

Stories Trees Tell

Agenda:

- **Tree Growth**
- **The history of fire encoded in tree rings**
- **Dendrochronology activity**
- **The impact of forest history on current and future conditions**

Learning Goals:

- **How a Tree Grows**
- **Tissue responsible for tree trunk growth**
- **How to date a tree ring fire scar sample**
- **Historical fire regimes in the Sierra Nevada mixed conifer forest**
- **Causes and consequences of forest change**

Tree Growth

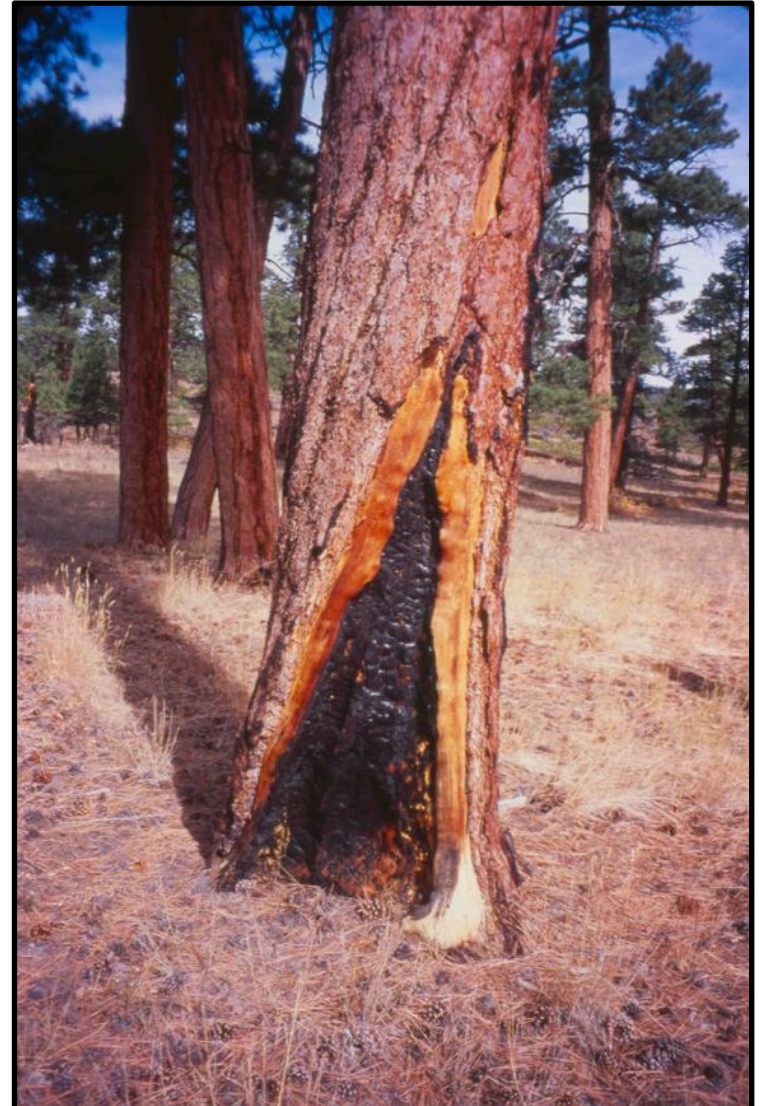


Tree Growth



<http://paradoxoff.com/eaten-by-a-tree.html>

Fire Scars

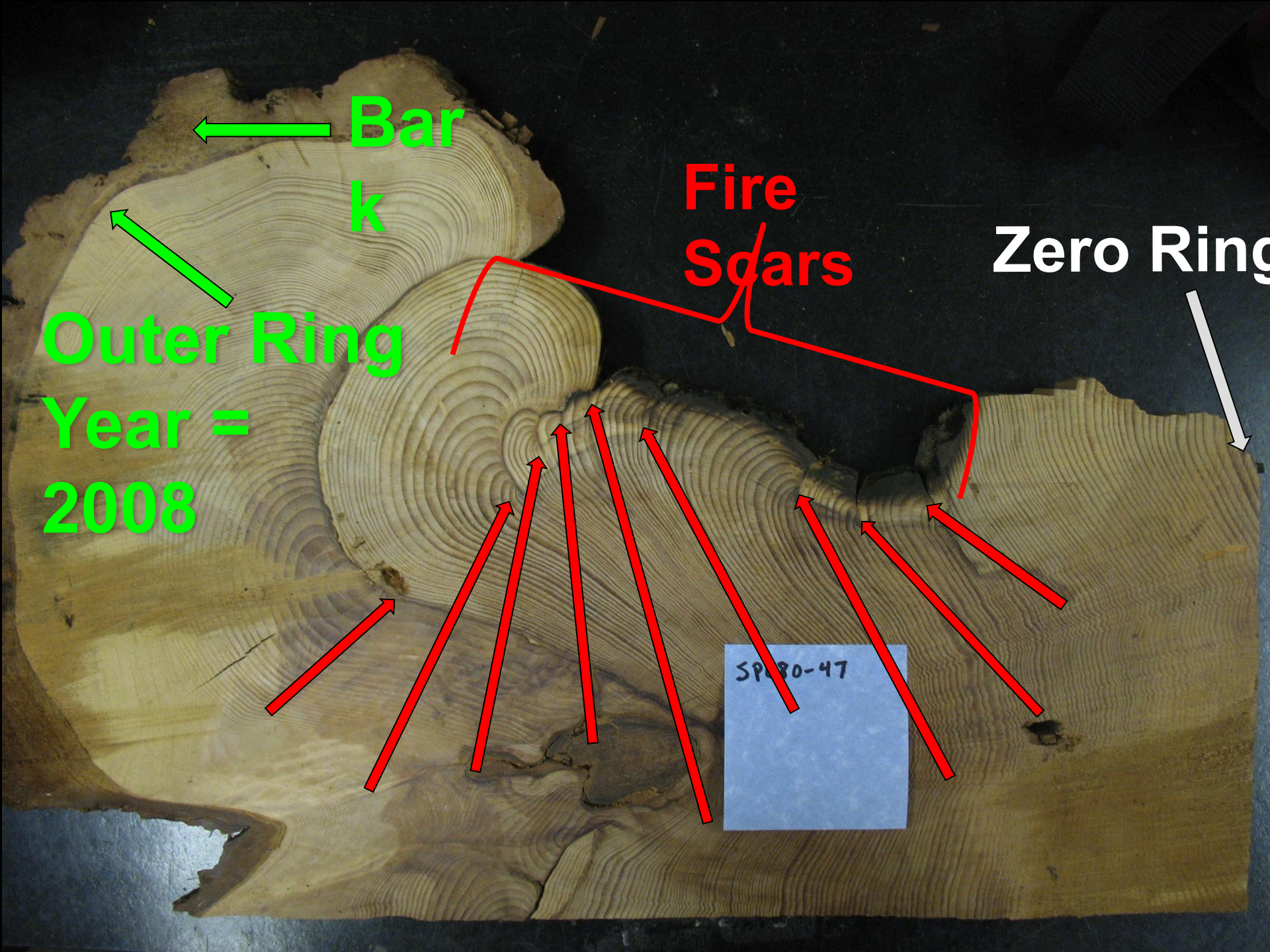


Fire Scars



Fire history study sites





← Bark

Fire Scars

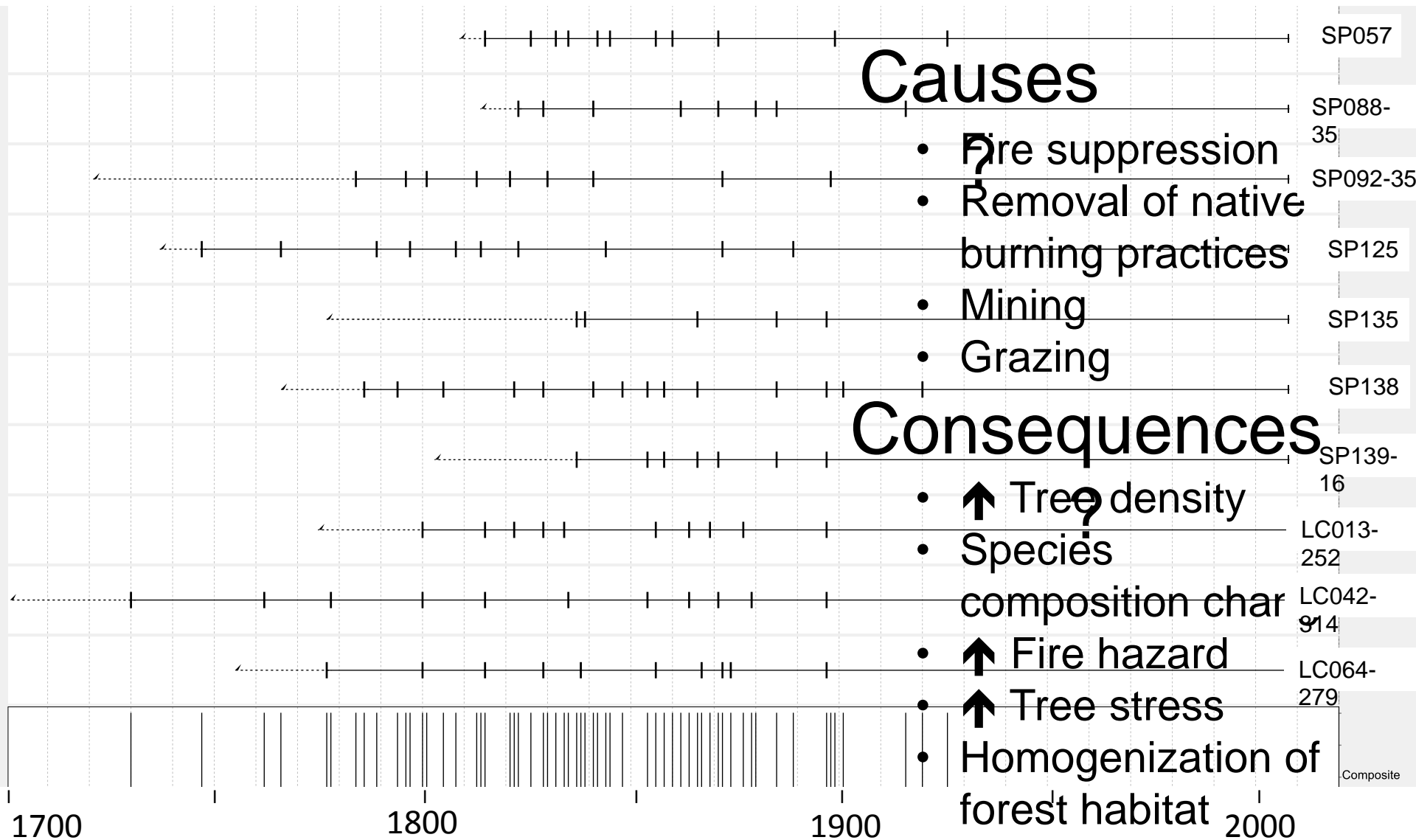
Zero Ring

Outer Ring
Year =
2008

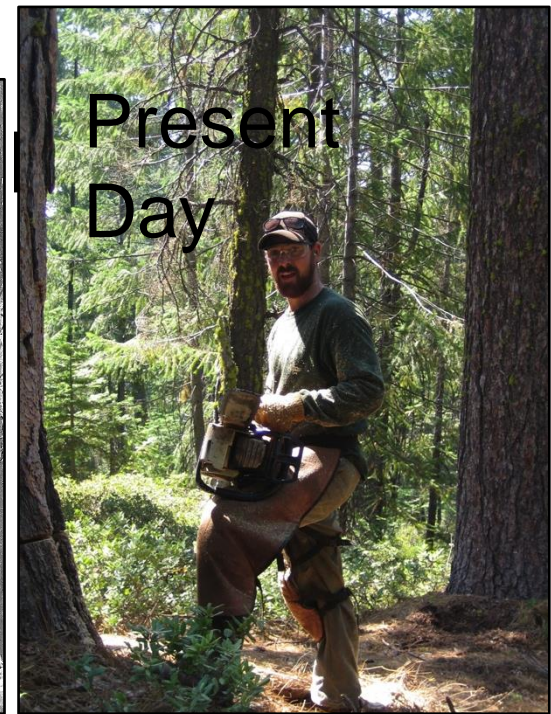
SP080-47

Now, it's your turn to
be a dendrochronologist.

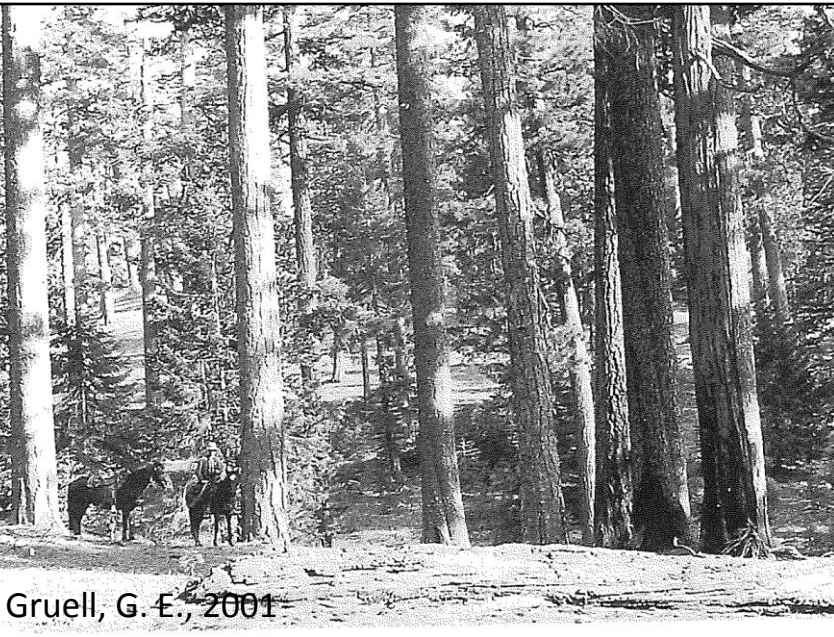
Composite Fire History Chart



Circa 1900 What did hist



Present Day

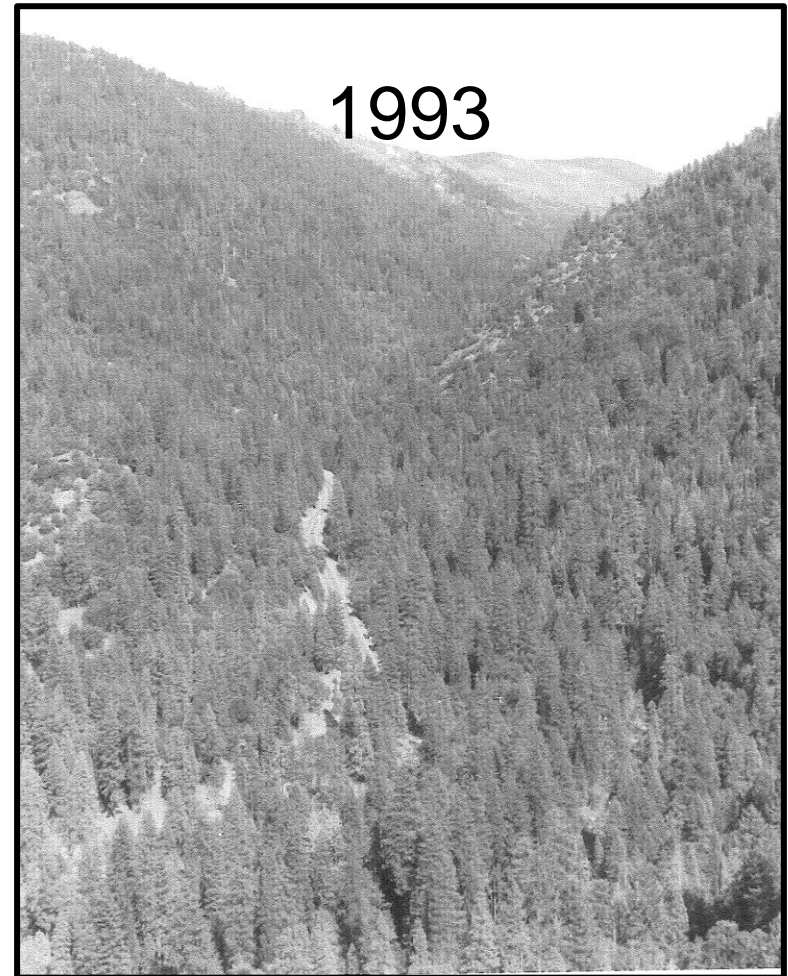
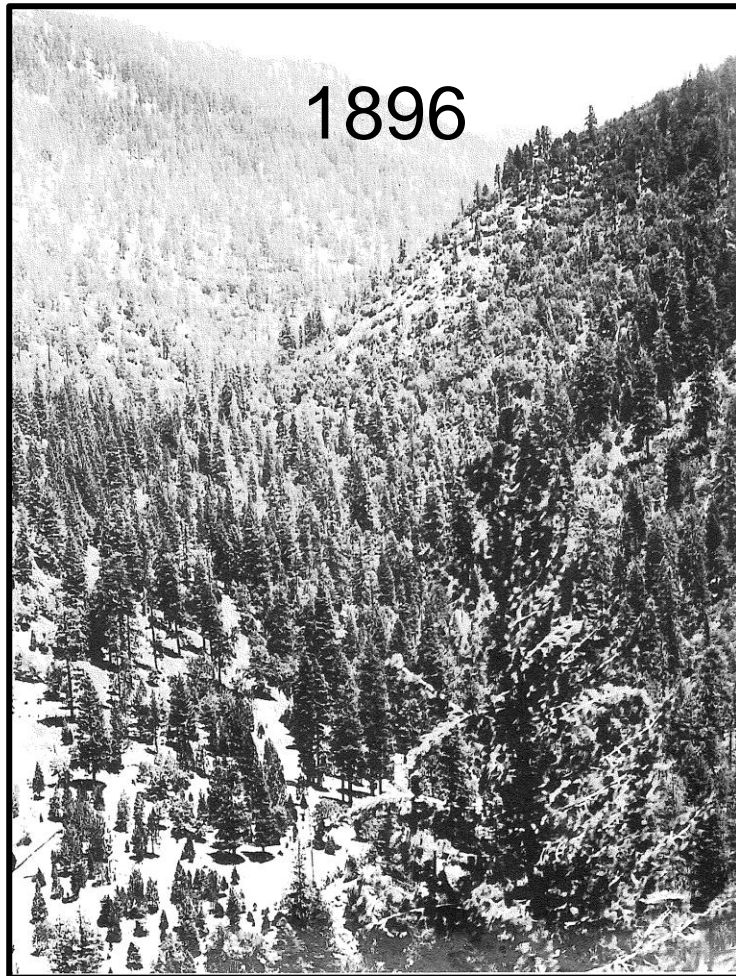


Gruell, G. E., 2001



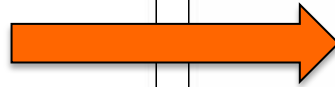
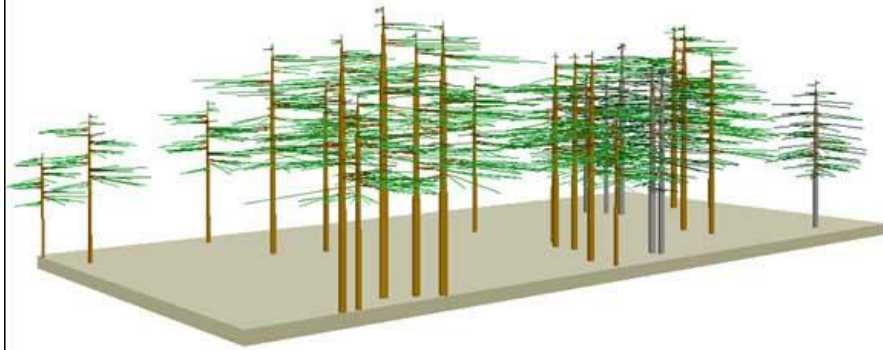
Increased Tree Density

North Fork of the American River

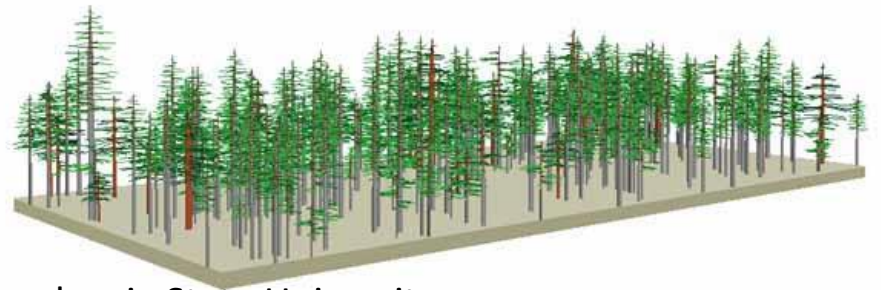
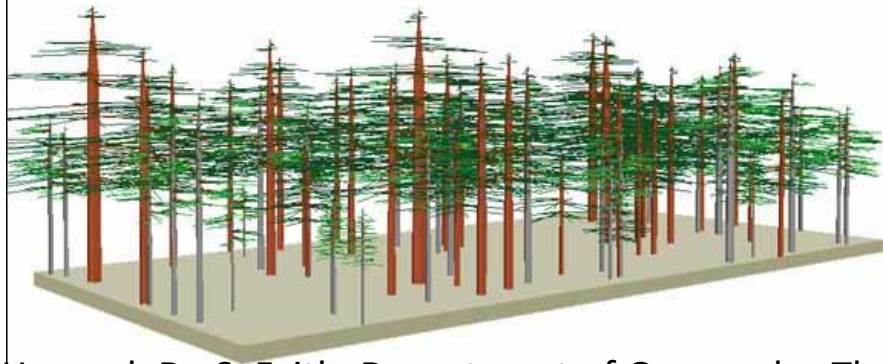
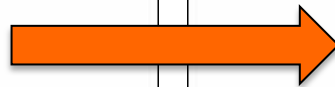
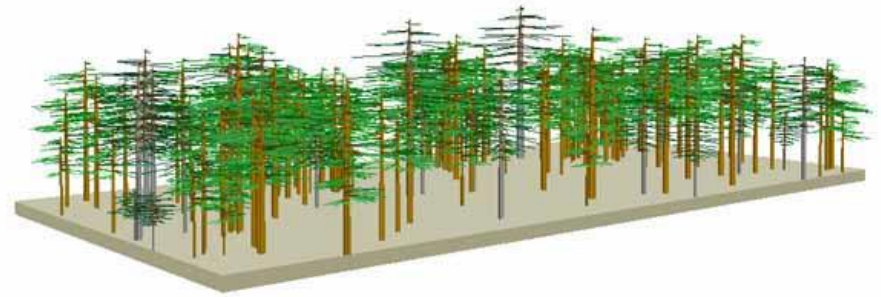


Change in species composition

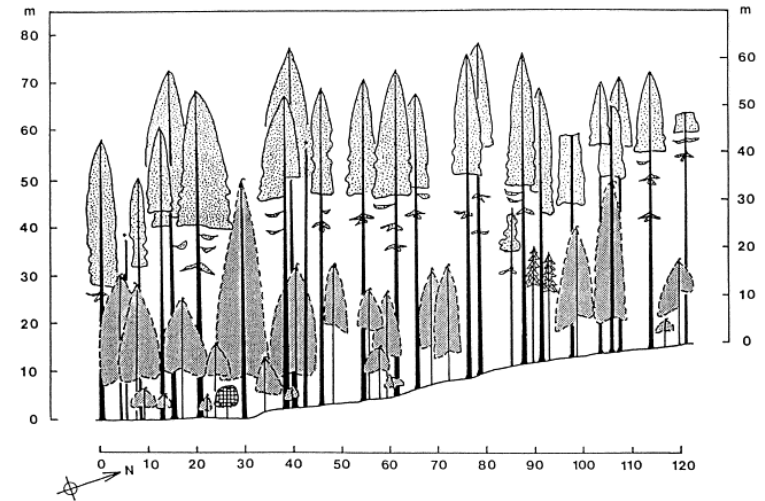
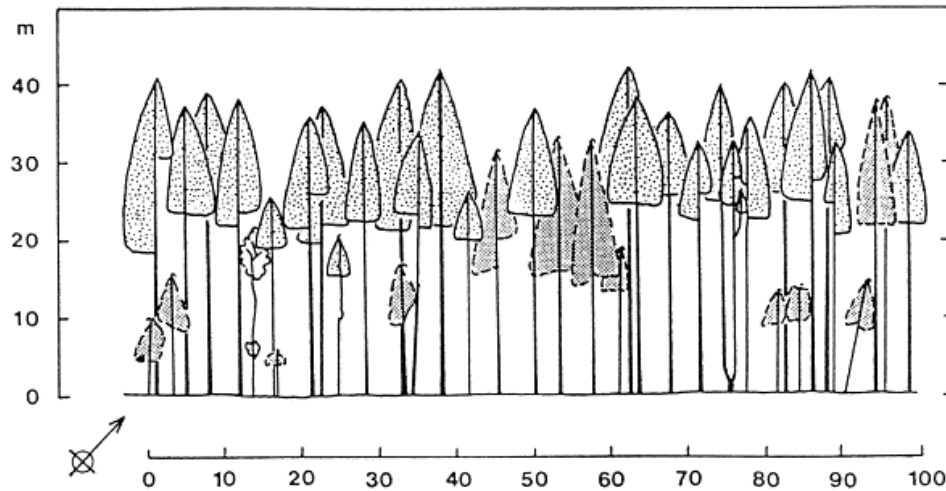
1860's



Present
Day



Increased Fire Hazard

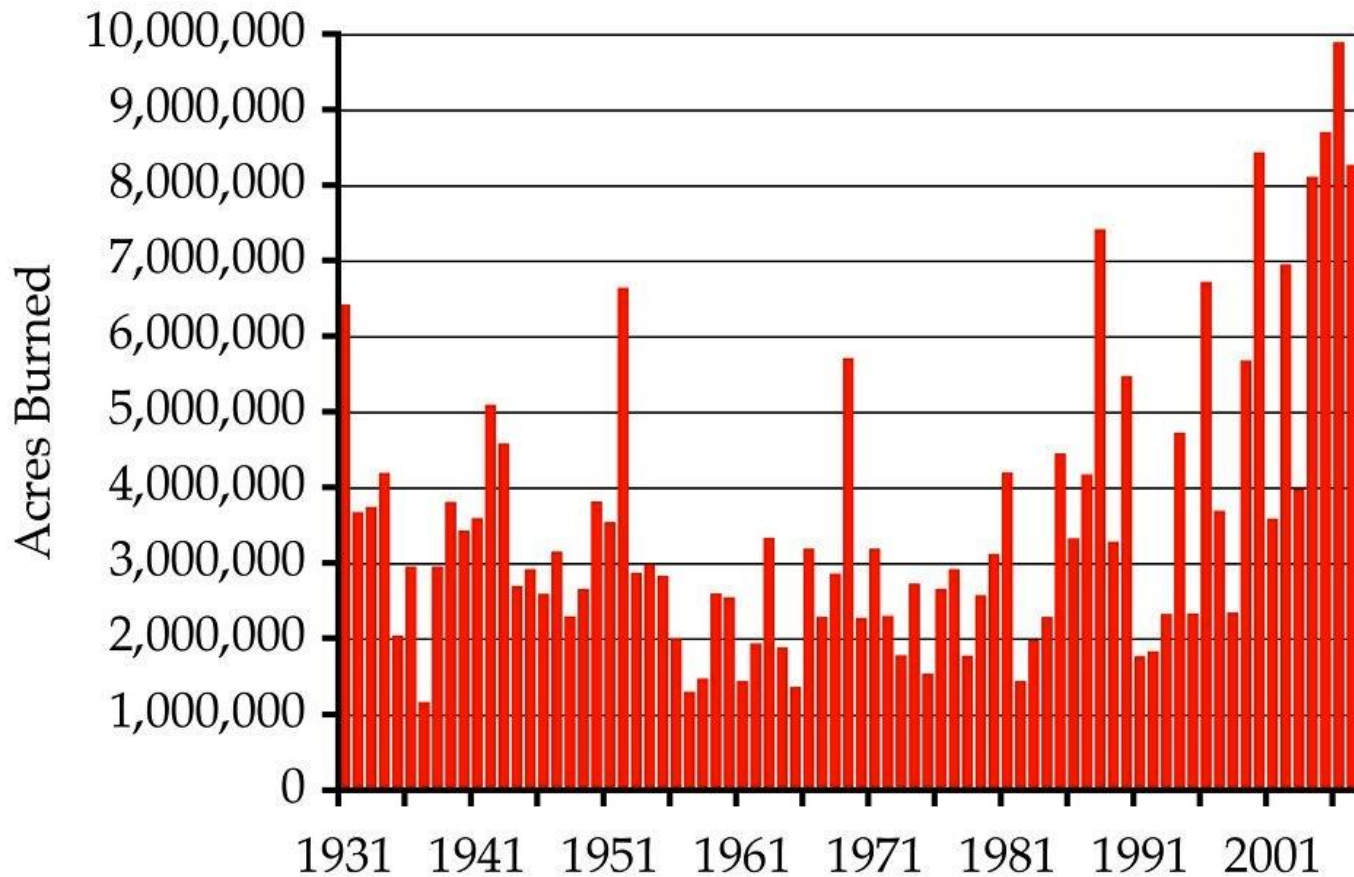


Franklin et al. 2002



Increased Fire Hazard

Protected Acres Burned Each Year



<http://ti.org/antiplanner/?p=274>, source USFS

Increased Tree Stress

San Bernadino National Forest, CA, 2003 Sierra San Pedro Martir, Baja CA, Mexico, 20



<http://www.sbcounty.gov/calmast/sbc/html>




Stephens and Gil, 2005

Homogenization of Habitat



Implication for Management

- Re-instate natural fire regimes where appropriate
- Use mechanical methods or prescribed fire to alter forest structure /  heterogeneity
- Limit development in fire prone areas
- Build resilient forests by incorporating disturbance into management goals

Wrap Up

The living part of a tree trunk is called what?

- Cambium

T/F: A tree killed by fire will record the event in a fire scar?

- False

What characterized the fire regime in the mixed conifer forest of the Sierra Nevada before Euro-settlement?

- Frequent, Low Severity fire

What caused the cessation of frequent fire in the Sierras?

- Fire suppression
- Removal of Native burning
- Mining
- Grazing

What are some of the major consequences of this altered fire regime?

- ↑ Tree density
- Species Composition Change
- ↑ Fire Hazard
- ↑ Tree Stress

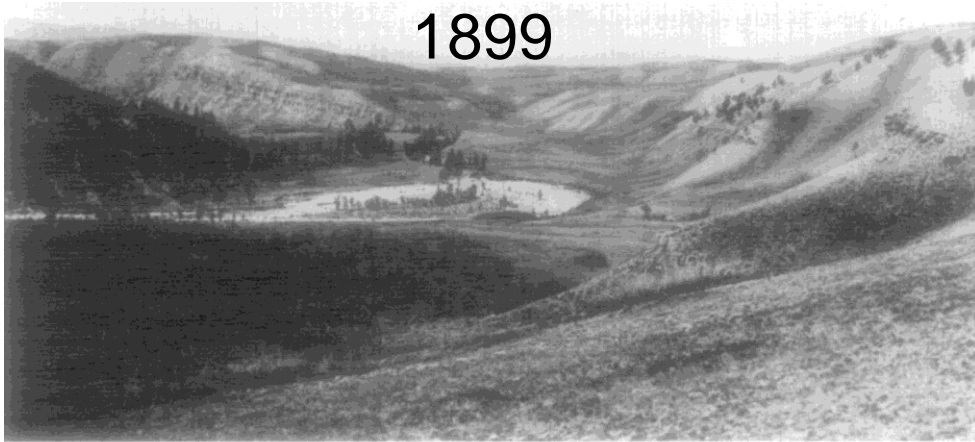
Questions?

Extension

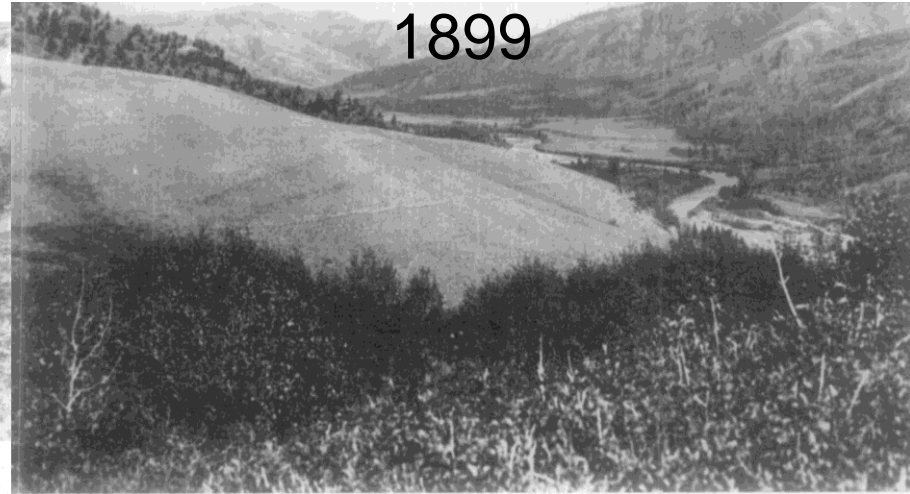
What about the forests around Jackson

Lower Gros Ventre Valley, WY

1899



1899



1971



1971

