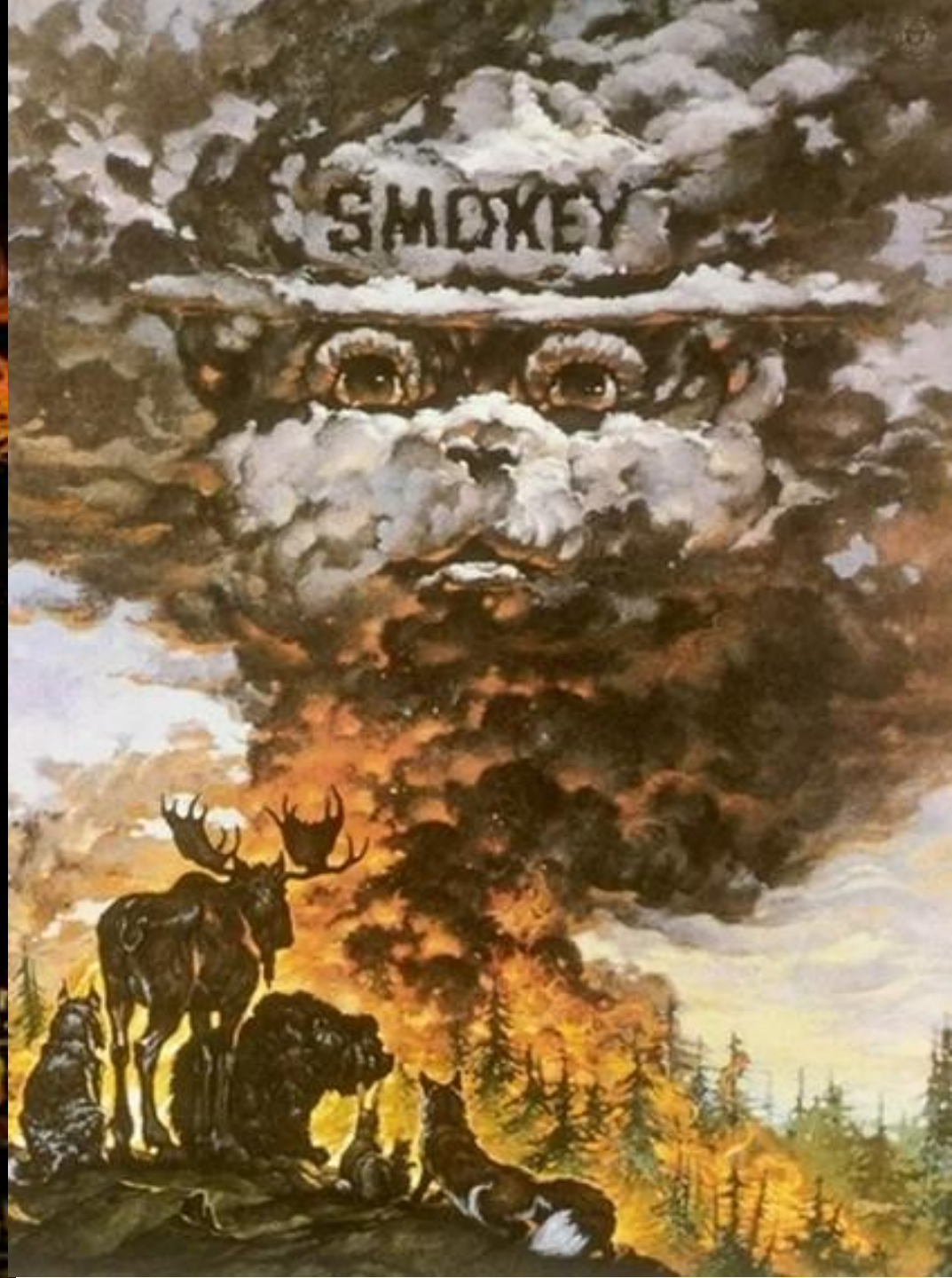
Did Smokey Bear Get it Wrong?



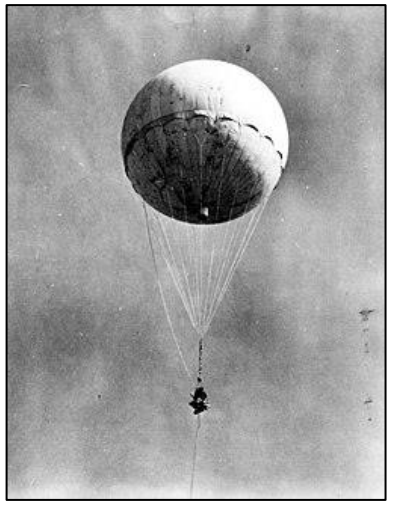
Smokey's Fire Prevention Campaign

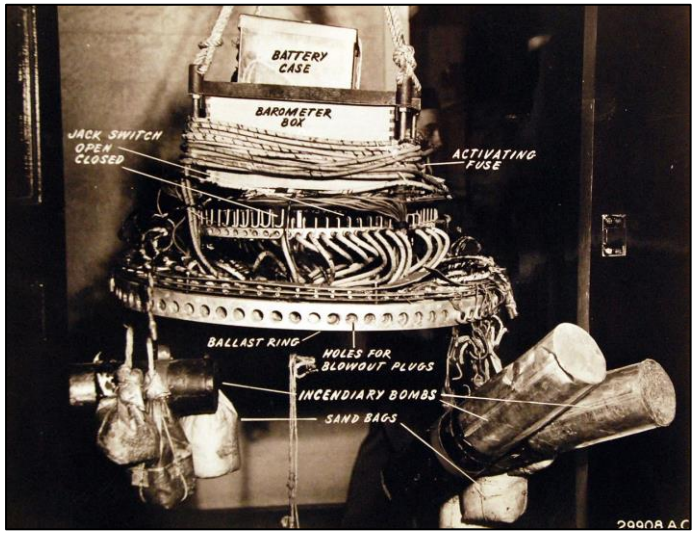
- Wildfire prevention icon since 1944
- Continues to be widely successful

Smokey Bear Propaganda?

Early Forest Fire Propaganda

- Japanese submarine attack in Southern Ca – Los Padres NF (1942)
- WWII Japanese Incendiary ballons (1944-1945)
- Wartime Advertising Counsel





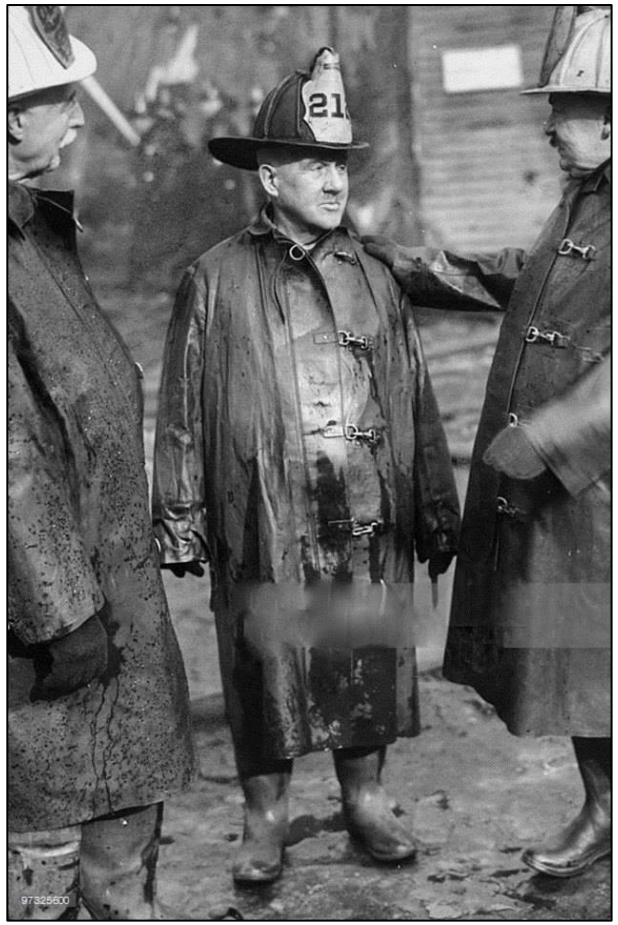
Bambi: First Fire Prevention Animal

- 1944 - Cooperative Forest Fire Prevention Council uses ***Bambi*** as first fire prevention animal

  - Disney only allowed use of Bambi for one year

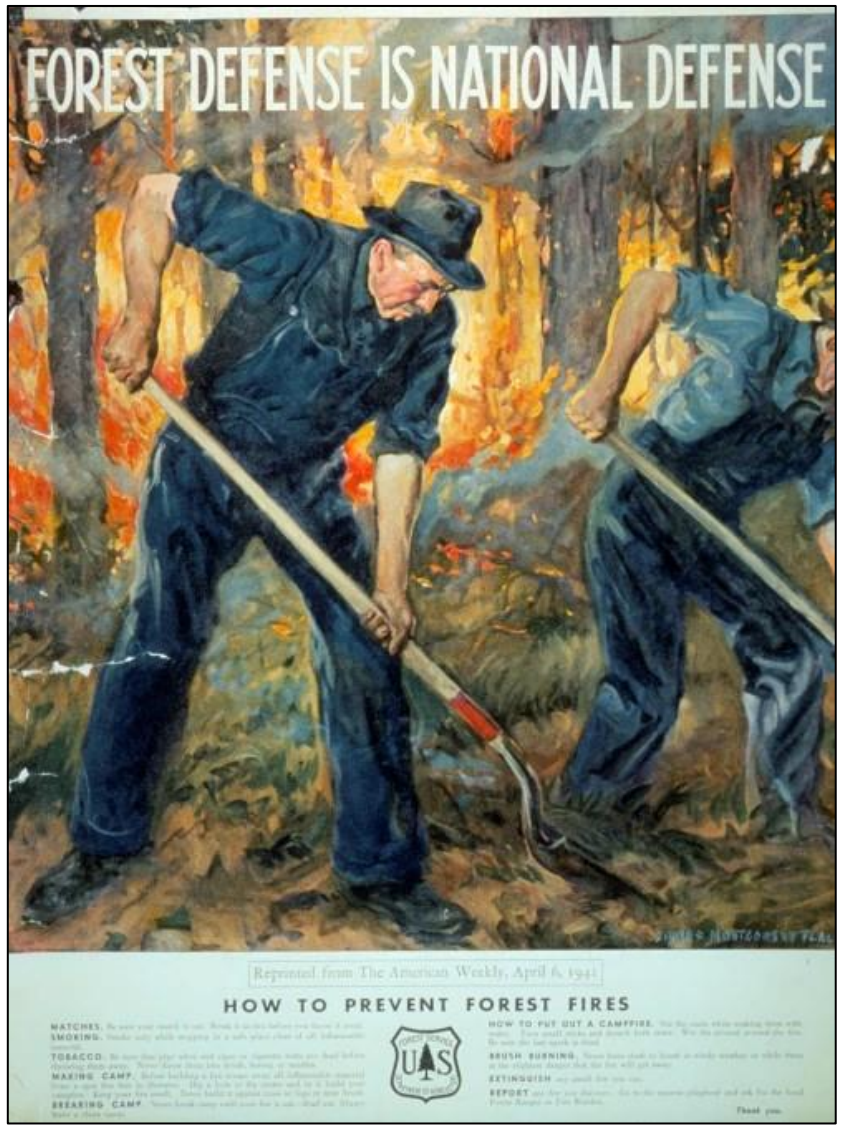
1944 – Smokey Campaign Begins

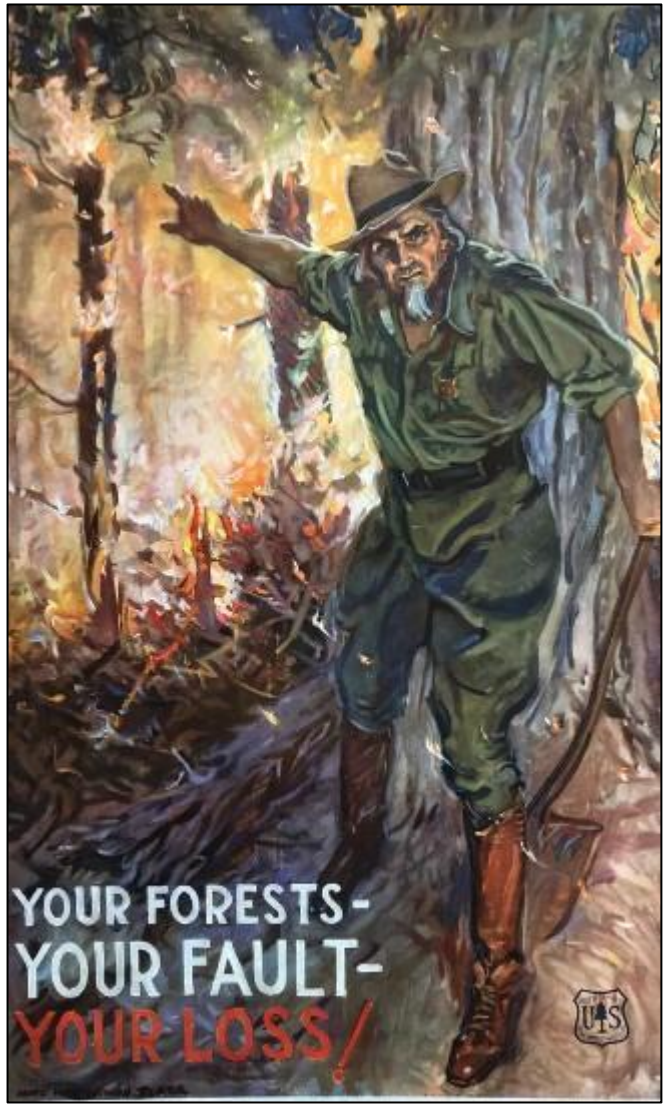
- Aug 9, 1944, the USFS choose a bear for their fire prevention campaign
- Named “Smokey” after FDNY Hero, “Smokey” Joe Martin



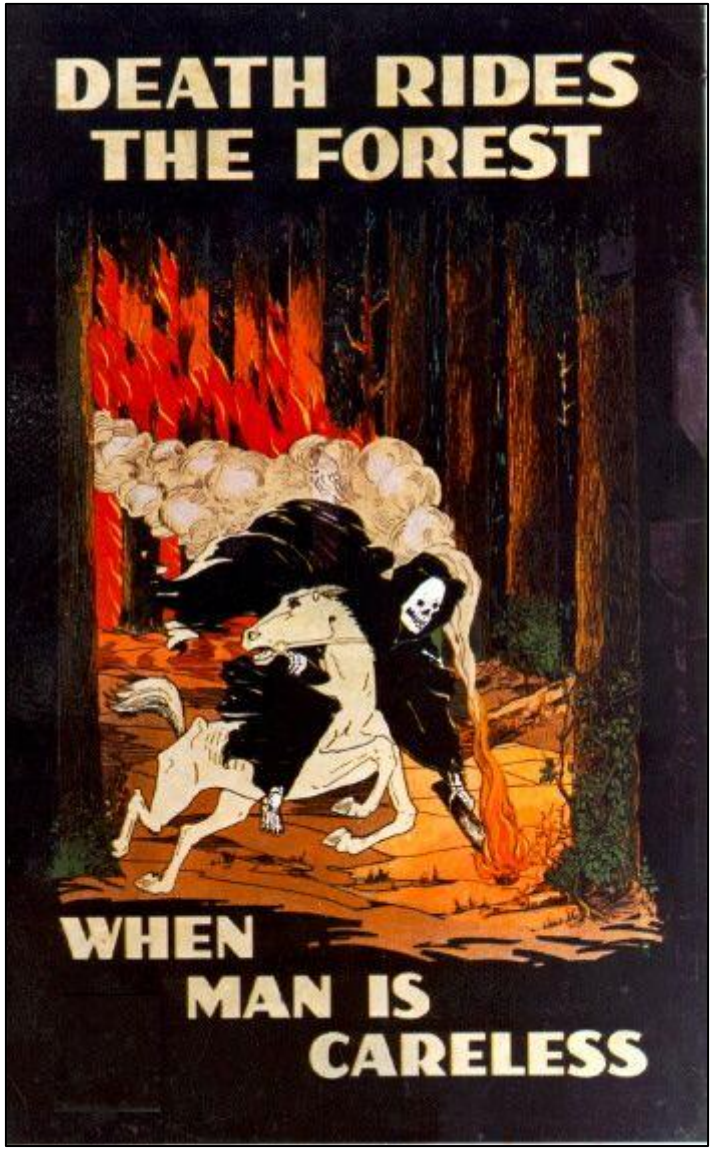
Smokey's Fire Suppression Messaging

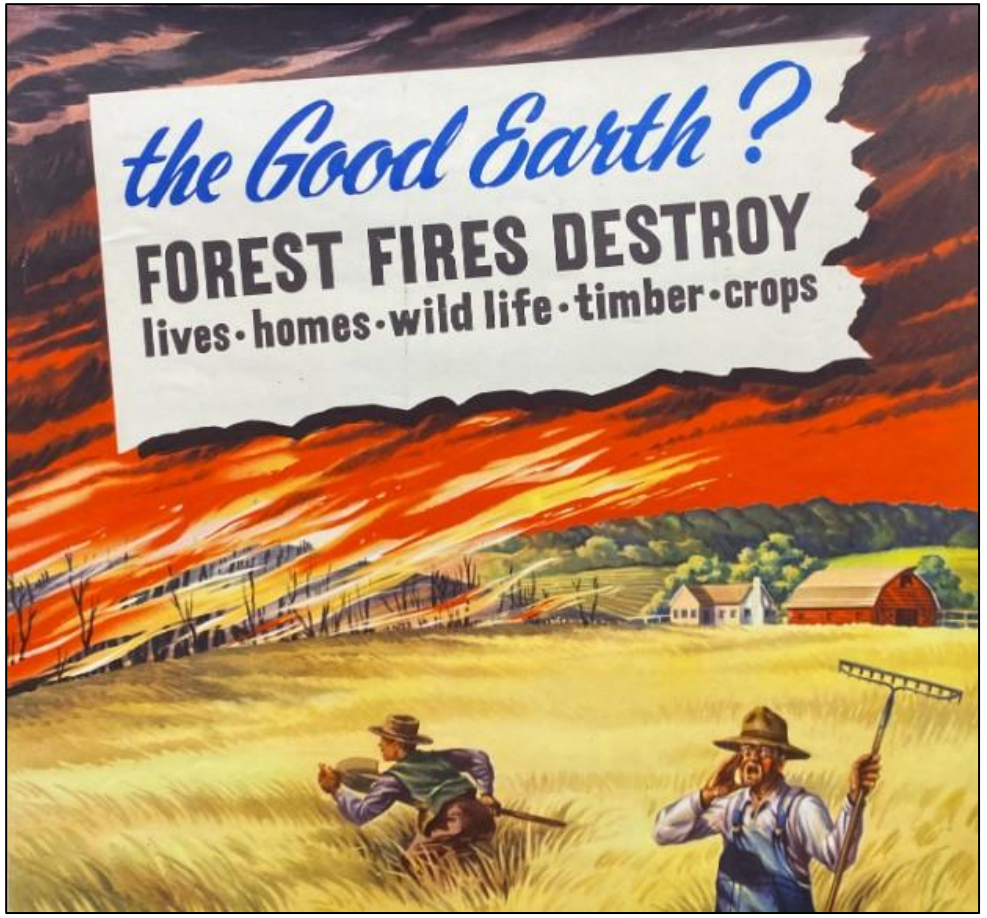
Fire Suppression Messaging

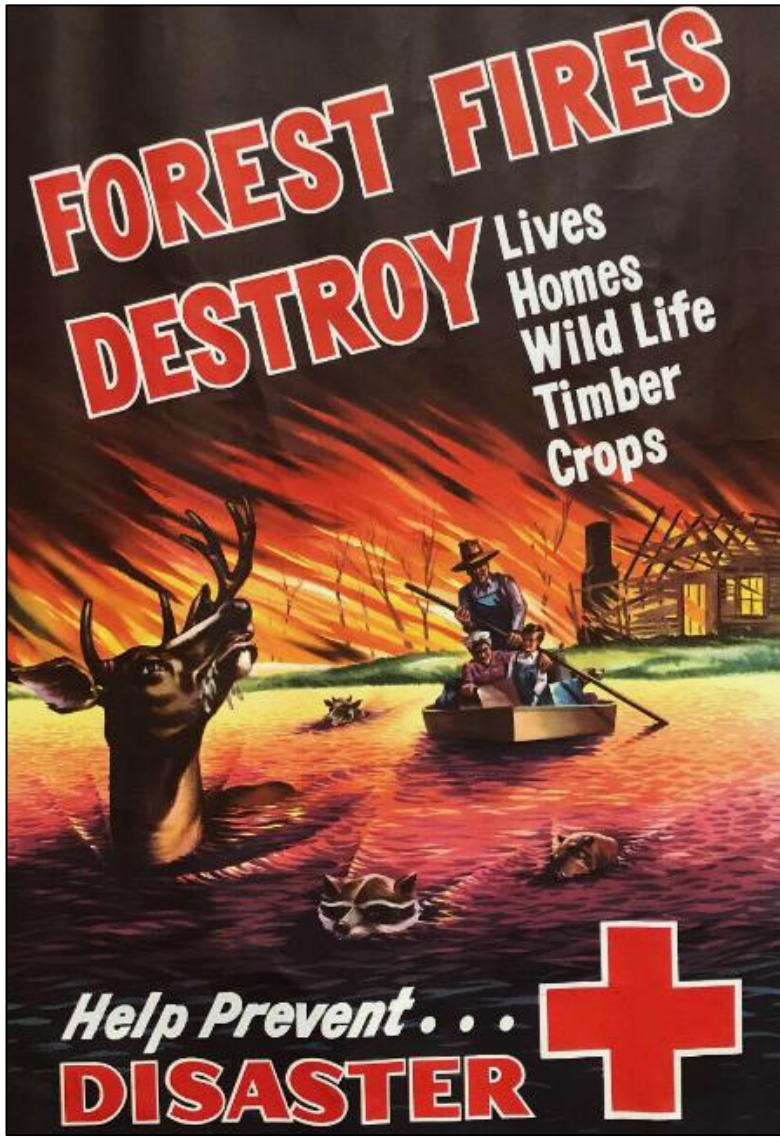




Fire Suppression Messaging





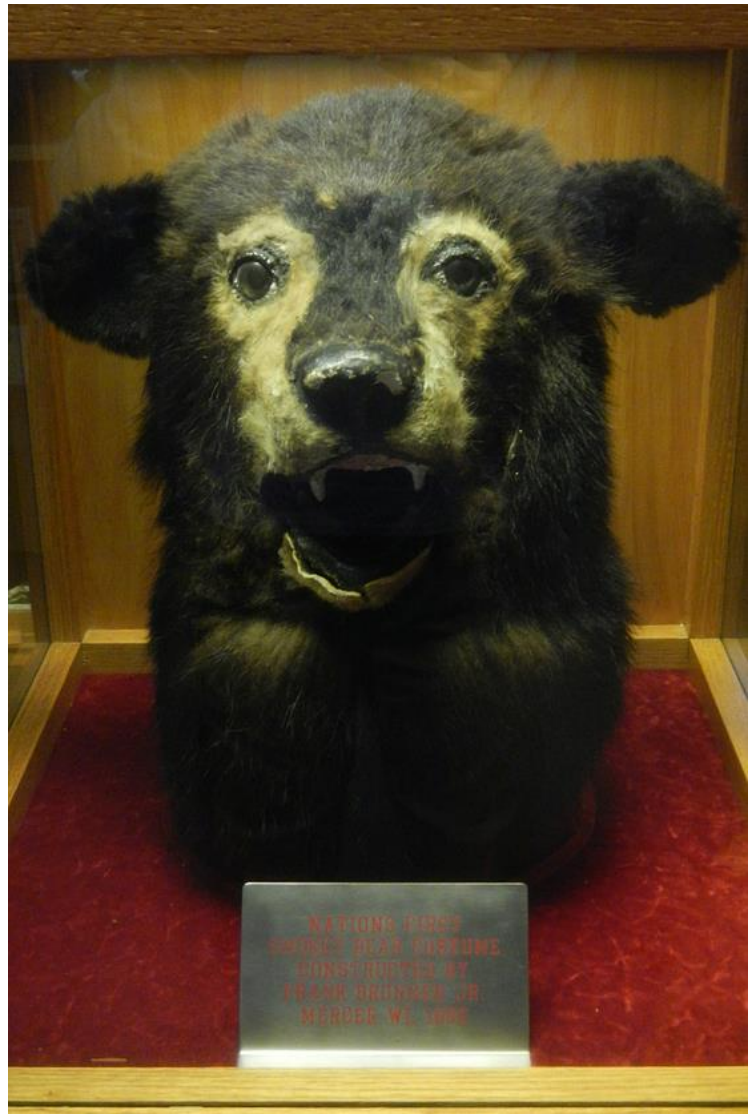


Real Smokey Emerges in 1950

- Young black bear cub was rescued on the Capitan Gap Fire in the Lincoln NF, New Mexico
- NM Game Warden, Ray Bell flies the cub to Santa Fe for treatment
- Later becomes a living symbol of Smokey Bear

Wisconsin DNR – First Smokey Costume

- Firemen's Convention Parade in Hurley, WI features Smokey Bear statue on float
- Wisconsin Dept. of Conservation crafts first Smokey Bear costume made with real bear hide
- Crafted by Frank Brunner Jr., Mercer, WI



2001 - “Only You Can Prevent Wildfires”

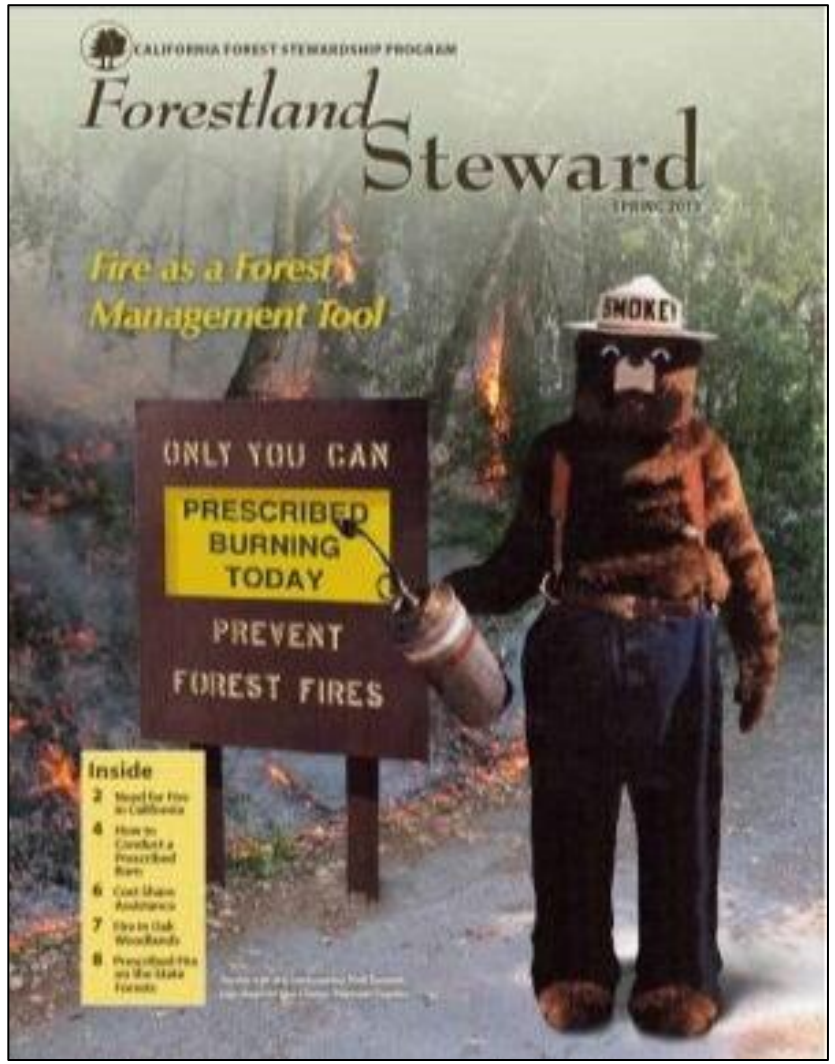
- Major fires occurring outside of forest ecosystems
- Clarify the meaning of unplanned fires vs. prescribed fire


SMOKEY
80TH
BIRTHDAY
80 years later.....
I HATE TO SAY IT, BUT CLIMATE CHANGE HAS BEAT ME!
SMOKEY
Horse
©2022 The Seattle Times

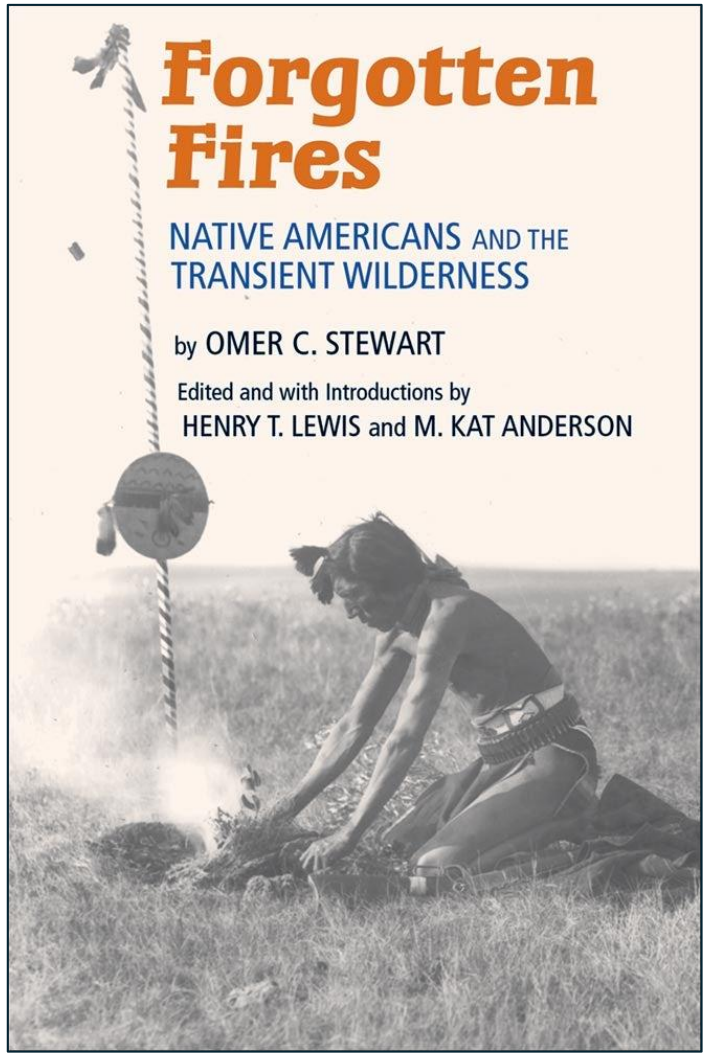
Be careful what you wish for: the legacy of Smokey Bear

Geoffrey H Donovan[1*] and Thomas C Brown[2]

"The Smokey Bear Effect"

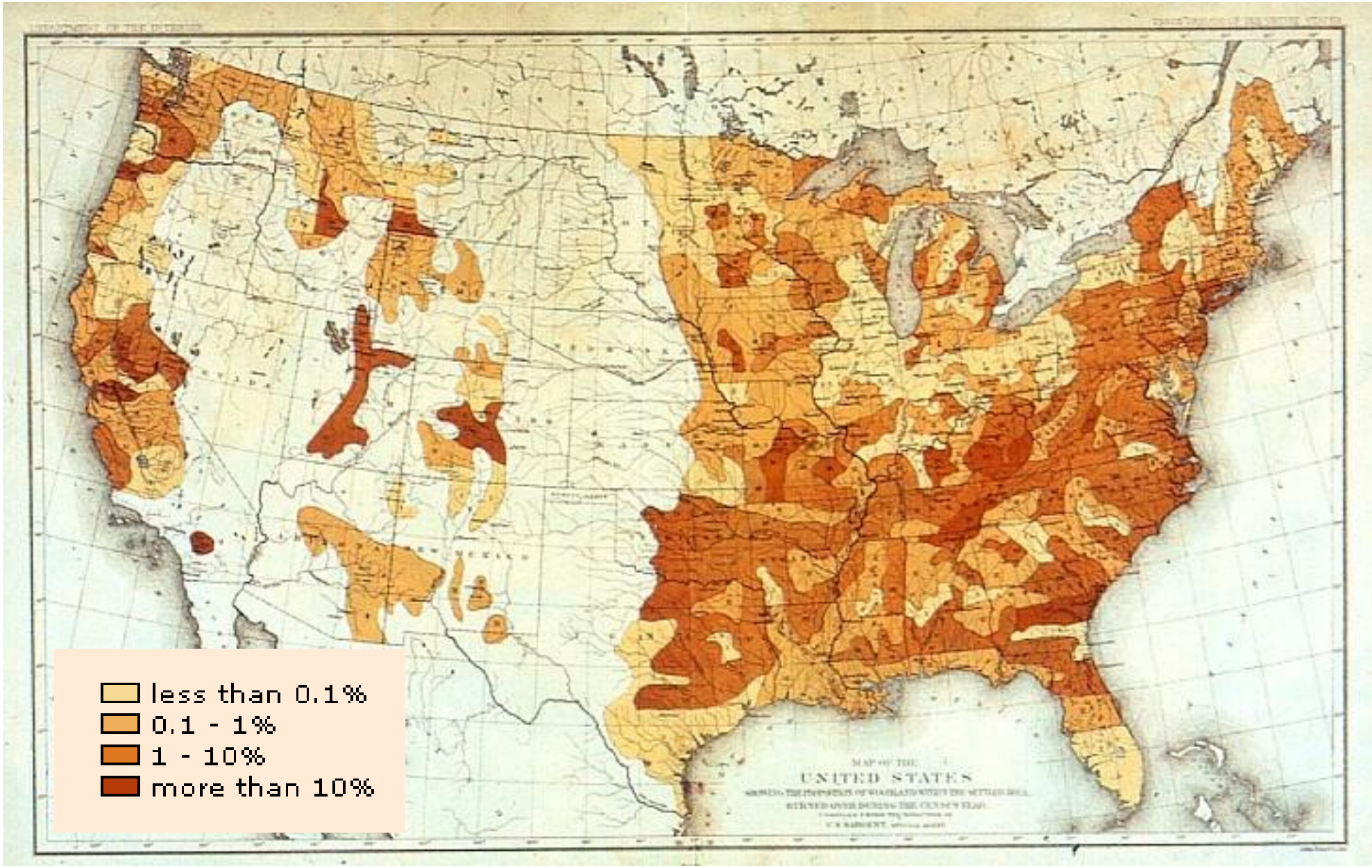


America's Fire History Prior to Smokey



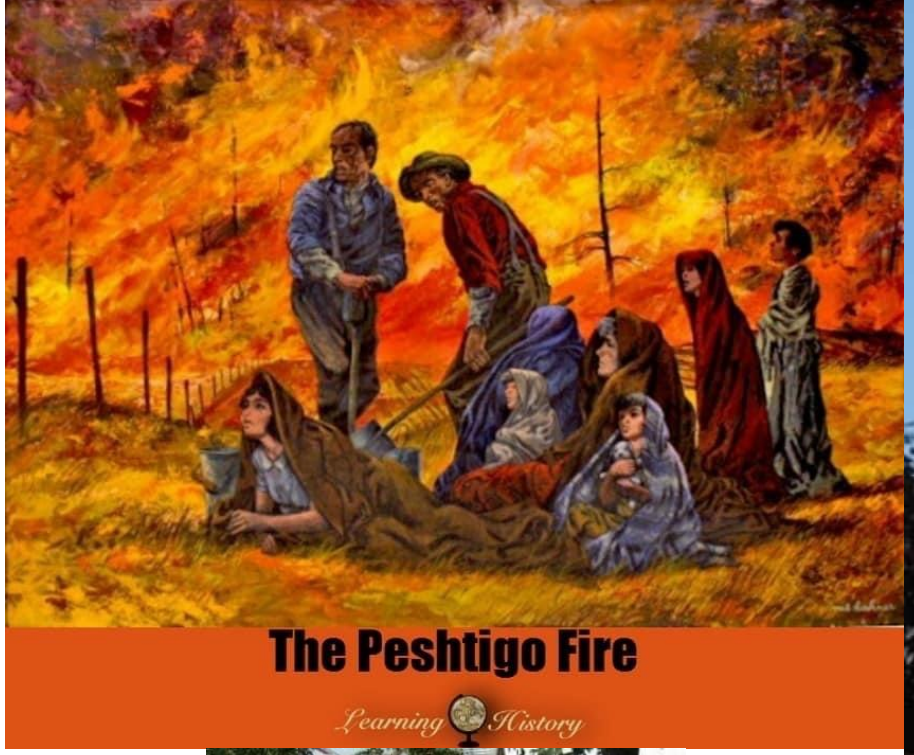
Shift from Native American burning practices

Proportion of U.S. Woodland Burned in 1880 (Sargent 1884)

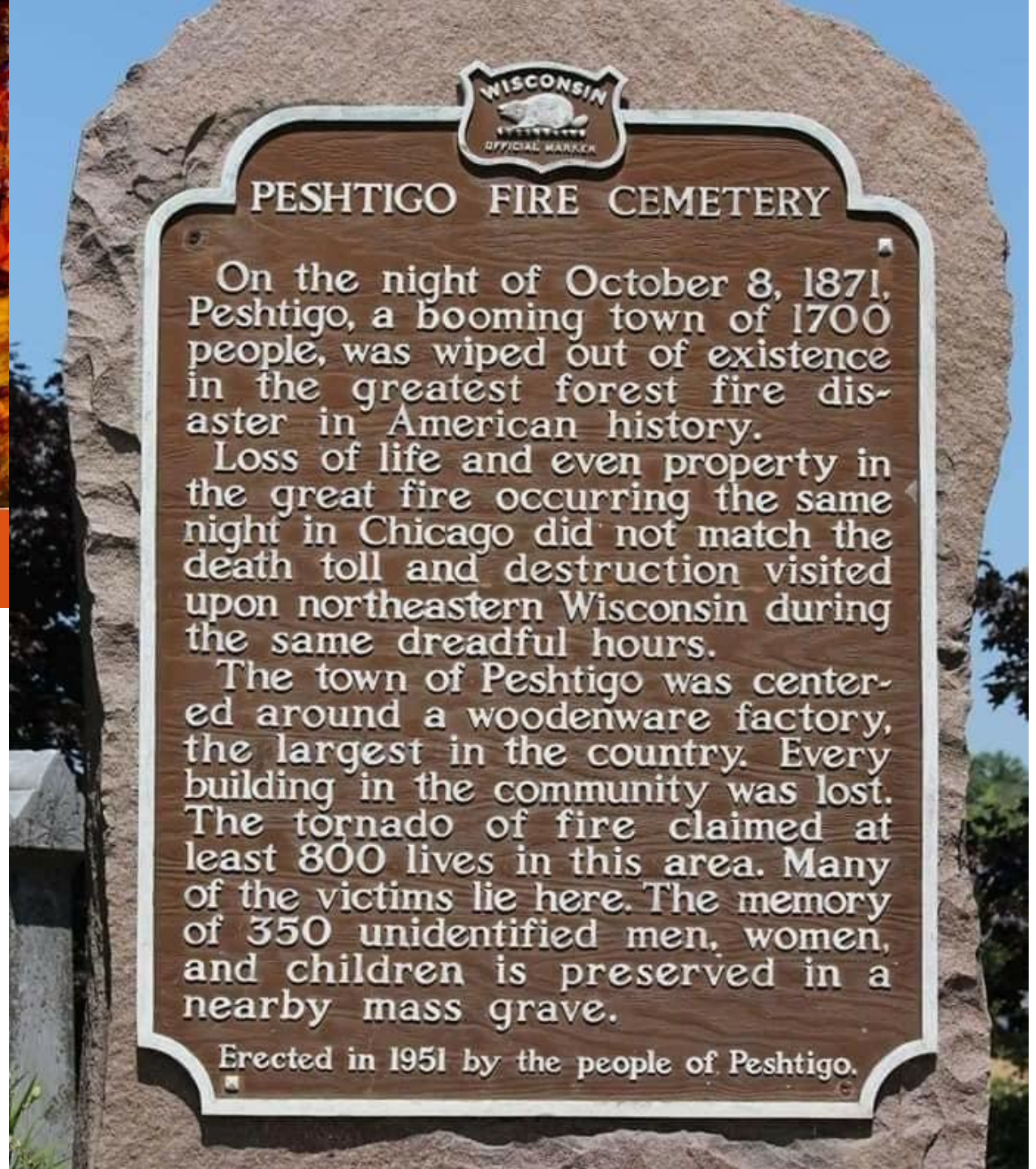


1871-Peshtigo Fire

- Burned approximately 1.2 million acres
- Deadliest wildfire in recorded history; deaths were estimated between 1,500 - 2,500


The Peshtigo Fire
Learning History

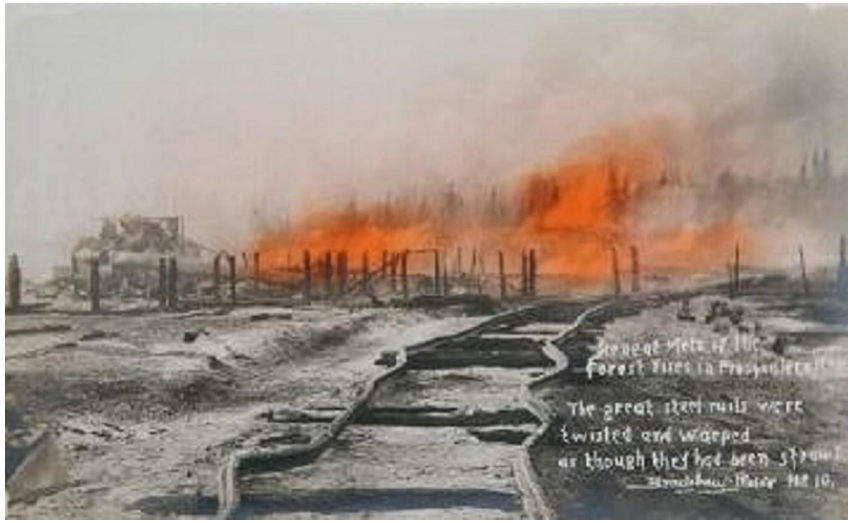

MASS
GRAVE
FOR THE
VICTIMS OF THE
PESHTIGO
FIRE
OCT. 8.
REST IN PEACE
1871


WISCONSIN
OFFICIAL MARKER
PESHTIGO FIRE CEMETERY
On the night of October 8, 1871, Peshtigo, a booming town of 1700 people, was wiped out of existence in the greatest forest fire disaster in American history.
Loss of life and even property in the great fire occurring the same night in Chicago did not match the death toll and destruction visited upon northeastern Wisconsin during the same dreadful hours.
The town of Peshtigo was centered around a woodenware factory, the largest in the country. Every building in the community was lost. The tornado of fire claimed at least 800 lives in this area. Many of the victims lie here. The memory of 350 unidentified men, women, and children is preserved in a nearby mass grave.
Erected in 1951 by the people of Peshtigo.

One of Three Big Fires on the Same Day

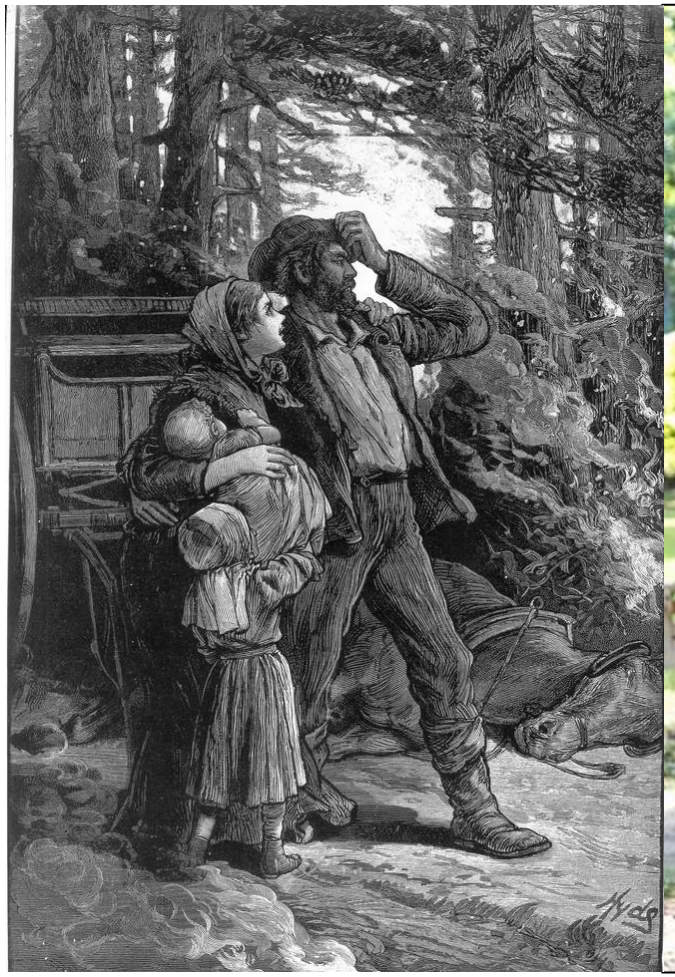
- **Great Chicago Fire**
  - 2,112 acres
  - 300 fatalities
  - 100,000 residences
  - Started in O'Leary barn

- **Great Michigan Fire**
  - 2.5 million acres
  - 500 fatalities
  - Several cities, towns, and villages were damaged or lost



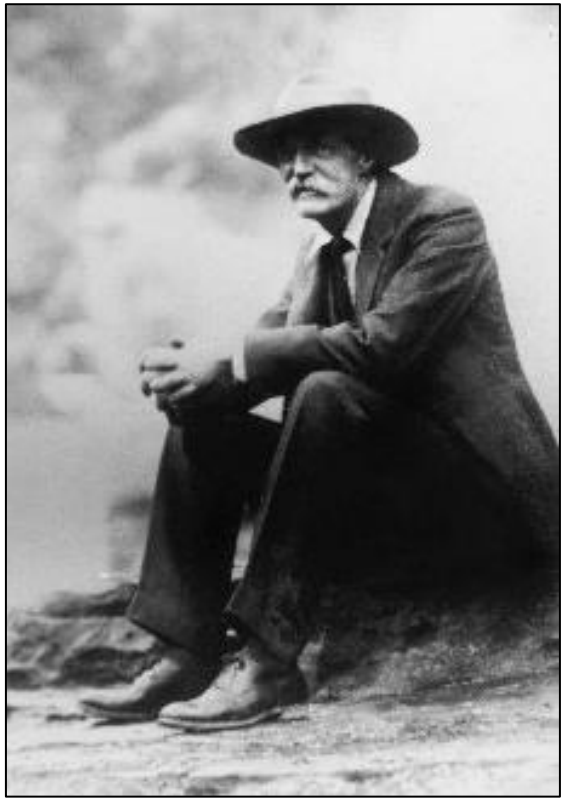
Great Fire of 1881 – “Great Thumb Fire”

- 2.5 million acres
- 1 million acres in one day
- 282 fatalities



1905 Creation of the Forest Service

Early Fire Policy



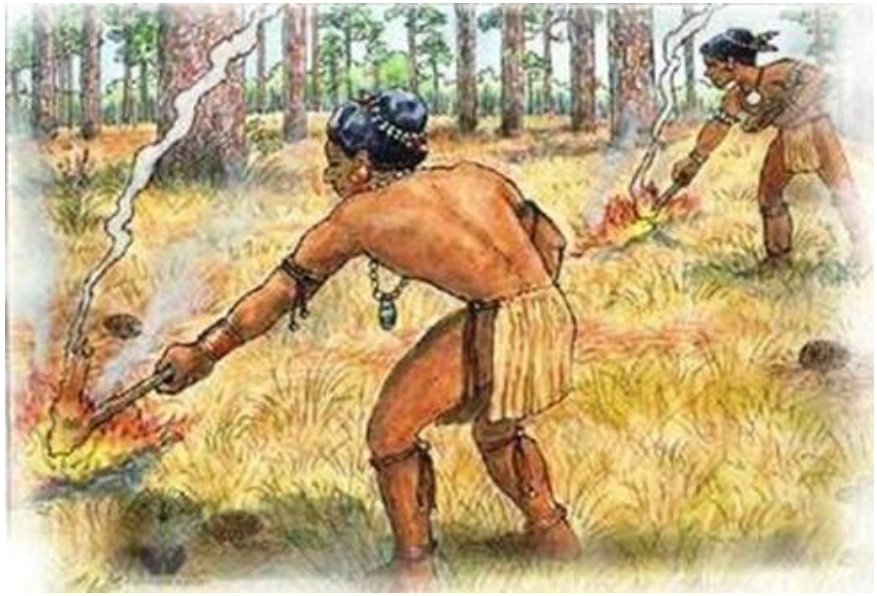
Gifford Pinchot

- **1907** *"In the early days of forest fires, they were considered solely an act of god, against which any opposition was hopeless. Today we understand that forest fires are wholly within the control of man."*

- **1908** *"The one secret of fighting fires is to discover your fire as soon as possible and fight it as hard as you can and refuse to leave it until the last ember is dead."*

How to manage fire?
Paiute Forestry vs Fire Prevention

If frequent “light” fires limit the potential for really big fires, then we should light lots of “light” fires.



If forest fires are bad, we should prevent them from occurring and put out all those that start..

Early Voices for Fire Ecology in the US South

Edwin V. Komarek, Sr.

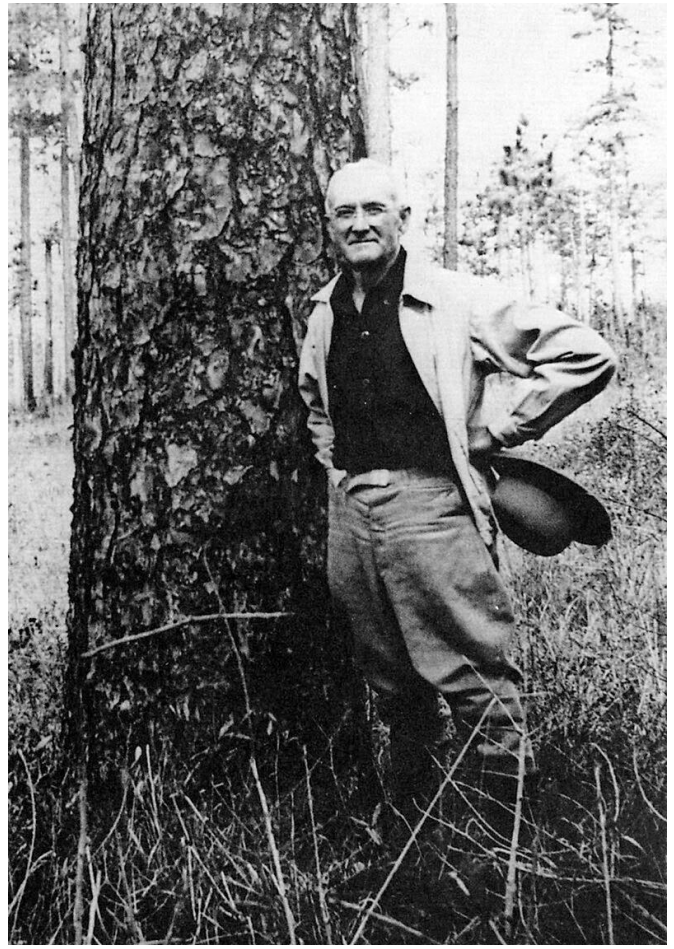
Organized Tall Timbers Fire Ecology Conference Series

"Father of Fire Ecology in the south"

H.H. Chapman from Yale School of Forestry also led the charge in the US South

TALL TIMBERS

- Komarek and Stoddard co-founded Tall Timbers Research Station in 1958



Herbert Stoddard

"The Bobwhite Quail: Its habits, preservation, and increase"

Harold's of Change

"Fire the servant vs. fire the master"

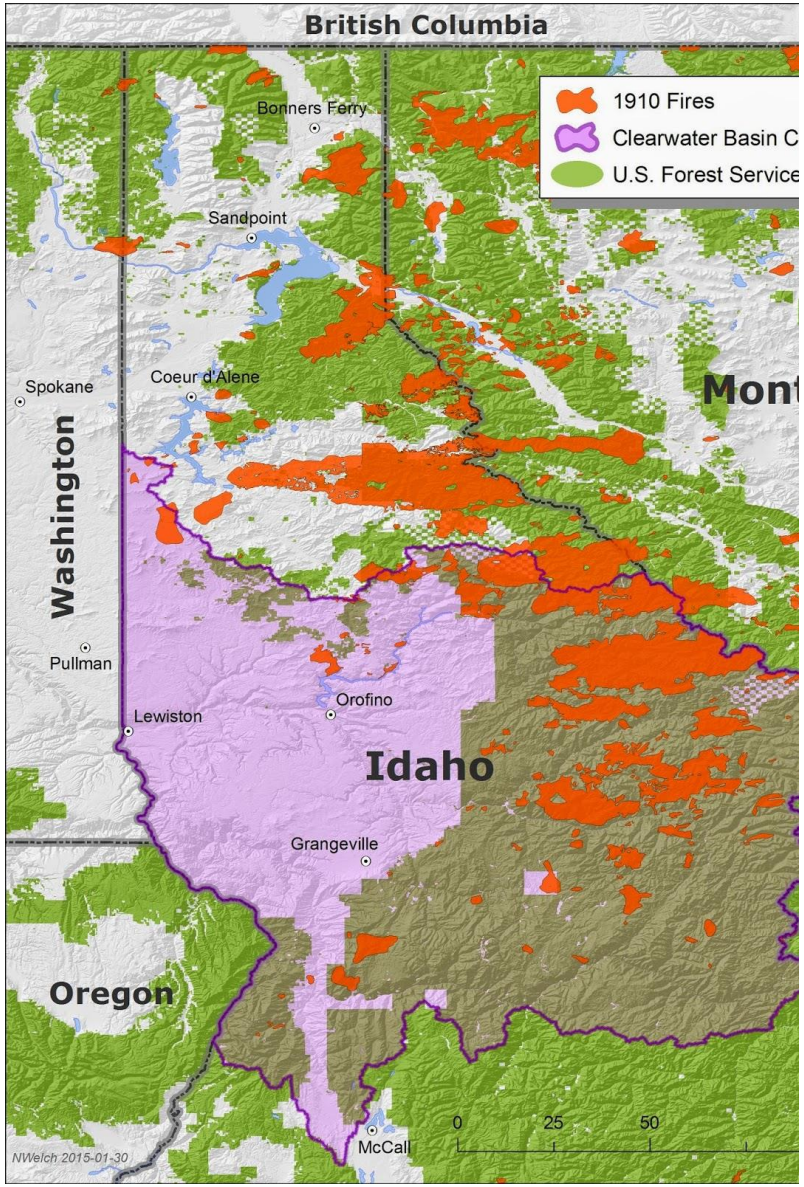
Dr. Harold Biswell

"Father of fire ecology in the west"

- Professor at UC Berkeley
- Worked extensively in ponderosa pine

Harold Weaver

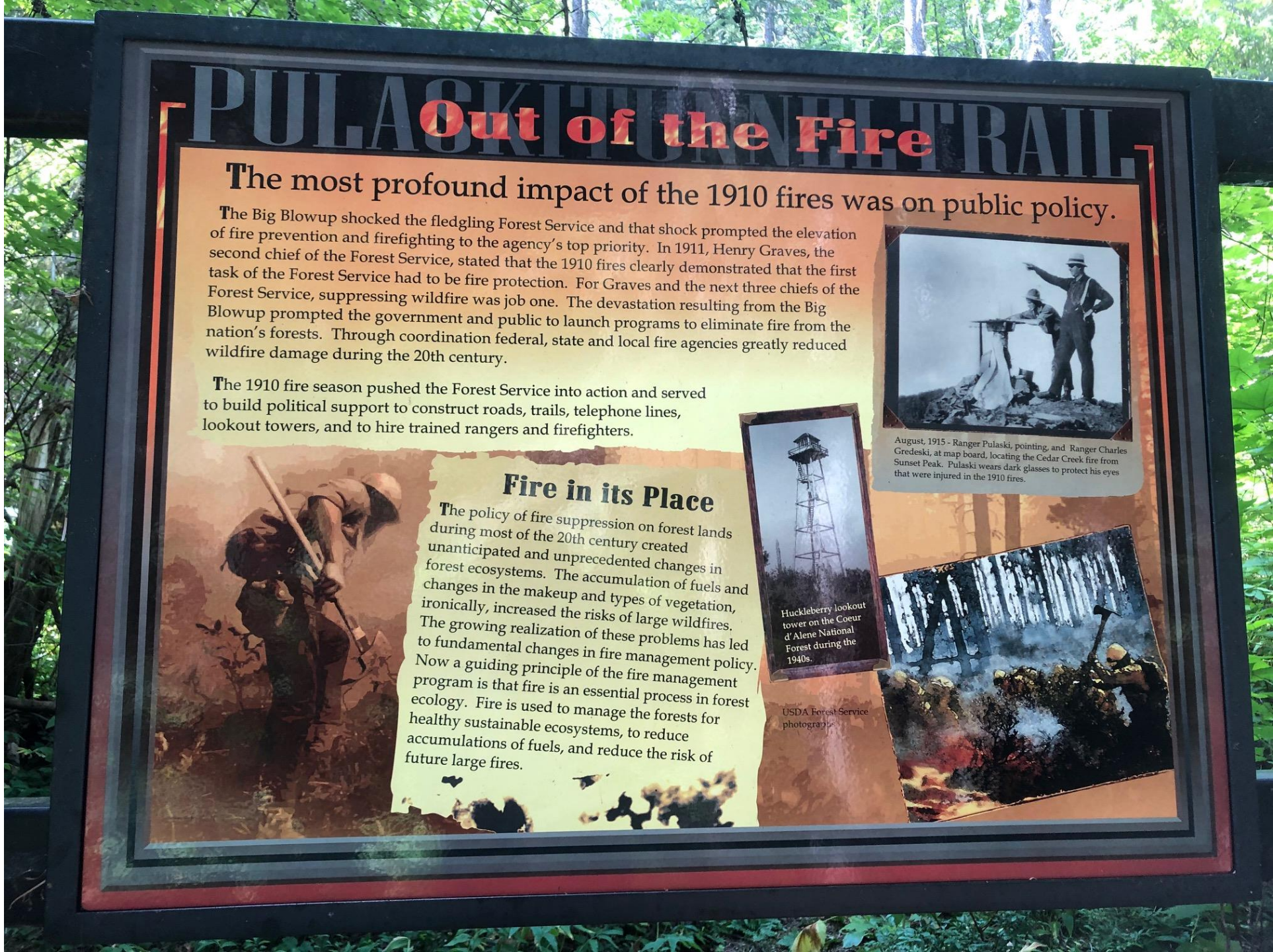
- BIA Forester
- Disciple of Dr. Biswell



1910 Fire aka "The Big Blow Up"

- 3 million acres
- North Idaho and Western Montana, with extensions into Eastern Washington and Southeast British Columbia,
- The fire burned over two days on the weekend of August 20–21
- 86 fatalities including 78 "firefighters"

The great fire debate was settled…..the war on fire was on



Fire Suppression was aided by WWII Surplus

The Civilian Conservation Corps

- Est. 1933 -1942
- Conservation projects
- Labor force for fire
- Unmarried men ages 18–25
- Maximum enrollment 300,000
- 1,463 camps

A Modern Reality – Fire in the 3rd Dimension

NIFC

Year	Fires	Acres
2000	92,250	7,393,493
2004	65,461	8,097,880
2005	66,753	8,689,389
2006	96,385	9,873,745
2007	85,705	9,328,045
2011	74,126	8,711,367
2012	67,774	9,326,238
2015	68,151	10,125,149
2017	71,499	10,026,086
2020	58,950	10,122,336

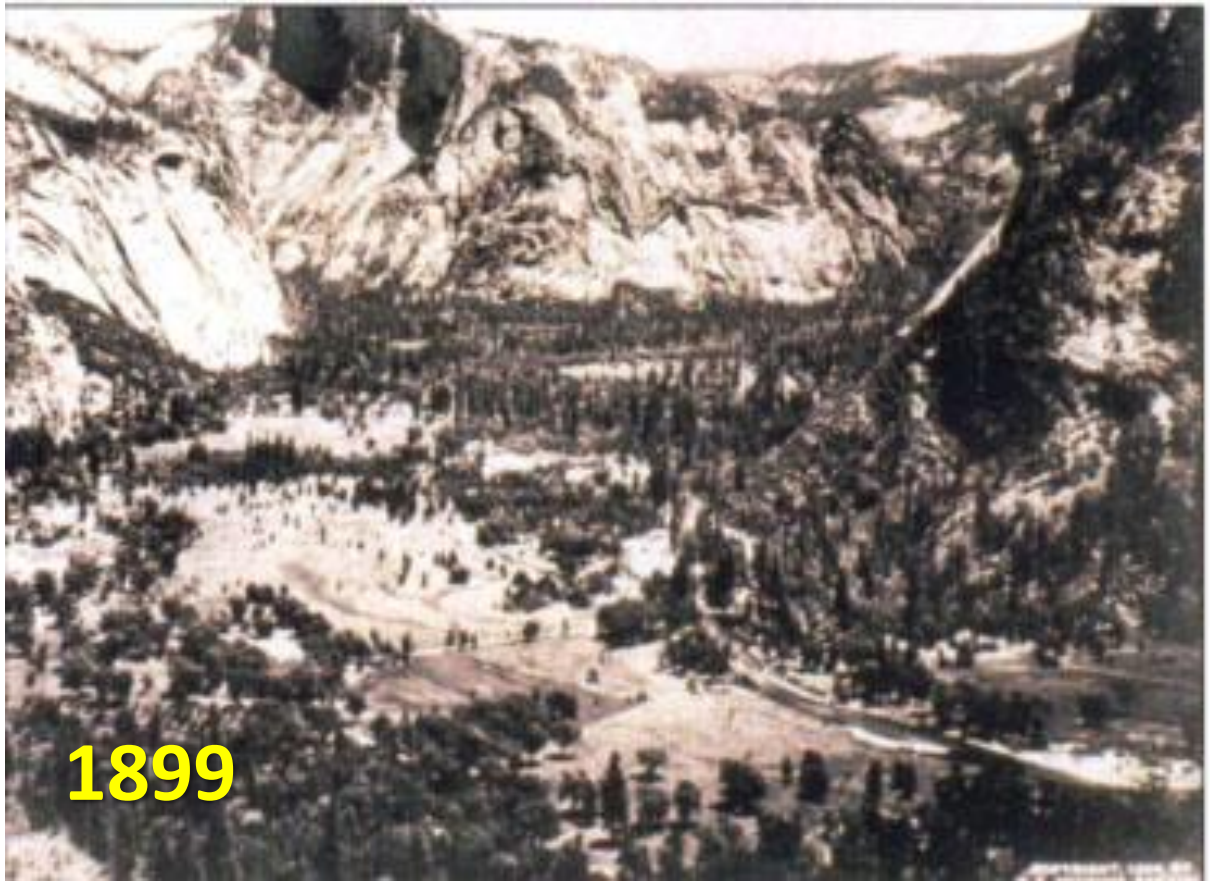
CAL FIRE Large Fires

Year	Fire Name	County	Acres
2000	Manter	Tulare	74,439
2004	Rumsey	Yolo	39,138
2005	Hackberry	San Bernardino	71,000
2006	Day	Ventura	169,702
2007	Zaca	Santa Barbara	240,207
2011	Comanche	Kern	29,213
2015	Rough	Fresno	151,623
2017	Thomas	Ventura	281,893
2020*	August Complex		1,032,648
2022	Dixie Fire	Butte	963,309

* 2020 was a record year in California – 9,917 fires; 4,397,809 acres

2022 - Mosquito Fire – 76,788 ac

Unintended Effects of Fire Exclusion



East end of Yosemite Valley from Columbia Point

74 inch diameter sugar pine

Stump

1929 pre logging

1929 post logging

2007

Afforestation in Wisconsin

Wollersheim Winery, Prairie du Sac, WI

Built in the 1840's

Winery

Removal of fire releases trees grasslands and savannas

Oak Savanna Restoration

- Invasive species
  - Buckthorn
- Increased tree density
- Suppressed herbaceous fuels

Restoration

- Reduce tree density (thin)
  - **Savanna = 10-25% canopy**
- Retain oaks
- Restore fire

FRI = 3-15 years

- Positive feedback loop
- Herbaceous fuels promote fire

Oak-Hickory Woodland Restoration

Restoration

- Reduce tree density (thin)
  - **Woodland = 25-65% canopy**
- Retain oaks and hickory
- Restore fire

- Invasion of fire intolerant species
  - Maples
  - Ashes
  - Elms
- Increases understory moisture
- Suppressed herbaceous fuels

FRI = 3-25 years

- Positive feedback loop
- Oak litter and herbaceous fuels promote fire

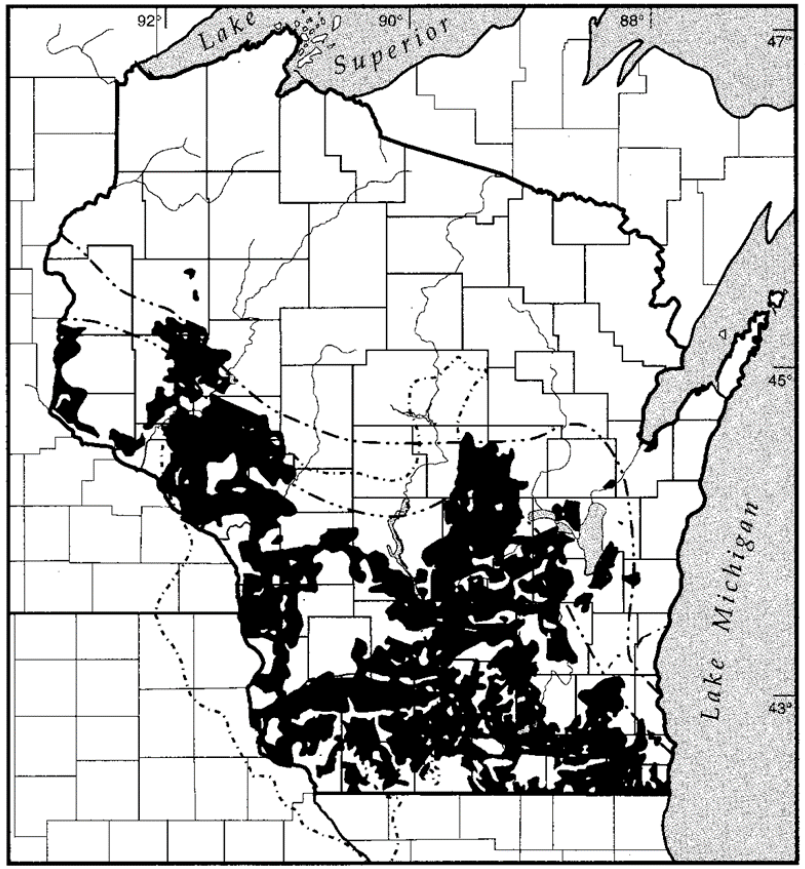
Benefits of Prescribed Burning Oak Woodlands

- Wildlife habitat

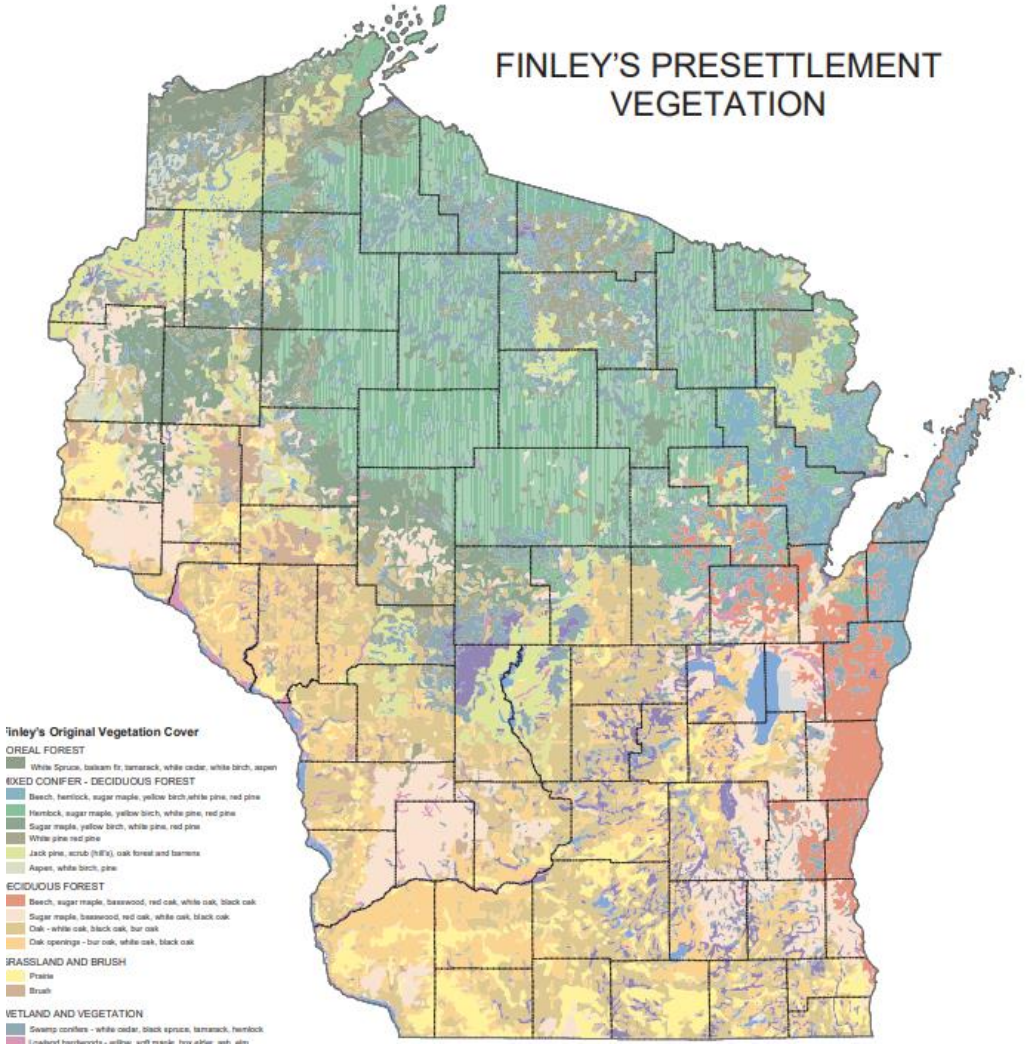
- Biodiversity
- Improved watershed function
- Hazardous fuels reduction
- Improved tree health

- Pollinator habitat

Extent of Pre-settlement Oak Savannas



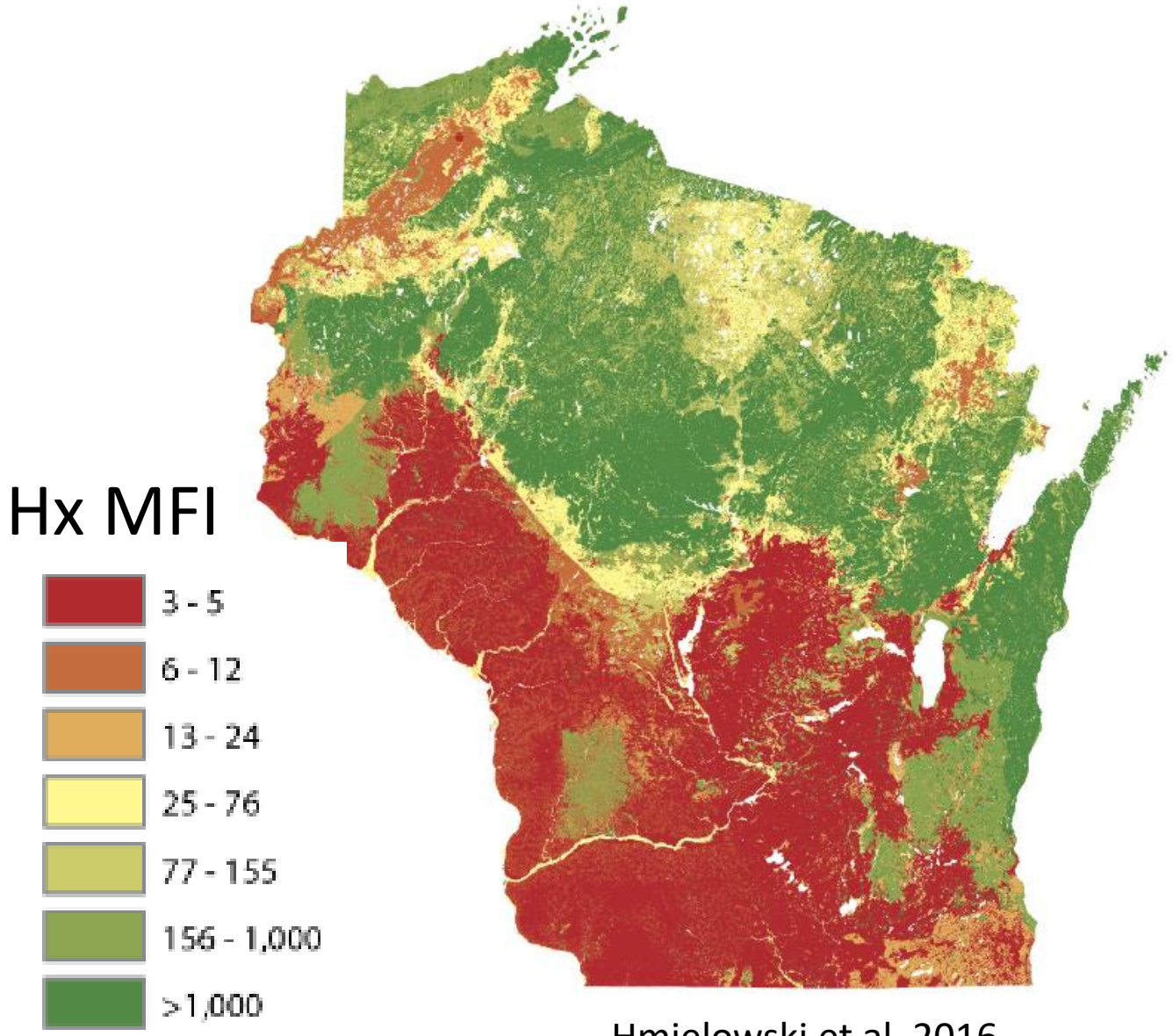
7.3 million acres of Oak Savanna in Wisconsin 1840-1860



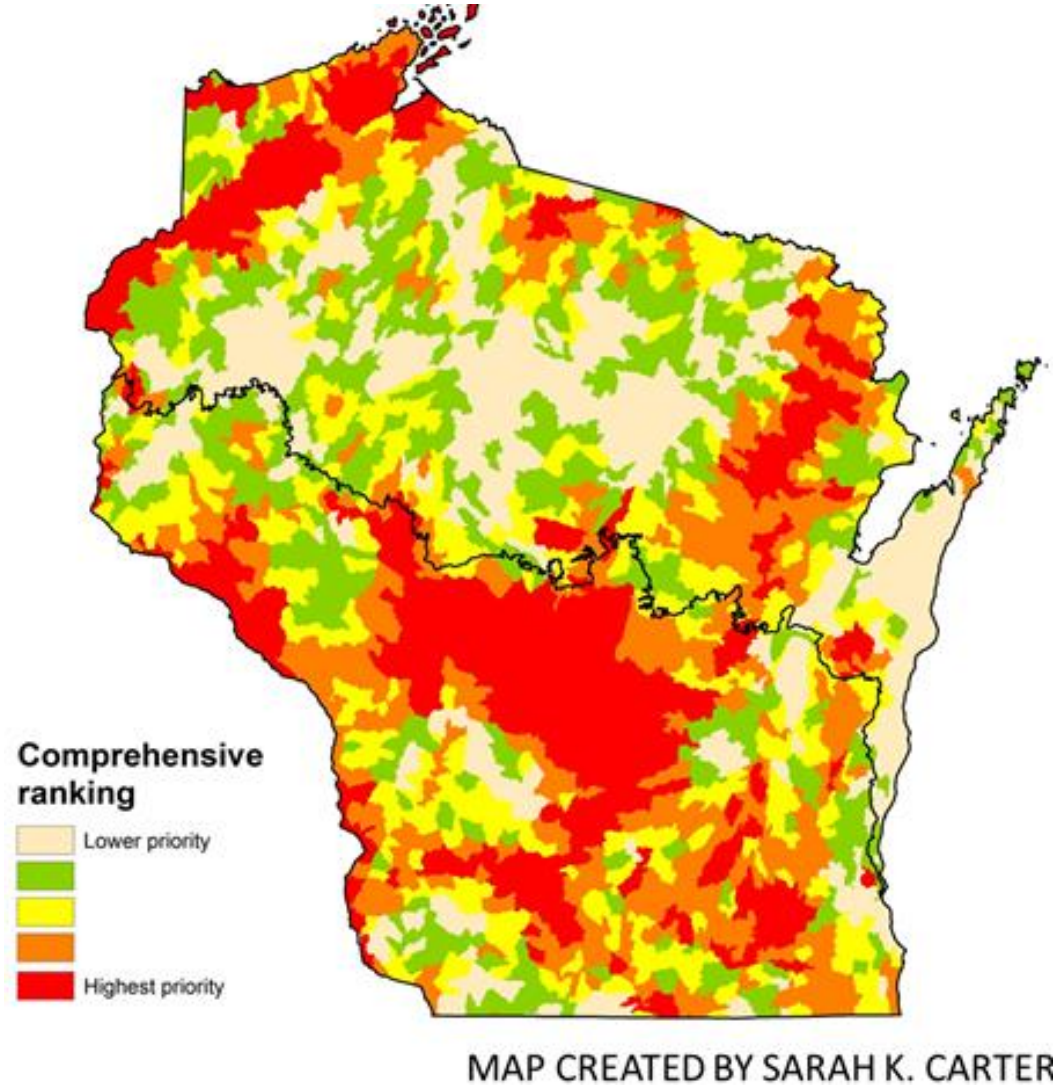
Robert W. Finley
1976, Univ. of WI

- Sugar Maple, Basswood, Oak Woodland
- Prairie
- Oak Savanna
- Marsh and Sedge Meadow, Wet Prairie

Wisconsin Prescribed Fire Needs

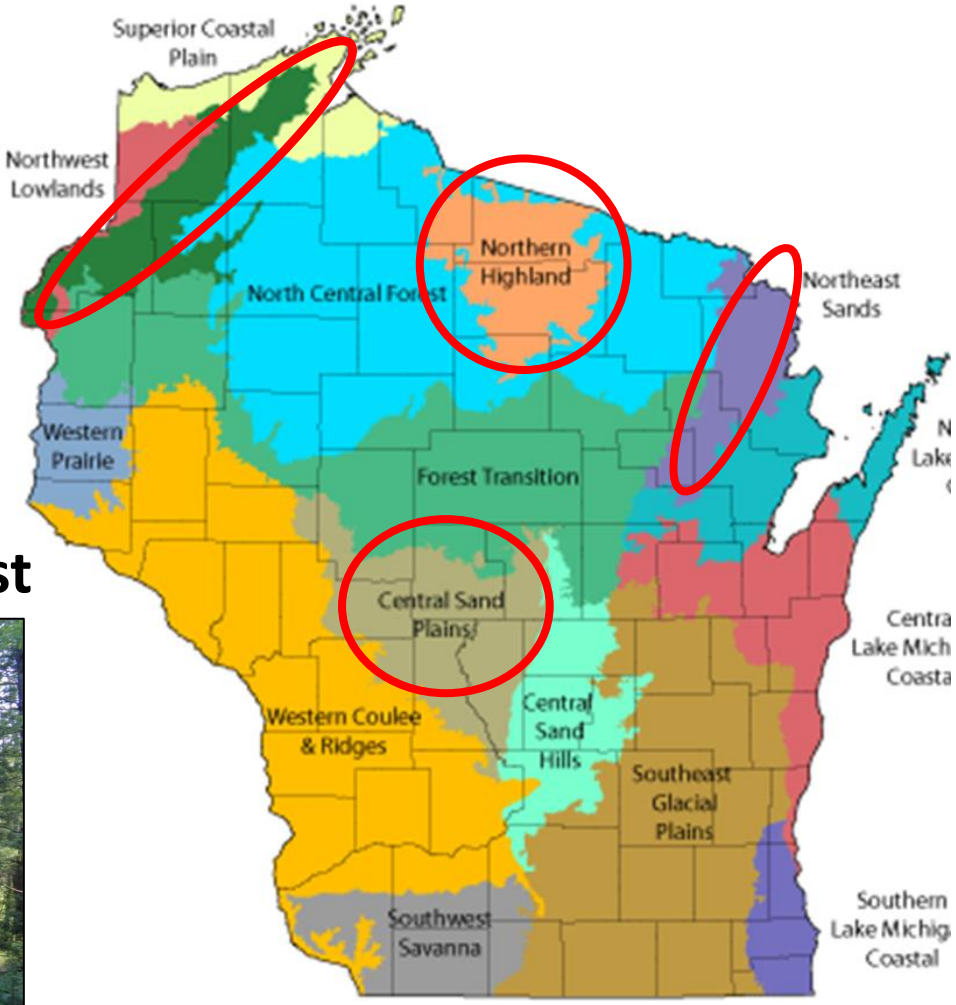


Hmielowski et al. 2016



Fire-dependent Forests of Northern WI

Jack Pine Barrens



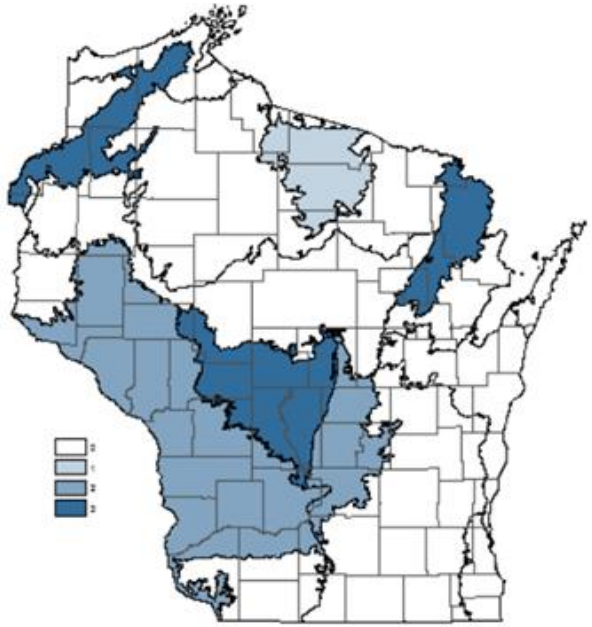
Northern Dry Forests

Dry Mesic Northern Forest

Jack Pine Barrens


Dunnville Barrens, WDNR

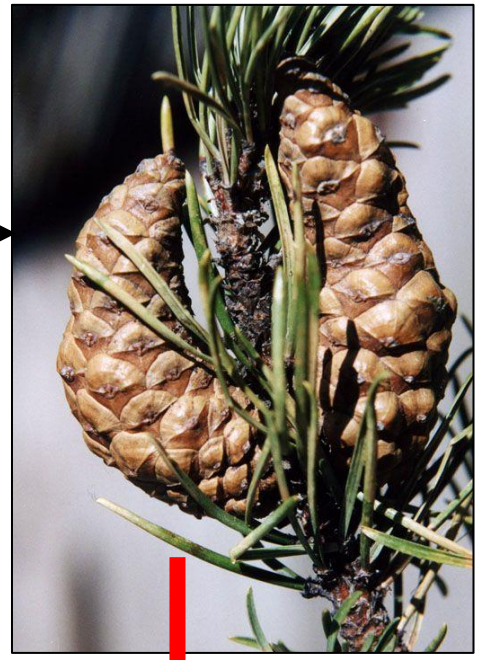
- Savannas dominated by grasses and shrubs with scattered jack pine, n. pin oak and occasional red pine
- Very frequent low intensity surface fires (2-15 years)
- Running crown fires rare due to low density of trees
- 95% reduction in Wisconsin due to fire exclusion, forest management, and land use change




Kirtland's Warbler

Spatial patterns of cone serotiny in *Pinus banksiana* in relation to fire disturbance

Volker C. Radeloff[a,*], David J. Mladenoff[a], Raymond P. Guries[a], Mark S. Boyce[b]

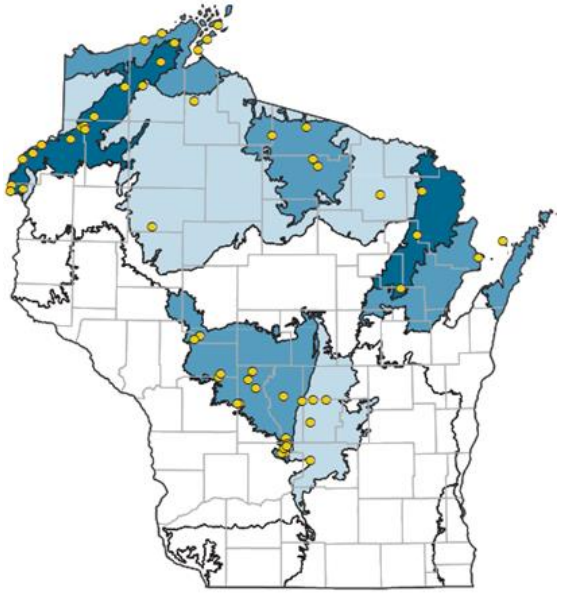


- Closed Cone/ Serotinous **Crown Fires**

- Mixed Serotiny **Mixed Severity Fires**

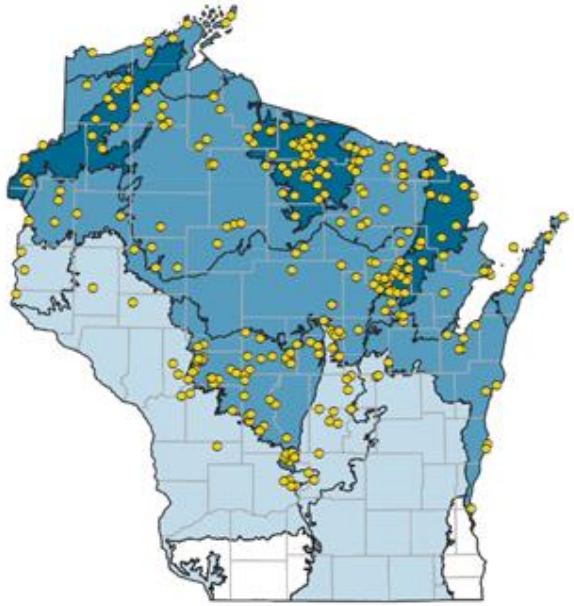
Open Cone/ Non-serotinous **Surface Fires**

Northern Dry Forests



- Mixed jack pine, n. pin oak, and red pine forests
- Sandy low nutrient sites
- Frequent low intensity surface fires (5-20 years)

Dry Mesic Northern Forests



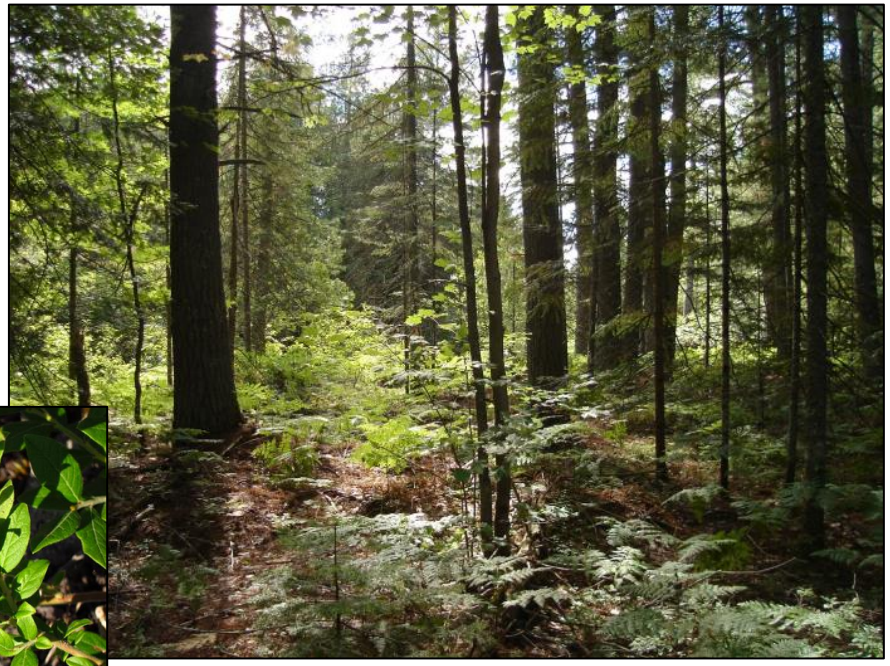
- Mixtures of red pine, white pine, aspen, paper birch, oak, spruce, balsam fir, and red maple

- Fire regime highly variable and likely heavily influenced by Native Americans

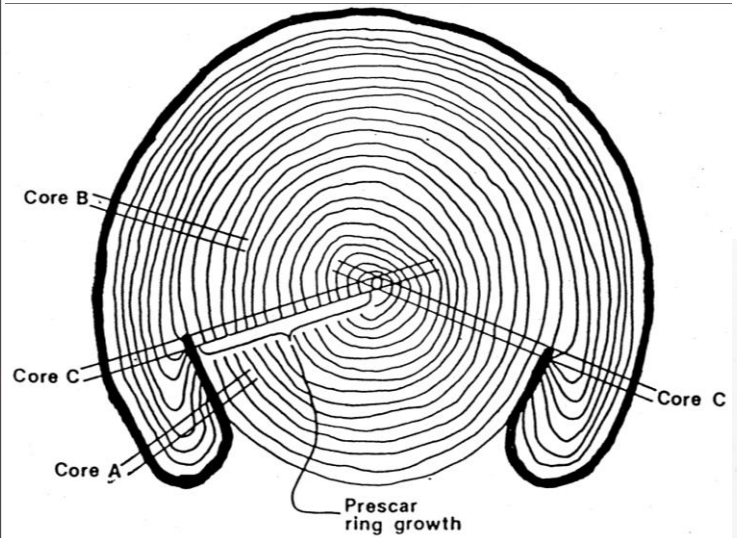
  -Frequent surface fires (3-20 years)

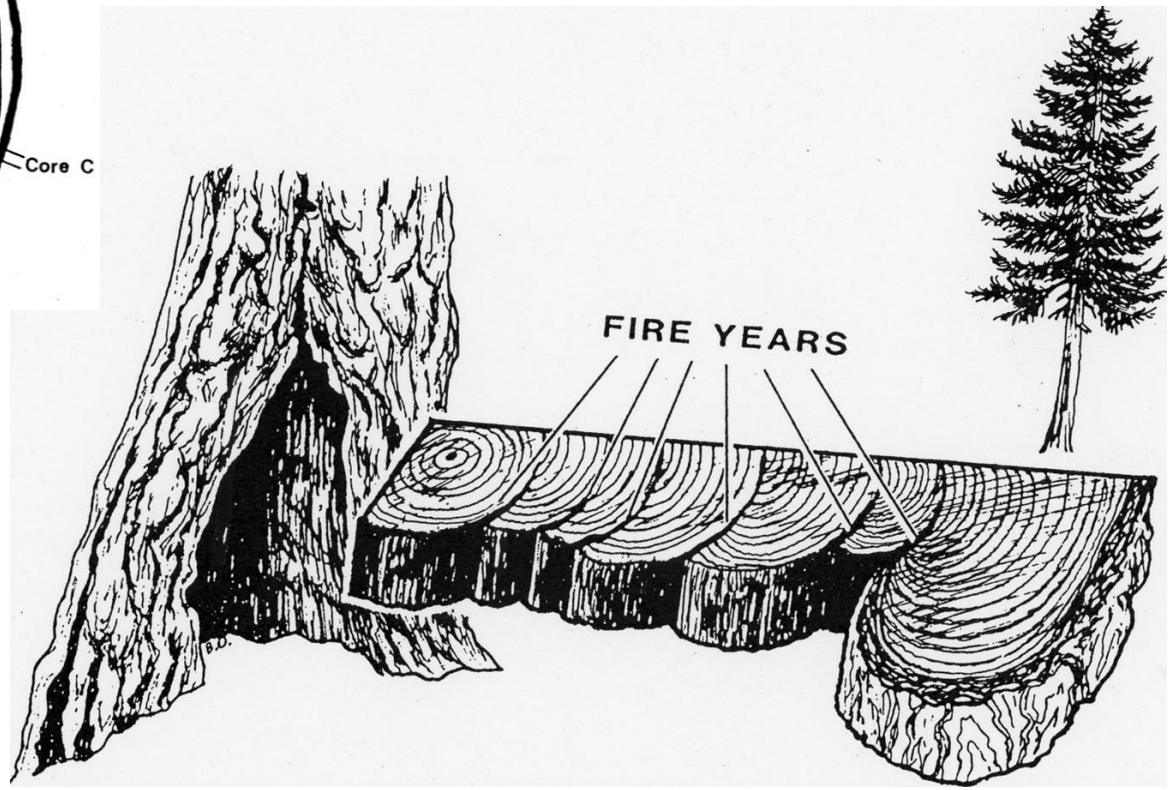
- Understory

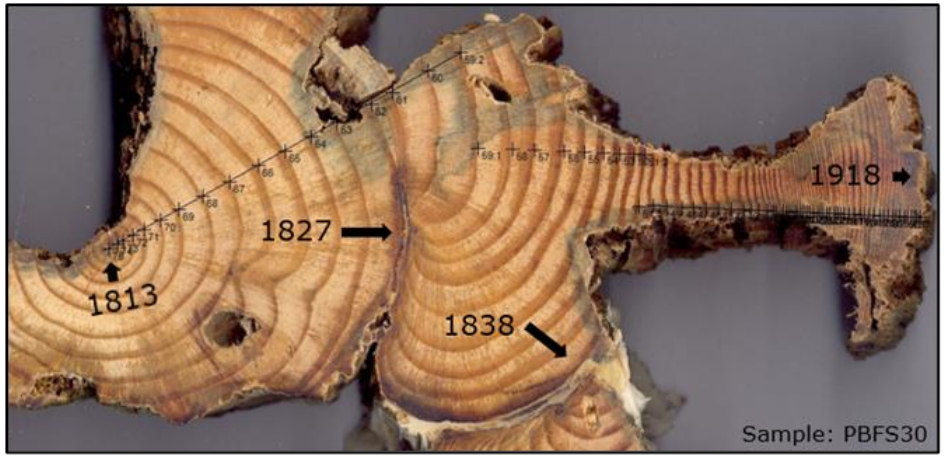
  - Ericaceae spp. – blueberry's



Reconstructing Fire Return Intervals – Fire Scar Studies



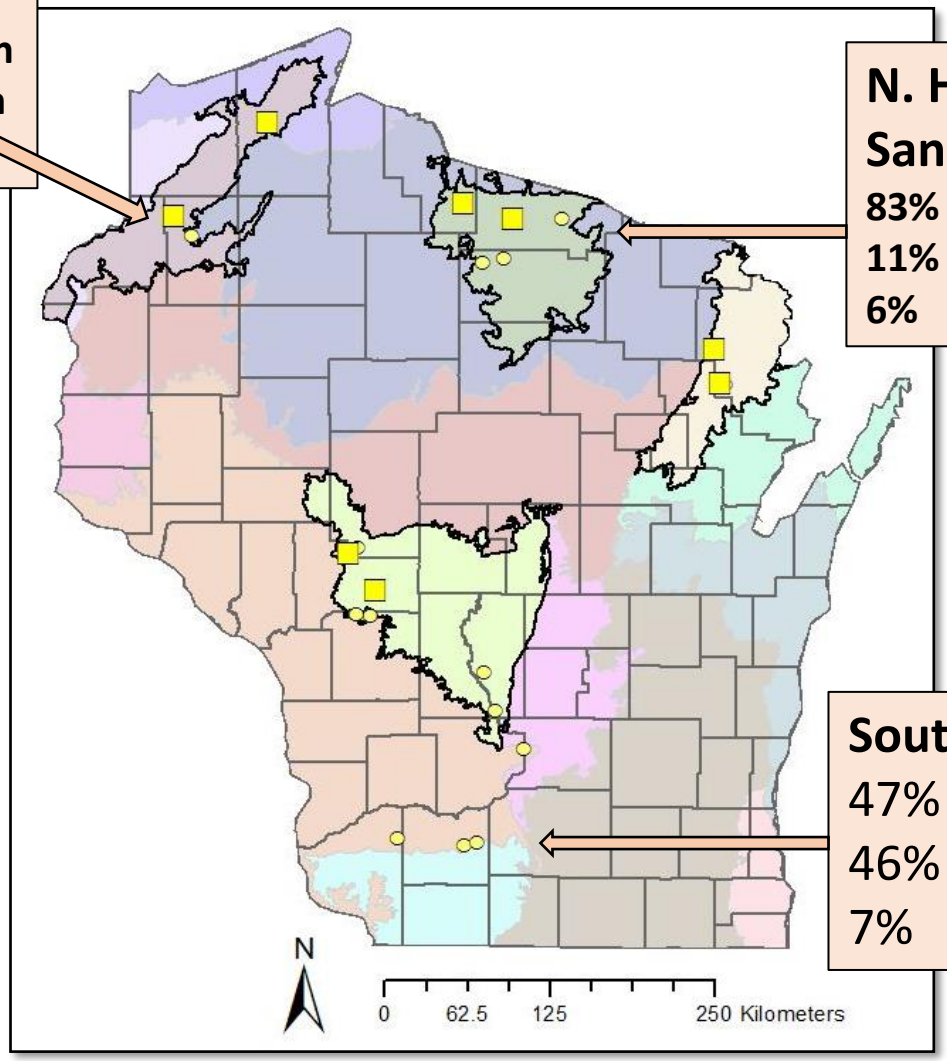




Dendrochronological Fire Scar Work – Jed Meunier

Red Pine (*Pinus resinosa*)

NW Sands
14% Dormant Season
61% Growing Season
25% Fall



N. Highlands and NE Sands
83% Dormant Season
11% Growing Season
6% Fall

Southern Relicts
47% Dormant Season
46% Growing Season
7% Fall

Red Pine Fire Mean Return Intervals in Wisconsin

Table 1
Study sites with fire history information (n = 20) from the year of first fire event to 2018 organized by ecological landscape and latitude (north to south).

Site	EL	No. stands	No. plots	No. samples	No. yrs w fires	MFRI All	MFRI 10%	MFRI 25%	Years
Inch Lake	NWS	1	1*	34	53	5	16	19.5	1668–2018
Totagatic River	NWS	1	1*	27	65	4	6	9	1710–2018
Lampson Pines*	NWS	3	3	14	47	4	6	7	1747–2018
Frog Lake	NH	1	1*	14	24	5	8	8	1833–2018
Buckatabon	NH	3	3	15	27	8	8	13	1697–2018
Cathedral Point	NH	1	1*	24	24	7	31	8	1791–2018
Finnerud Pines	NH	1	3	39	32	8	11	13	1699–2018
Squirrel River*	NH	3	3	12	21	8	8	17	1744–2018
Wolf Lane	NES	1	1*	16	23	5	7	8	1818–2018
Camp Bird	NES	1	1*	17	34	5	6	9	1762–2018
Tar Dam Road*	NES	1	3	12	31	8	8	15	1718–2018
Levis Mound	CS	3	3	18	101	2	3	9	1608–2018
Bruce Mound	CS	1	1*	59	39	7	10	15	1681–2018
Wildcat	CS	1	1*	49	30	4	7	9	1712–2018
Stony Bluff	CS	2	1	20	39	5	10	9	1704–2018
Quincy Bluff	CS	2	2	23	86	4	5	8	1642–2018
WI Dells	CS	3	3	28	87	3	4	7	1681–2018
Fort McCoy	CS	2	2	3	22	9	6	6	1786–2018
Pine Bluff	WCR	1	3	17	64	4	5	6	1684–2018
Snow Bottom*	WCR	2	2	18	46	6	6	7	1661–2018

Sites with partially dated samples, No. plots – 0.5 ha plots, all others comprised of 0.02 ha plots, MFRI is mean fire return interval (years) for ≥ 2 recording trees, – too few samples to estimate MFRI statistic, EL – ecological landscape (NWS-Northwest Sands, NH-Northern Highlands, NES-Northeast Sands, CS-Central Sands, WCR-Western Coulees & Ridges).

MFI 2-9 years

Red Pine Fire History Study – Treehaven

Jonathan Steigerwaldt

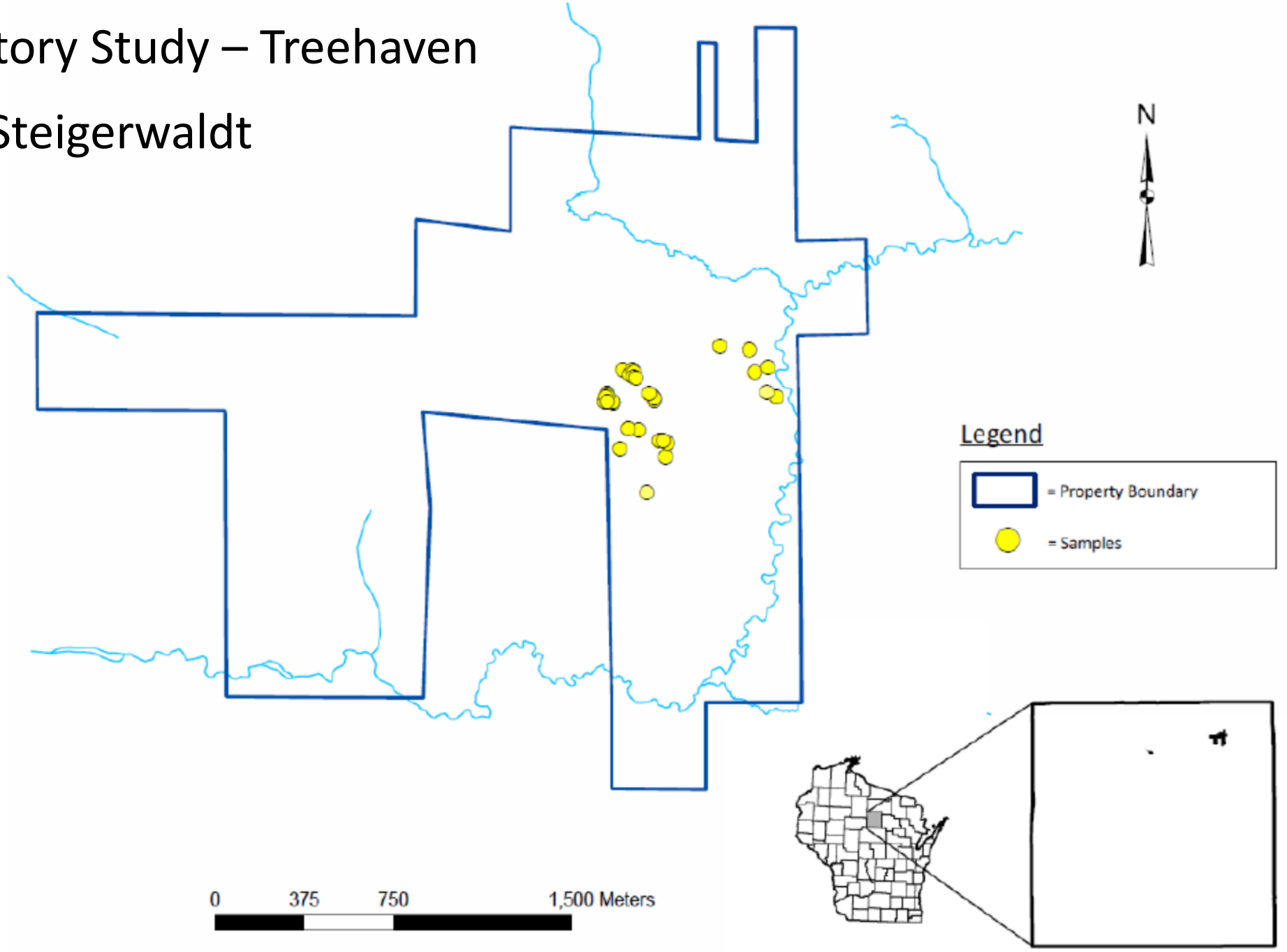
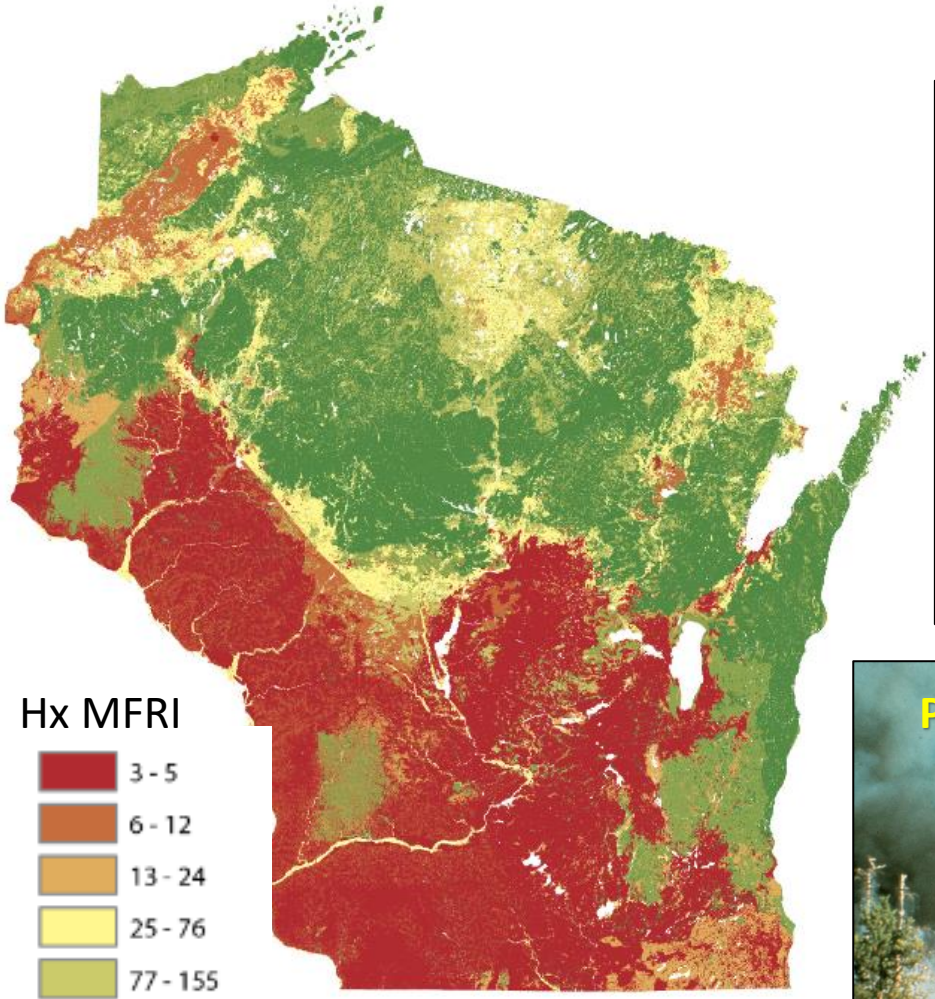


Table 1.3. Fire history attributes for Treehaven during three functional historical periods.

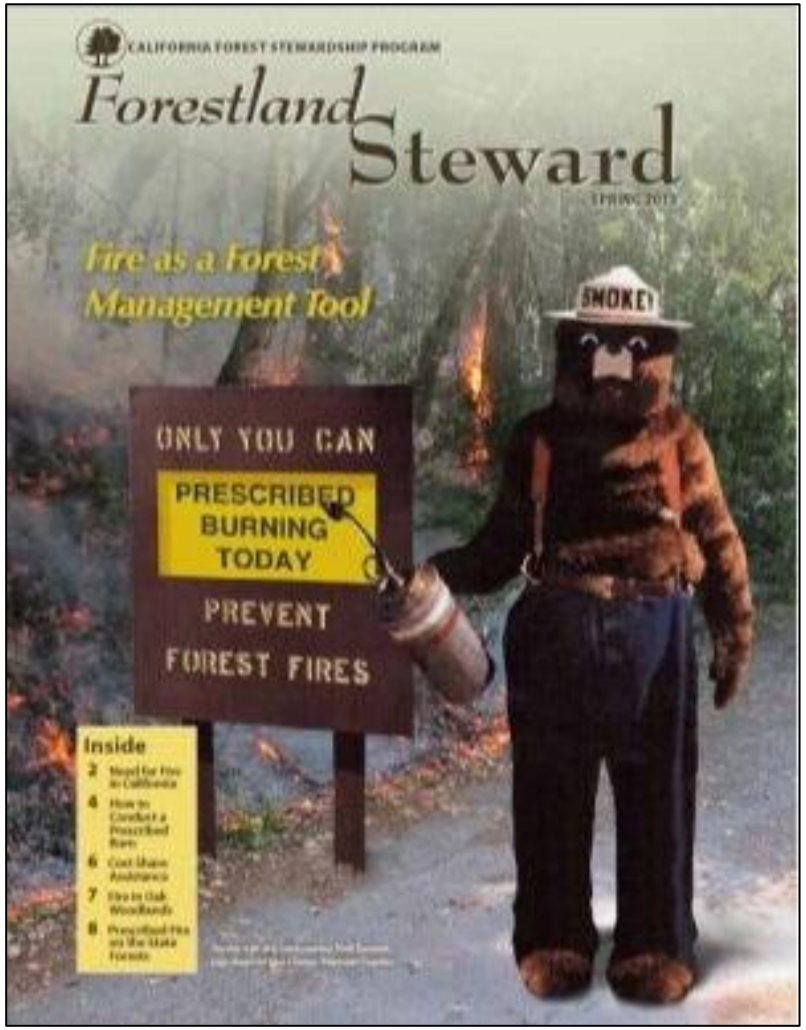
	Functional Historical Period		
	Pre-European Settlement	Settlement	Suppression
Period Range	1832-1880	1881-1943	1944-2014
Number of Years	49	63	71
Number of Years with Fire	6	16	1
Number of Intervals	5.0	15.0	0
Mean Fire Interval (yr)(SD)	5.2 (5.7)	3.3 (3.0)	
Median Fire Interval (yr)	2.5	2	
Fire Interval Range (yr)	1 to 17	1 to 14	

Key Take Away – Fire Return Intervals were much more frequent than previously thought



Conclusion

Paradigm shift….



“Society needs to learn to live with fire”


Thank You
UWSP Fire Crew Summer 2023 - Treehaven