

Did Smokey Bear Get it Wrong?





Smokey's Fire Prevention Campaign

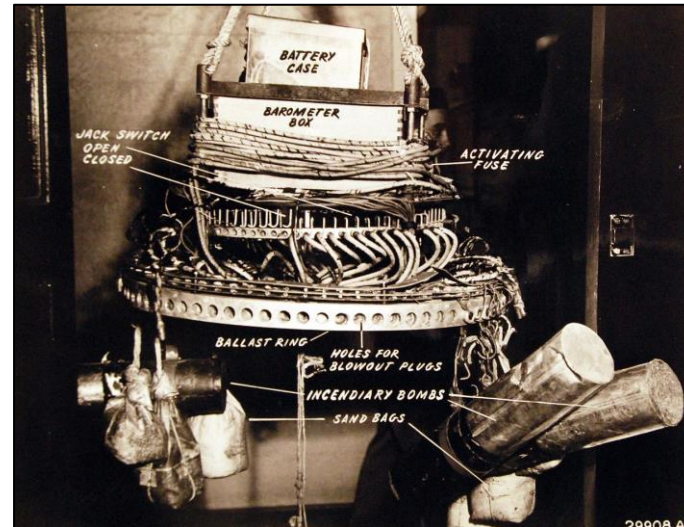
- Wildfire prevention icon since 1944
- Continues to be widely successful

Smokey Bear Propaganda?



Early Forest Fire Propaganda

- Japanese submarine attack in Southern Ca – Los Padres NF (1942)
- WWII Japanese Incendiary balloons (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 SAYS—
Care will prevent
9 out of 10 woods fires!

U. S. Department of Agriculture
Forest Service

State Forest Service

Smokey's Fire Suppression Messaging



Fire Suppression Messaging

FOREST DEFENSE IS NATIONAL DEFENSE

Reprinted from The American Weekly, April 6, 1941

HOW TO PREVENT FOREST FIRES

MATCHES. Do not use matches in the woods. If you must use them, use them in a safe place. Do not use them in the woods. Do not use them in the woods. Do not use them in the woods.

SMOKING. Do not smoke in the woods. Do not smoke in the woods. Do not smoke in the woods. Do not smoke in the woods.

TOBACCO. Do not use pipe, cigar, or cigarette in the woods. Do not use pipe, cigar, or cigarette in the woods. Do not use pipe, cigar, or cigarette in the woods.

MAKING CAMP. Do not make a camp in the woods. Do not make a camp in the woods. Do not make a camp in the woods. Do not make a camp in the woods.

EXTINGUISH. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control.

REPORT. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control.

BREAKING CAMP. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control. Do not let a fire get out of control.

U.S. FOREST SERVICE

YOUR FORESTS - YOUR FAULT - YOUR LOSS!

U.S. FOREST SERVICE

STRIKE DOWN THIS MONSTER!

FOREST FIRES DELAY VICTORY

Reprinted from The American Weekly, May 17, 1942

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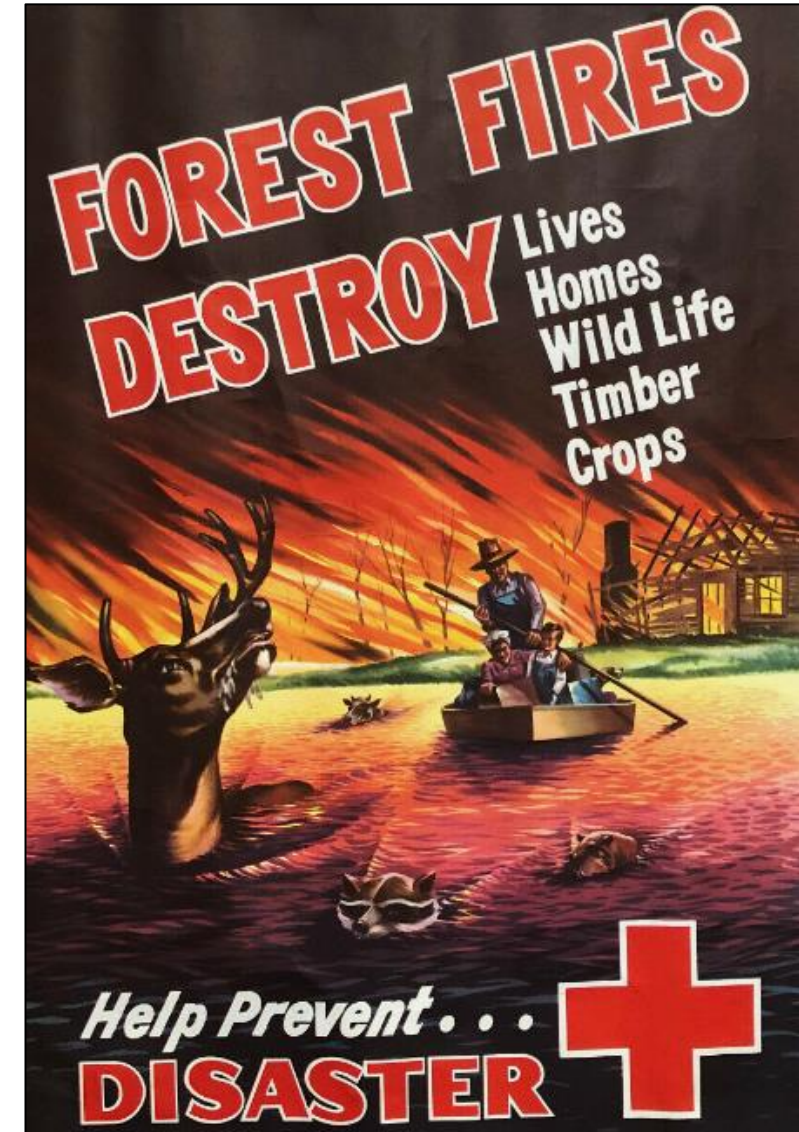
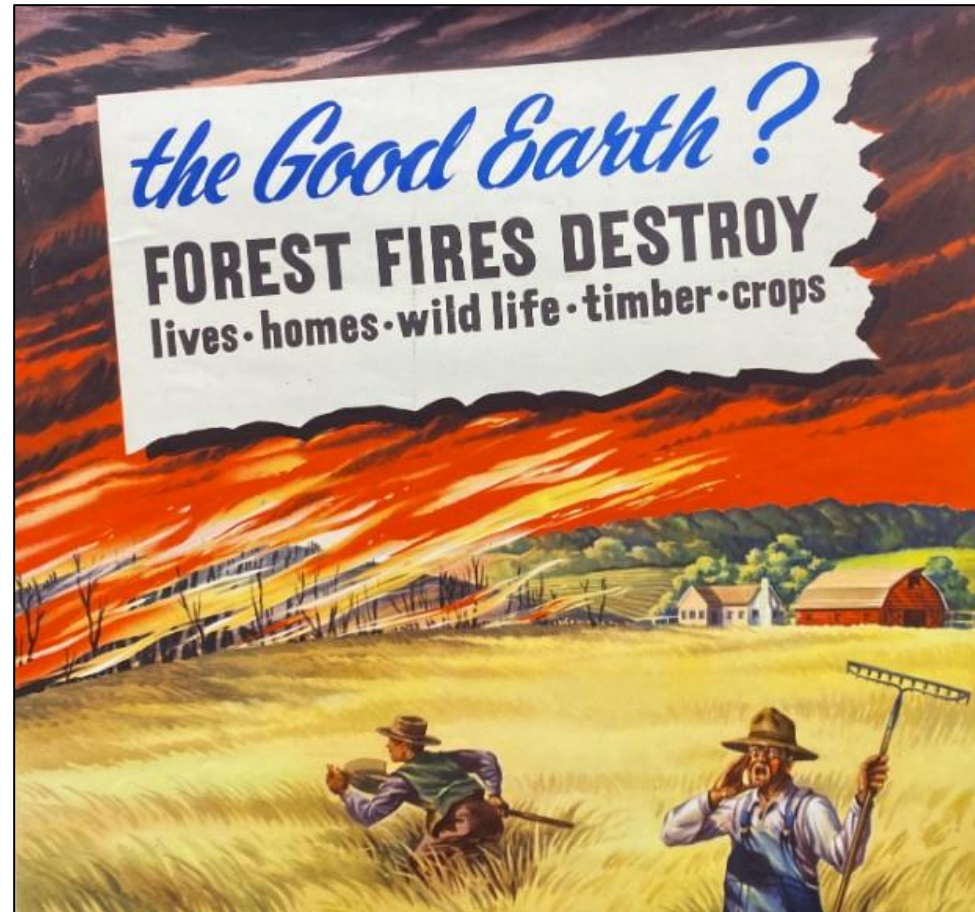
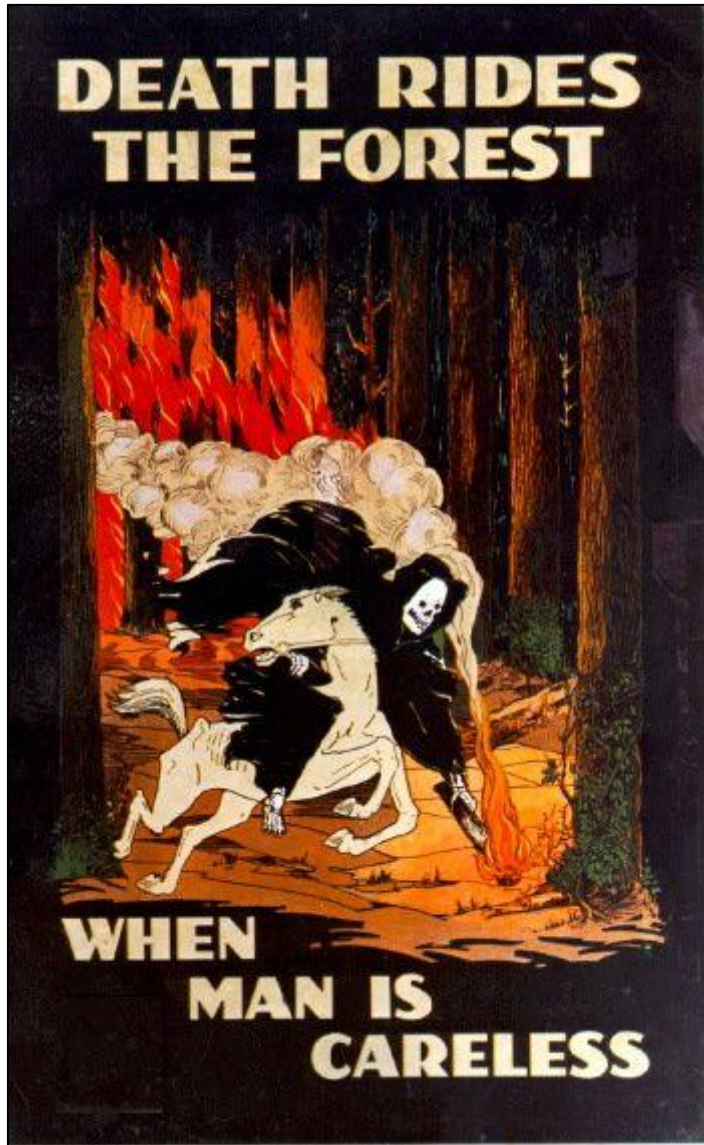
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U.S. FOREST SERVICE

Fire Suppression Messaging



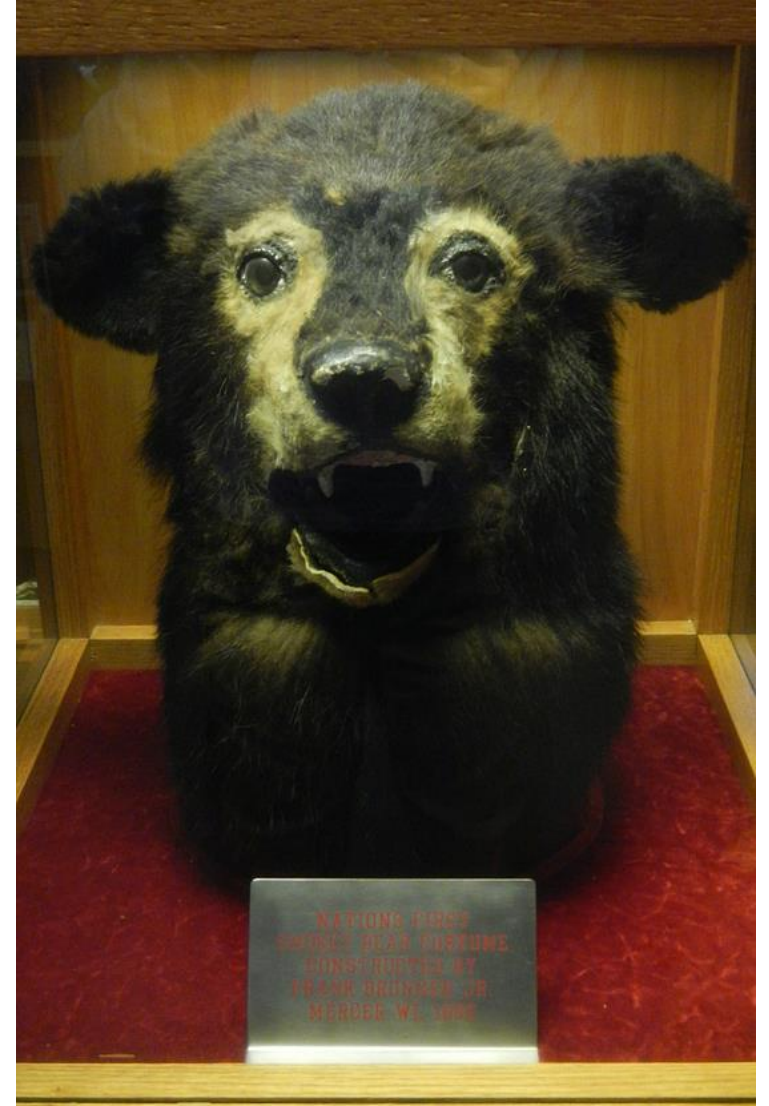
Real Smokey Emerges in 1950

- 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

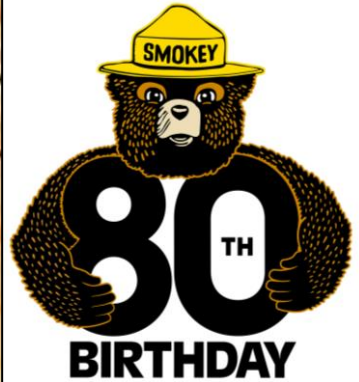
- Firemen's Convention Parade in Hurley, WI features Smokey Bear statue on float
- Wisconsin Dept. of Conservation crafts first Smokey Bear costume made with real bear hide
- Crafted by Frank Brunner Jr., Mercer, WI



2001 - “Only You Can Prevent Wildfires”

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





80 years later.....



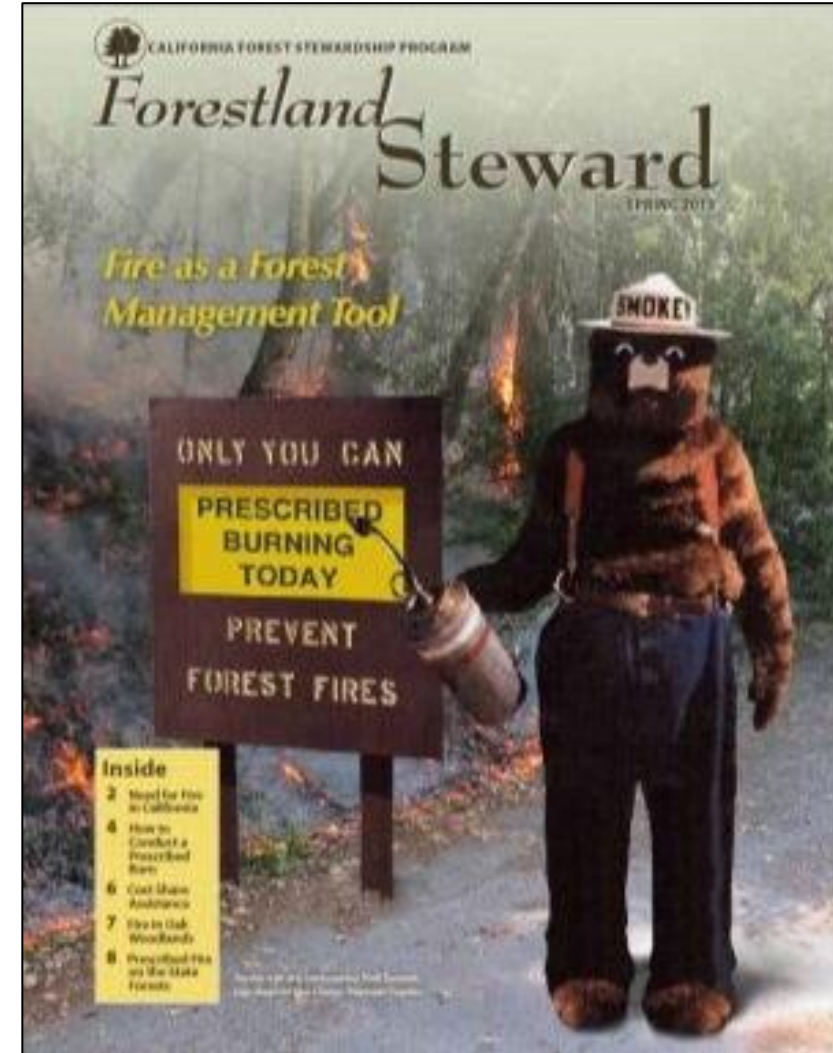
I HATE TO SAY IT, BUT CLIMATE CHANGE HAS BEAT ME!

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

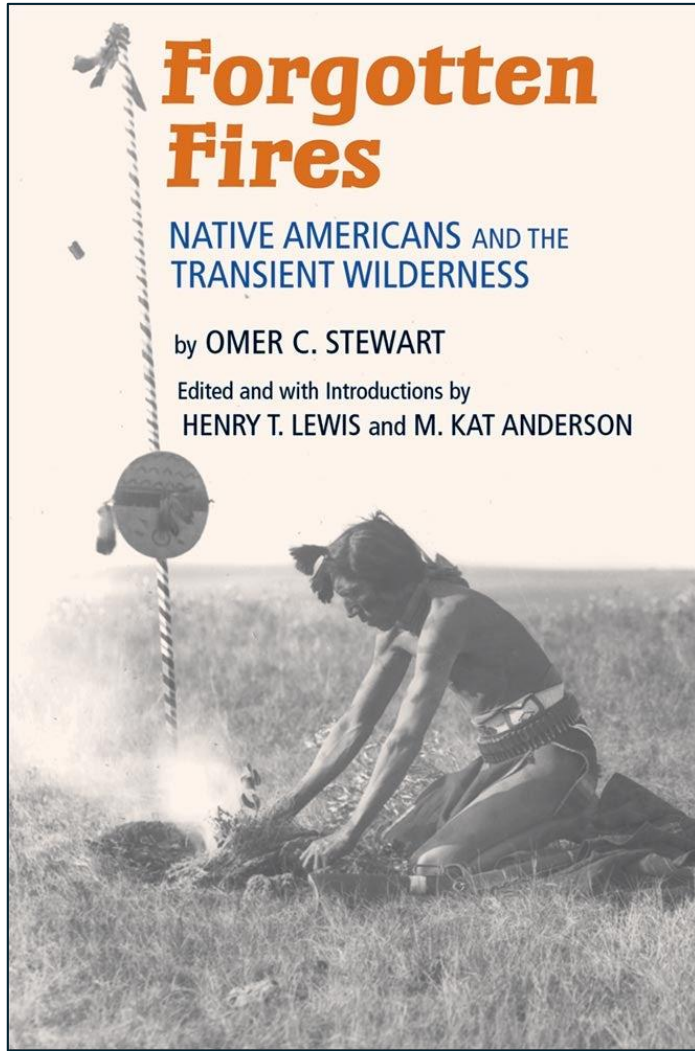
Geoffrey H Donovan^{1*} and Thomas C Brown²



“The Smokey Bear Effect”

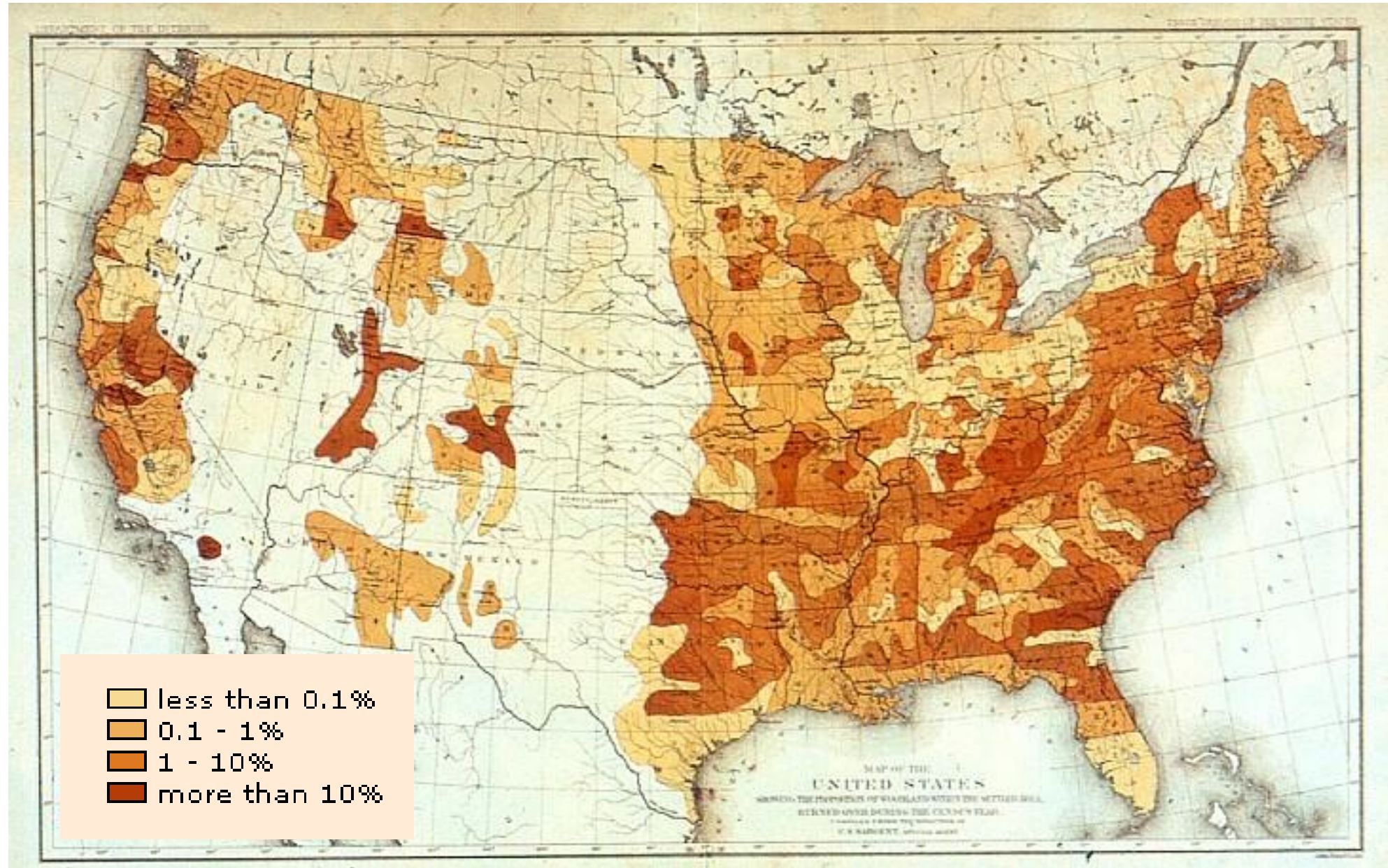


America's Fire History Prior to Smokey



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

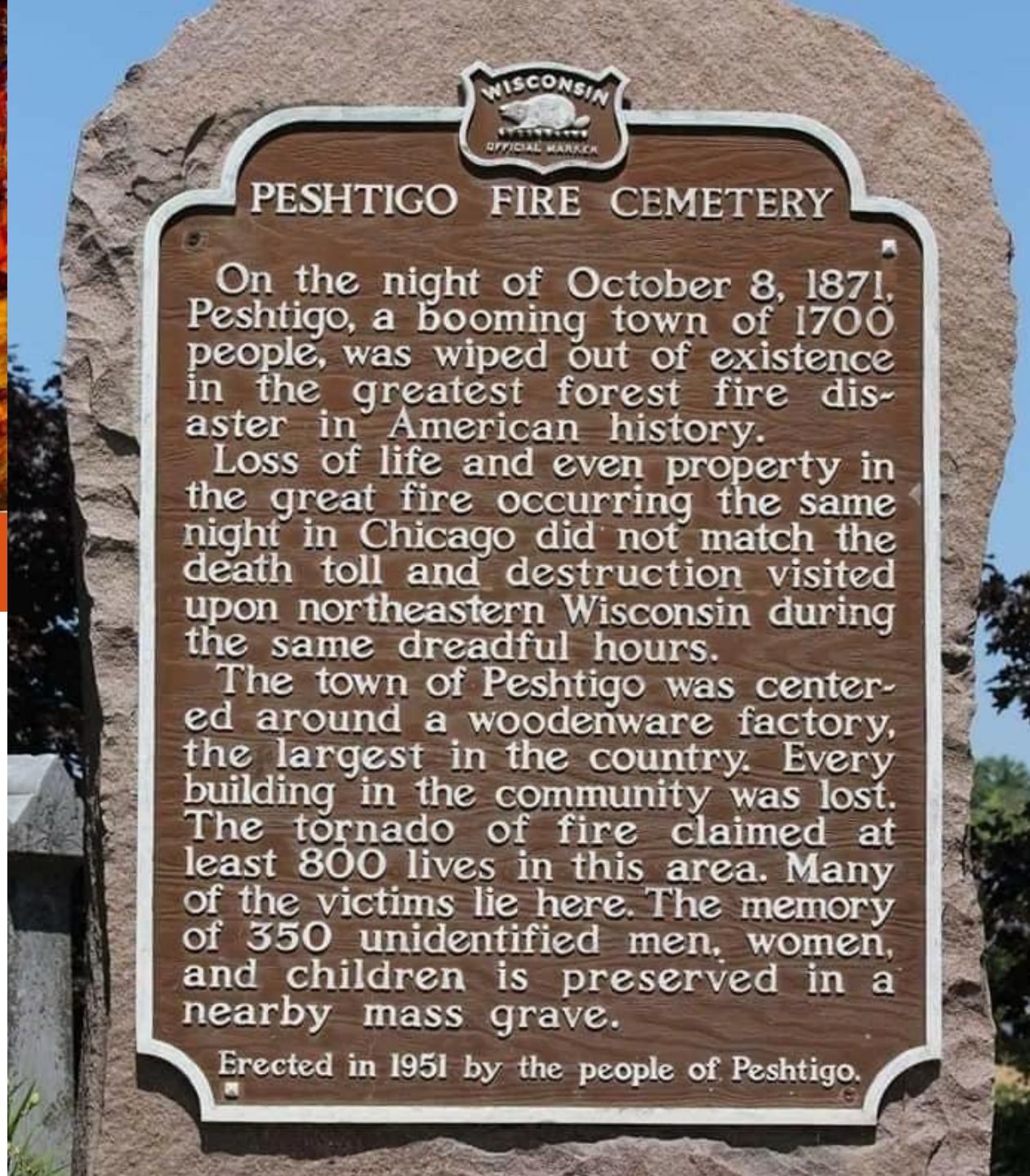
Learning History



MASS
GRAVE
FOR THE
VICTIMS OF THE
PESHTIGO
FIRE

OCT. 8.

REST IN PEACE
1871



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”

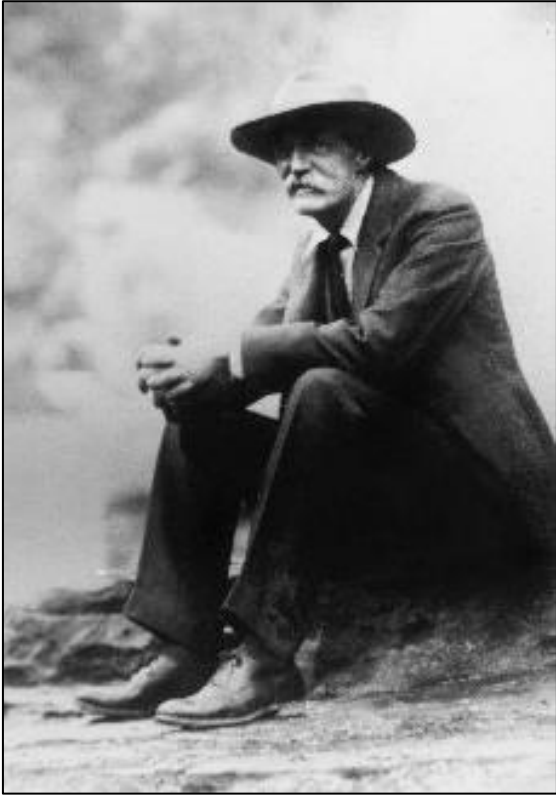
- 2.5 million acres
- 1 million acres in one day
- 282 fatalities



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.



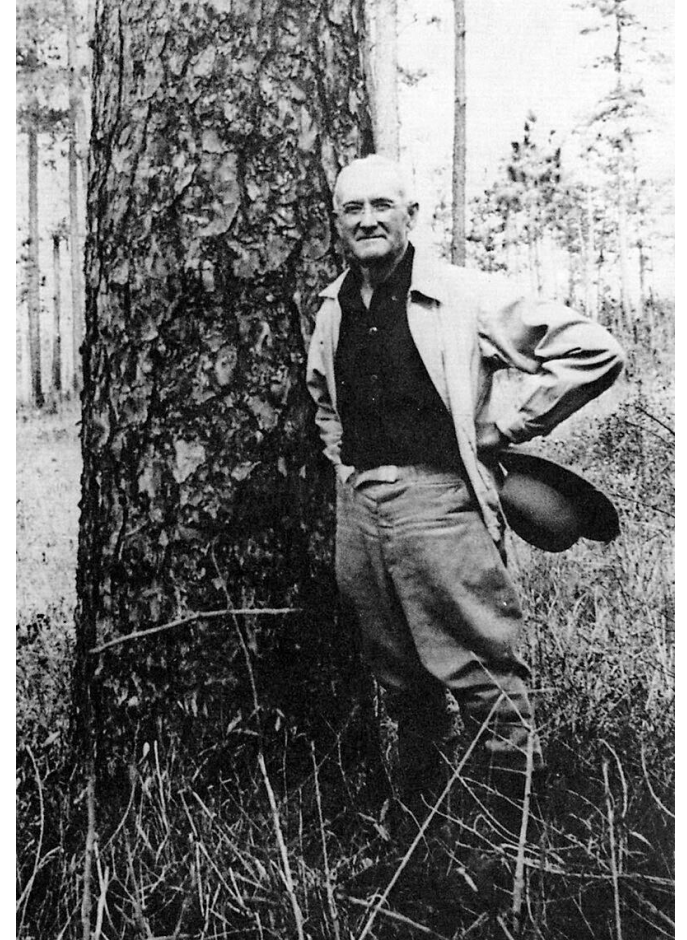
If forest fires are bad, we should prevent them from occurring and put out all those that start..



Early Voices for Fire Ecology in the US South



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



Herbert Stoddard

“The Bobwhite Quail: Its habits, preservation, and increase”



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

Harold's of Change

“Fire the servant vs. fire the master”



Dr. Harold Biswell

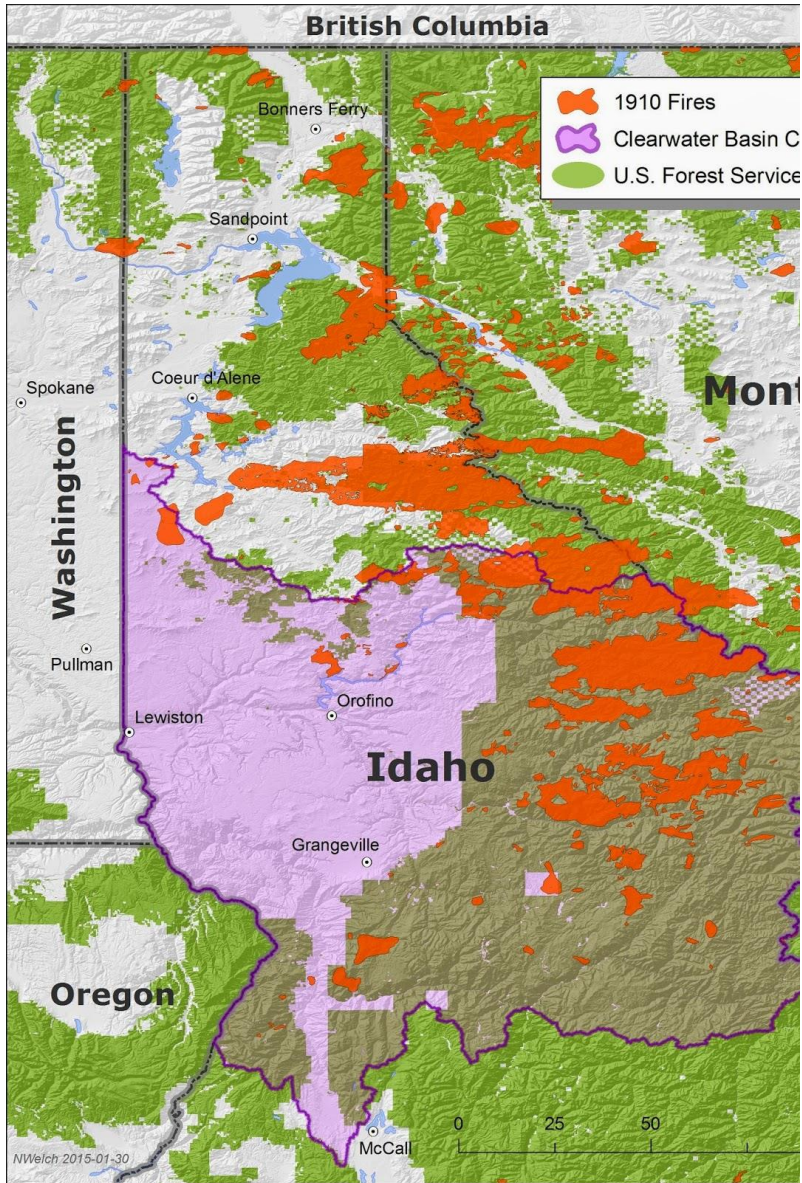


Harold Weaver

“Father of fire ecology in the west”

- Professor at UC Berkeley
- Worked extensively in ponderosa pine

- 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

PULASKI TUNNEL TRAIL

Out of the Fire

The most profound impact of the 1910 fires was on public policy.

The Big Blowup shocked the fledgling Forest Service and that shock prompted the elevation of fire prevention and firefighting to the agency's top priority. In 1911, Henry Graves, the second chief of the Forest Service, stated that the 1910 fires clearly demonstrated that the first task of the Forest Service had to be fire protection. For Graves and the next three chiefs of the Forest Service, suppressing wildfire was job one. The devastation resulting from the Big Blowup prompted the government and public to launch programs to eliminate fire from the nation's forests. Through coordination federal, state and local fire agencies greatly reduced wildfire damage during the 20th century.

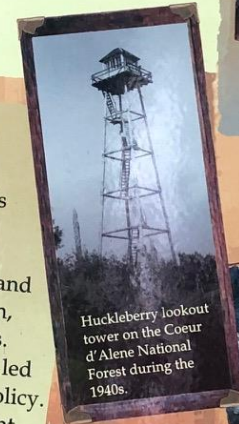
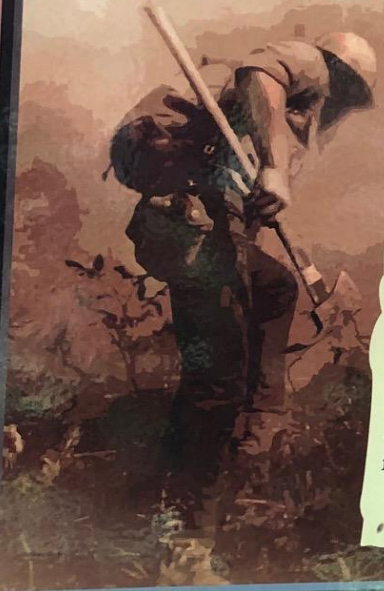
The 1910 fire season pushed the Forest Service into action and served to build political support to construct roads, trails, telephone lines, lookout towers, and to hire trained rangers and firefighters.



August, 1915 - Ranger Pulaski, pointing, and Ranger Charles Gredeski, at map board, locating the Cedar Creek fire from Sunset Peak. Pulaski wears dark glasses to protect his eyes that were injured in the 1910 fires.

Fire in its Place

The policy of fire suppression on forest lands during most of the 20th century created unanticipated and unprecedented changes in forest ecosystems. The accumulation of fuels and changes in the makeup and types of vegetation, ironically, increased the risks of large wildfires. The growing realization of these problems has led to fundamental changes in fire management policy. Now a guiding principle of the fire management program is that fire is an essential process in forest ecology. Fire is used to manage the forests for healthy sustainable ecosystems, to reduce accumulations of fuels, and reduce the risk of future large fires.



Huckleberry lookout tower on the Coeur d'Alene National Forest during the 1940s.



USDA Forest Service photograph

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

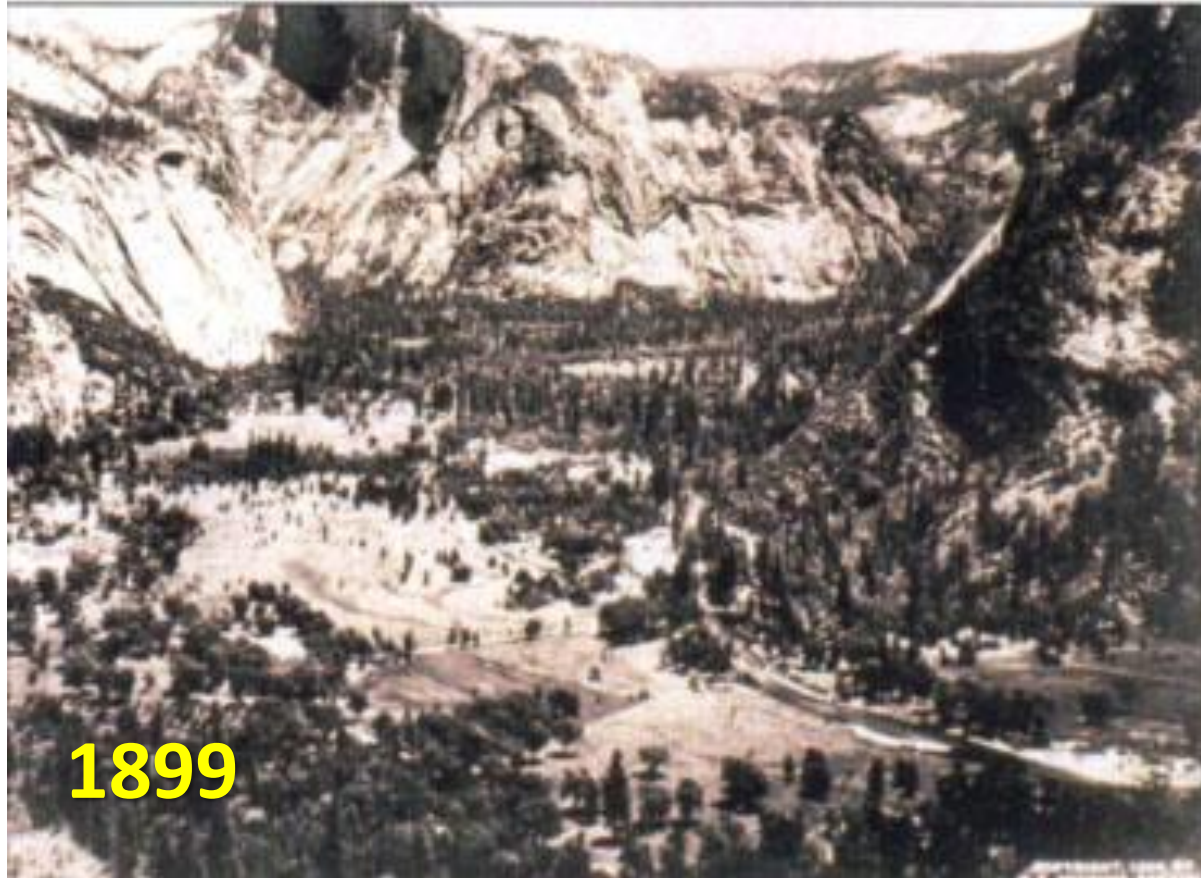
<u>Year</u>	<u>Fires</u>	<u>Acres</u>
2000	92,250	7,393,493
2004	65,461	8,097,880
2005	66,753	8,689,389
2006	96,385	9,873,745
2007	85,705	9,328,045
2011	74,126	8,711,367
2012	67,774	9,326,238
2015	68,151	10,125,149
2017	71,499	10,026,086
2020	58,950	10,122,336

CAL FIRE Large Fires

<u>Year</u>	<u>Fire Name</u>	<u>County</u>	<u>Acres</u>
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

Unintended Effects of Fire Exclusion



East end of Yosemite Valley from Columbia Point

74 inch diameter sugar pine



1929 pre logging



1929 post logging

Stump



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

Mesophication

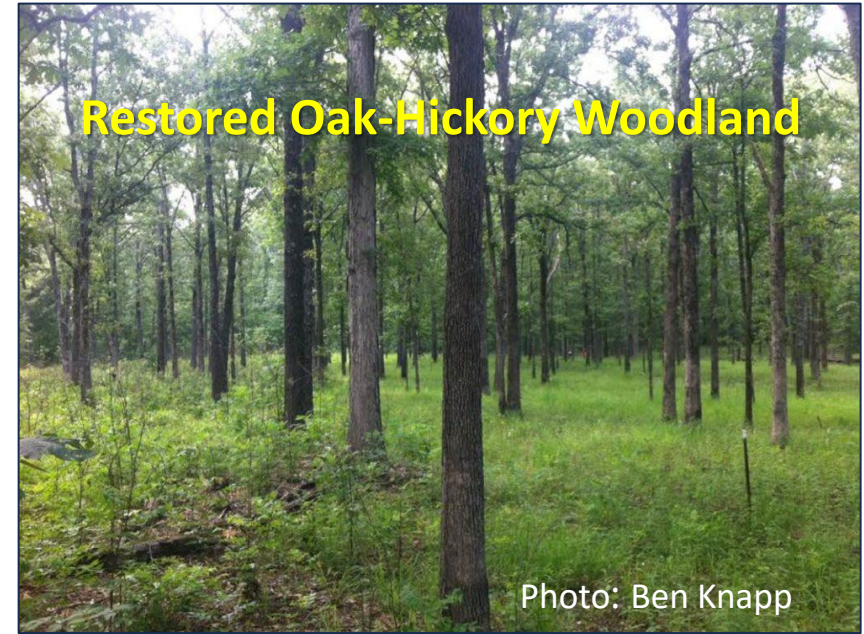


Restoration

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



Restored Oak-Hickory Woodland



- 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



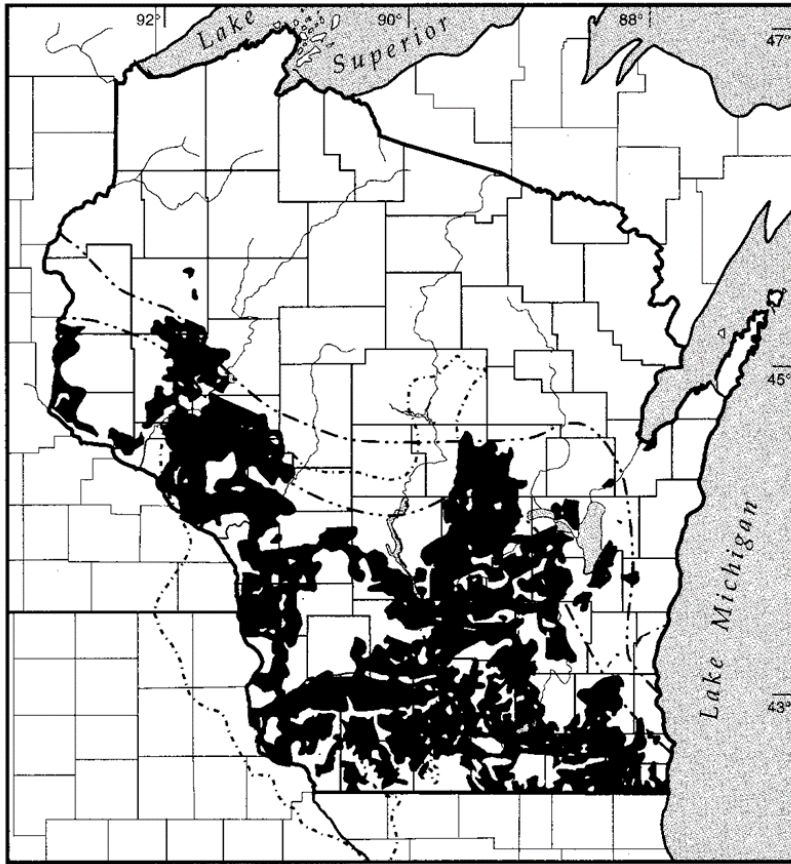
- Biodiversity
- Improved watershed function
- Hazardous fuels reduction
- Improved tree health



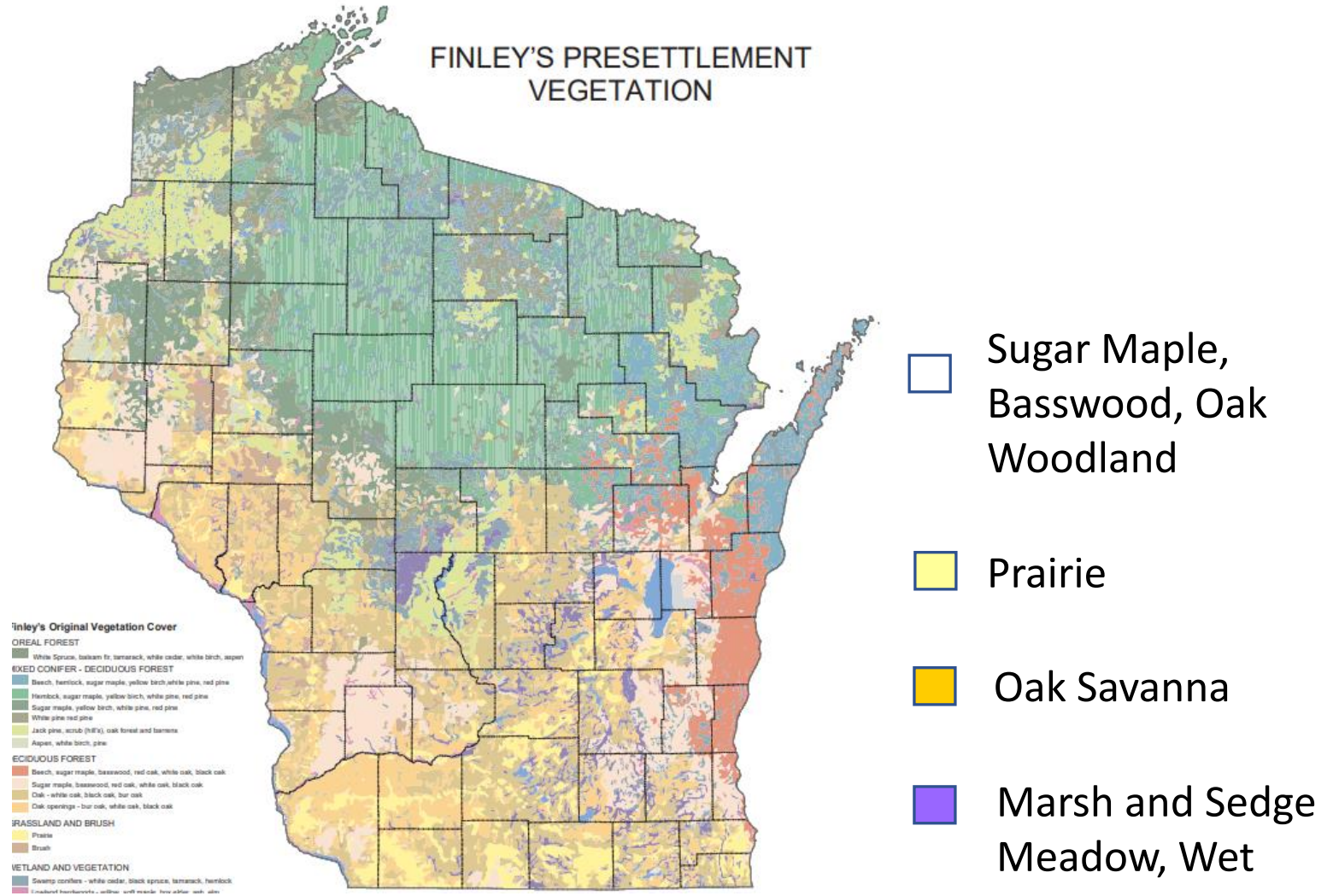
- Pollinator habitat



Extent of Pre-settlement Oak Savannas



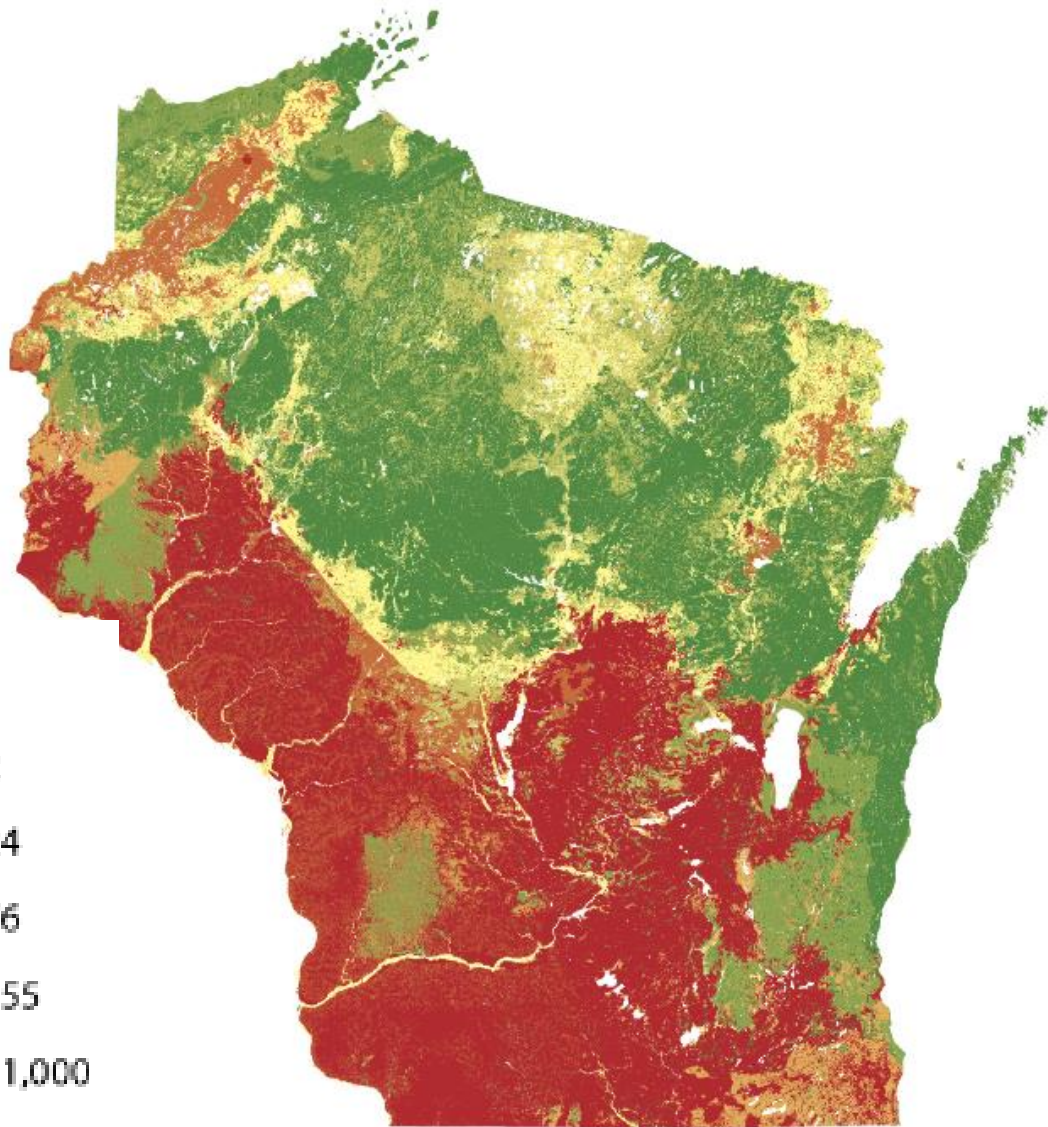
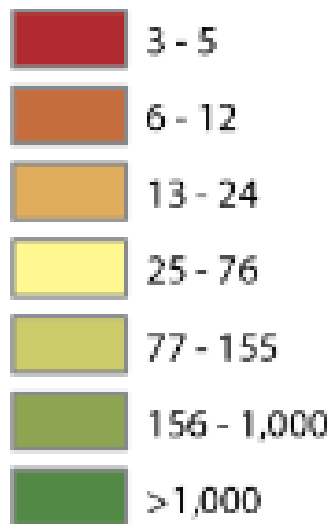
7.3 million acres of Oak Savanna in Wisconsin 1840-1860



Robert W. Finley
1976, Univ. of WI

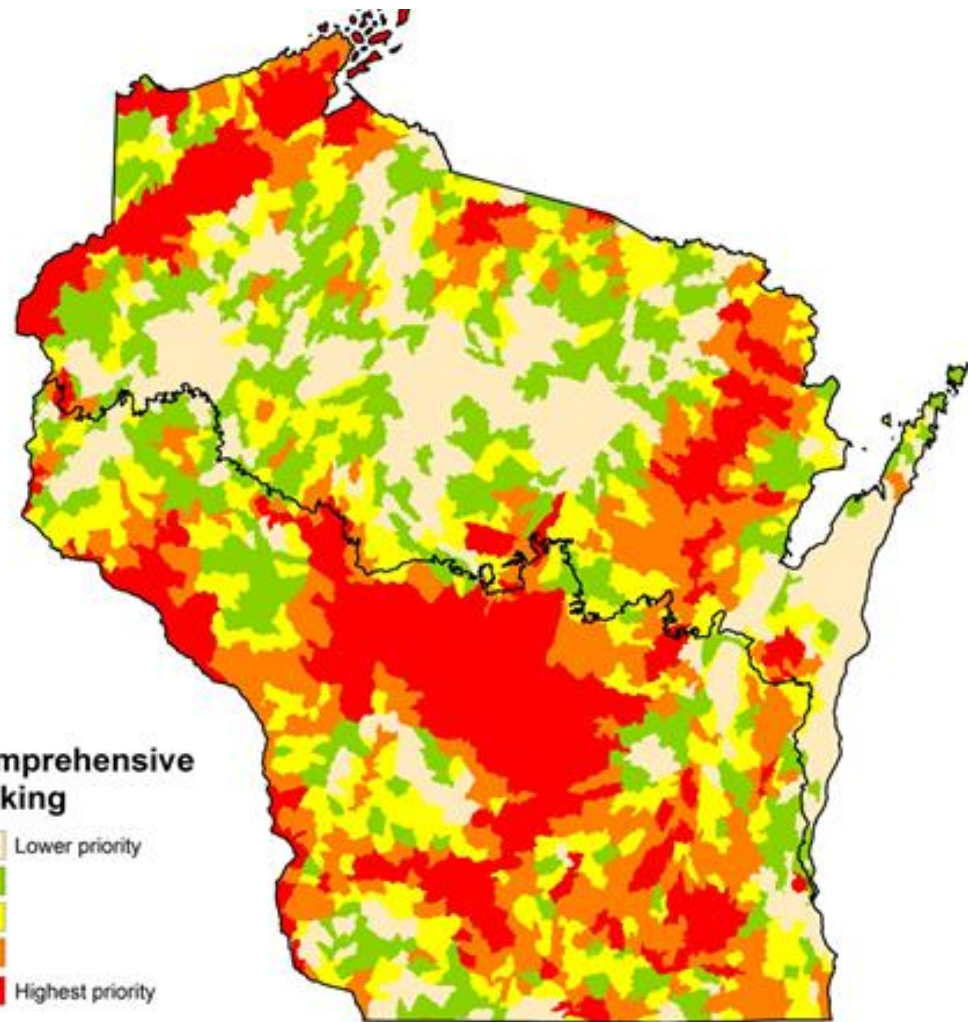
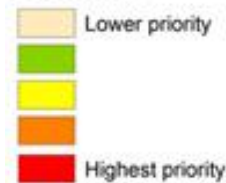
Wisconsin Prescribed Fire Needs

Hx MFI



Hmielowski et al. 2016

Comprehensive ranking



MAP CREATED BY SARAH K. CARTER

Fire-dependent Forests of Northern WI

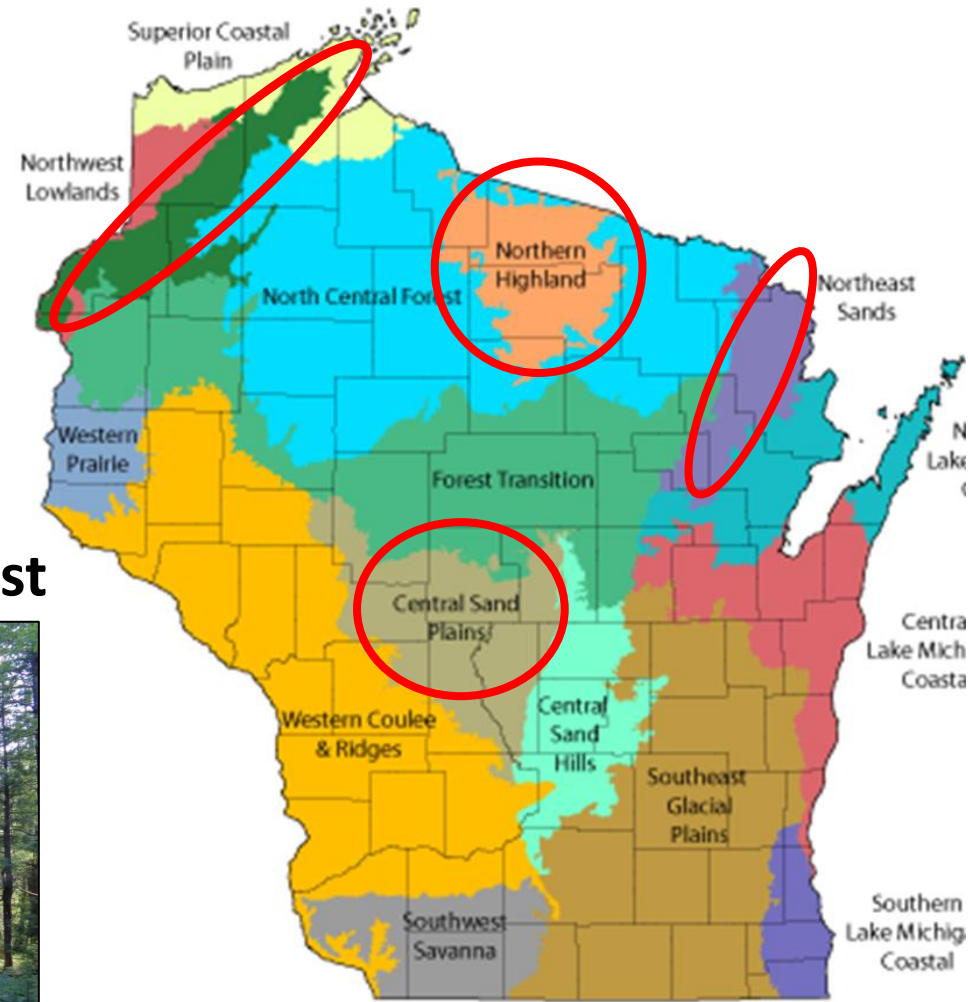
Jack Pine Barrens



Northern Dry Forests



Dry Mesic Northern Forest

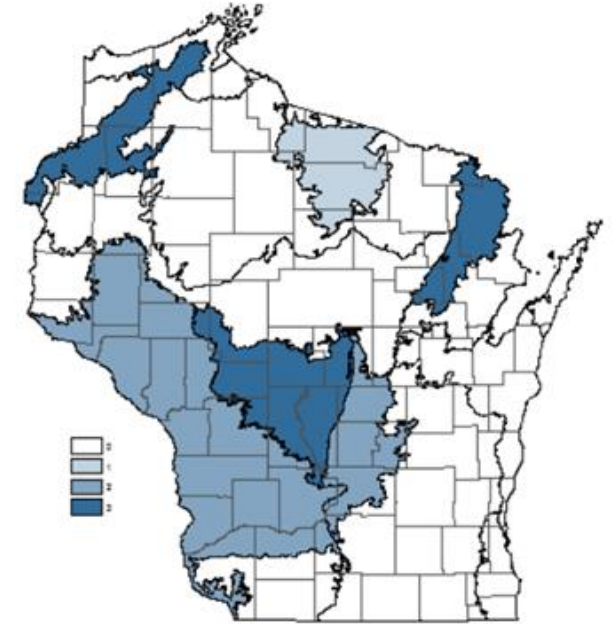


Jack Pine Barrens



Dunnville Barrens, WDNR

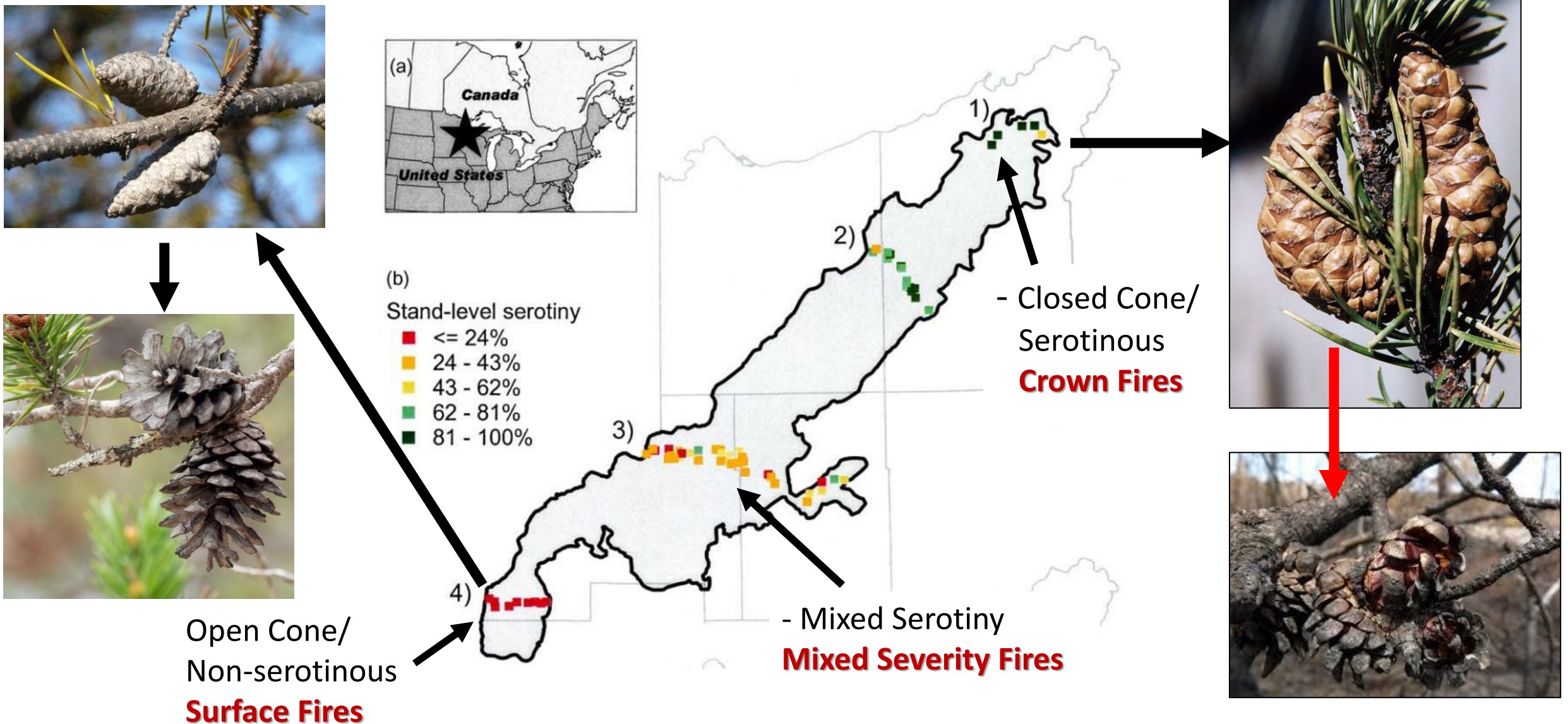
- Savannas dominated by grasses and shrubs with scattered jack pine, n. pin oak and occasional red pine
- Very frequent low intensity surface fires (2-15 years)
- Running crown fires rare due to low density of trees
- 95% reduction in Wisconsin due to fire exclusion, forest management, and land use change



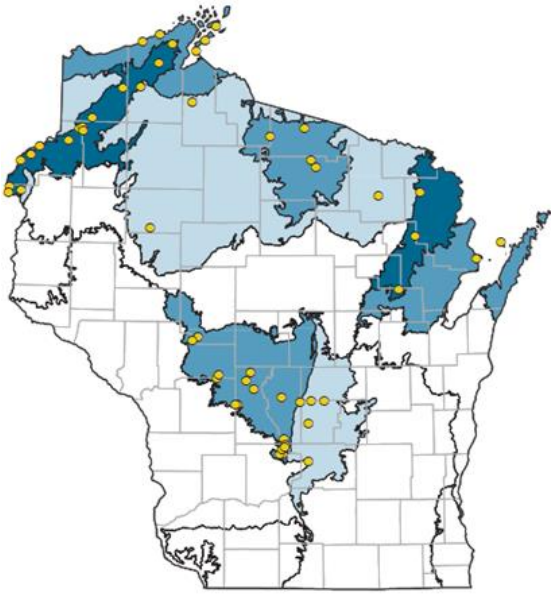
Kirtland's Warbler

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

Volker C. Radeloff^{ca,*}, David J. Mladenoff^{ca}, Raymond P. Guries^a, Mark S. Boyce^b



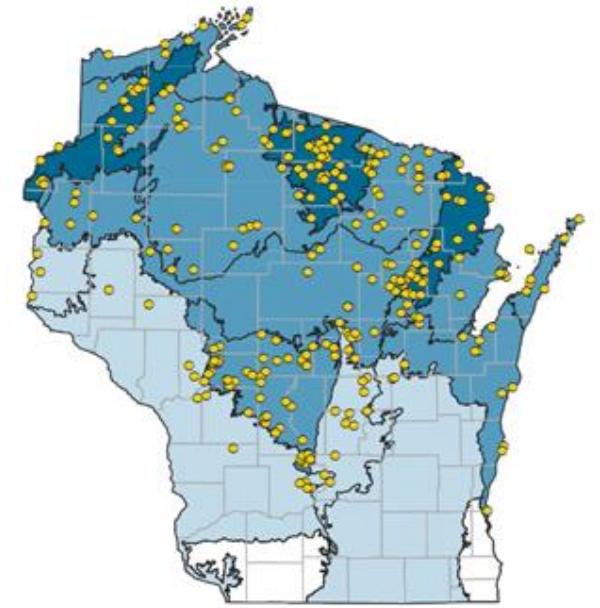
Northern Dry Forests



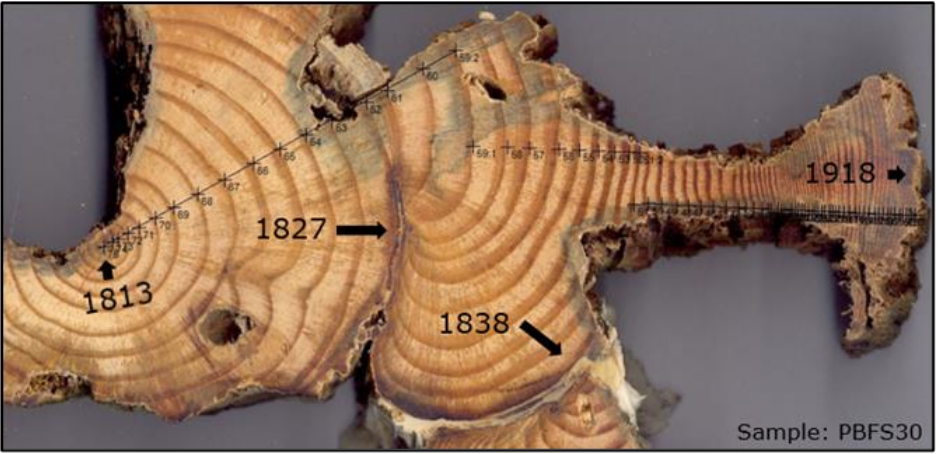
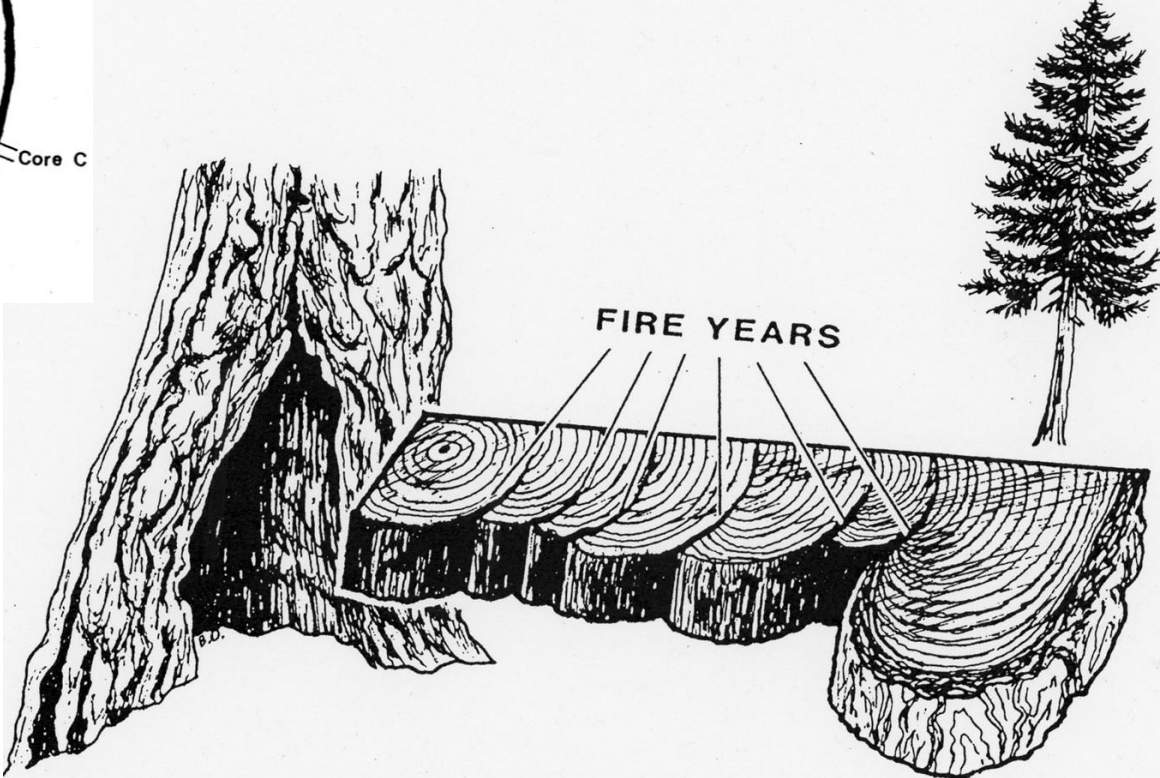
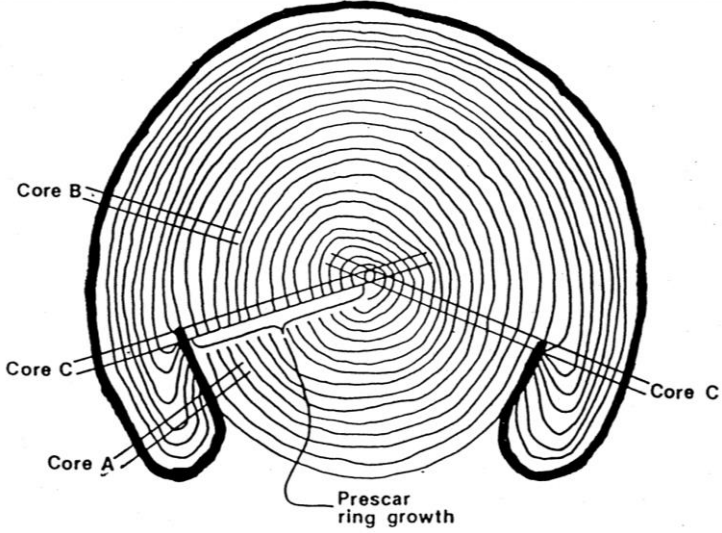
- Mixed jack pine, n. pin oak, and red pine forests
- Sandy low nutrient sites
- Frequent low intensity surface fires (5-20 years)

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

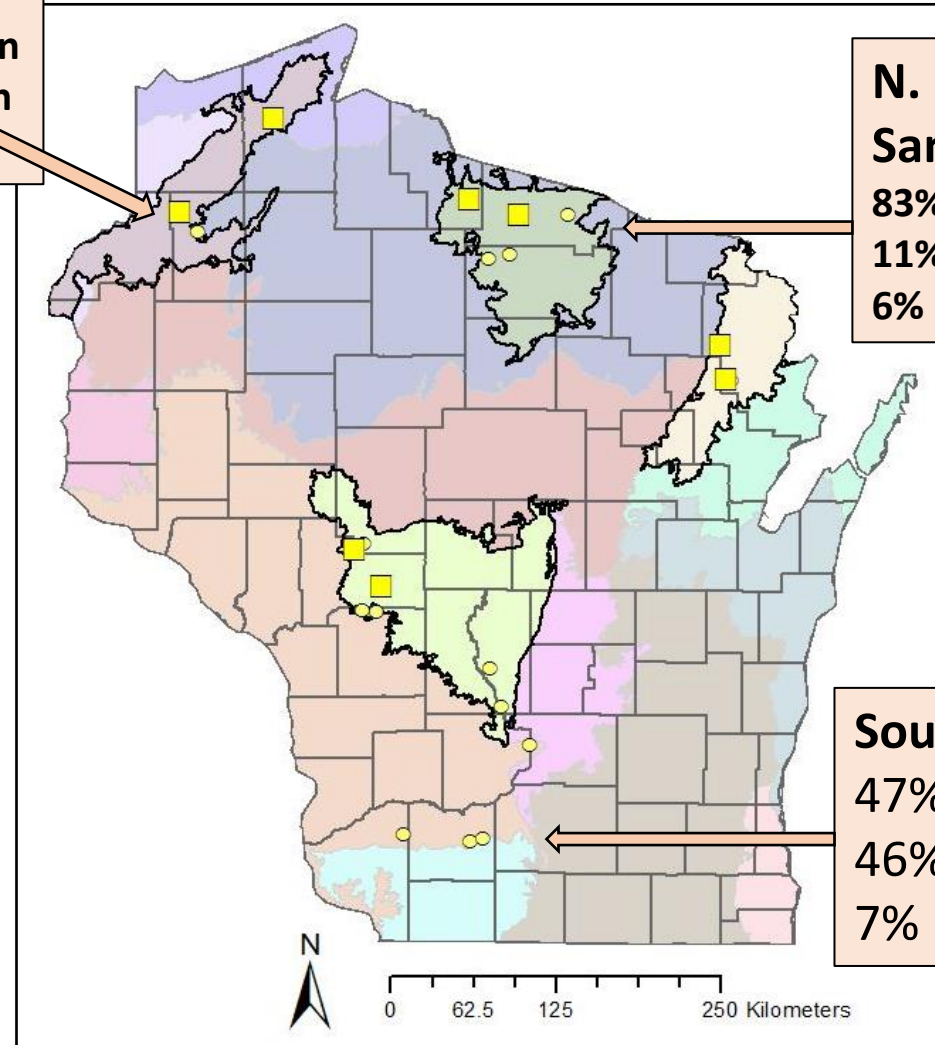


Dendrochronological Fire Scar Work – Jed Meunier



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).

MFRI 2-9 years

Red Pine Fire History Study – Treehaven

Jonathan Steigerwaldt

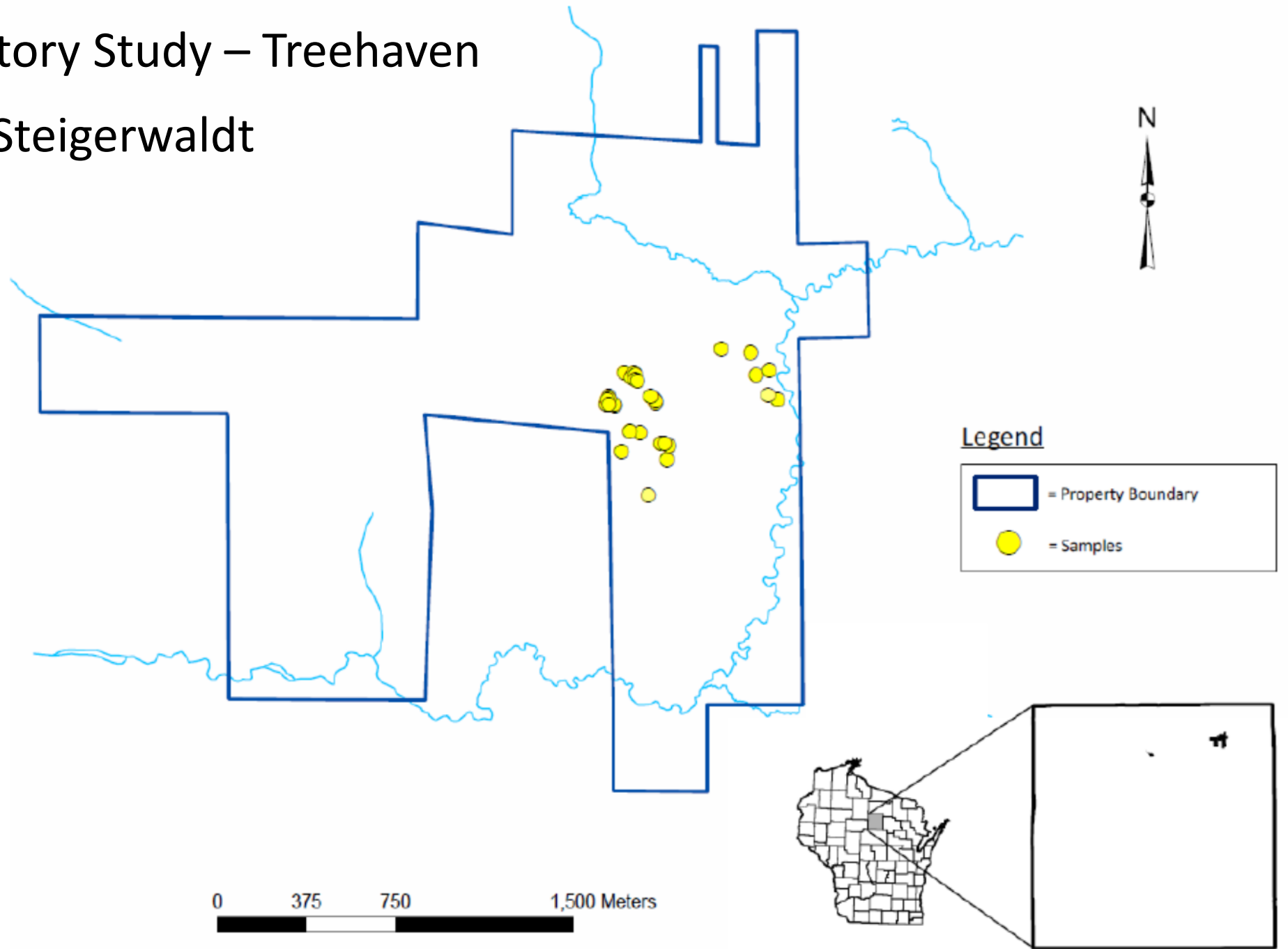


Table 1.3. Fire history attributes for Treehaven during three functional historical periods.

	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

Northern Dry Forest



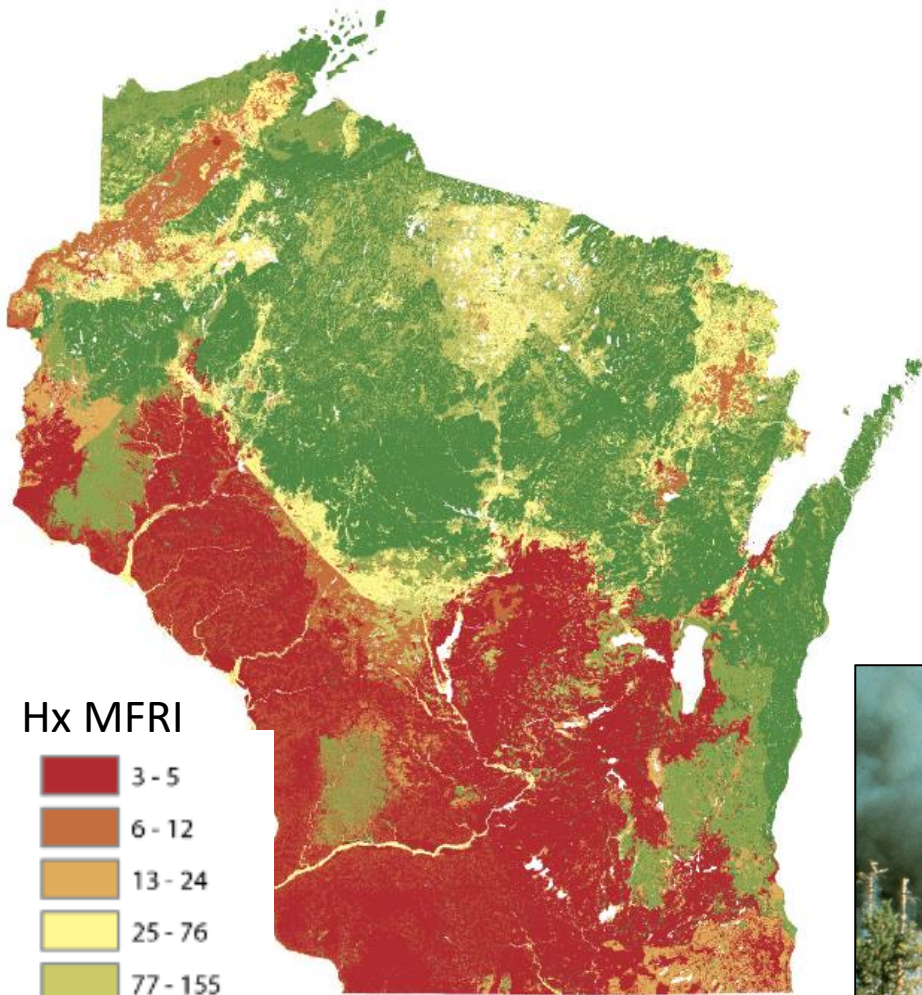
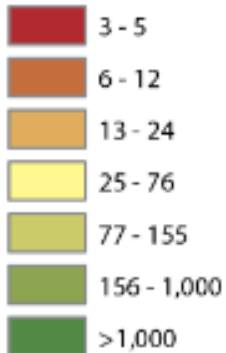
Pine Barrens



Dry Mesic Northern Forest



Hx MFRI



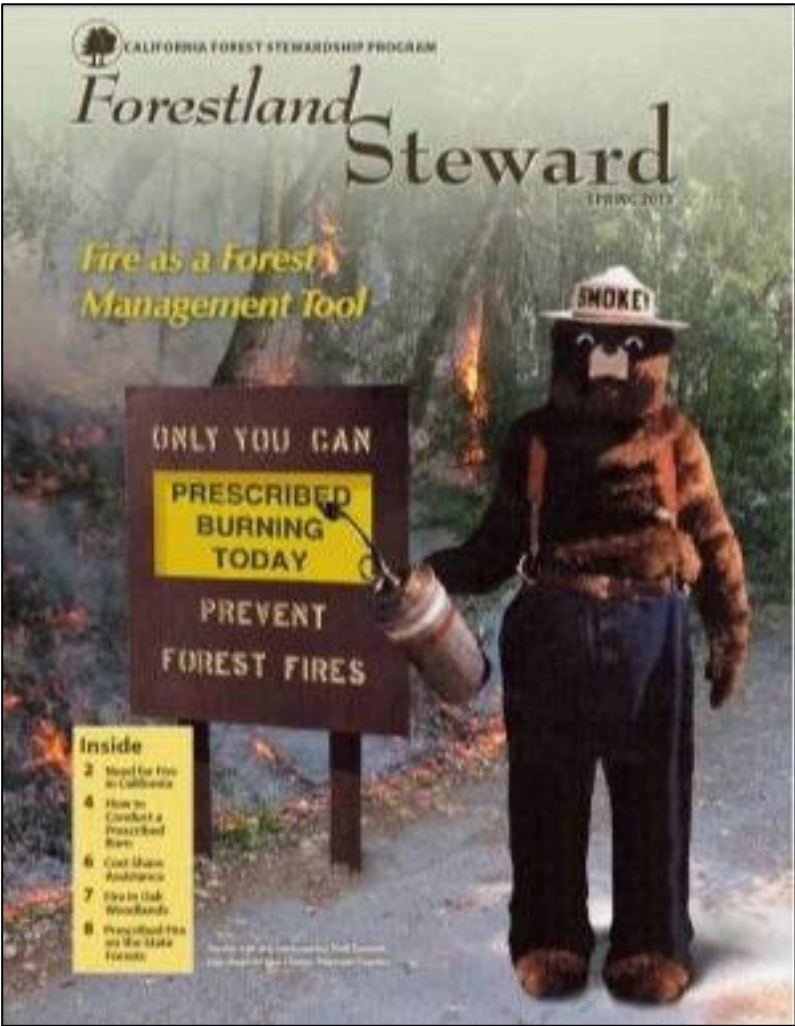
Pine Barrens



Conclusion



Paradigm shift....



“Society needs to learn to live with fire”

A firefighter in a forest at night, using a torch to burn brush. The scene is illuminated by the fire and the ambient light of dusk or dawn. The firefighter is wearing a helmet and a jacket, and is walking away from the camera. The forest is dense with trees and undergrowth. The overall mood is one of quiet intensity and dedication.

Thank You

UWSP Fire Crew Summer 2023 - Treehaven