberg Fund and nongovernmental sources.
- From 2012 to 2019:
  - annual average of 141 jobs supported, \$33.7 million in labor income, and \$44.2 million in added economic value to the local economy over nine-county region
  - \$2.2 dollars added to the local economy for every dollar invested
  - 9.2 million in tax revenues
- Merchantable tree volume by the end of 2019 is estimated to be 14% greater with the implementation of the MTNF-CFLRP as compared to initial conditions.

# Things Monitored

- **Floristic Quality Indices – NatureCITE**
- **Restoration Effects on Native Butterfly and Skipper Communities – Missouri State University**
- **Economic Analysis – USFS/University of Missouri**
- **Hydrological study – Missouri State University**
- **Pine regeneration study – USFS/University of Missouri**
- **Bird Response – USFS/University of Missouri**

# Questions?





### Central Hardwoods Ecological Potential

- Yellow: Prairie/Grassland
- Light Green: Prairie/Savanna (< 20% canopy)
- Orange: Prairie/Savanna (Barrens) (< 20% canopy)
- Purple: Glade/Savanna Mosaic (< 20% canopy)
- Bright Green: Oak Open Woodland (20-50% canopy)
- Dark Green: Oak Closed Woodland (50-80% canopy)
- Teal: Pine/Bluestem Open Woodland (20-50% canopy)
- Dark Teal: Pine/Oak Closed Woodland (50-80% canopy)
- Black: Forest (> 80% canopy)
- Blue: Floodplain Forests
- Cyan: Herbaceous Wetlands
- Red Line: Central Hardwoods BCR Boundary

0 12.5 25 50 Miles