



“Fire in the Park!”

*33 years restoring and managing
shortleaf pine natural communities*



Bryant Creek State Park

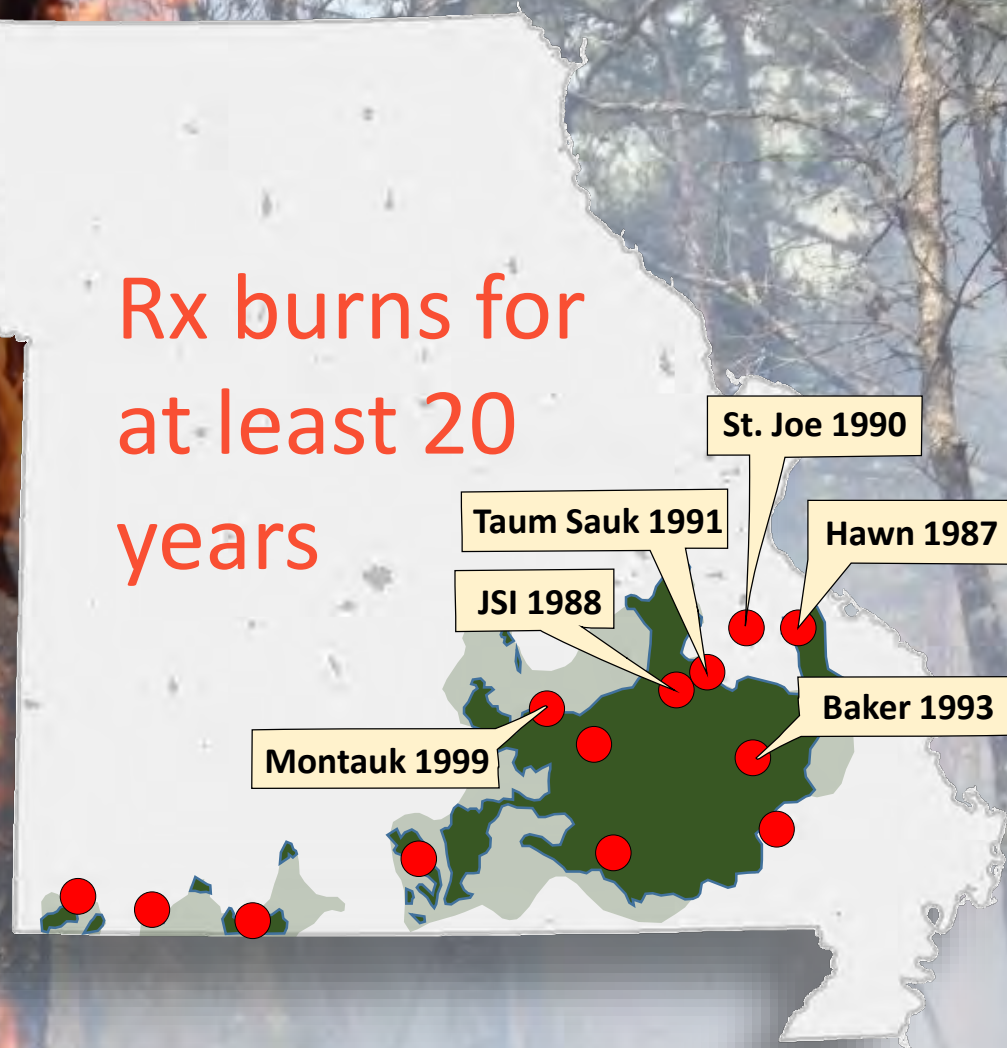
Acquired in 2017





Missouri's shortleaf pine

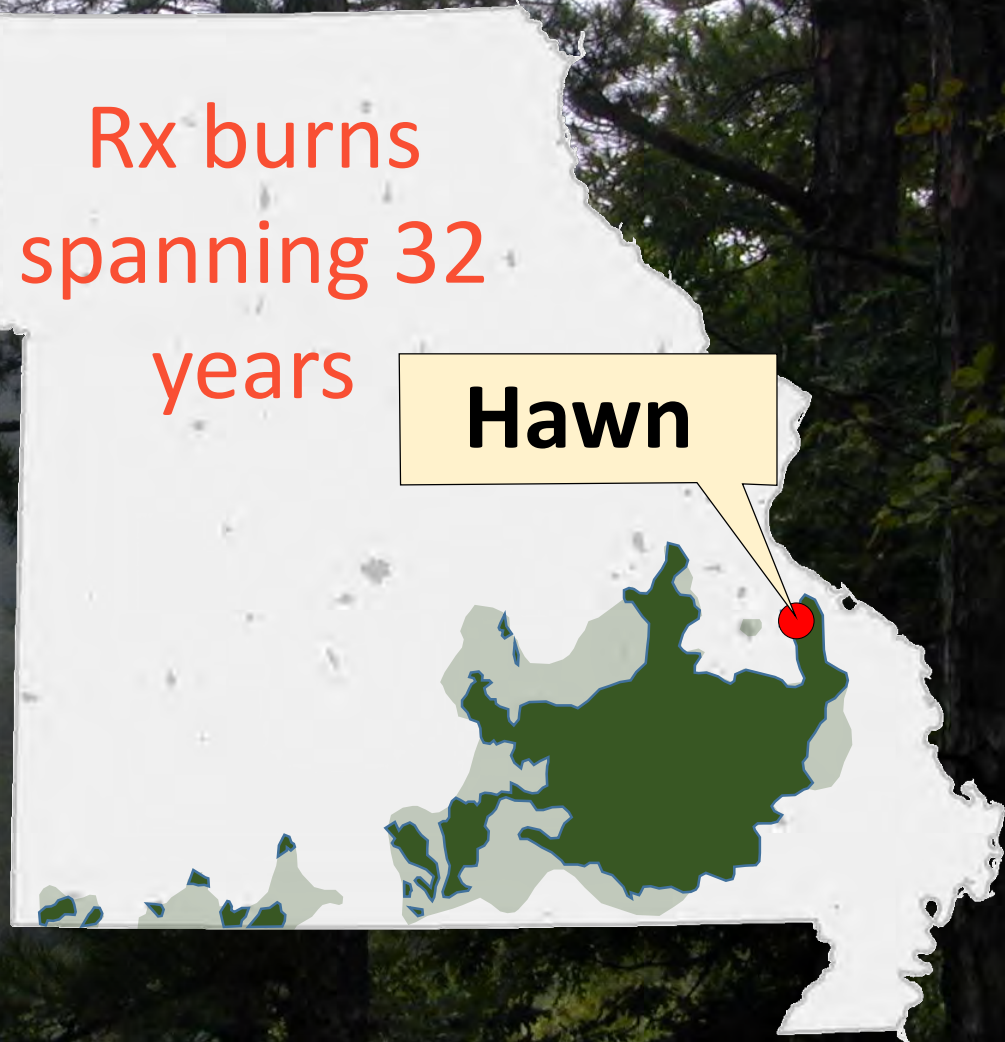
Rx burns for
at least 20
years



Missouri's shortleaf pine park

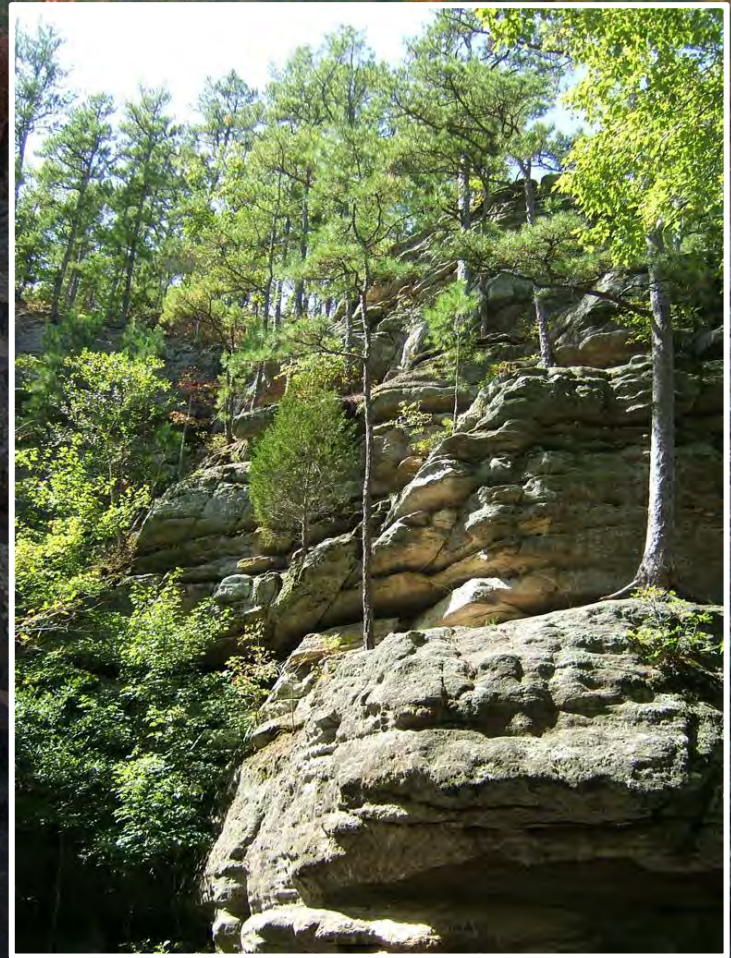
Rx burns
spanning 32
years

Hawn





Hawn State Park



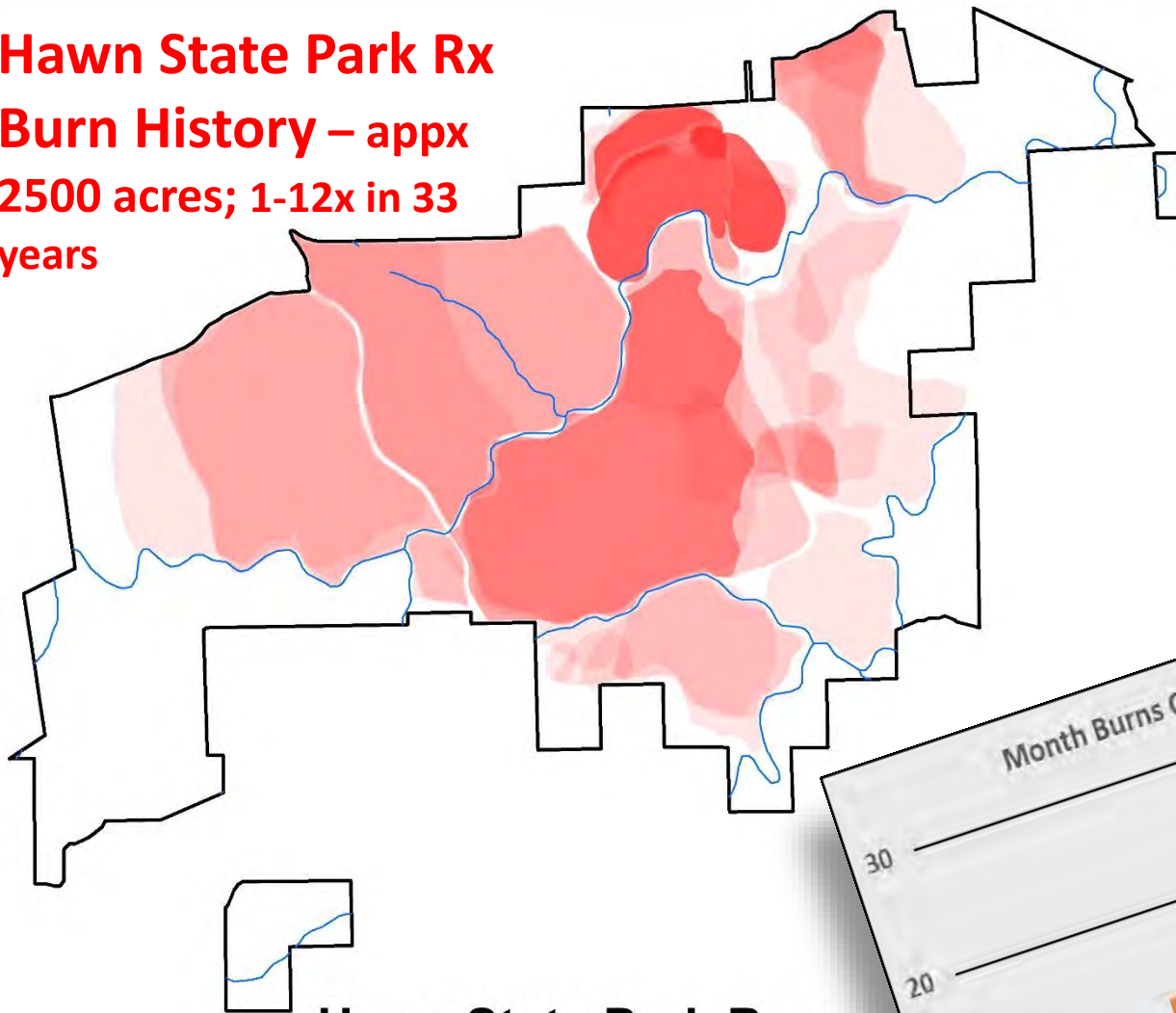


Hawn's Pines:

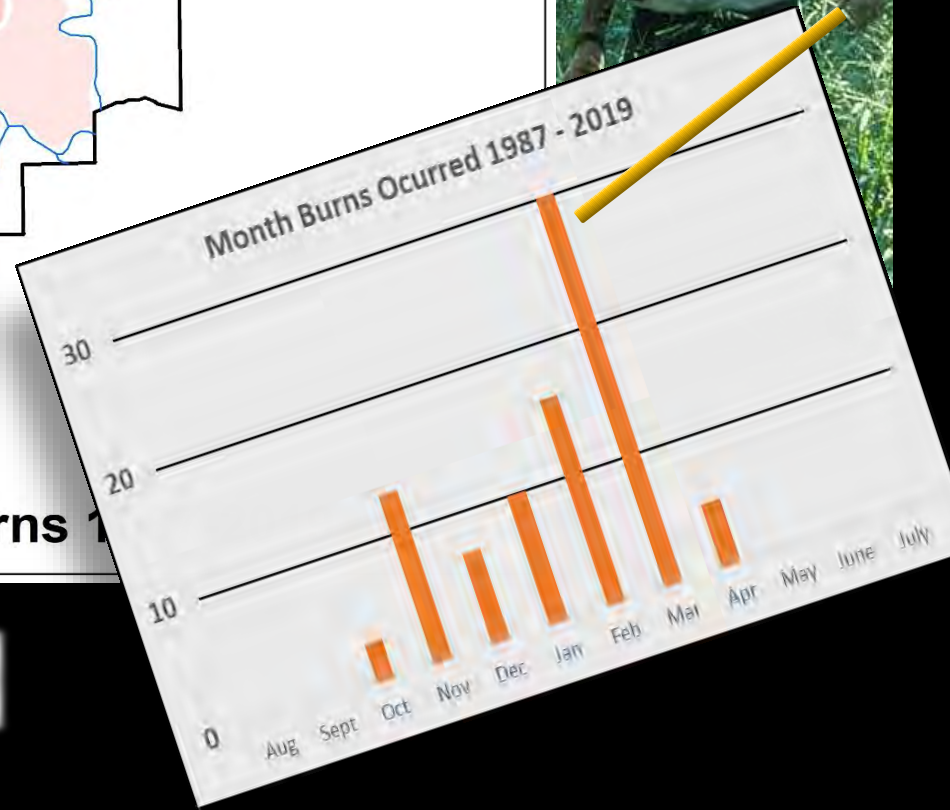
Native,
plantation,
old-field
successional, &
mowed stands



**Hawn State Park Rx
Burn History – appx
2500 acres; 1-12x in 33
years**

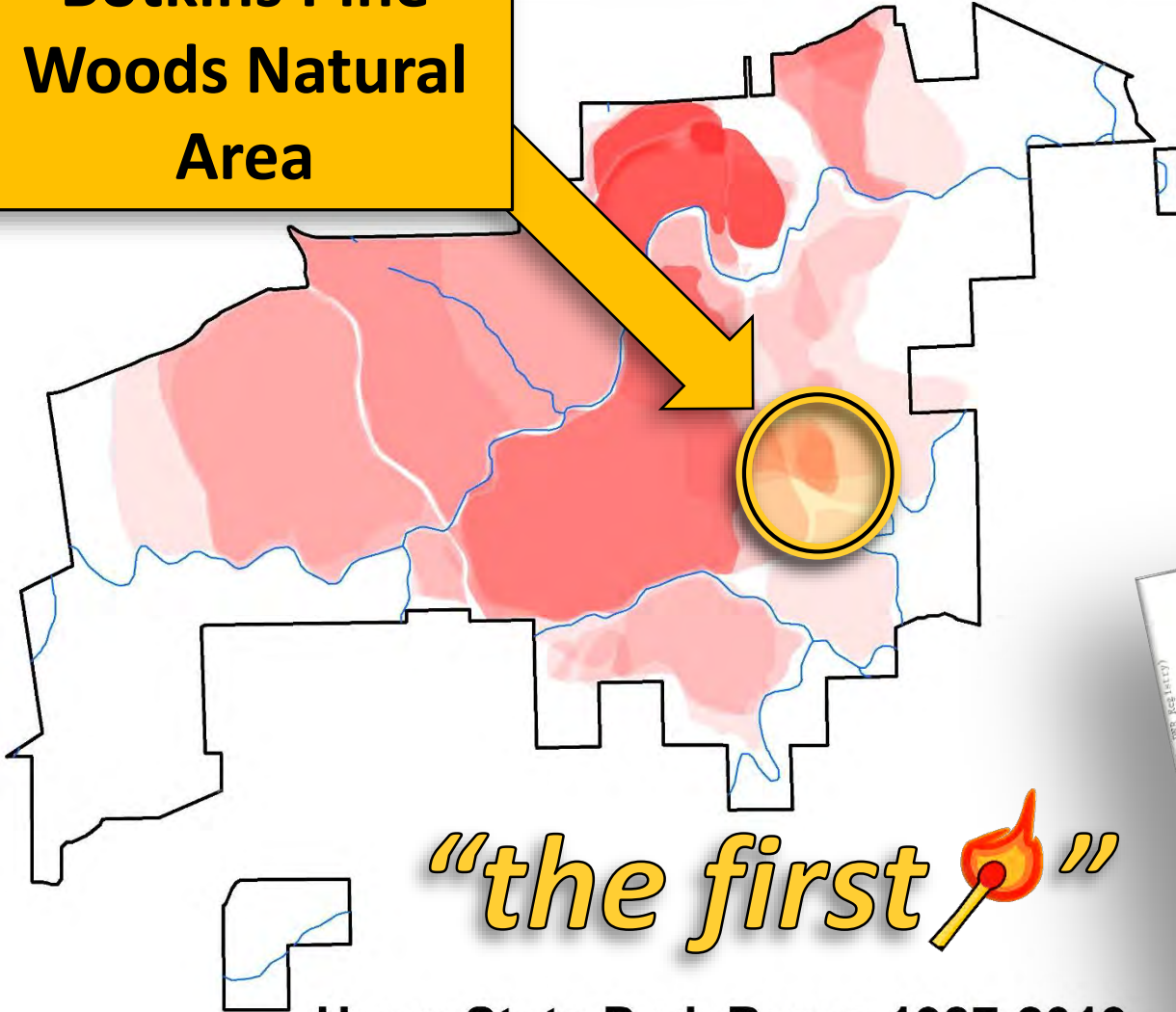


Hawn State Park Burns



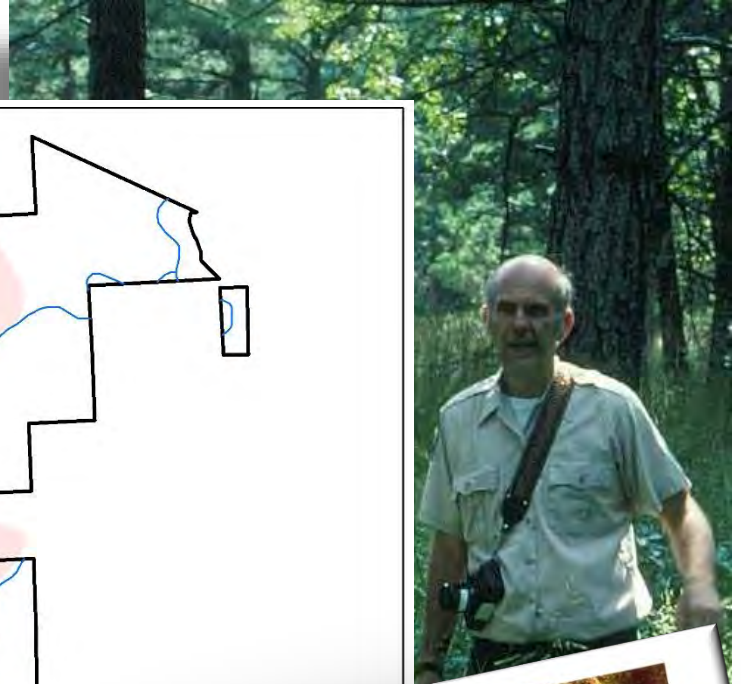
Rx fire began in 1987

Botkins Pine Woods Natural Area



“the first 🔥”

Hawn State Park Burns 1987-2019



(To be filed in DNR Registry)

Botkins Pine Woods Natural Area, Hawk State Park



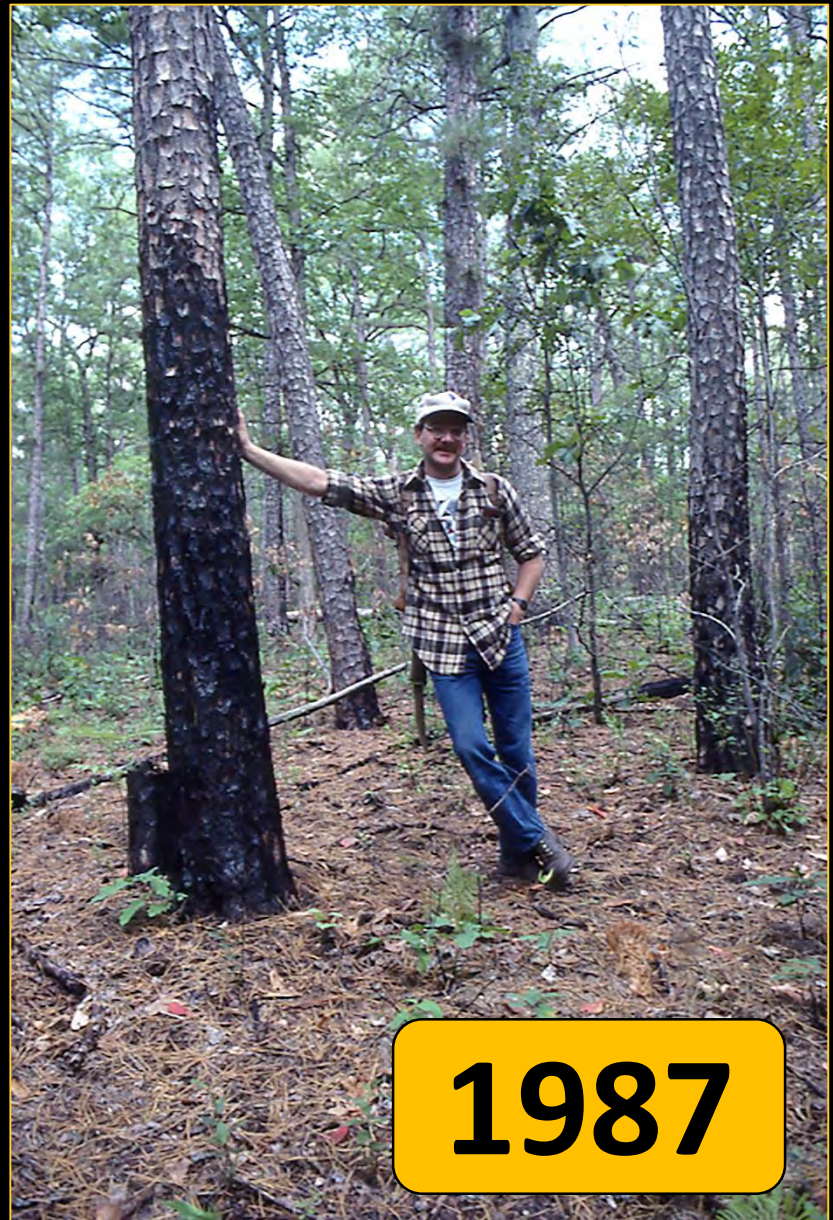
**Botkins Pine Woods as photographed for its 1981
Missouri Natural Area Nomination**

(To be filed in DNR Registry)

Botkins Pine Woods Natural Area, Hawk State Park



1981



1987

Botkins Pine Woods, summer after first (2/87) prescribed burn

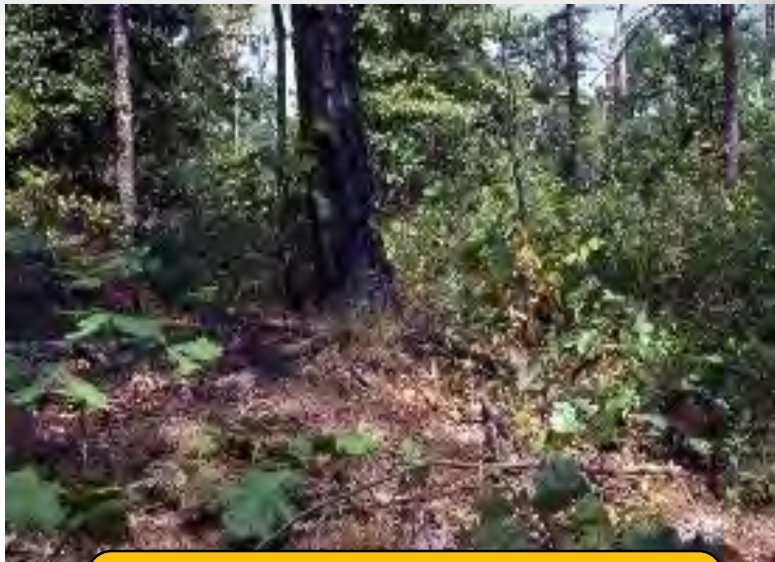
Botkins Pine Woods Natural Area, Hawk State Park



1981 before Rx burns

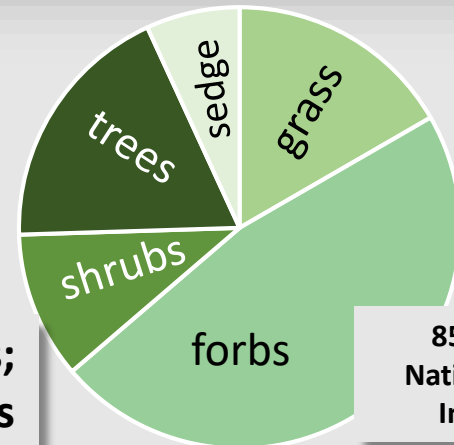


1987 after first burn



2010, 13 yrs & 3 more fires after first burn

Understory Plants - Relative Cover



Four transects;
16 1/4m² plots

85 species
Native Quality
Index 4.5

2012, 15 yrs - 4 burns

Botkins Pine Woods Natural Area September 2019



Burned five times in 33 years

... four growing seasons since the last fire



1981

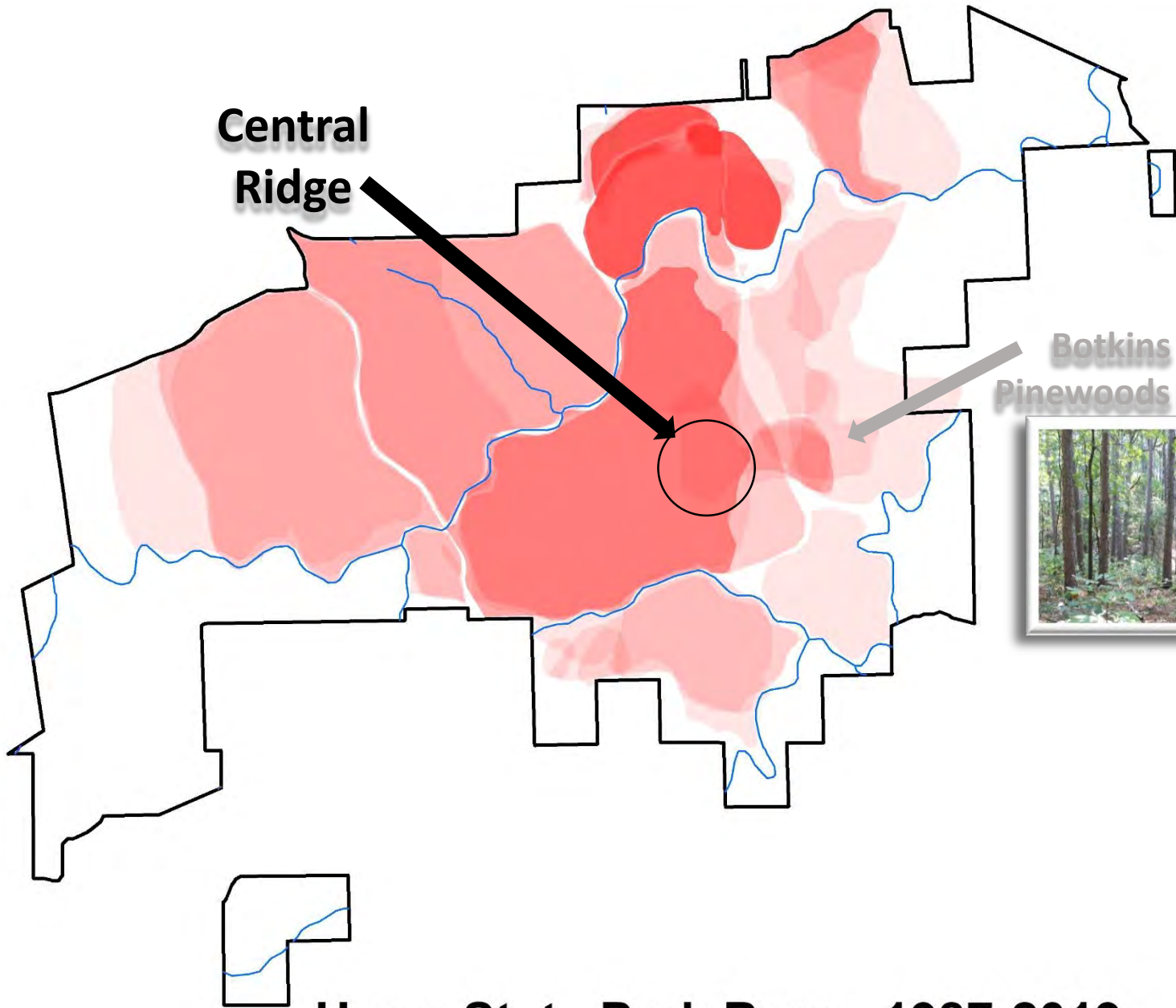


1987



2019

Closed canopy, dry/dry-mesic site burned five times 1987-2019



**Central
Ridge**

**Botkins
Pinewoods NA**



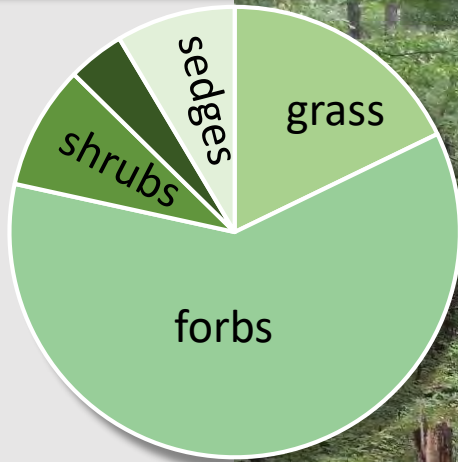
Hawk State Park Burns 1987-2019

Hawn – Central Ridge, 2016

Burned 7x in 23 years: 1993-97-99-03-09-12 & 15

2016 Monitoring Plot Data

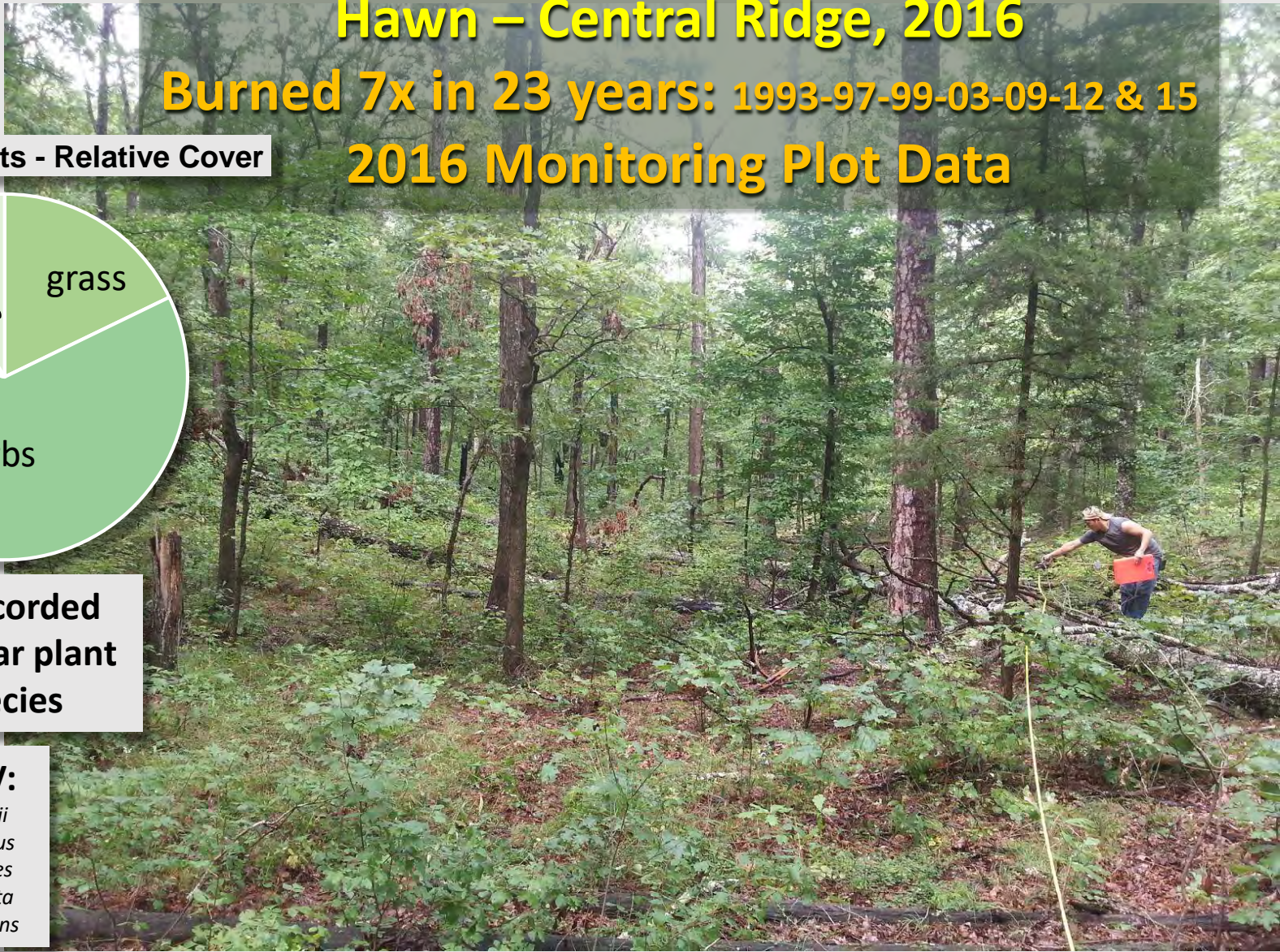
Understory Plants - Relative Cover



93 recorded vascular plant species

Top 5 by RIV:

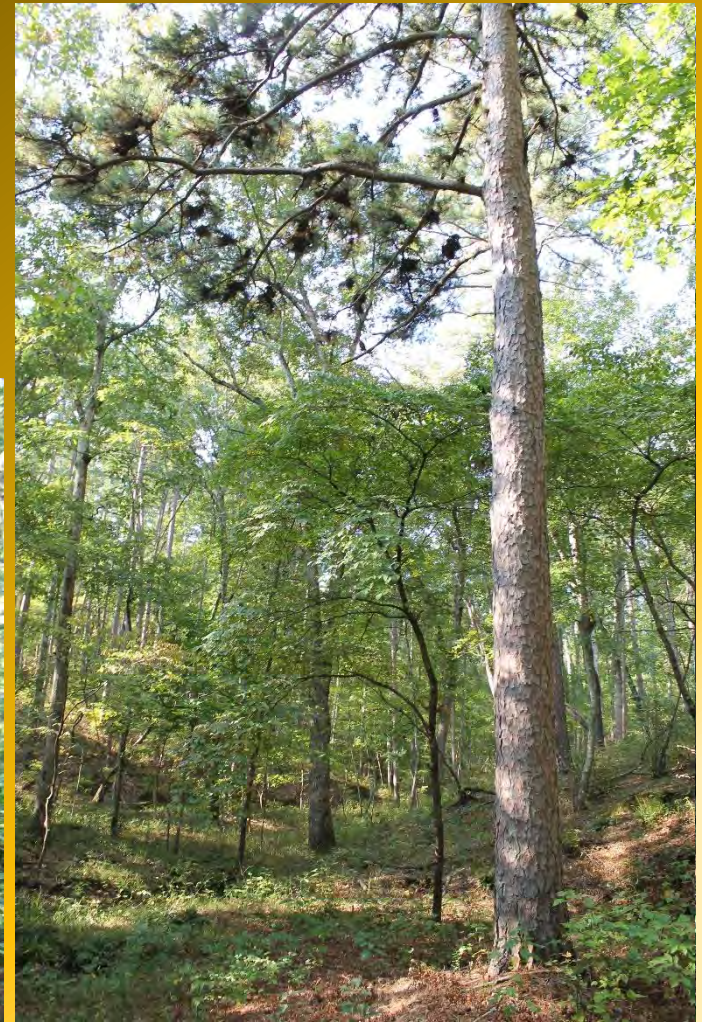
Dichanthelium boscii
Helianthus divaricatus
Psoralea psoraleoides
Carex nigromarginata
Lespedeza procumbens



Plot Number	Community	Location	Mean-C	Cwm-C	FQI	CWfqi	Richness	Grass	Forb	Shrub	Tree	Sedge
Hawn-4-2016	Dry Woodland	Hawn	4.5	4.5	43.4	42.4	93	14.8	50.3	7.4	3.4	7.1

Central Ridge

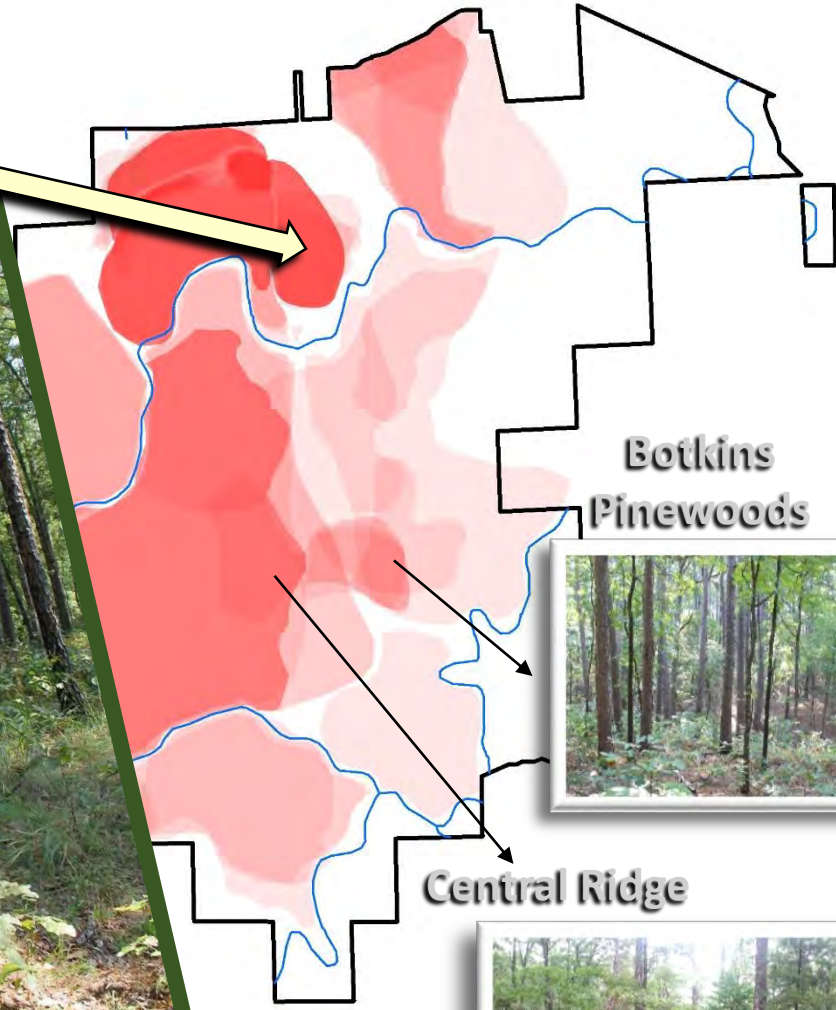
...Two weeks ago



7 burns in
26 years

2019

**Amphitheater
Unit**



**Botkins
Pinewoods**



Central Ridge



Hawk State Park Burns 1987-2019

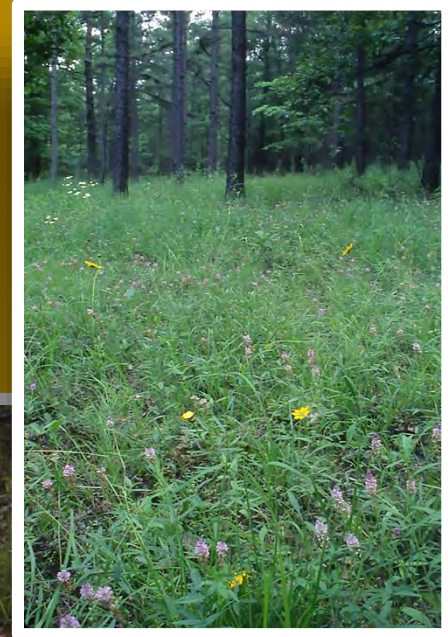
Amphitheater Unit



1992

**3 burns in 3
years**

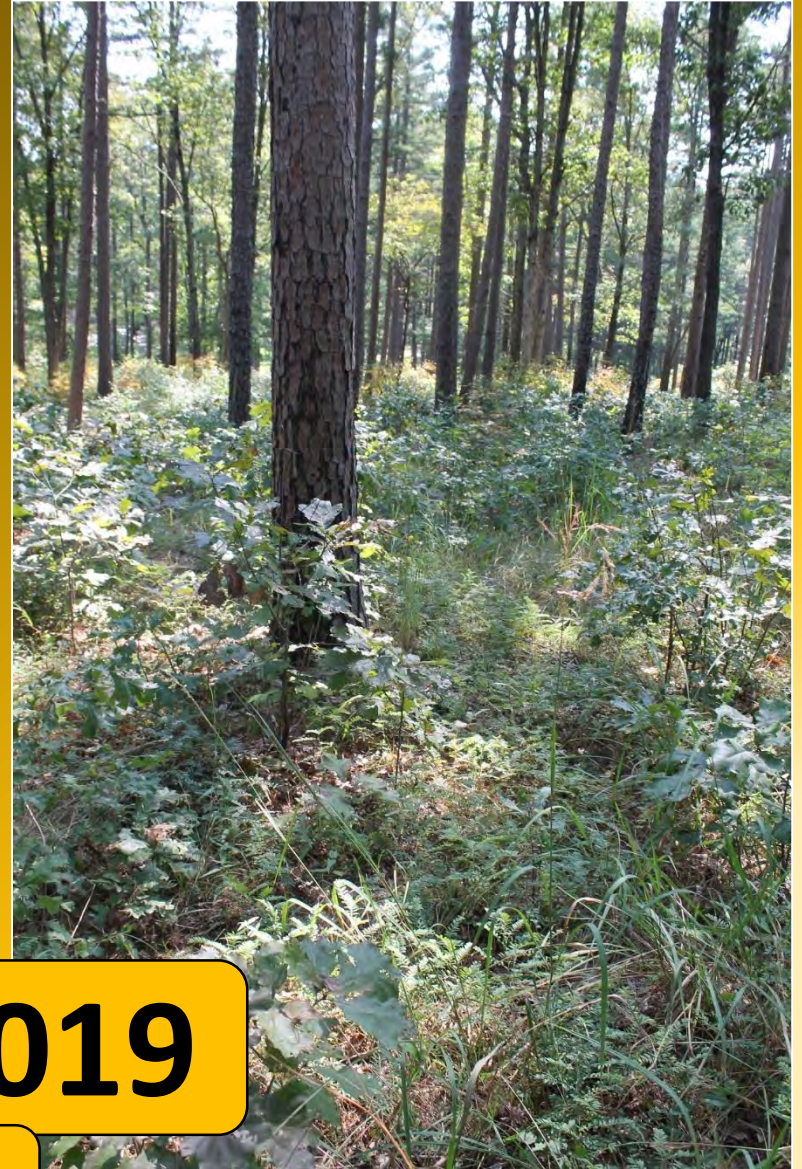
Amphitheater Unit



1992

**3 burns in 3
years**

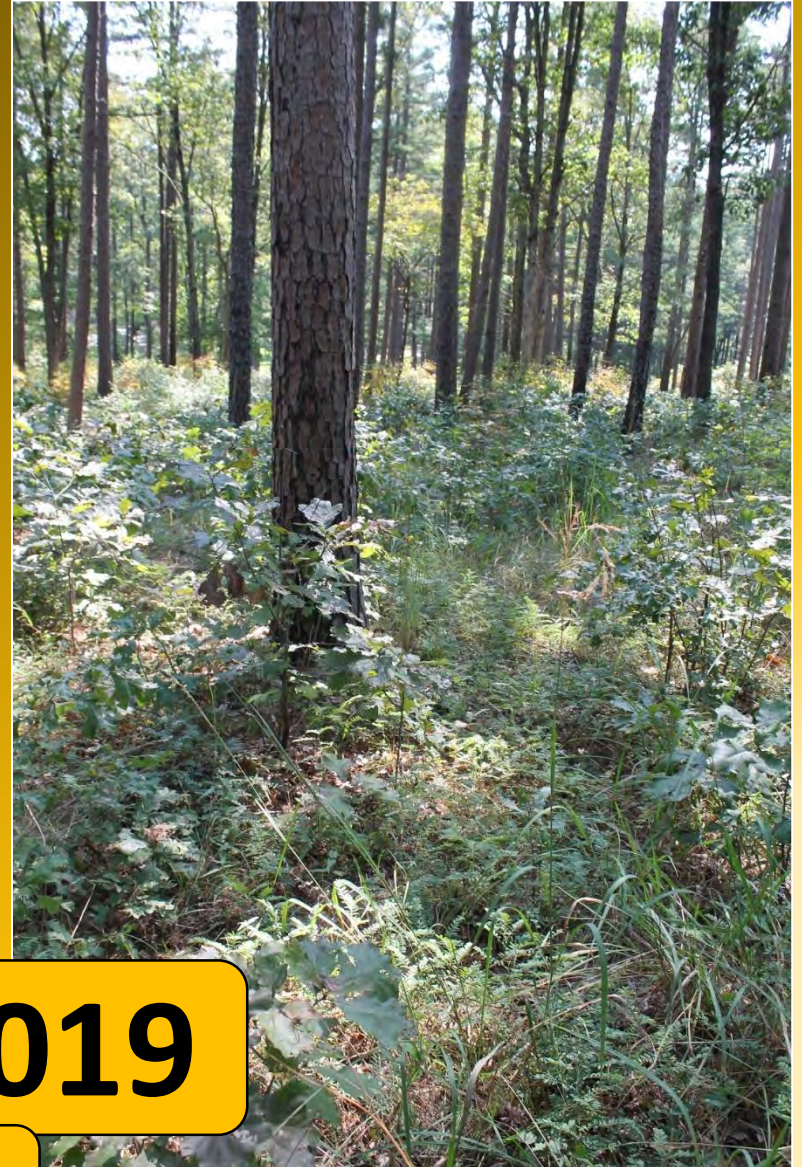
Amphitheater Unit



2019

**11 burns in
29 years**

Amphitheater Unit



2019

**11 burns in
29 years**

Hawn Ampitheater, 2016

dry sandstone woodland 2 years post-burn



2019

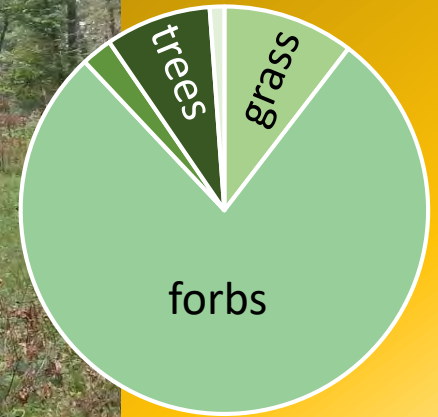
**11 burns in
29 years**



Hawn Amphitheater, 2016 dry-mesic sandstone woodland 2 years post-burn

Same burn unit ... lower on the slope

**Understory Plants
Relative Cover**



**76 recorded
vascular plant
species**

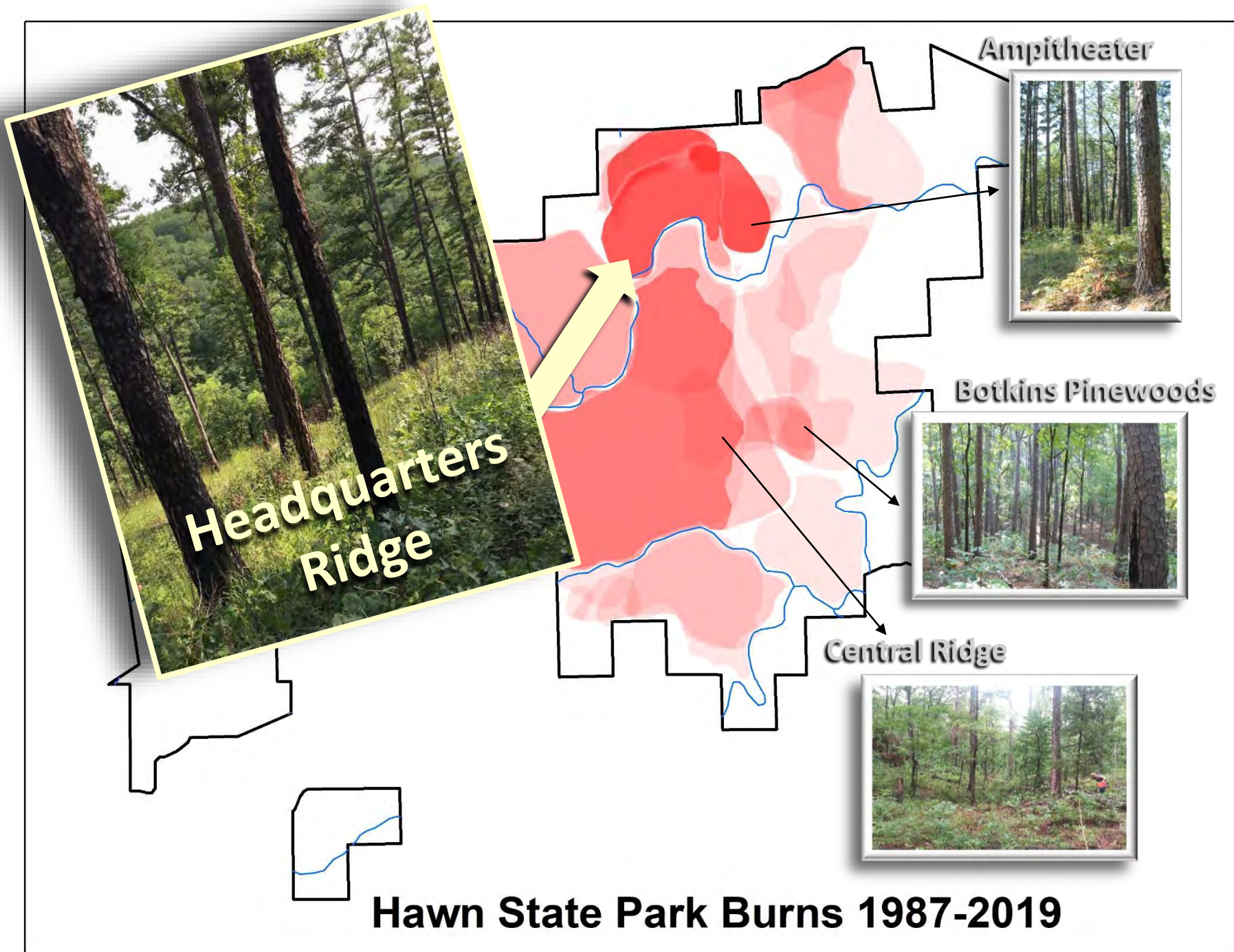
**11 burns in
27 years**

	Mean-C	Cwm-C	FQI	CWfqi	Richness	Relative Coverage				
						Grass	Forb	Shrub	Tree	Sedge
Hawn-4-2016	4.5	4.5	43.4	42.4	93	14.8	50.3	7.4	3.4	7.1
Hawn-4-2019	4.6	4.2	40.2	37.6	80	14.4	45	14.4	16.7	6

Amphitheater Unit

Two weeks ago ...
12 burns and 29
years later





Headquarters Ridge

Sept. 2018
9 burns in 25 years



Sept. 2018
12 burns in 29 years

Headquarters Ridge



Headquarters Ridge



Sept. 2018
12 burns in 29 years

Headquarters Ridge



Sept. 2018
12 burns in 29 years

Headquarters Ridge



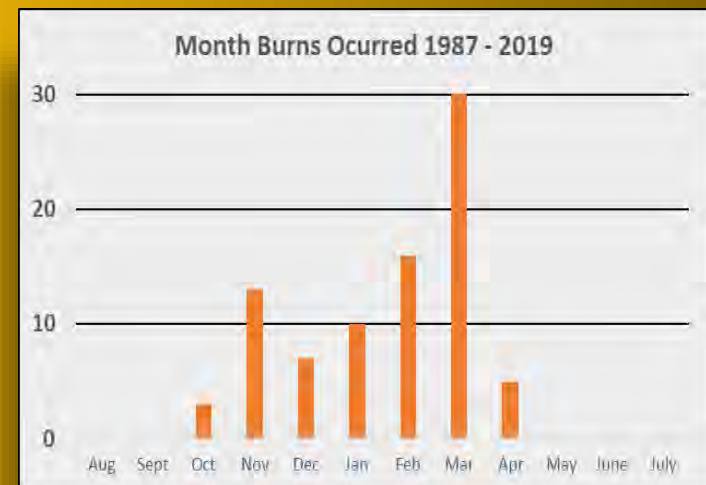
Sept. 2018
12 burns in 29 years

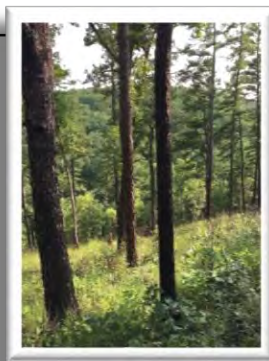
Hawn State Park Fire (*only*) Management

Areas, 1987-2019



- Fire only
- 20 to 33 year fire regime
- Fire frequency averages once per 3-7 years
- Up to twelve burns on some units
- Response relates to fire frequency, site factors and initial floral richness





Headquarters
Ridge

Ampitheater



Botkins Pinewoods



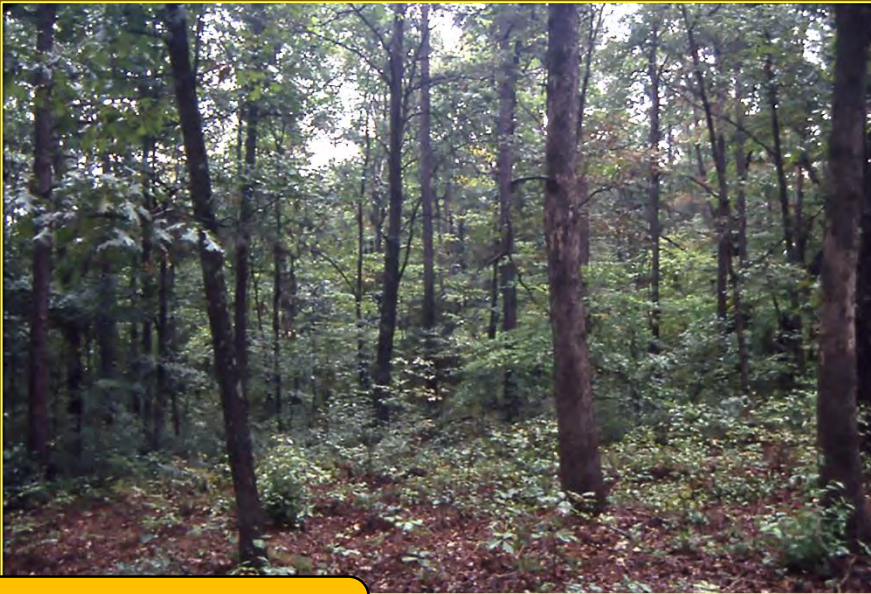
Central Ridge



Thinning Unit

Hawn State Park Burns 1987-2019

Hawn Park Rd East Thinning Unit



Not Thinned

1993

Thinned



Thinned, no fire yet



1993, after thinning; before fire

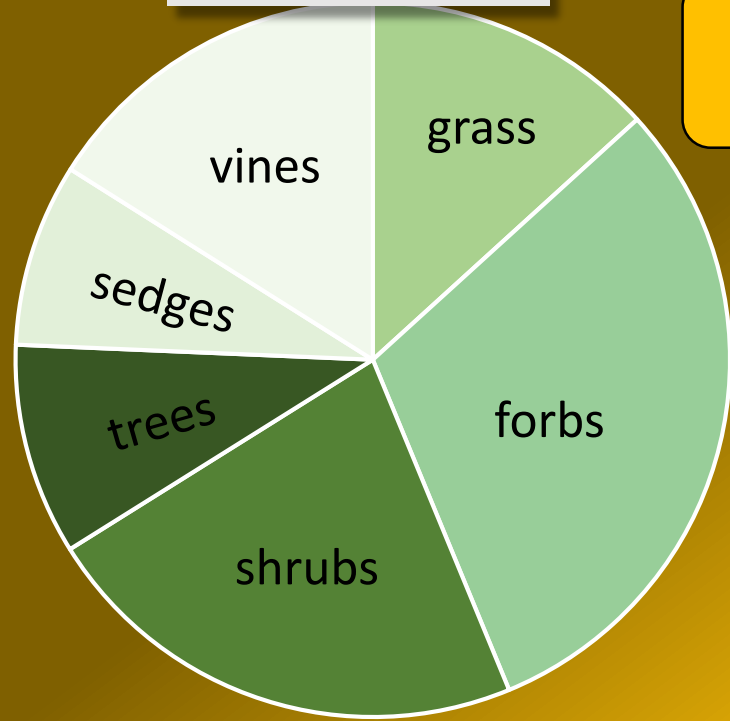


**1997, after burns in
1993 & 1997:**



Four years later, after two burns

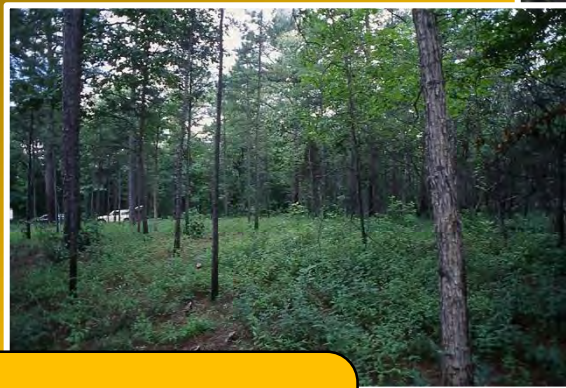
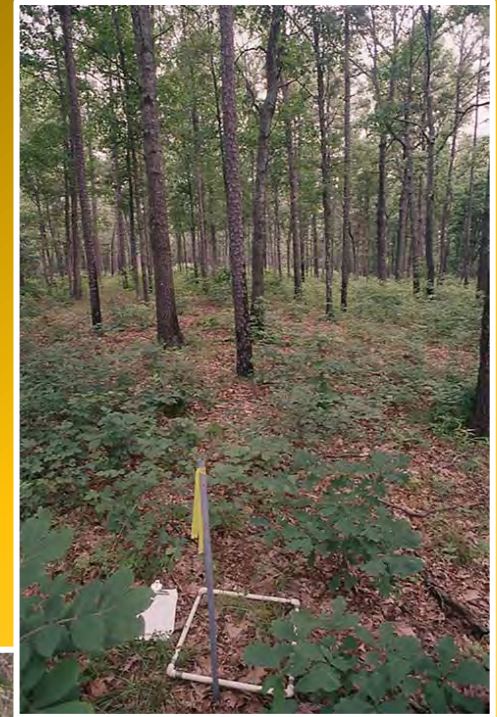
Understory RIV's



June, 1997 DATA

55 recorded
vascular plant
species

Top six by RIV:
Rhus aromatic
Panicum boscii
Amphicarpa bracteata
Monard russeliana
Sassafras albidum
Vitis aesivalis



1997, after burns
in 1993 & 1997:

Thinned, no fire yet



1993
No fires yet

Four years, two burns later ...



1997
Two burns

Twenty-five years, five burns later ...



Sept 2019
Two years post-fire
Five burns in 25 years

Hawn Park Road-East Thinned Unit

Four years, two burns later ...



1997

Two burns

Hawn Park Road-East Thinned Unit

Twenty-five years, five burns later ...



Sept 2019

Two years post-fire
Five burns in 25 years

Four years, two burns later ...



1997
Two burns

Twenty-five years, five burns later ...



2019
Five burns

Twenty-five years, five burns later ...



Hawn Park Road-East Thinned Unit

Sept 2019

**Two years post-fire
Five burns in 25 years**

*Dry-mesic woodland
overview*

Twenty-five years, five burns later ...



Hawn Park Road-East Thinned Unit



Dry sandstone woodland ...

higher up the slope with gravelly, better drained soil

Remember this tree
line?

1993

Did the
thinning
help?

Hawn Park Rd East Thinning Unit

Remember this tree
line?

1993

Did the
thinning
help?

2019

Not
Thinned

Thinned



Hawn Park Road-East

UN-Thinned Unit

Dry-mesic sandstone woodland



Two weeks ago ...
5 burns and 25
years later



Hawn Park Road- East Burn Unit

Dry sandstone woodland



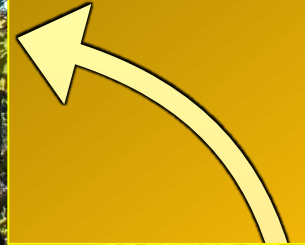
September, 2019
Same fire history
Same soil & contour
after 25 years and
five burns



Thinned



Not Thinned



St. Joe State Park

Same burn unit,
different thinning dates
Eight burns 1993-2002

Last week ...

Nine burns/nineteen years after thinning began



St. Joe State Park

Same burn unit,
different thinning dates
Eight burns 1993-2002





Amphitheater Unit



Central Ridge



Hawn Park Road-
East Thinned Unit



Botkins Pine
Woods

Pine regeneration?

Pine regeneration?



Amphitheater Unit



Amphitheater Unit



Beaver Ridge Unit

Johnson's Shut-Ins State Park

Two Rx burns
since the 2009
Derecho



30 years of “Fire in the Parks”

