

# PYROSILVICULTURE

Talk objectives

- 1. Definition of pyrosilviculture**
2. Historical and present day examples
3. Research and monitoring needs
4. Undergraduate education in pyrosilviculture at Cal

# Pyrosilviculture... What it is NOT:

- PYRO: Does not mean having fire for fire's sake
- Silviculture: Does not mean just timber

Literally:

PYRO = Fire

SILVICULTURE = Altering the structure and composition of forests to meet *various* objectives



# Pyrosilviculture

- The integration of fire ecology, fire history, and use into decisions about forest manipulations to meet management objectives

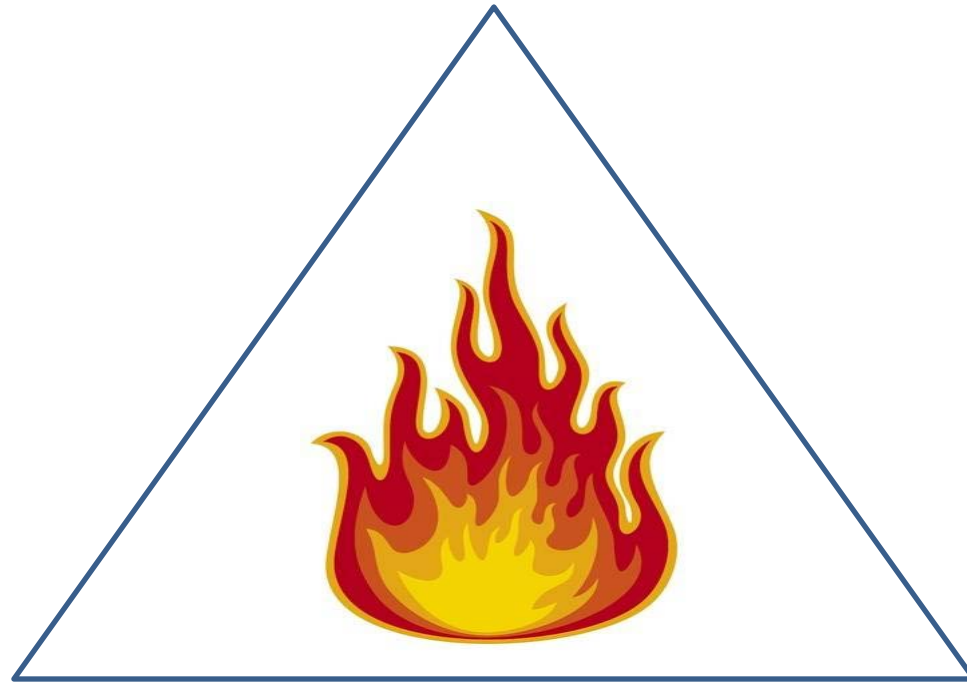


# The Fire Triangle

Suppression

Silviculturalist

Land Owner



Fire Fighter

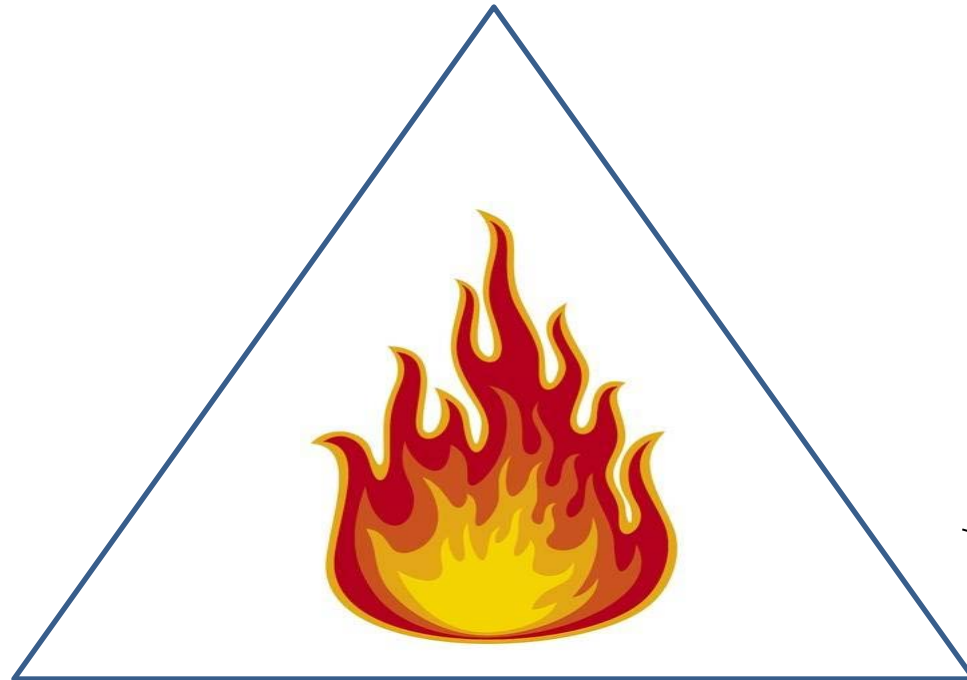
# The Fire Triangle



Management

~~Silviculturalist~~

*Pyro-Silviculturalist*



~~Land Owner~~

*Pyro-Land Owner*

~~Fire Fighter~~

Fire Manager

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# An early example of pyro-silviculture 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... in 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’

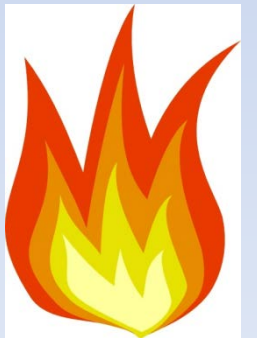




# The Lost Century: ~1920 to 2020

- Fire suppression (Voldemort) rules!
- But the flame was kept alive by Harold (aka Dumbledore) Biswell

Harold Biswell



# Southern California Edison- modern pyrosilviculture

“You’re not doing good forest management if you don’t include fire”

Former SCE manager, John Mount

“We log, and then we burn”

Current SCE manager





- Pyrosilviculturalist +  
Fire Manager +  
Pyro-landowner

Note:

- Skid trail





# Blodgett Forest Research Station

An aerial photograph of a forest research station. A white, irregular line outlines a large area of forest. The forest is dense with green trees, but there are several distinct patches of lighter brown and tan color scattered throughout, indicating areas of different vegetation or perhaps fire damage. The overall texture is a mix of dark green and light brown.

My Favorite stand...

Burned three times in last 17 years

1 acre heterogeneity NOT from fire, but from group selections

Low fire hazard NOT from Group selections, but from rx fire

Google Earth



## Comp 400

- Burned three times since 2002
- 2018 harvest
  - 40MBF / acre



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# 1. How can we extend the burn window?

- Fall burning is ideal, but is arguably too restrictive
- At Blodgett in 2017
  - 3 days when we could burn in the fall with a LE-7 permit before significant rain
  - 8 days when we could burn in the winter, without a permit
  - *Given the right structures and composition*



Winter burning =  $f(\text{canopy density, canopy composition, understory composition})$



# Winter burning

Silviculture made it possible:

Structure created with chainsaws and winter burning:

**Torching probability = 0.1**

**Torching index = 80 mph**

**Timber = 1 MBF/acre/yr**

(no dbh maximum)

Feb, 2018 burn



*Competing vegetation*

v.

*Fire-facilitating vegetation*

- |  bracken fern

- |  bear clover

Burn at 4,000' in February, 2018



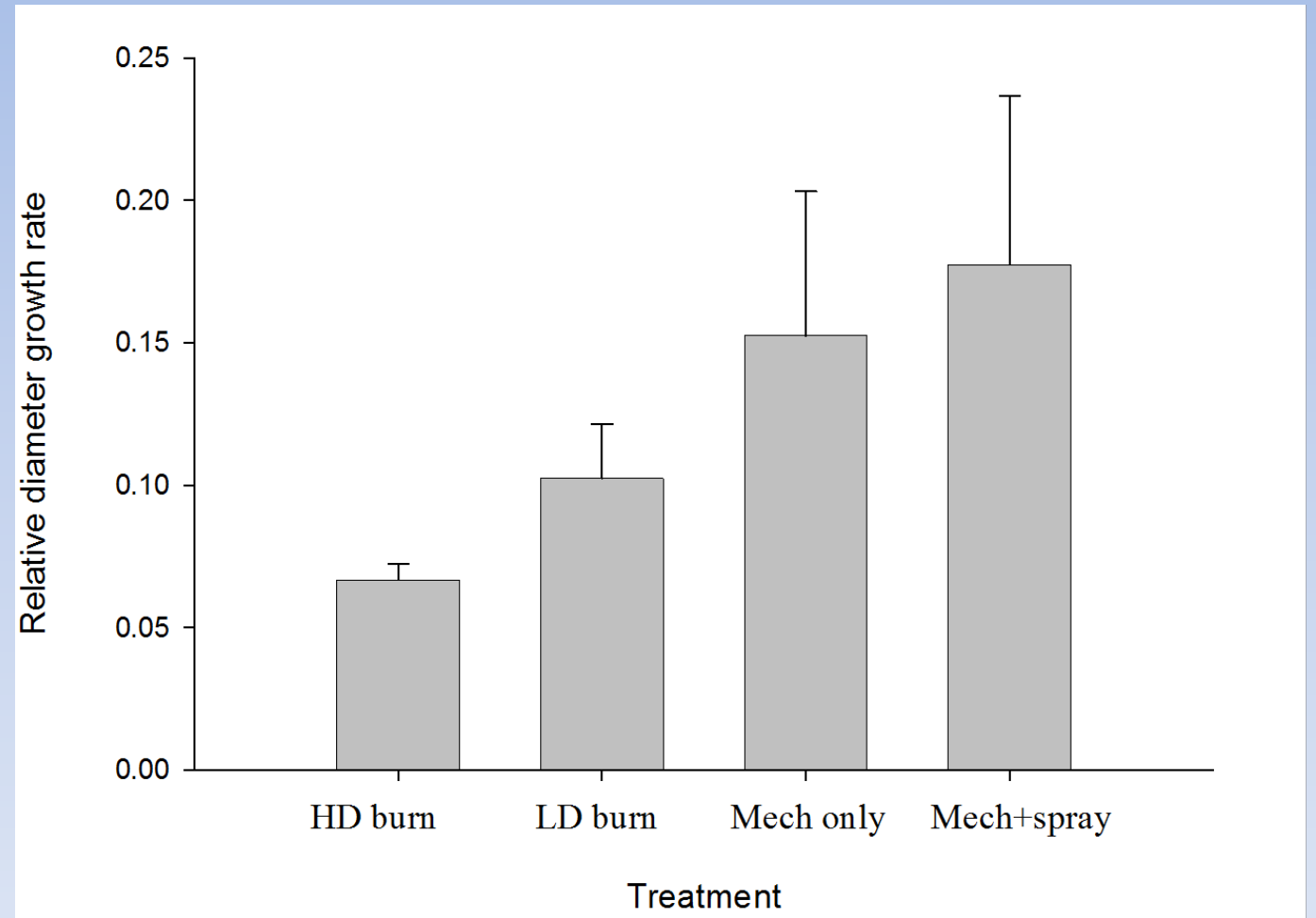


## 2. The extent to which prescribed fire causes timber defect





### 3. Young stand burning effects on growth



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# Pyrosilviculture at Cal

Undergrad education in forestry:

- ~1/3 of upper division units relate to fire and/or silviculture
- Most students have participated in a rx burn





The ~~DA~~ BA club  
(Biswell's Army)

