

The Fire MOU Partnership

- Started as a Settlement Agreement between the Forest Service and Sierra Forest Legacy (Fall 2014)
- Expanded to 11 initial partners including: Cal Fire, Sierra Nevada Conservancy, The Nature Conservancy, National Parks Service, The Wilderness Society, The Sierra Club, Center for Biological Diversity, Northern California Prescribed Fire Council, Southern Sierra Prescribed Fire Council. (Fall 2015)
- New Partners added by (June 2016) included: Audubon Canyon Ranch, Bureau of Land Management, California Forestry Association, CA State Parks, Central Coast Prescribed Fire Council, CSERC, NRCS, Southern California Edison, UC Berkeley Center for Fire Research and Outreach, and other individuals.
- More parties to be added . . . Pacific Forest Trust; Pepperwood Preserve

FIRE MOU Partners have a Steering Committee and 3 primary work groups:

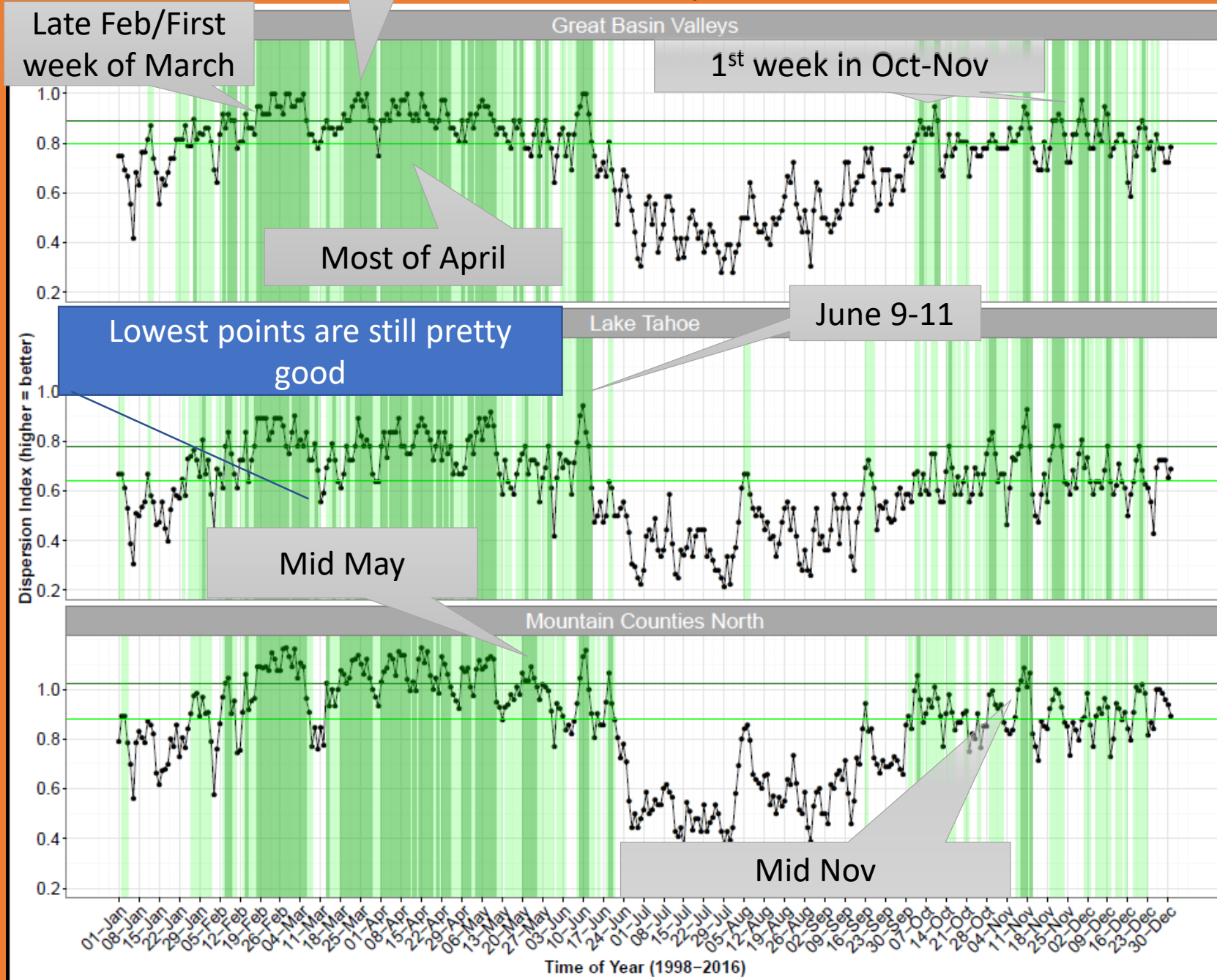
- **Capacity Work Group**---increasing training and staff capacity to do more fire work; cross jurisdictional work that gets to larger acreage resilience;
- **Policy Work Group**---defining the barriers to increased fire use; remove or limit impact of barriers (and keep support of stakeholders);
 - air quality issues such as limits on burn duration; per acre fees
 - burn day availability, fuel moistures, staff and logistic support
 - public understanding of the need for fire in the ecosystem.
 - risks of burning and risks of not burning
 - public health and emissions trade-offs
 - overcoming a century plus of fire exclusion
- **Communication and Outreach Work Group**—media framing of fire and fire effects, using language that builds understanding and support v. fear and insecurity.

Fire Management

What Guides Us:

- Centuries of fire use by Native Californians for natural resource and cultural benefits.
- The Best Available Science from Dr. Harold Biswell in 1960, to SNEP 1996, to Dr. Malcolm North et. al. 2015, to today, scientists have been calling for increased fire use and warning us of the consequences . . . if we don't increase fire use.
- The Governor's Tree Mortality Emergency Proclamation → Increase prescribed fire.
- The Fire MOU Partnership promoting increased fire use for ecological and other benefits such as public health and community safety.
- Forest Service Leadership Intent-2011—Fire Exclusion and past management decisions got us where we are today, which is . . . not a good place.
- The State Fire Plan
- The ultimate consequences of fire exclusion (the King Fire; the Rim Fire). The King fire landscape has seen significant activity over the past century BUT no significant fire use since 1908 . . .

Tahoe/Central Sierra Rx "best bets"



LEGEND

- More likely than not
- Pretty good bet

FIRE MOU PUBLIC INFORMATION AND EDUCATION PLAN

The Fire MOU Outreach and Communications Working Group is dedicated to providing high-quality science-based fire *information responses* for identified target audiences (see list below). The Fire Information Response and Education (FIRE) Program will emphasize the major goals of the Fire MOU Partners to increase public awareness and support for increasing fire use for multiple resource objectives in California¹

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- Staffing
- Key Messages
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Goals

The FIR&E Program has four goals:

GOAL #1 – Offer year-round education on fire ecology, fire history, and fire effects in the Sierra. Communicate how prescribed fire and managed natural ignitions meet natural resource management and community protection goals for land management agencies and private landowners which provide multiple resource benefits for Californians

GOAL #2 – Provide accurate and timely incident information for local, regional, and national fire operations as needed.

GOAL #3 – Work with local communities to promote fire safety, fire prevention, defensible space, fire wise community planning, and fuels management. Help them to understand that restoring fire on the landscape, well-planned and when safe to do so, is also a key tool to protect public health and safety.

GOAL #4 – Build and maintain interagency, educational, and community partnerships to improve fire education activities.

Key Messages

The FIR&E Program will provide target audiences with accurate information about fire management from both the national and local perspectives.

The Fire MOU Section III includes language supporting our commitment to public outreach and education. The Outreach and Communication Working Group utilized and synthesized the information meeting notes from our June 2016 Fire MOU Partnership meeting to create this document. This Communication Plan is a living document offered to all our partners to utilize as they wish in support of the general goal of increasing fire use in California for ecological and other resource benefits.

Communication and Outreach Plan

There is **no-no fire-
option** in California

Burning Questions

Can we re-establish fire as a primary disturbance and gain the benefits of increased, ecologically significant, pace and scale of restoration?



Fire in the past . . .

Prehistoric fire and emissions in CA forests, woodlands, shrublands, grasslands (Stephens et al. 2007)

“The idea that U.S. wildfire area of approximately two million ha annually is extreme is certainly a 20th or 21st century perspective.”

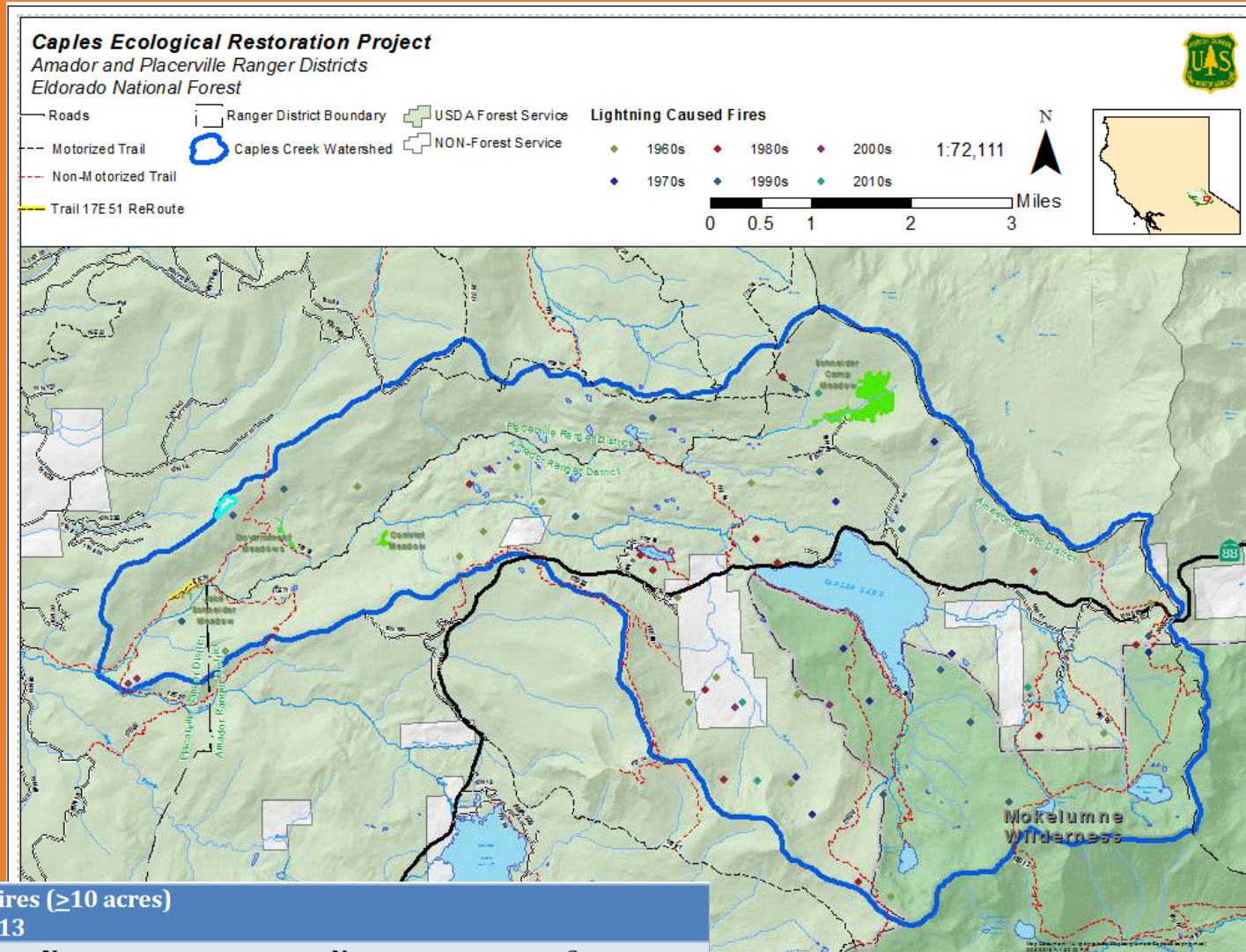
“Approximately 1.8 million ha (4.45 million acres) burned annually in California prehistorically (pre-1800)”.

Much of California has changed since 1850 but our forestlands are still forestlands.

Burning Question: What are the implications of fire exclusion in strongly fire-associated forests in the Sierra Nevada?

487,000 ac burned annually in the Sierra Nevada (North et al. 2015)

Caples Creek Watershed Lightning Ignition



**Class C Fires (≥10 acres)
1908-2013**

Year	Name	Cause
1928	Mule Canyon	Lightning
1934	Mule Canyon	Lightning
1975	Unknown	Lightning
1999	Jake	Lightning

Class A and B Fires (<10 acres) 1960-2013

Cause	Number of Ignitions
Lightning	141
Human	79





Beaver Creek
Pinery
Ishi
Wilderness

Reference
site subject
to fire
suppression

Current Pace and Scale: One measure is against historic rates:
 How much of the Sierra Nevada burned/yr? About 1/2 million ac

Forest Type ²	Area (ac)	HFRI ¹		Own er- ship	Forest Service			Own er- ship	National Park Service		
		Me an (yr)	High (yr)		Area (ac)	Mean HFRI (ac/yr)	High HFRI (ac/yr)		Area (ac)	Mean HFRI (ac/yr)	High HFRI (ac/yr)
Mix. conifer West-side	1,466,539	12	25	0.62	909,254	75,771	36,370	0.05	73,327	6,111	2,933
ponderosa Lwr cison.	1,087,734	5	12	0.53	576,499	115,300	48,042	0.08	87,019	17,404	7,252
mix. con-oak	1,046,221	10	30	0.46	481,262	48,126	16,042	0.04	41,849	4,185	1,395
Jeff. pine-fir	730,428	8	25	0.8	584,342	73,043	23,374	0.09	65,738	8,217	2,630
Jeffrey pine East-side	484,563	6	20	0.75	363,422	60,570	18,171	0.13	62,993	10,499	3,150
ponderosa	398,819	5	15	0.76	303,103	60,621	20,207	0	0	0	0
Black oak	268,598	10	25	0.6	161,159	16,116	6,446	0.03	8,058	806	322
White fir	133,434	25	45	0.7	93,404	3,736	2,076	0.06	8,006	320	178
Aspen	24,463	30	90	0.89	21,772	726	242	0.02	489	16	5
Sequoia-mix con.	17,544	15	20	0.31	5,439	363	272	0.52	9,123	608	456
Active Man. Total	5,658,343				3,499,655	454,371	171,241		356,602	48,166	18,321
Red fir	838,905	45	90	0.61	511,732	11,372	5,686	0.3	251,671	5,593	2,796
Lodge. pine Red fir-west.	532,748	30	110	0.6	319,649	10,655	2,906	0.42	223,754	7,458	2,034
white p. Whitebark p.	393,877	50	135	0.75	295,408	5,908	2,188	0.18	70,898	1,418	525
mtn hemlock Whitebark &	93,404	85	180	0.62	57,910	681	322	0.37	34,559	407	192
lodge. pine Up cison.	92,168	40	165	0.86	79,265	1,982	480	0.12	11,060	277	67
mix. con-oak	64,493	15	45	0.48	30,957	2,064	688	0.14	9,029	602	201
Foxtail pine	58,810	50	150	0.21	12,350	247	82	0.77	45,284	906	302
Whitebark p.	54,115	65	200	0.68	36,798	566	184	0.31	16,776	258	84
Passive Man. Total	2,128,519				1,344,068	33,475	12,536		663,031	16,918	6,201
All Man. Total	7,786,862				4,843,723	487,846	183,778		1,019,633	65,084	24,522

North, M.P., B.M. Collins, and S.L. Stephens. 2012. Using fire to increase the scale, benefits and future maintenance of fuels treatments. Journal of Forestry 110: 392-401.

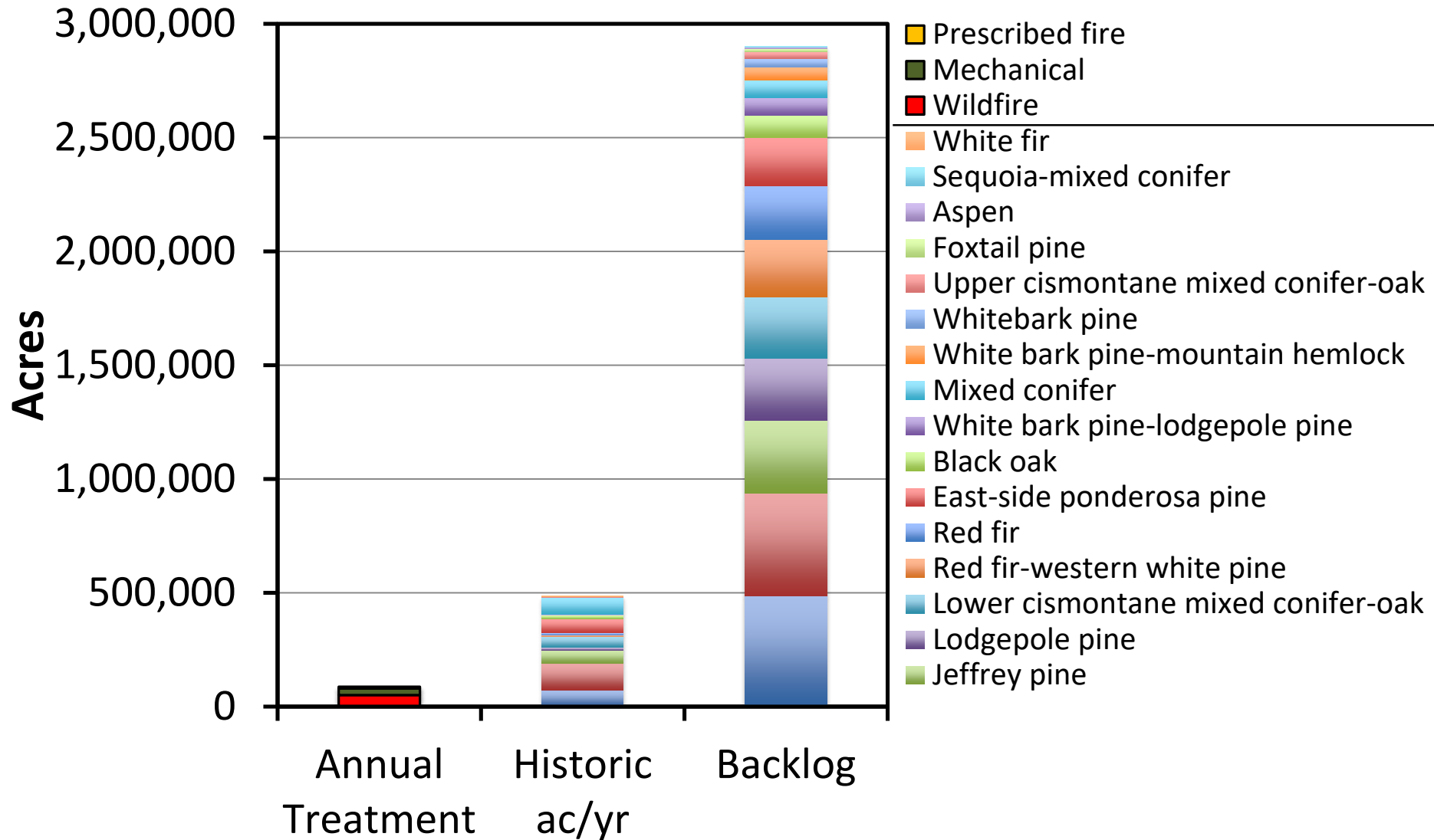
Current Pace and Scale on National Forests

Historical Rate of Fire	487,486 acres/year
Current Rates of Treatment* (1998-2008)	36,854
• Mechanical treatment	28,598
• Prescribed fire	8,256

- **Current treatment is 7.6% of historical rate**
- **Annual Deficit = 450,000 acres/year**

*For this same 11 year period, wildfire burned an average of 51,000 ac/yr. But current wildfire is often not a treatment, averaging >33% high severity on Forest Service land (Miller et al. 2012)

The Fire “Debt” or Backlog is Much Greater



At current rates, 66% of National Forest Lands will never get treated

Consequences of Fire Suppression

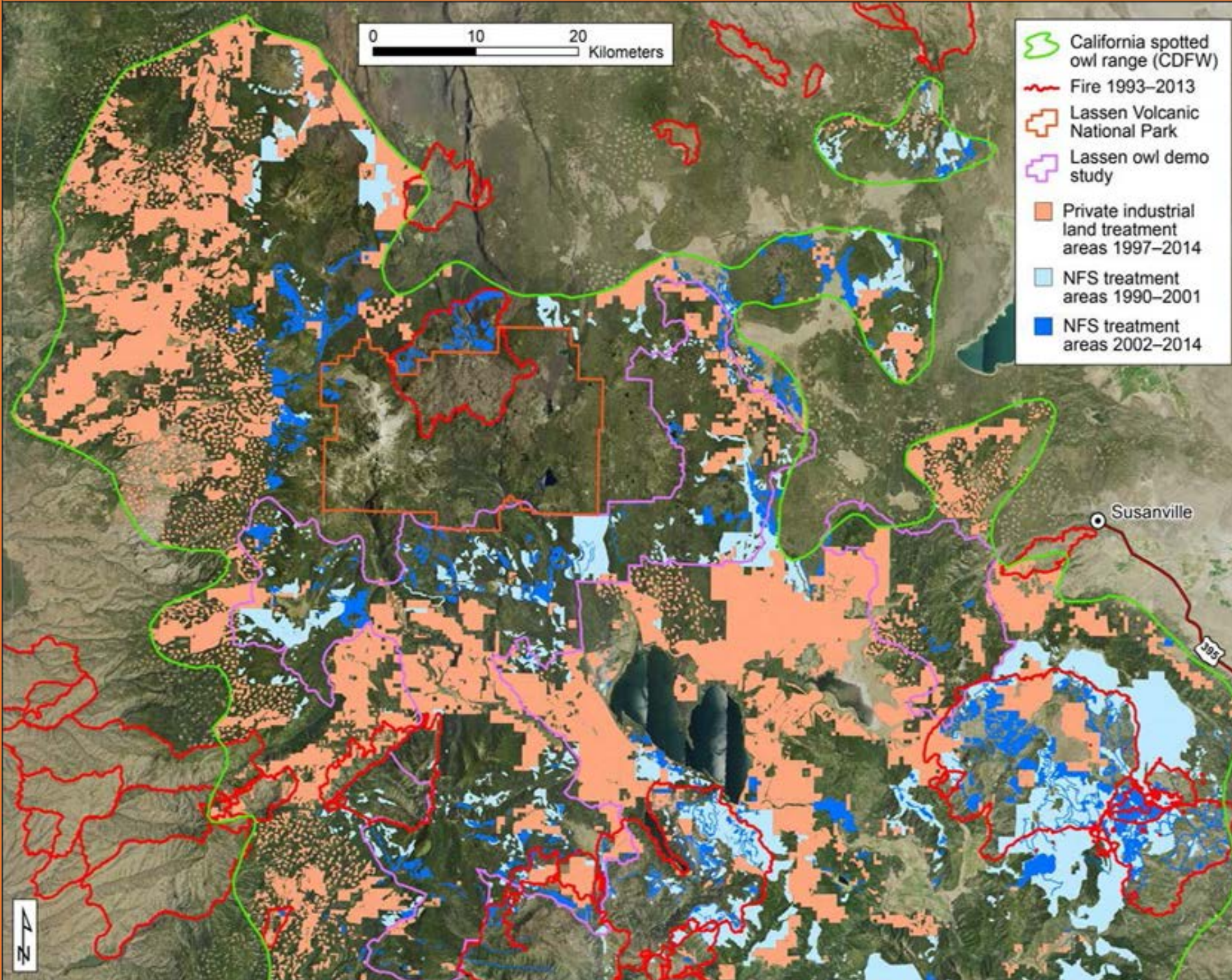


- Suppression only postpones: fuel loads increase and escaped ignitions occur during extreme weather
- Since the start of effective suppression in the 1920s, in the contiguous U.S., 16 of the 20 largest wildfires have occurred in just the last 14 years
- Fire is inevitable: Choice is between beneficial fire mostly on your terms vs. triaging ‘Act of God’ events

Implications

- Even if you quadrupled the current rate of mechanical treatment to $>100,000$ ac/yr, you'd still be treating $<1/4$ of what's needed
- And almost $1/2$ of Sierra firesheds you cannot significantly affect wildfire spread or intensity with only thinning
- Fire is the only way to truly change pace and scale.
- Its up to us to decide what kind of fire we want.





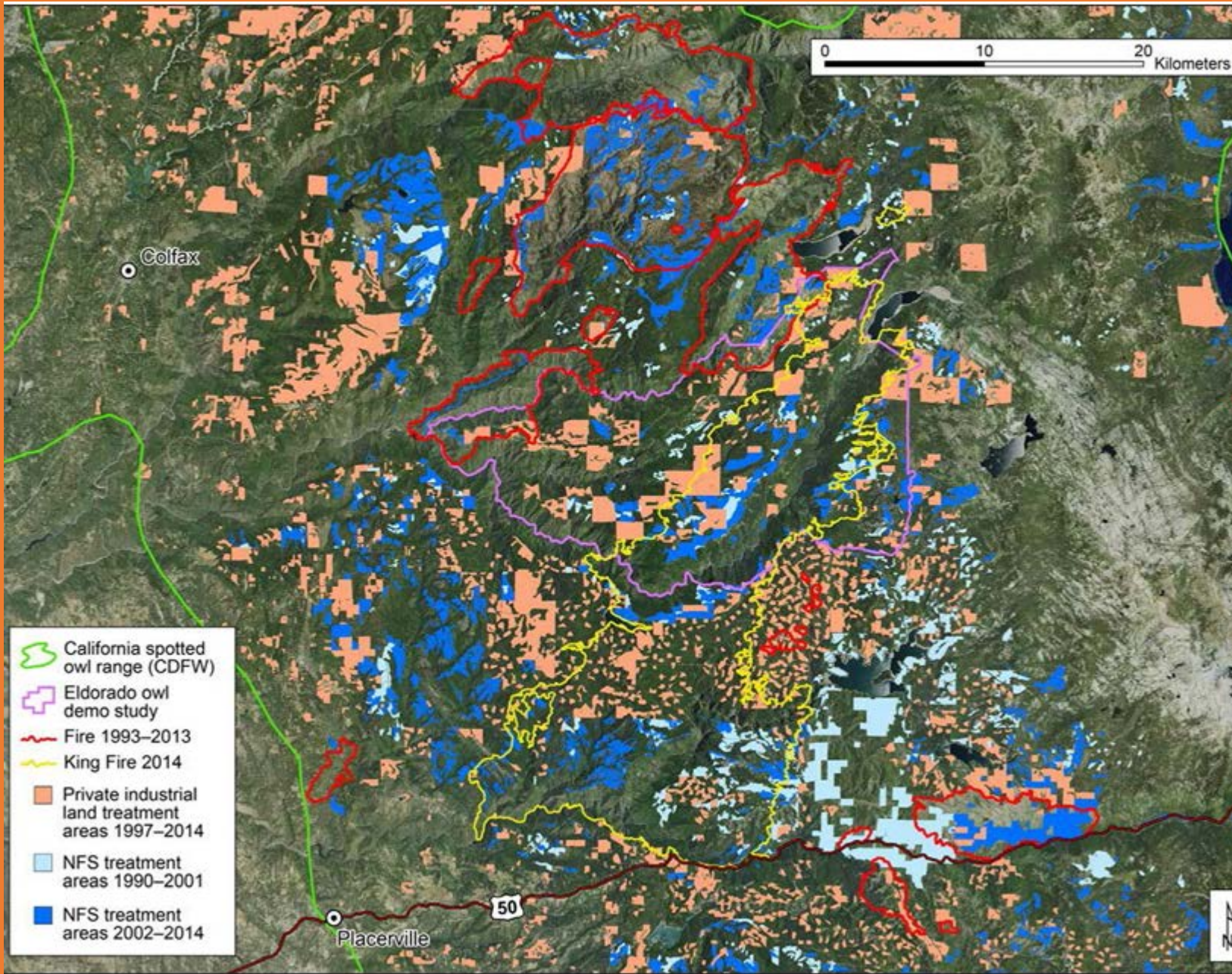
Plumas-Lassen area

Public land treatments in light and dark blue

Private land treatments in beige

Fires in red outline

CSO range area in green



Tahoe-Eldorado NF area

Public land treatments in light and dark blue

Private land treatments in beige

Fires in red outline

CSO range area in green

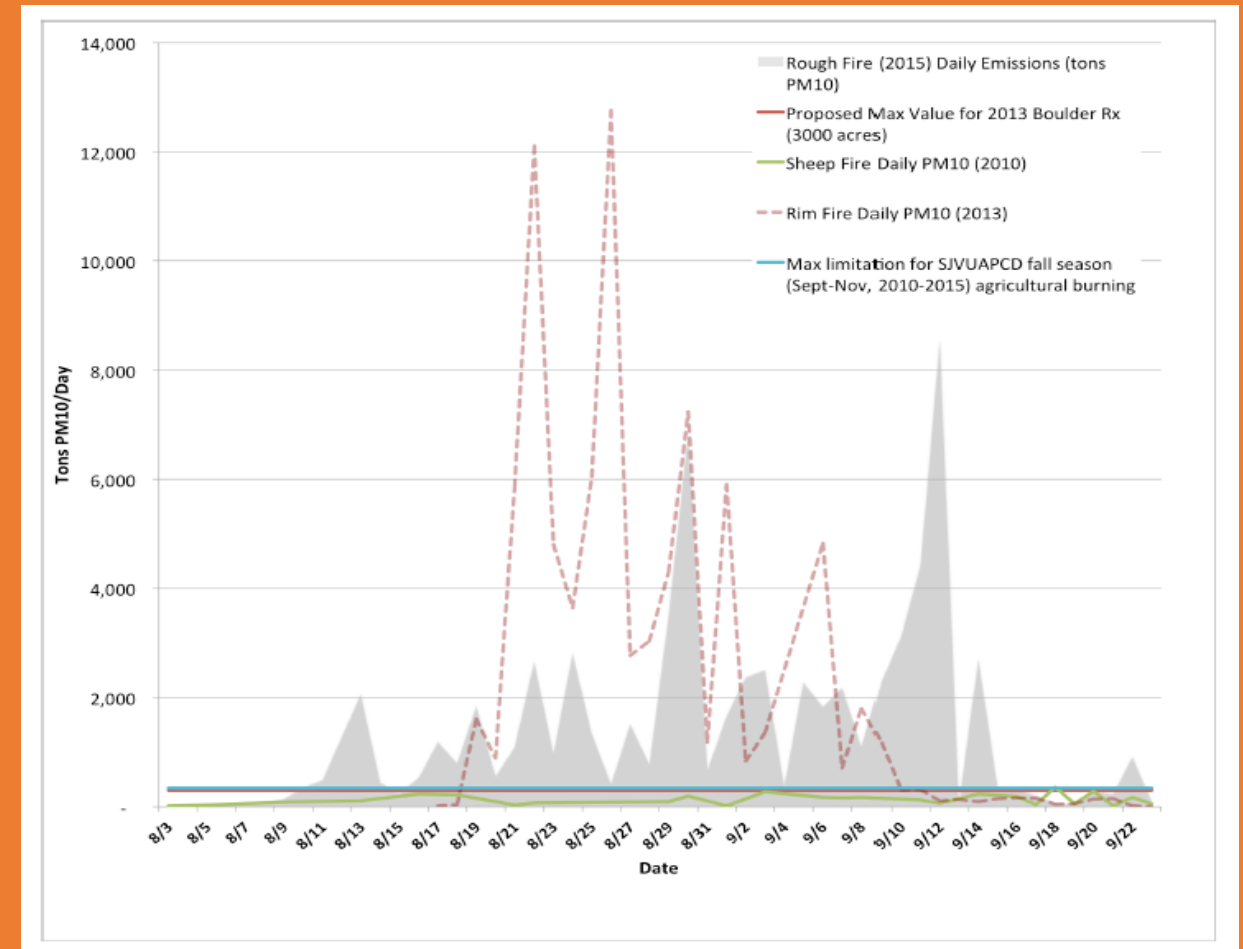
Fire and Air Quality Management

Air Quality Science and Public Health Impacts . . .

Air Quality research in California points to the need for active fire program **to protect public health** (Schweizer and Cisneros 2016)

Emissions from Rim Fire impacted 7 million person/days with unhealthy air.

In addition to resource damage, the Rim Fire health-related impacts est. is **\$600 million** (Long et al. 2017)



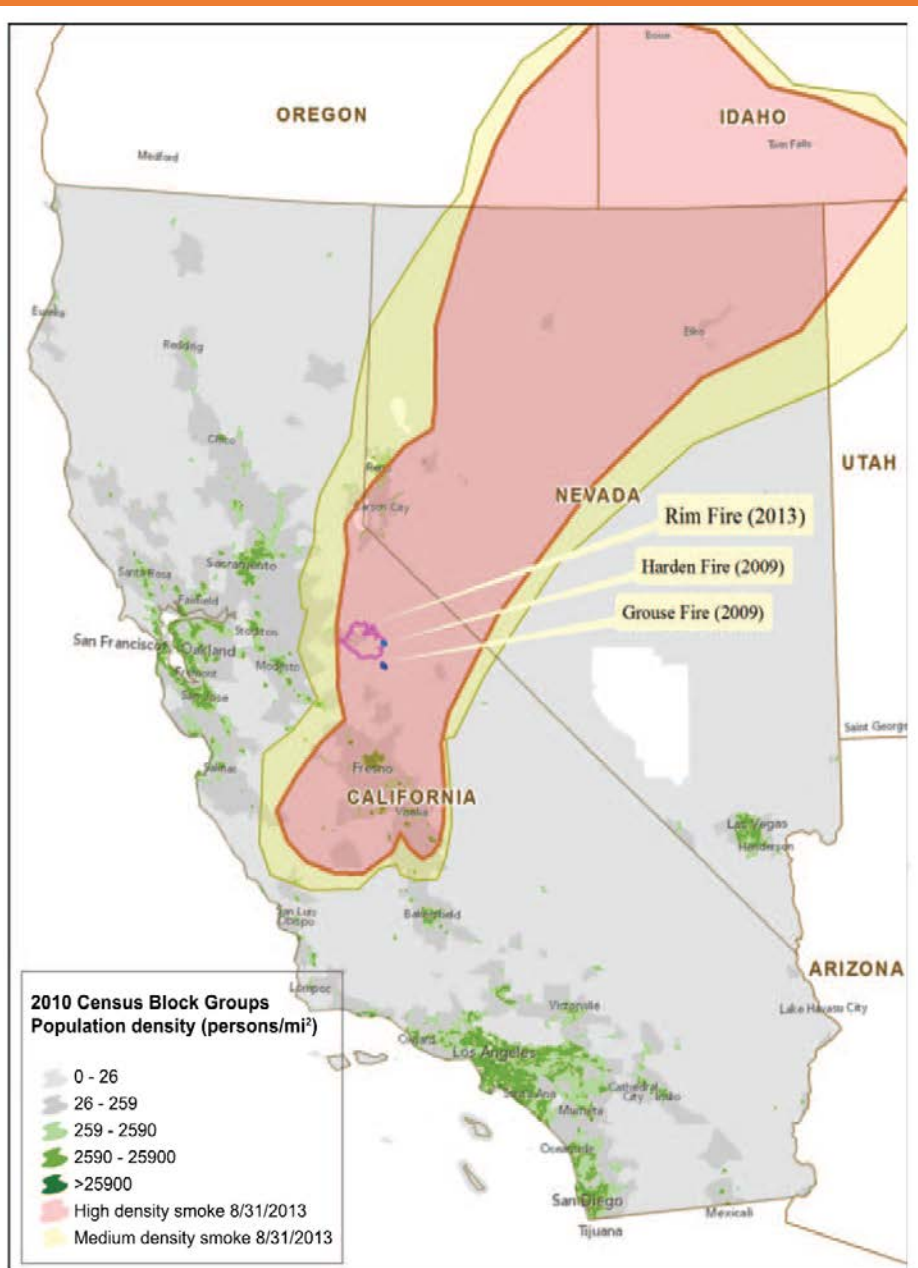


Figure 5. HMS smoke plumes from the Rim Fire on Aug. 31, 2013, a day of extensive heavy smoke impact, overlying population density of census tracts in California and Nevada.

7 Million total person-days of exposure to higher than normal levels of PM 2.5 from the Rim Fire between August 22nd and September 10th.

Values that exceed 35 $\mu\text{g}/\text{m}^3$ are considered unhealthy for sensitive groups.

Large smoke plumes occurring on August 23-25 and August 28-29 when PM values exceeded 55.5 $\mu\text{g}/\text{m}^3$ which is unhealthy for all populations.

Very unhealthy and unhealthy days occurred at 10 monitoring sites in the central Sierra, northern Sierra and Nevada.

On way to determine economic impact is to multiple person-days of impact by willingness to pay to avoid exposure. Studies suggest the costs of the Rim smoke impacts approximate \$600 million dollars.

Long et al. 2017 Journal of Forestry.

Schweizer and Cisneros 2016 Change conventional thinking on smoke management to prioritize long term air quality and public health.

Policy change has largely attempted to provide the avenue for increased use of ecologically beneficial fire but allows for continued reliance on suppression as a primary tool for a smoke averse population. While understanding the essential role of suppression in protection of life and property, we dispute the efficacy of attempting to eliminate smoke exposure through suppression in a fire prone area to protect human health at the population level. Sufficient consideration to future negative health outcomes needs to be considered in fire management decisions. It is likely that long term air quality is inextricably linked to ecosystem health in the Sierra Nevada. We contend that landscape use of ecological fire is essential to forest and human health. Radical change is needed where beneficial wild-land fire smoke is treated as natural background and exempted from much of the regulation applied to anthropogenic sources.

Smoke Management . . . what counts? When did counting start (baselines set), what is not counted?

Title 17 of the California Code of Regulations

Article I, Chapter 2 Smoke Management Guidelines for agricultural and prescribed burning. §80111 General Purpose

The Smoke Management Guidelines for Agricultural and Prescribed Burning, henceforward referred to as Guidelines, are to provide direction to air pollution control and air quality management districts (air districts) in the regulation and control of agricultural burning, including prescribed burning, in California. The Guidelines are intended to provide for the continuation of agricultural burning, including prescribed burning, as a resource management tool, and provide increased opportunities for prescribed burning and agricultural burning, while minimizing smoke impacts on the public. The regulatory actions called for are intended to assure that each air district has a program that meets air district and regional needs.

Aligning Smoke Management with Ecological and Public Health Goals

Long et al. 2017 Journal of Forestry

- Expanding discussion of extent of emissions impacts in regulatory findings supported by better real-time monitoring of smoke plumes, better models, and a broader assessment of public health and economic impact of mega-emissions versus a well-managed use of fire for multiple resource benefits.
- There was a 53% reduction in emissions from areas in the Rim Fire footprint that had either prescribed fire or resource objective wildfires since 2002 (10,385 acres). Had the entire area be treated with fire the overall emissions would have been reduced by 48%.
- When conditions are right, large areas can burn with relatively minor smoke impacts.
- Better to manage fire based on monitored smoke concentrations versus using generalized assumptions about per/ac emissions or predetermined area limits.

Federal Clean Air Act 42 U.S.C. §7401 et seq. (1970)

NAAQS first set in 1971

- Anthropogenic pollution (human caused but . . .we need to re-examine this definition in light of increased ecological literacy regarding fire and ecosystem function)
- Primary purpose of the Clean Air Act is to protect public health.
- NAAQS developed to regulate pollution levels and drive unsafe levels of pollution to scientifically defined safe levels in a specific timeframe.
- Federal EPA considers wildfire an event outside of its regulatory control

EPA Air Quality Guidance letter of 2013

Reflect EPA's current thinking on exceptional events issues

- 2016 Exceptional Events Rule recognizes the value of Prescribed Fire and Wildfire managed for multiple resource benefits **but . . .**

The interim guidance materials are based on the following principles:

1. Air agencies should not be held accountable for exceedances due to exceptional events that were beyond their control at the time of the event.
2. It is desirable to implement reasonable controls to protect public health.⁴
3. Clear expectations will enable the EPA and other air agencies to better manage resources related to the exceptional events process.

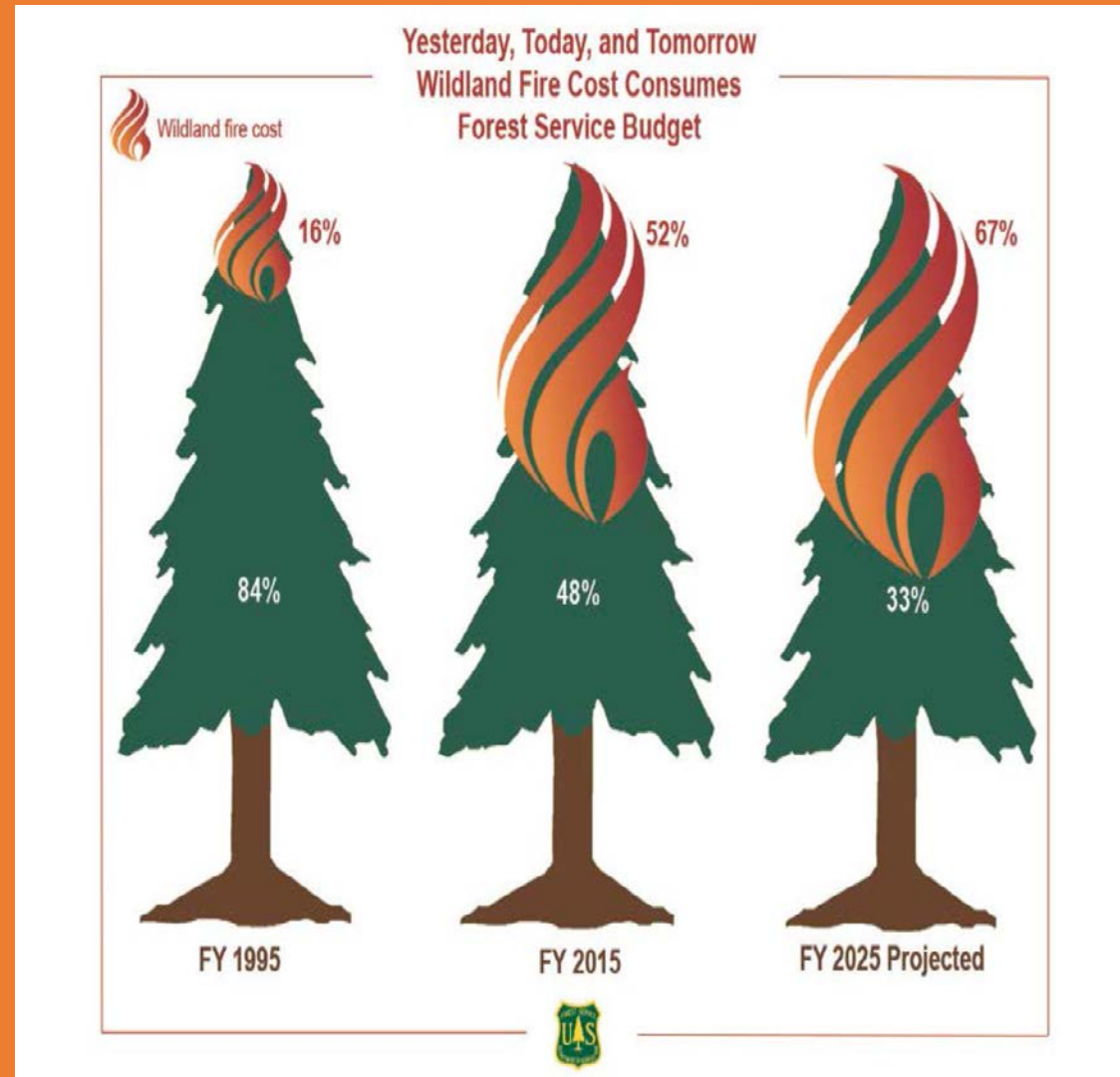
Wildfire Fighting Costs Continue to Soar

USDA
United States Department of Agriculture

THE RISING COST of WILDFIRE OPERATIONS:

Effects on the Forest Service's Non-Fire Work

U.S. Forest Service August 4, 2015



Expanding Community Fire Protection Efforts

- 2015 Butte Fire—70,868 acres/921 structures including 549 homes lost/2 fatalities/cause-powerlines
- 2015 Valley Fire-70,067 acres/1,955 structures including 1,281 homes/4 firefighters injured and 4 civilian fatalities/cause electrical.
- We need help with all aspects of community fire protection. Folks aren't doing the work they need to do to live in the strongly fire adapted landscapes of California.

Forestland Steward

SPRING 2013

Fire making a comeback
for forest management

ONLY YOU CAN
PRESCRIBED
BURNING
TODAY
PREVENT
FOREST FIRES



Inside

- 2 CA Forests Need Fire
- 4 Nuts & Bolts of a Prescribed Burn
- 6 Cost Share Assistance
- 7 Fire in Oak Woodlands
- 8 Prescribed Fire on the State Forests

Smokey bear's drop torch courtesy North State Park
page design by Alex Connor, Palewater Graphics

Only you can help
us increase fire
use in California

THANK YOU !