



Mixed Conifer Oak Habitat Enhancement on the Lassen National Forest

Mixed Conifer Oak Habitat

- Species Composition
 - White fir
 - California Black Oak
 - Ponderosa Pine
 - Incense Cedar
 - Sugar Pine
 - Douglas Fir
- Elevation Range
 - ~3500-5000 ft



Ecological Significance of Black Oak in Mixed Conifer Forest

– Structural Complexity



– Floristic Diversity



– Wildlife forage

- Acorns
- Foliage gleaning birds select for oaks



Need for Restoration

- **Fire Suppression**

- Conifer encroachment
- Lack of oak regeneration

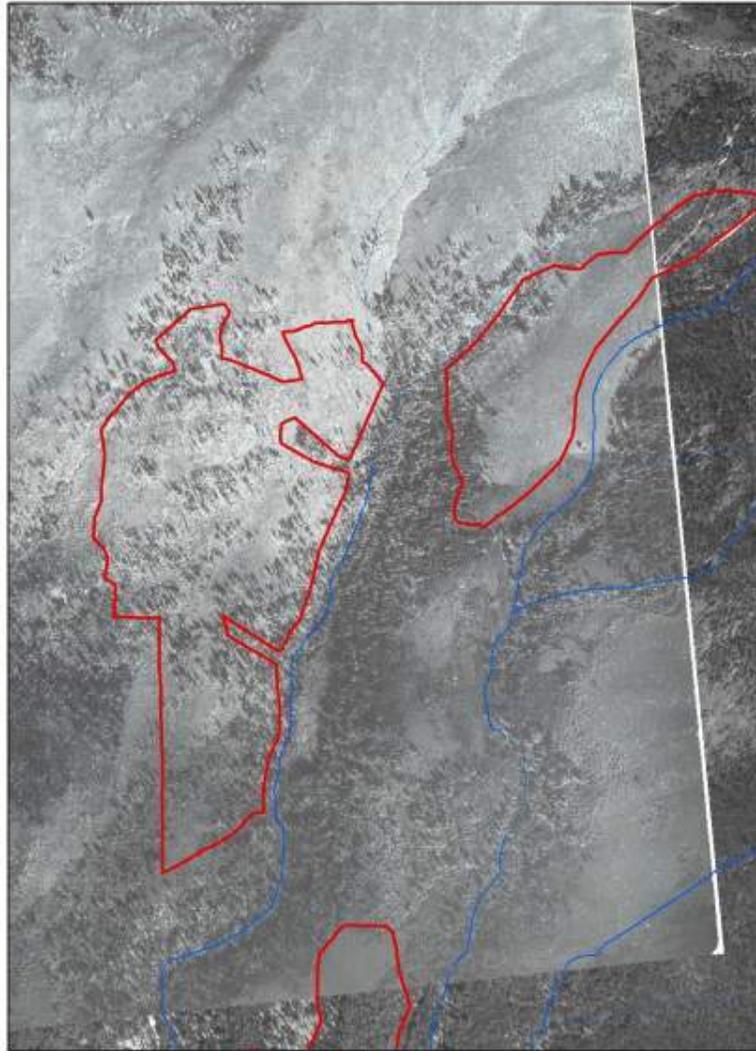
- **Past Timber practices**

- Selective removal of pine
- Type conversion of open shrub/oak to conifers

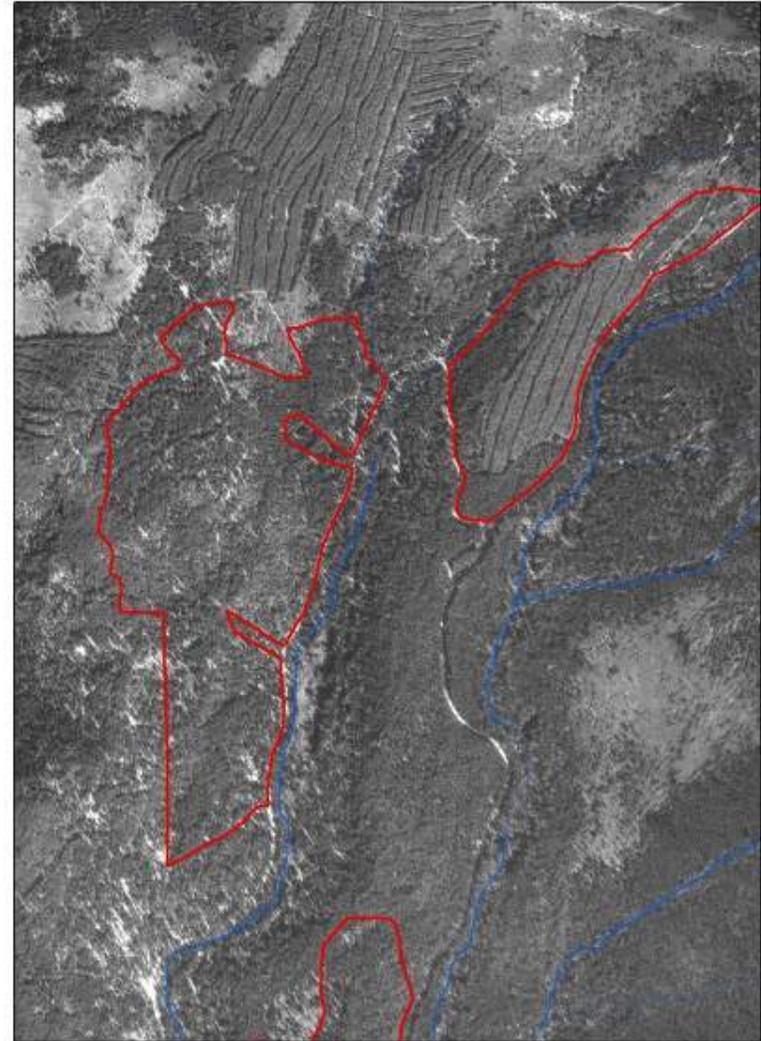
- **Current Private Land Timber Practices**

- Even-aged management
- Herbicide of oak and shrub
- Post fire management

A changed Landscape: Browns Ravine Project Area



1937 Photo: Last Forest Fire 1928



2004 Photo: Effects of Past Management
and 80 years of fire suppression



Private Land Management



Even age management



Post-fire management

Browns Ravine Pilot Project

880 acres mechanical & 120 hand treatment

- 100-140 basal area
- 40% canopy cover
- Prioritize Pine retention
- Reduce White fir
- Thin oaks to stimulate growth
- Underburn (2009)
- Timber sale harvest – 2005-ongoing

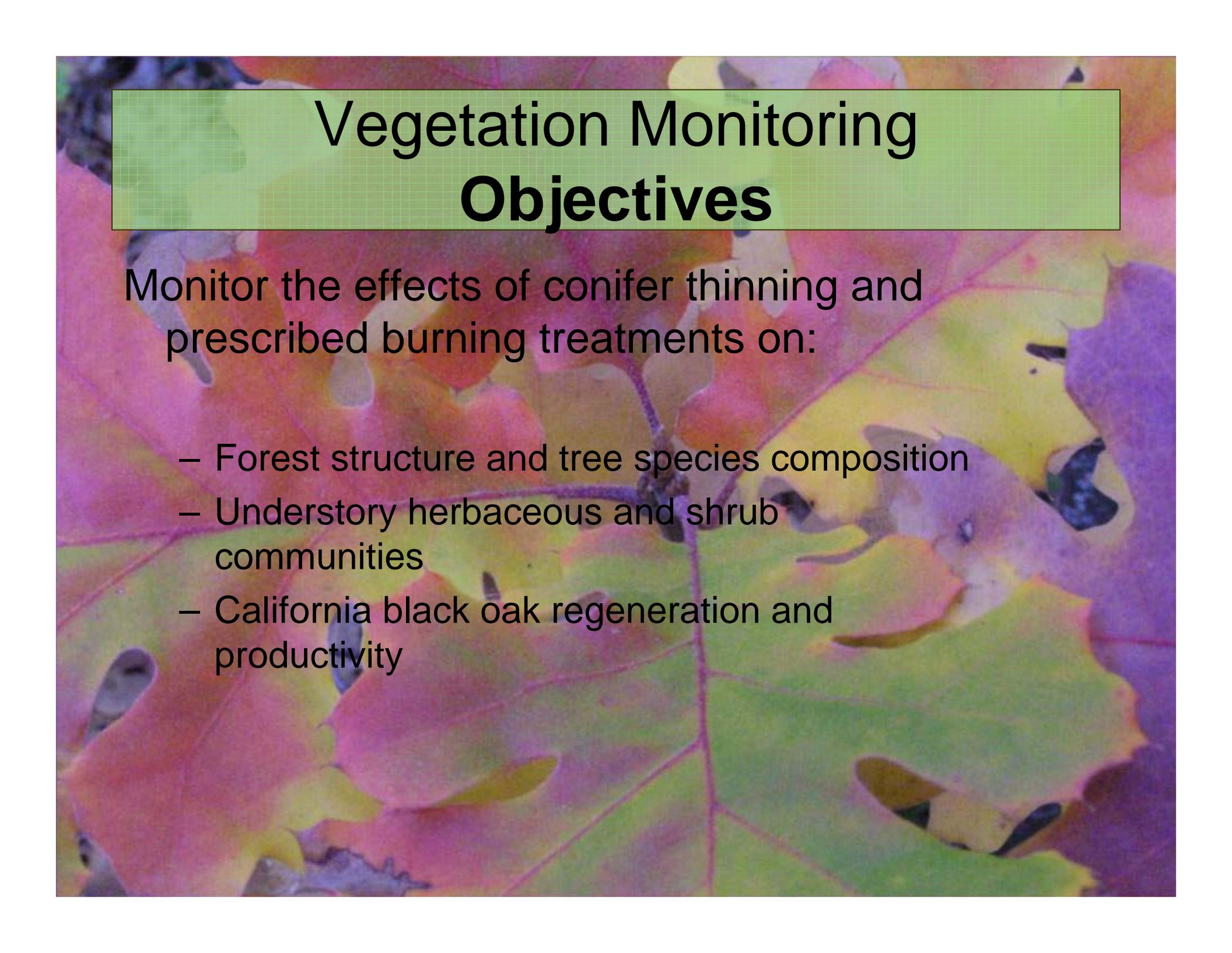


Effectiveness Monitoring

PRBO Avian Monitoring

Vegetation Monitoring





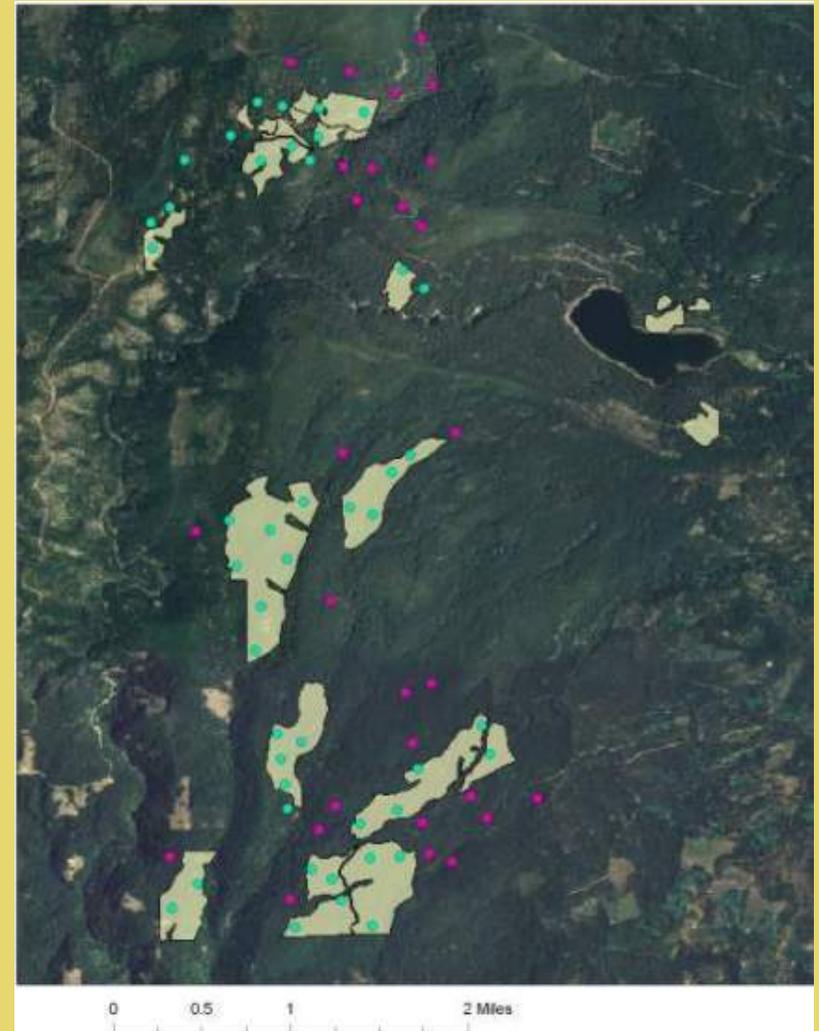
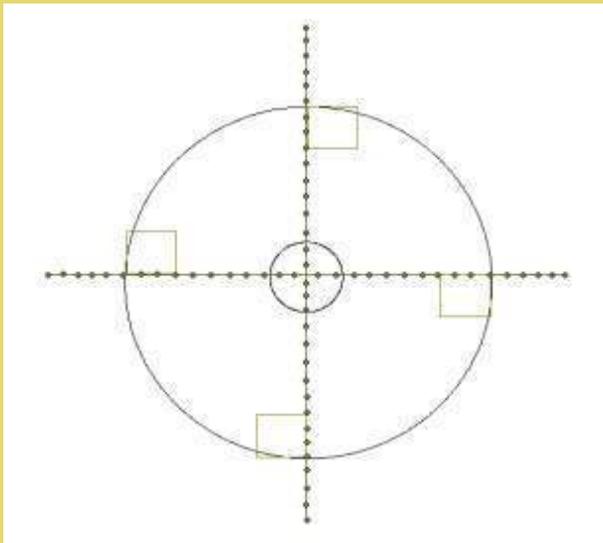
Vegetation Monitoring Objectives

Monitor the effects of conifer thinning and prescribed burning treatments on:

- Forest structure and tree species composition
- Understory herbaceous and shrub communities
- California black oak regeneration and productivity

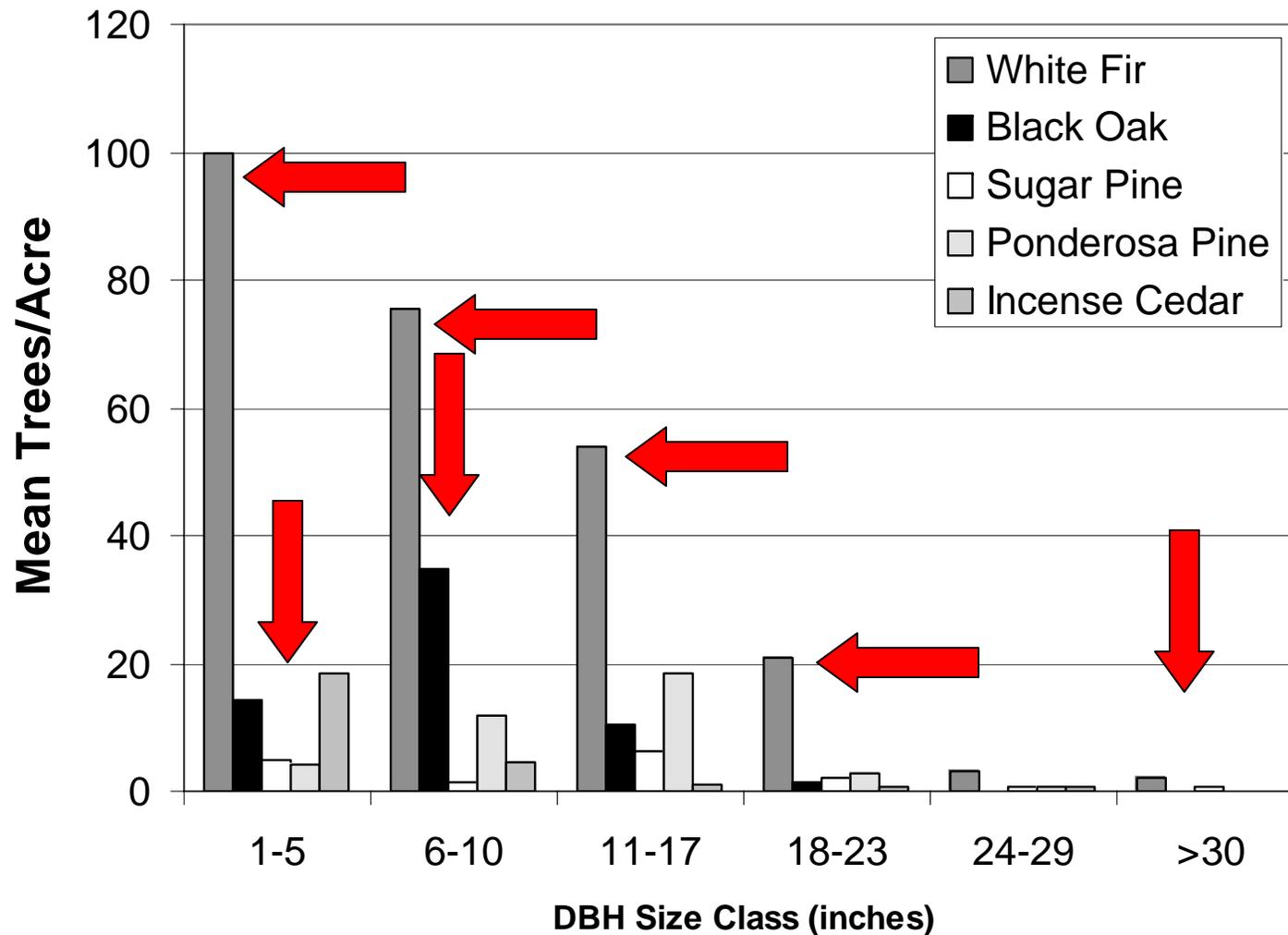
Methods

- 67 stratified random plots
 - 33 Treatment plots
 - 34 Control plots
- 1/10 acre tree density/comp. plot
- 3m seedling & 1m herbaceous plots
- 16m canopy & shrub cover transects

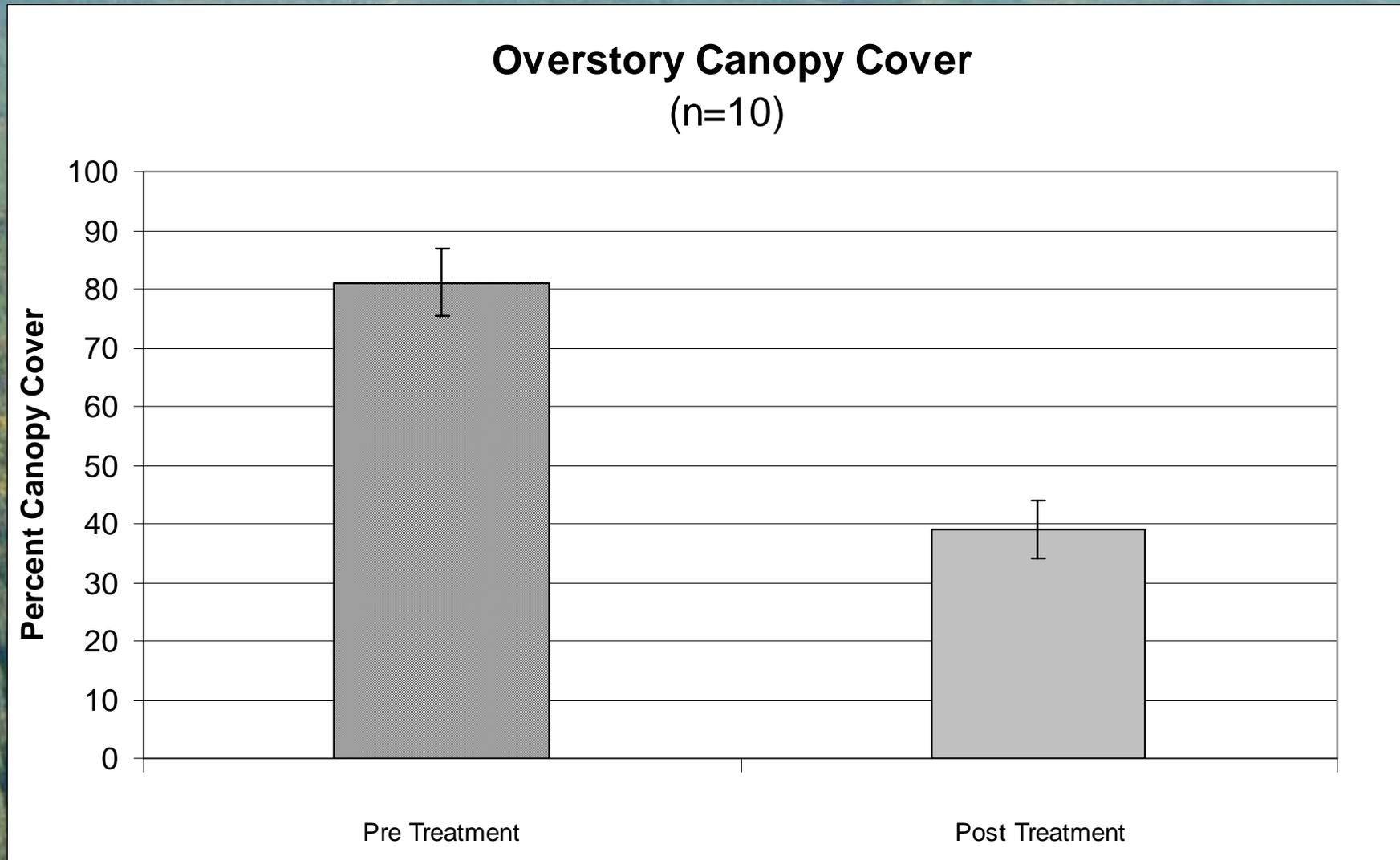


Pre-treatment Size Distribution

Tree Density by Size Class (N=33 plots)



Preliminary Results from 10 treated Plots

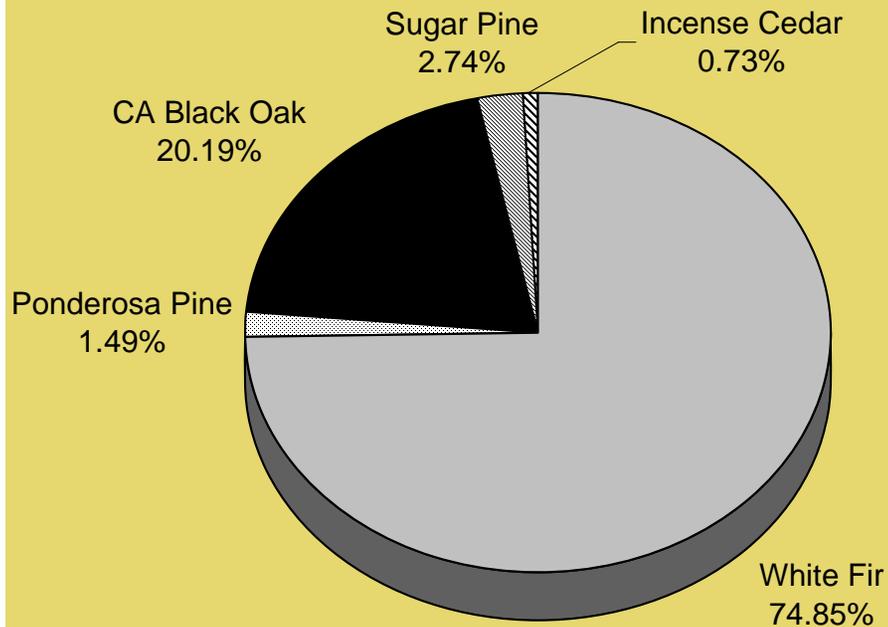


Relative Species Composition Before and 1 year Post Treatment

Mean BA= 308 ft²/acre

Pre-Treatment

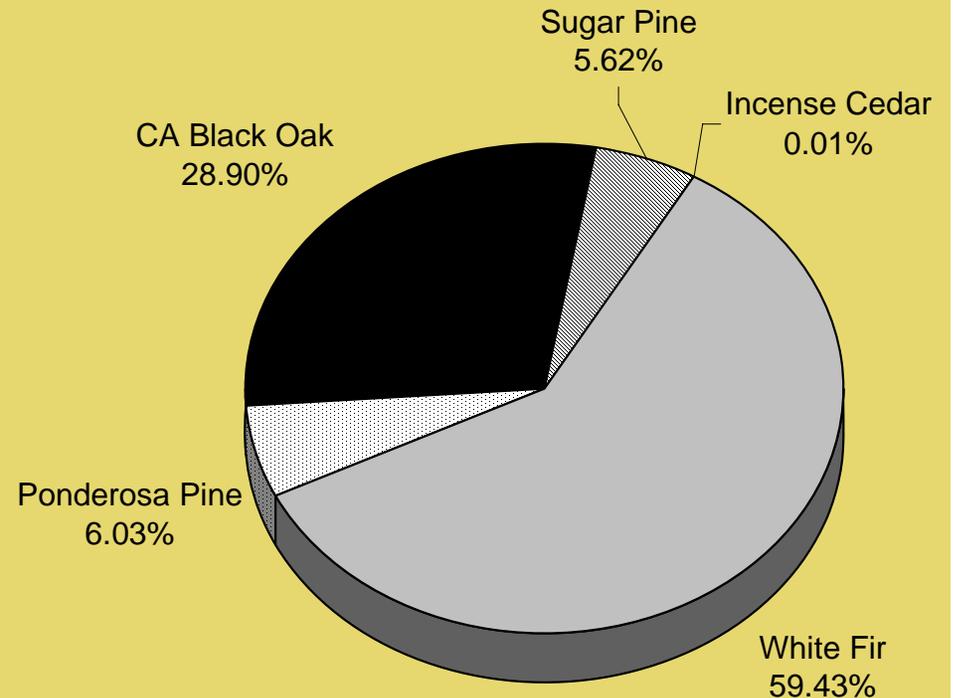
(n=10)



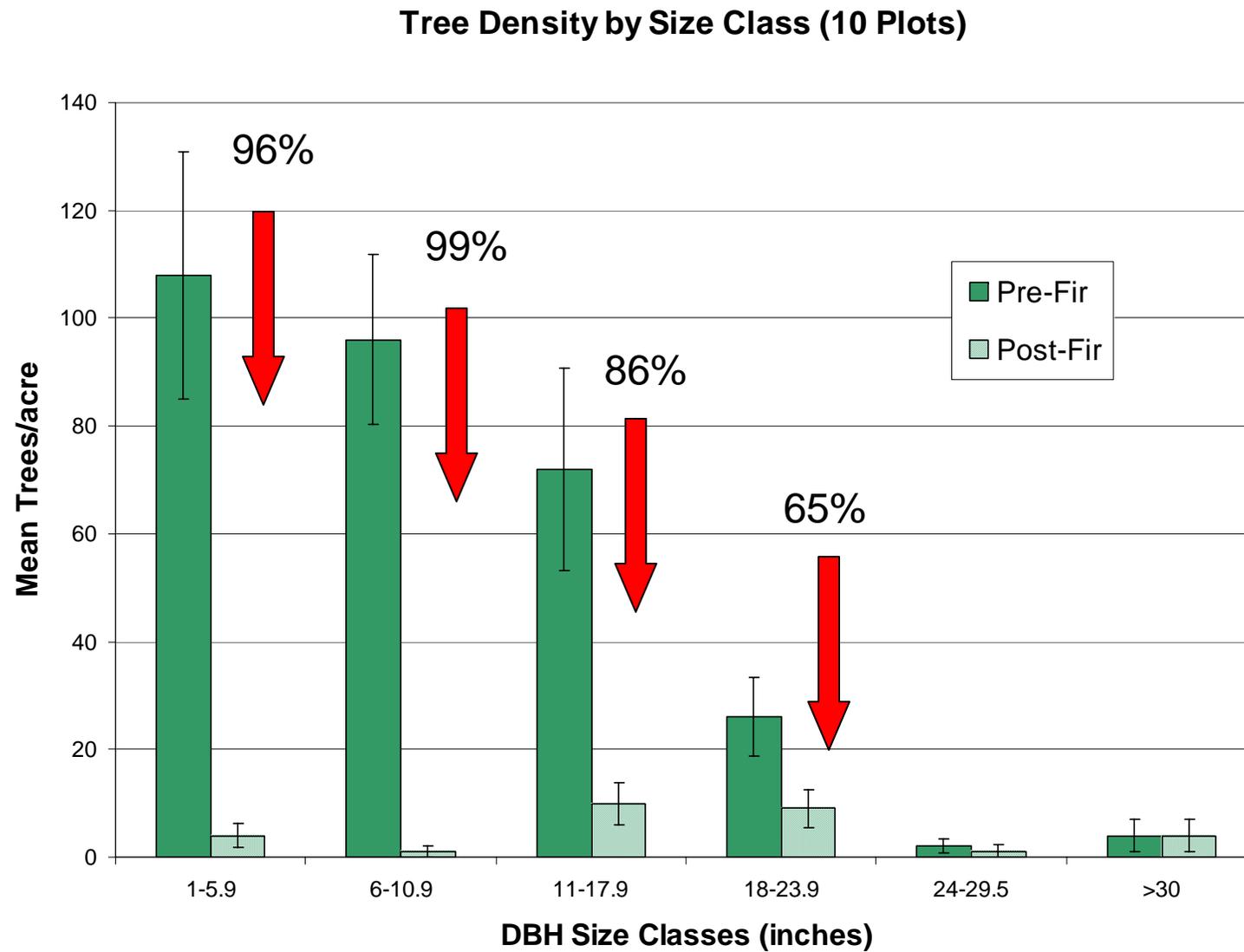
Mean BA= 107 ft² /acre

Post Treatment

(n=10)

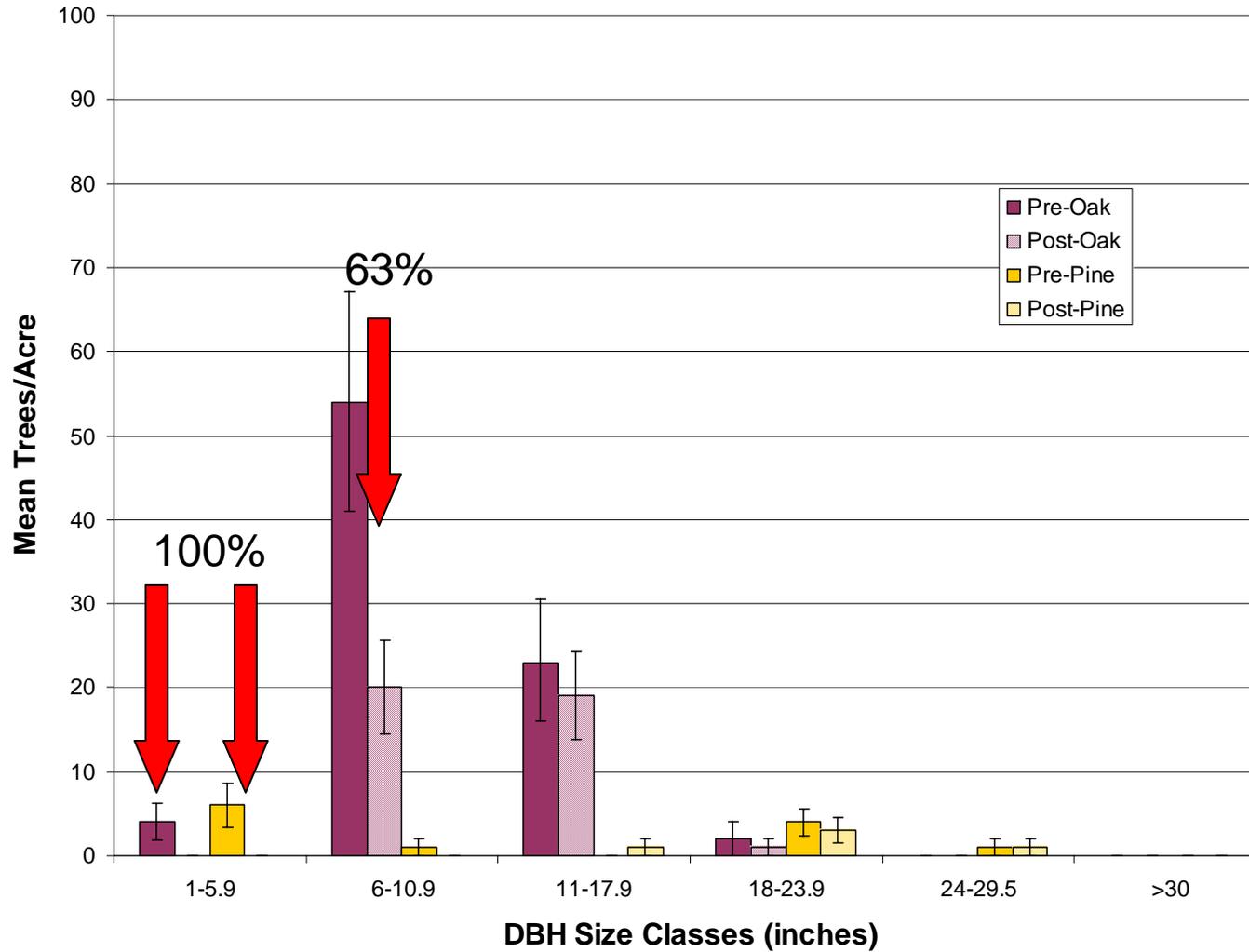


Significant Reduction in White fir Density

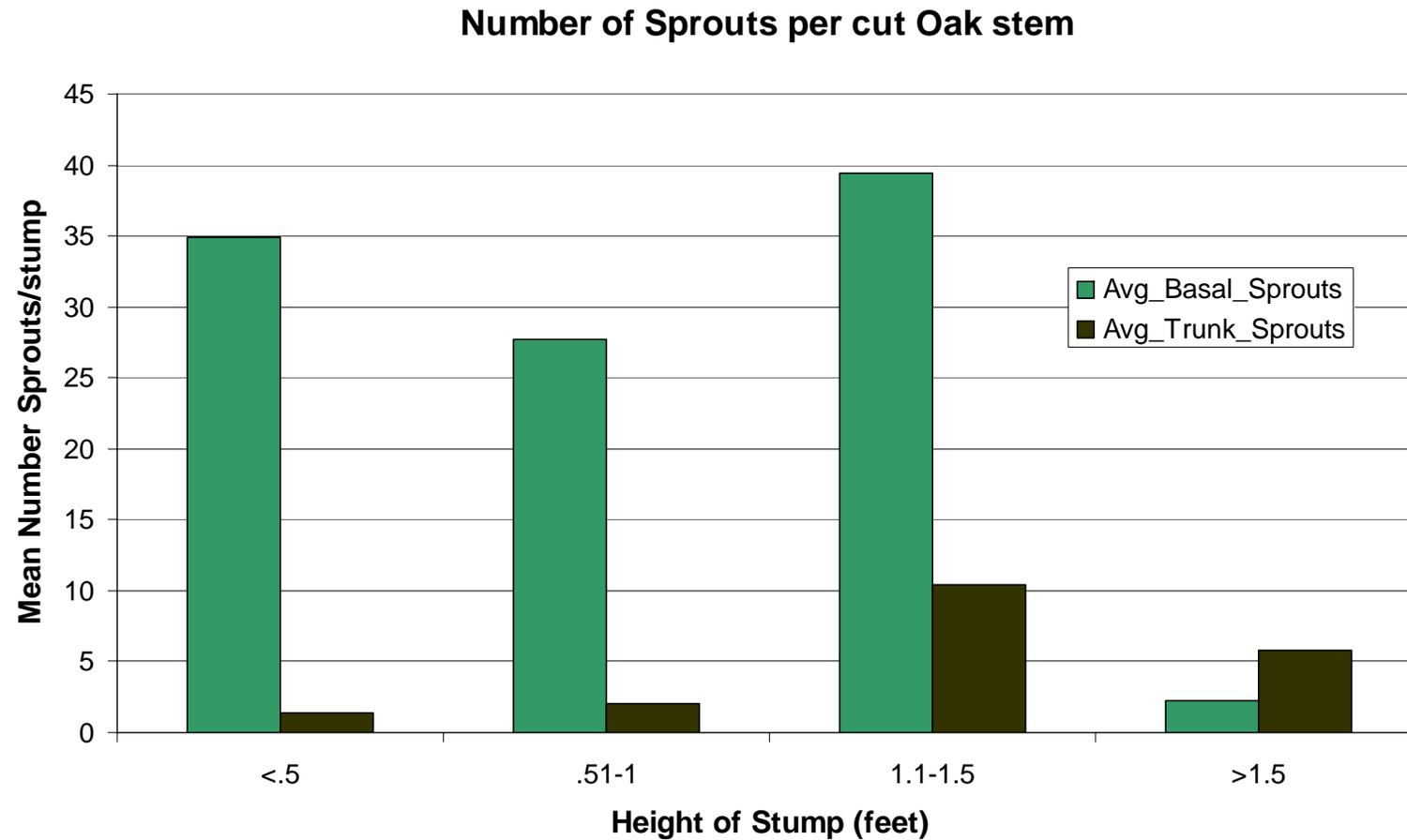


Changes in Pine and Oak Stem Density

Tree Density by Size Class (10 plots)



Black Oak Regeneration



Pre-Treatment



1st Year Post Treatment

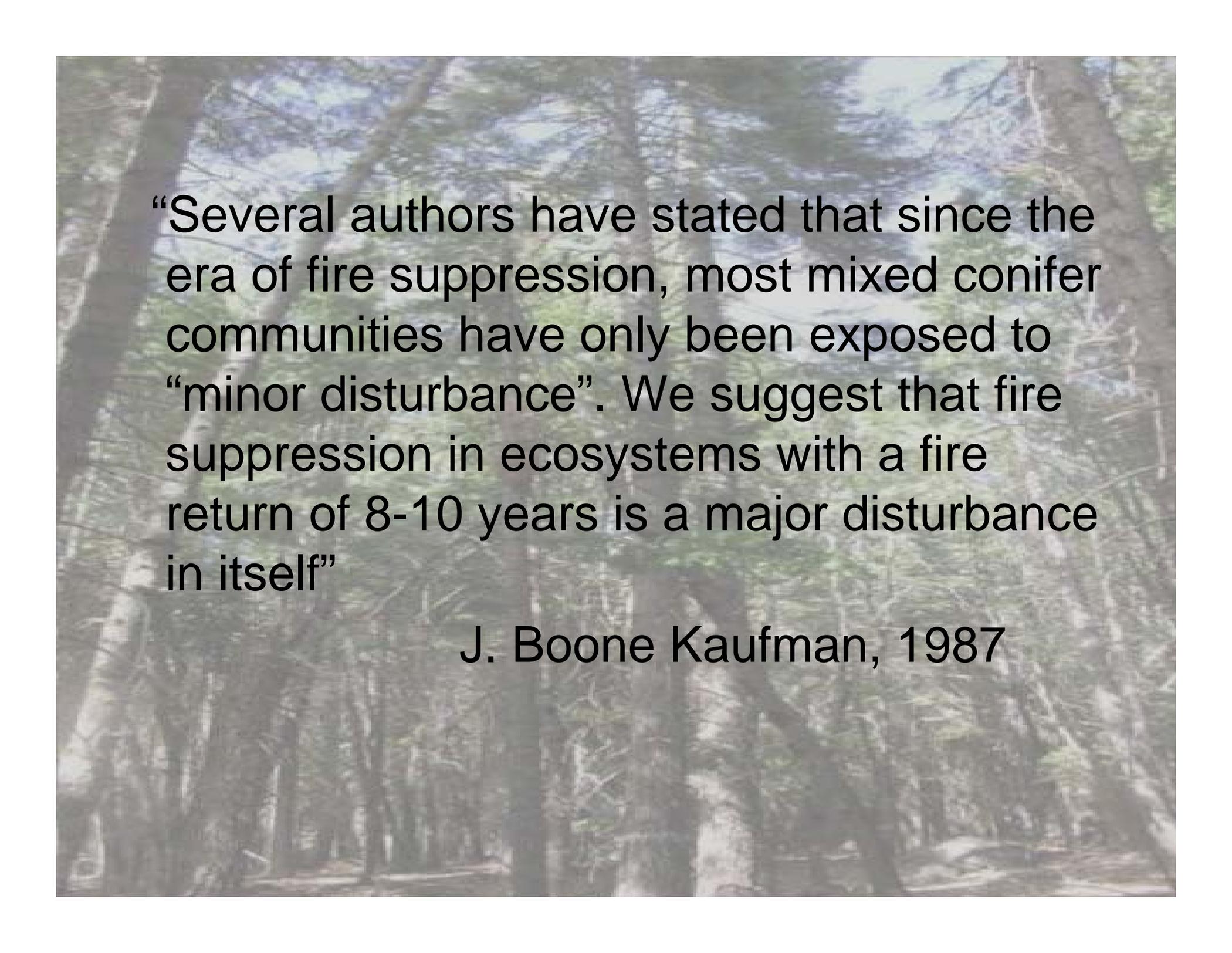


Conclusions

- White fir still the dominant conifer following treatment
- Cutting black oak stems can stimulate stump sprouting
- Treatment results in reductions of pine and oak in smaller size classes
- Treatment necessary to reduce white fir and promote oak and pine in the absence of fire
- Thin to create a mosaic of canopy covers to promote oak and pine recruitment and structural diversity

What next?

- Analyze data from recently treated plots
- Continue to monitor to determine long-term effects
- Use results to help guide future MCH enhancement projects on the LNF.



“Several authors have stated that since the era of fire suppression, most mixed conifer communities have only been exposed to “minor disturbance”. We suggest that fire suppression in ecosystems with a fire return of 8-10 years is a major disturbance in itself”

J. Boone Kaufman, 1987

Many Thanks!

- **Bobette Jones, Ecologist, Eagle Lake Ranger District**
- **Ryan Burnett, PRBO Conservation Science**
- **Mark Williams, Wildlife Biologist, Almanor Ranger District**
- **Gretchen Jehle, Wildlife Biologist, Almanor Ranger District**
- **Ralph Martinez, GIS coordinator, Almanor Ranger District**
- **Danny Cluck, Lassen National Forest**
- **Ecology Crew:**
 - Betsy Halbert, Aron Hayden, Sarah Hubert, Charlotte Narr, Jennifer Martin**
- **Wildlife Crew:**
 - Cassie Parsons, Katie Parsons, Katie Redfern, Kaylee Phillips**

