



# Prescribed Fire in California: Where Are We Headed?

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# Talk Outline

## Fire and the Sierra Nevada

- Fire regimes critical idea

## Fire and forest management in California

- Native Americans to present: The people involved and what we can learn from them

## Recent fire and forest policy changes and ideas in California

- Executive Order, May Revise, Legislature
- Big ideas and changes coming



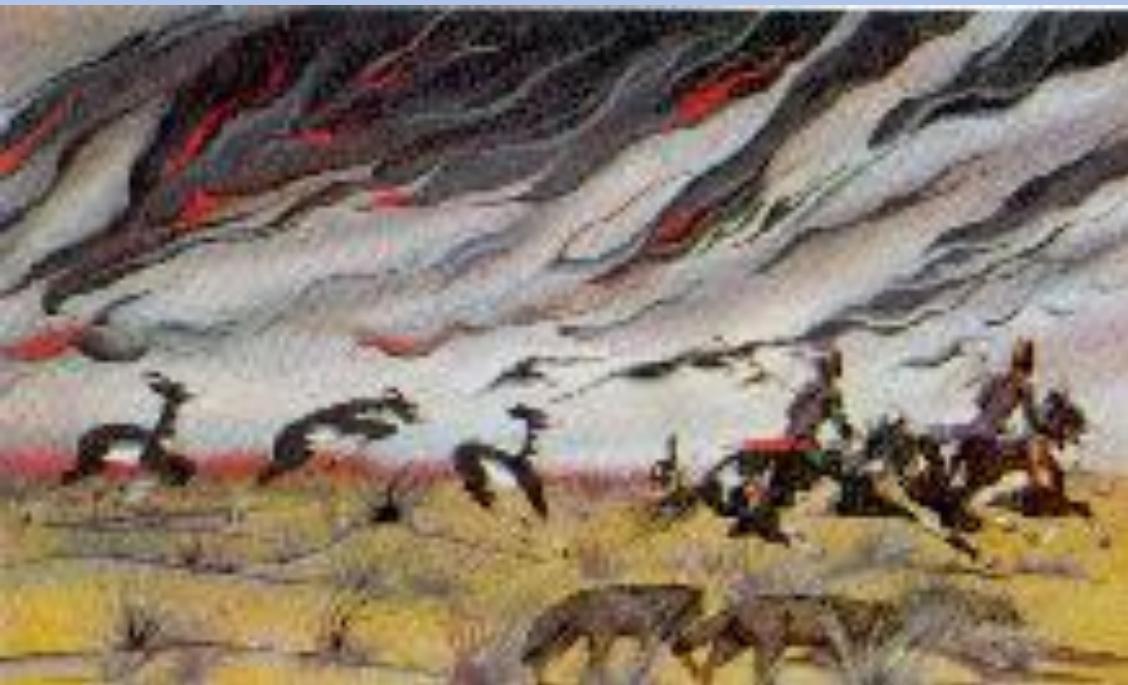
# Fire Regimes

- In a given area over long periods of time
  - Primary effects on plants
- Major attributes include...
  - Temporal attributes
    - Seasonality
    - Fire return interval
  - Spatial attributes
    - Fire size
  - Magnitude attributes
    - Fireline Intensity – heat
    - Fire severity – change in dominant vegetation
  - Interactions
    - Drought, insects, invasive species

# Native American Burning

- Native Americans burning common in this region (Forgotten Fires – Omer Stewart University of Oklahoma Press 2002)
  - This book first sent to a New York publisher in the early 1950's
  - Then Viking Fund Publications in Anthropology
  - Then Tall Timbers Research – held it for 25 yr
  - Finally to Univ Oklahoma Press in 1992, six months before he died. Published in 2002
- Systematic suppression of his work – Julian Steward and others Why?

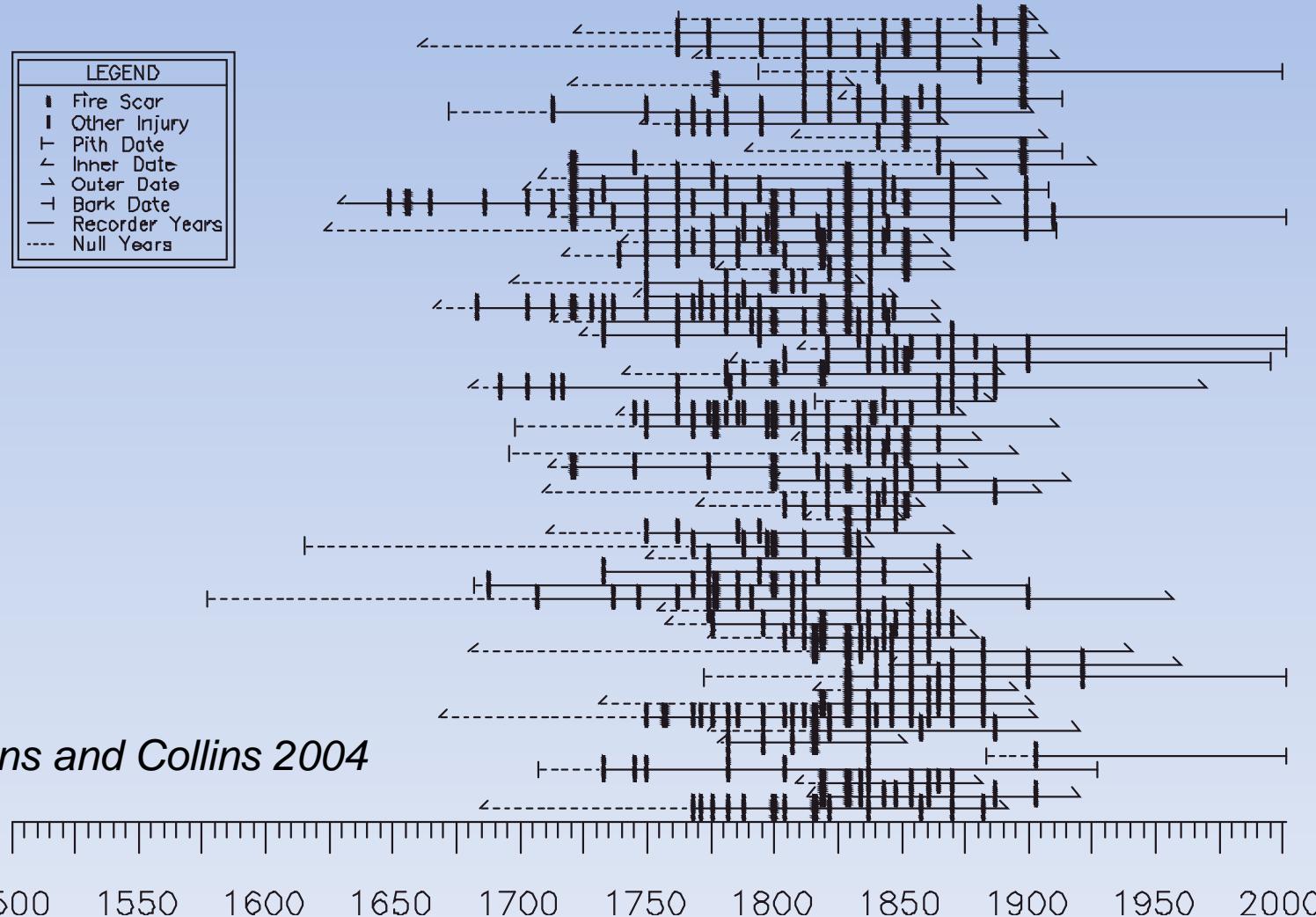
# Native Americans Burned for Specific Objectives



- Evidence
  - Footnotes of early explorers
  - Interviews of elders for their traditions
  - Fire scar study later
- Strong cultural history of fire use for diverse objectives
  - Interest in restoring fire as a cultural process
- *Blodgett fire history*

# Composite Fire History of Blodgett Forest

Median fire return interval 4-5 years from 1750-1900. 79% latewood fires, 21% dormant



# Fire Suppression

- Begins around 1905
- Approximately 80,000 fires/year today
- 98-99 percent of all wildland fires out at less than 5 acres in size
- 95% of area burned today is from 1-2% of the fires that escape initial attack
- 4.5 million acres once burned in California, 1.1 million acres of forests
  - 10-25% of this area burns today (*Stephens et al. 2007*) and severity different in forests
- History of early forest management and prescribed fire

# Early Fire Management in California

*Red River Lumber Company* in southern Cascades,  
near Lake Almanor, owned by Walker family

– Owned 750,000 acres used light burning to 1920's



*Forest History Society pictures  
1920*

# Clinton Walker wrote in letter in 1938

- ‘The general condition of the forests when the white man first came into CA was very excellent’
- ‘Then came the foresters from Yale University and put the tourniquet on the forests’
- ‘I would prefer to remove the tourniquet in our timber matters [which] is the lack of fire’



# Meeting of Walker and Early Leaders

- ‘I request permission [to burn] from the State Forester and the USFS DuBois. Both refused’
- ‘We proceeded to burn anyway, and Chief Forester Graves came out from Washington and DuBois and many others with cameras and notebooks to get damaging evidence’
- ‘They stayed several days and followed the burning, with comment by Graves that the work was excellent’
- ‘DuBois apologized to me for panning me in the newspapers previously’

# Wilderness Fire Management

- Elers Koch, US federal forester from 1903-1943
  - One of the Pinchot Boys, worked in suppression decades
- The passing of the Lolo Trail (1935) Kosh writes about fire suppression in the Selway River area of the Northern Rockies
  - *Has all this effort and expenditure of millions of dollars added anything to human good?*
  - *Is it possible that this it was all a ghastly mistake?*
- Proposed a system of 3 zones for fire management
  - Zone 3, rugged, inferior timber growth, inaccessibility
    - Withdraw entire fire-control organization
  - Results in Primitive Area designation in 1936, fire control until 1970's, Koch wanted fire control out of area

# Policy of Fire Suppression Wins

- The earliest federal fire-control policy was written during Graves appointment (DuBois 1914)
- William Greeley, the 3<sup>rd</sup> USFS Chief stated ‘the conviction burned into me is that fire prevention is the number 1 job of American foresters’
- A scientific study on the merits of fire suppression vs. light burning supported a strong fire suppression policy (Show and Kotok 1924)
  - *That maximum protection or fire exclusion inevitably increases hazard by the encouragement of undergrowth is, of course, true, but such added hazard in no way vitiates the reasons for protection* (Show and Kotok 1924)
- *Some early prescribed burners in the USA*



Harold Weaver,  
Herbert Stoddard,  
Harold Biswell at  
1967 Tall Timbers  
Conference, Hoberg,  
Lake County, CA.

Stoddard - Longleaf  
pine in southeast.  
Weaver BIA  
Forester, Biswell  
came to CA in 1947

Hoberg Fire Capital  
of world in 1967  
Jameson Karns found picture

# Proceedings of the 1967 Tall Timbers Conference



Hoberg's Resort after the Valley Fire.

After Biswell retired in early 70's, prescribed fire program in ponderosa pine ended.

Prescribed fire programs have to be more than personalities, need policy for long term

Biswell, Weaver, Vogl, Hartersvelt, Stoddard all discussed ecological importance of fire

Raymond (CDF), Zivnuska (UCB) did not support

Brush 'control' big

# Other Early Fire and Fuels Researchers

- Begins in Longleaf Pine in the Southeast
  - Chapman, Stoddard, Komarek
  - SE Most successful US program
    - Frequent fire adapted forest
    - 75% of US prescribed fire today
    - Florida burned 1.2 million acres last year
    - Strong cultural history of fire
    - Been doing this for 50 years – passing on experiences - CA?
- BIA: Harold Weaver – Forester educated at Oregon State
- *What did Weaver accomplish?*



*L. Kobziar picture*

# Harold Weaver

- Burned 684,890 acres of ponderosa pine forests in the Colville Reservation in eastern Washington from 1945-1955 (Weaver 1957)
- Prescribed fires significantly reduced wildfire damage by 87% and cost of fire control by 54% when compared to adjacent areas that had not been burned
- “This is the presentation of a management system – not just prescribed burning” – Harold Weaver
  - Weaver left, program shut down – need institutional support
- San Carlos Apache Reservation – institutional support
  - Alternative fire suppression strategies – new research
- Where is California Headed?

# Governor Brown's Executive Order

## Protect Communities from Wildfire, Climate Impacts

- Doubling the land actively managed through vegetation thinning, controlled fires, and reforestation from 250,000 to 500,000 acres/year
  - Increase use of Good Neighbor Authority
  - State agencies reduce regulatory barriers
  - Provide assistance to landowners < 5000 acres
  - By Oct 1 new online timber harvesting system to expedite review
  - All relevant state agencies shall make cultural and biological resources data accessible online
  - ARB shall increase the opportunities for Rx fire

# Governor Brown's Executive Order

## Boosting Education and Outreach to Landowners

- Cal Fire shall provide educational programs and outreach to private landowners on forest restoration, fuels reduction project development, and permitting
- Cal Fire shall develop a training program to educate and certify government, tribal, academic, and non-government organizations to increase the number of qualified people to implement Rx fires
- Develop pilot training programs in forest thinning and biomass processing in areas with inadequate labor supply

# Governor Brown's Executive Order

## Supporting Wood Products and Innovation

- Review the approved Tall Wood Buildings Proposal and consider its adaption to the California Building Standards Code
- Board of Forestry and Fire Protection, working with UC and CSU, shall establish a Joint Institute for Wood Products Innovation to preform wood products research, development, and testing
- PUC requested to review and update its procurement program for small bioenergy renewable generators

# Governor Brown's May Revise Budget

## Forest Carbon Plan Significant Adjustments – p 53

- An increase of \$26.8 million in Greenhouse Gas Reduction Fund and 79 positions for CAL FIRE to complete additional fuel reduction projects through the operation of six year-round prescribed fire crews
  - This funding supports the Forest Carbon Plan's recommendation to increase the rate of prescribed fire and fuel reduction, allowing CAL FIRE to treat 60,000 acres/yr
- Northern, Coastal and Southern California Regional Forest Health Projects—An increase of \$20 million for the Natural Resources Agency to provide block grants to support landscape-level forest restoration projects that leverage non-state funding

# Governor Brown's May Revise Budget

## Forest Carbon Plan Significant Adjustments – p 53

- Sierra Regional Forest Health Projects—An increase of \$30 million assuming voter approval of Proposition 68, for the Sierra Nevada Conservancy to expand the Watershed Improvement Program
  - Guided by a MOU between the Natural Resources Agency and the USFS, supports regional, landscape-level forest restoration projects in collaboration with federal and local agencies
- Markets for Wood Products—An increase of \$2.3 million in Timber Regulation and Forest Restoration Fund to encourage markets for wood products, including establishment of a Joint Institute for Wood Products Innovation

# Fire prevention and protection: prescribed burns

## Legislative Action SB 1260 (Senator Hannah-Beth Jackson)

- Bill allows CEQA compliance for prescribed burns under certain conditions, authorizes CalFIRE to determine proportionate share of liability, and authorizes those with valid fire boss certificates from qualified third party organizations to be appointed burn bosses in California
  - Amends the liability provision for prescribed fires that escape to provide that a *prima facie* case of due diligence is established when a prescribed burn is in compliance with all provisions of law and the terms and conditions imposed by an agreement with CalFIRE

# Fire prevention and protection: prescribed burns

## Legislative Action SB 1260 (Senator Hannah-Beth Jackson)

- Allows CEQA compliance for prescribed burns to tier from the CalFIRE Vegetation Management Program Environmental Report upon its certification (consortium review, overdue)
- Directs CalFIRE to cooperate with private and public landowners in Rx fire activities including site preparation, planning, and other activities
  - CalFIRE to consider establishing separate units to assist with annual prescribed burn activities, and provides that the department's prescribed burn activities shall not diminish the department's fire suppression activities

# Fire prevention and protection: prescribed burns Legislative Action SB 1260 (Senator Hannah-Beth Jackson)

- Directs CalFIRE to actively engage the University of California Extension Service, fire safe councils, resource conservation districts, to enhance public education in fire prevention and public safety
  - Activities could include community wildfire protection plans, community fire safe councils, community and private chipping days, defensible space, prescribed fires, hardening of houses, compliance with building standards, evacuation routes, activities that promote fire resiliency or achieve carbon sequestration benefits, and activities that promote public safety.
  - Bill directs the department to establish a grant program for these purposes, upon appropriation by the Legislature, and which may include a cost-share provision

# Summary

- Fire will continue to be a major force in CA.
  - Climate change will impact regimes but not the main issue in frequent fire ecosystems
    - High severity regimes most sensitive to climate change
- Some early fire and forest managers in CA and OR created incredible programs
  - Native American use of fire also key
- Fire and forest policy changes in CA interesting
  - Never seen anything like this in my career
- Next 1-3 decades absolutely critical
  - Leave options available for future managers, optimistic

# Acknowledgements

Bill Stewart, Brandon Collins, Danny Fry – UC Berkeley

Papers available at:

[www.cnr.berkeley.edu/stephens-lab/](http://www.cnr.berkeley.edu/stephens-lab/)

Email [sstephens@berkeley.edu](mailto:sstephens@berkeley.edu)

# Current versus 1911 Sierra Nevada mixed conifer forest conditions in the Stanislaus National Forest

Year	Total basal area $\text{m}^2\text{ha}^{-1}$ [ $\text{ft}^2 \text{ac}^{-1}$ ]	Number of trees $\text{ha}^{-1}$ [ $\text{acre}^{-1}$ ]	
1911	13 [59]	47 [19]	Don't use this data for specific targets but can inform desired conditions
2013	57 [248]	553 [224]	<i>Data in Collins et al. (2015)</i>

