

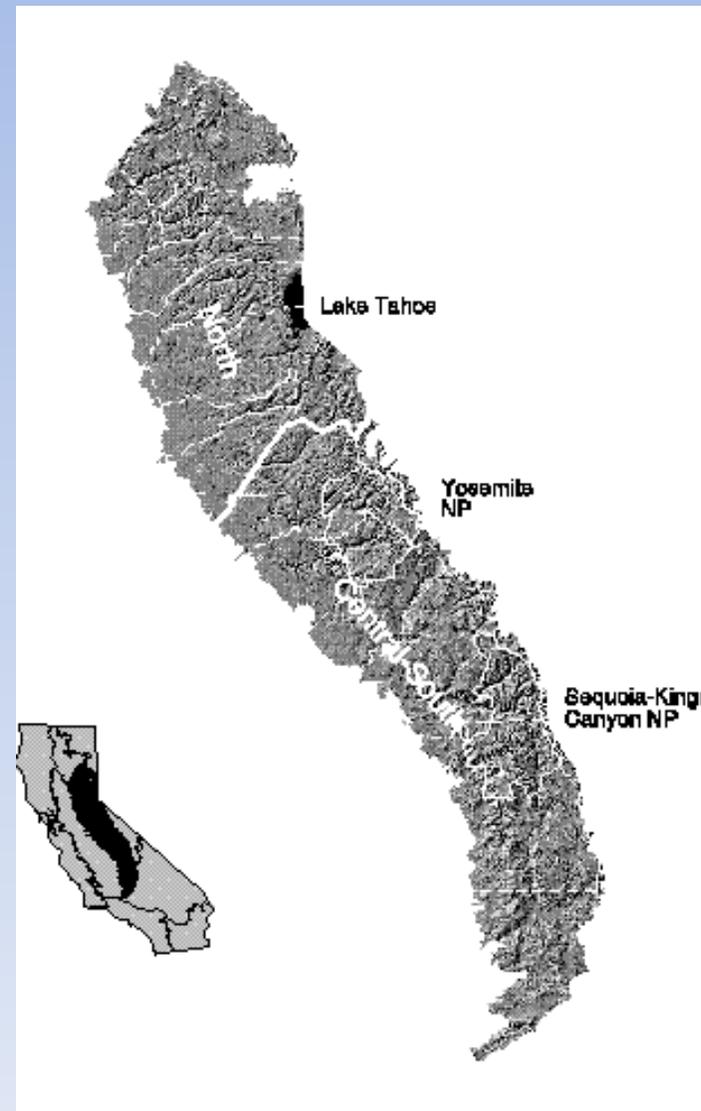
A long time ago, in a forest far far away...

PRESCRIBED FIRE

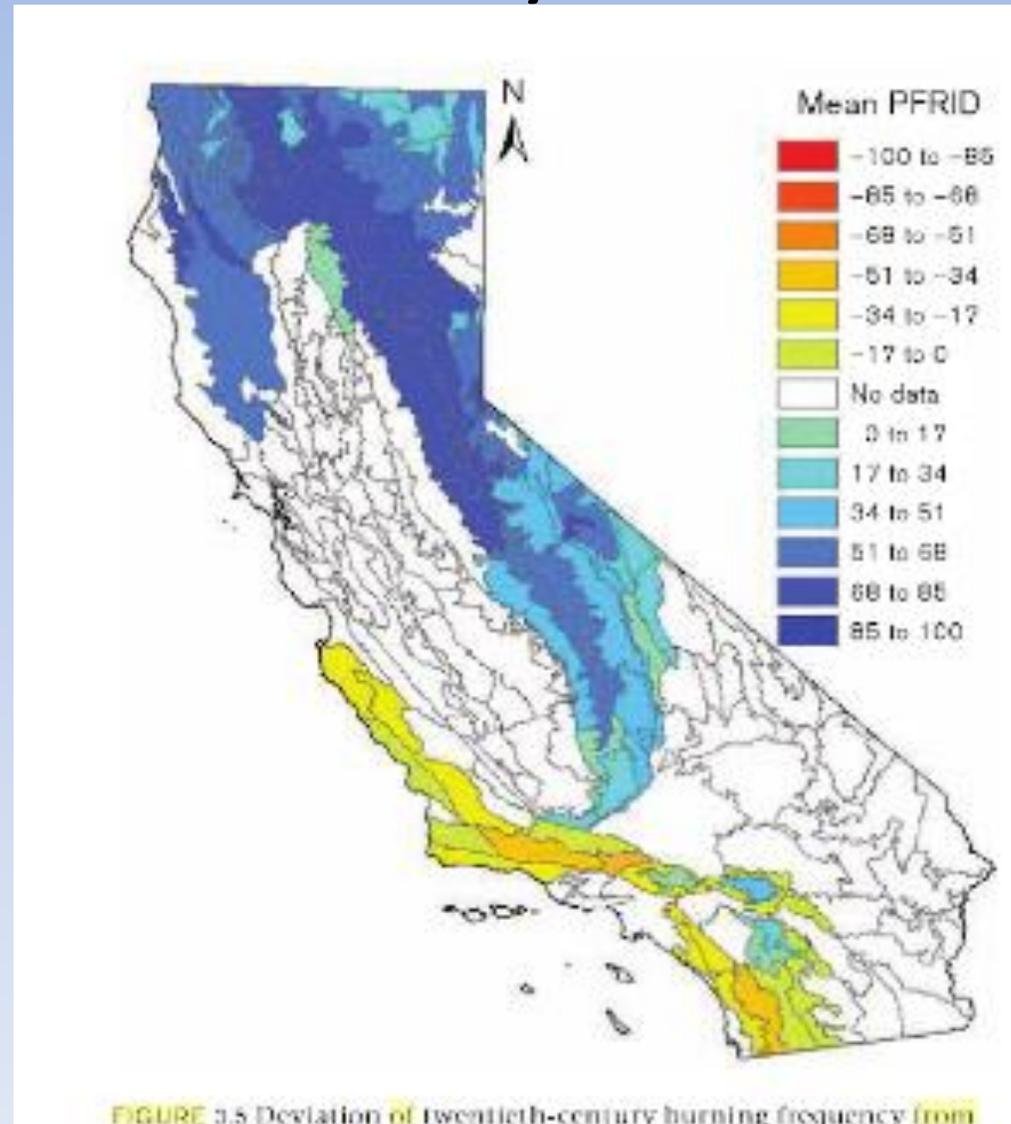
For managing ecosystems

Sierra Nevada mixed conifer forest

- North boundary = Feather River
- South Boundary = Tehachapi Pass
- 15.6 million acres
 - 50% federal
 - 50% private
 - 62% nonindustrial
 - 38 % industrial



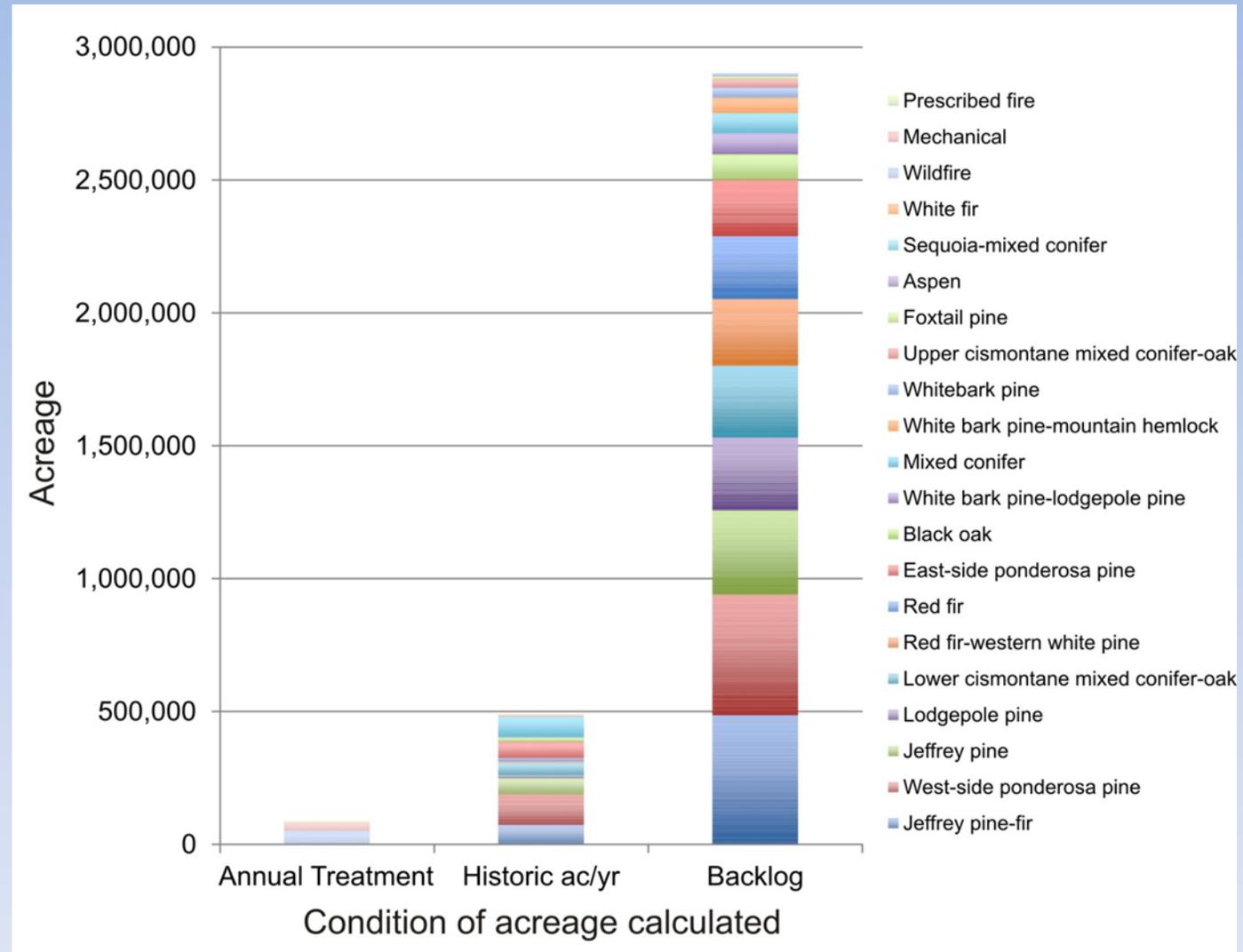
Fire as it once was is essentially gone from the ecosystem



Keeley and Safford 2016

Even where there is a will, there is no way

Backlog on USFS lands



State Forests

State lands 0.1%
- Not enough

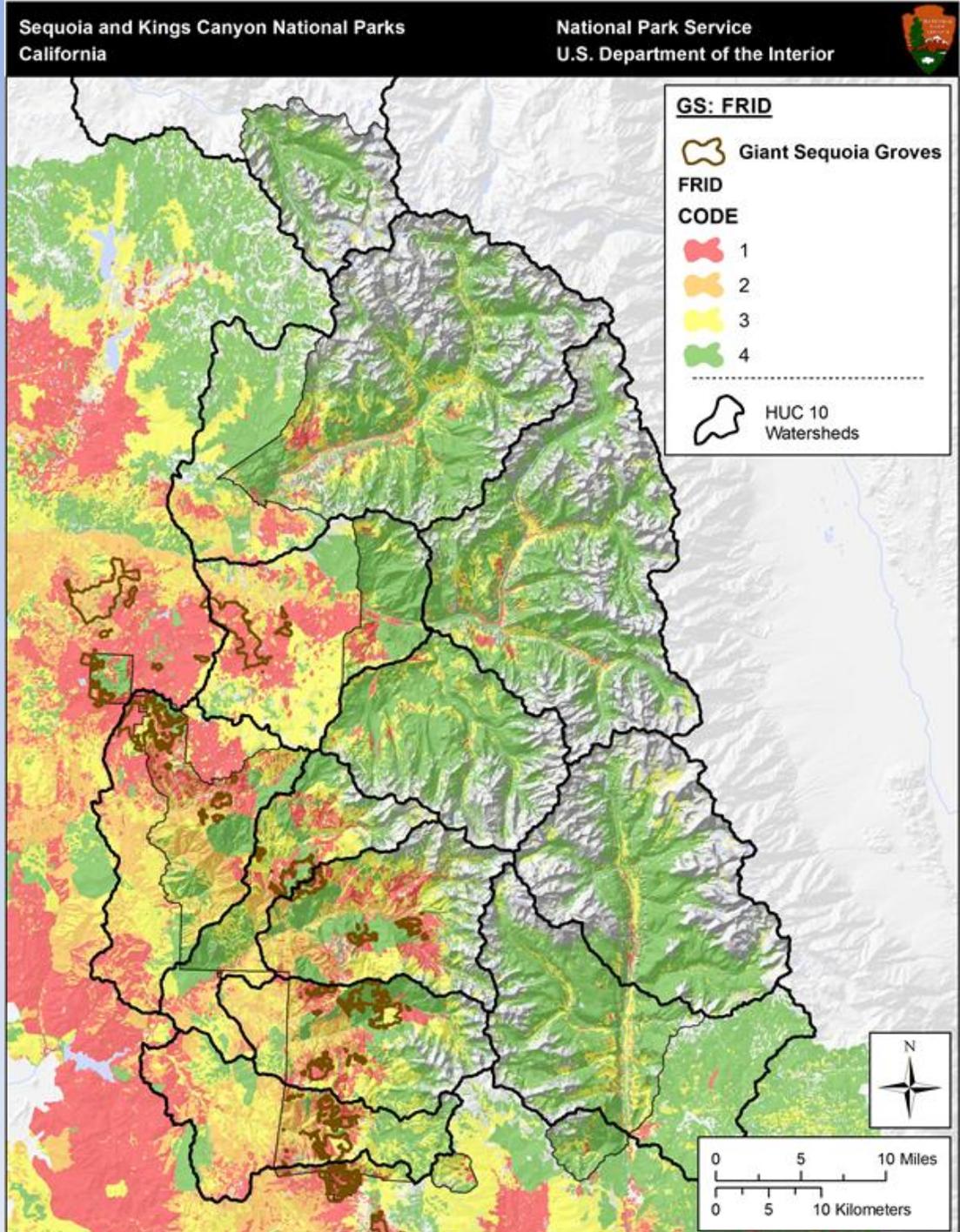
But research and
demonstration may be key



National parks Closest, but still way off

Metric	Integrity Measure	Current Condition
Fire Return Interval Departure	Higher degrees of departure = poorer integrity. Values are between 1.0 (extreme departure) and 4.0 (no departure)	POOR
Ozone	Ozone concentration within groves (ppb). Damage not expected unless 8-hr highs > 200 ppb	GOOD
Size structure	Number of giant sequoias in	UNKNOWN -Monitoring data

York et al. 2014



Industrial lands

*Mostly don't
want fires*



Private non-industrial – the New Hope?

- Conservation easements / trusts
- University lands
- Private parcels
 - As a percent of ownership, more than anyone else?



All Hope is Lost?

- Suspension of burn permits
 - Early and persistent
- Air quality restrictions (~)
- Risk of liability



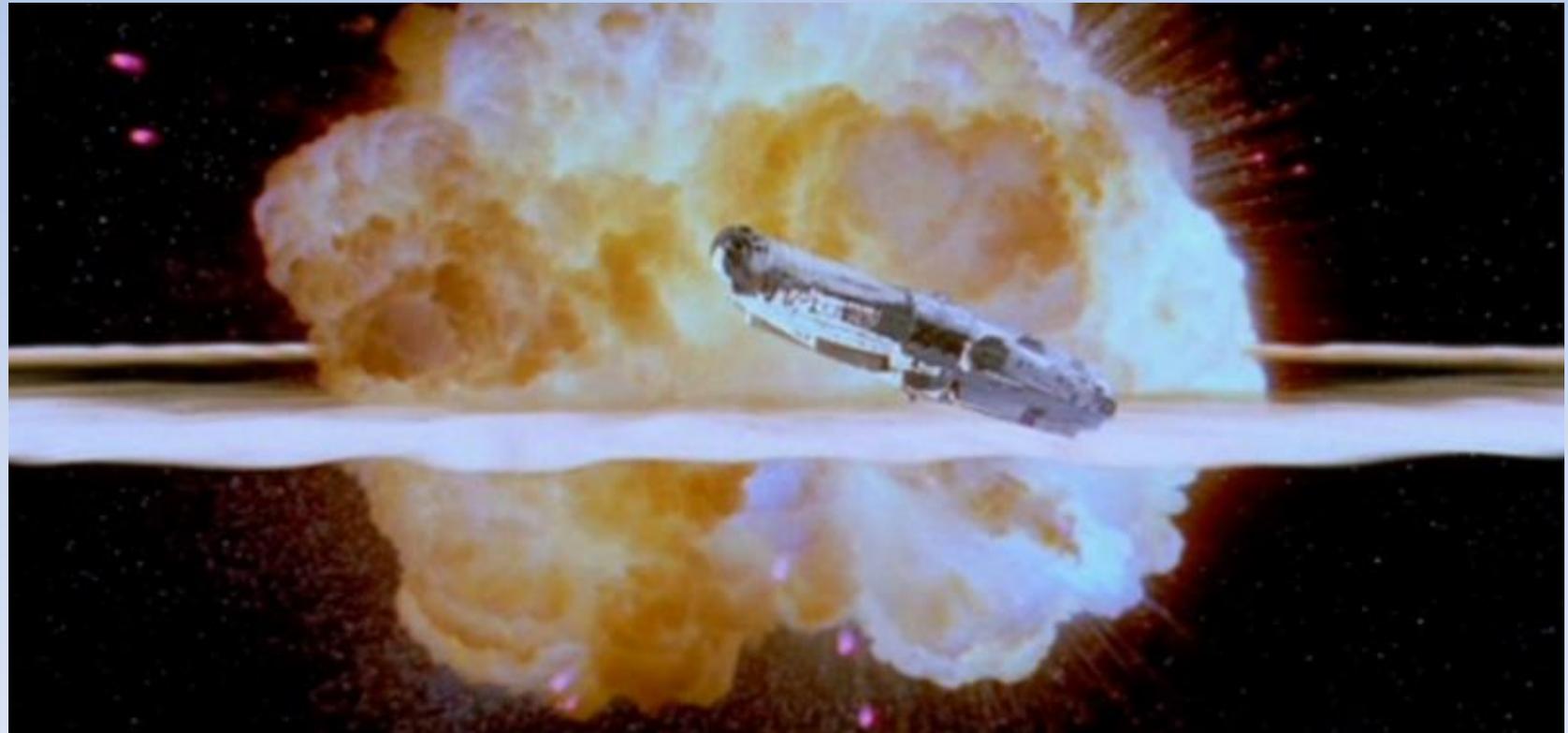
Maybe not...

- AB 2091
- AB 2585
- AB 2672
- AB 1956
- Little Hoover
Commission Report
- Governor's executive
order
- Lofty acres-burned
goals



'Death star blowing up' moment not here yet

- Laying the ground work

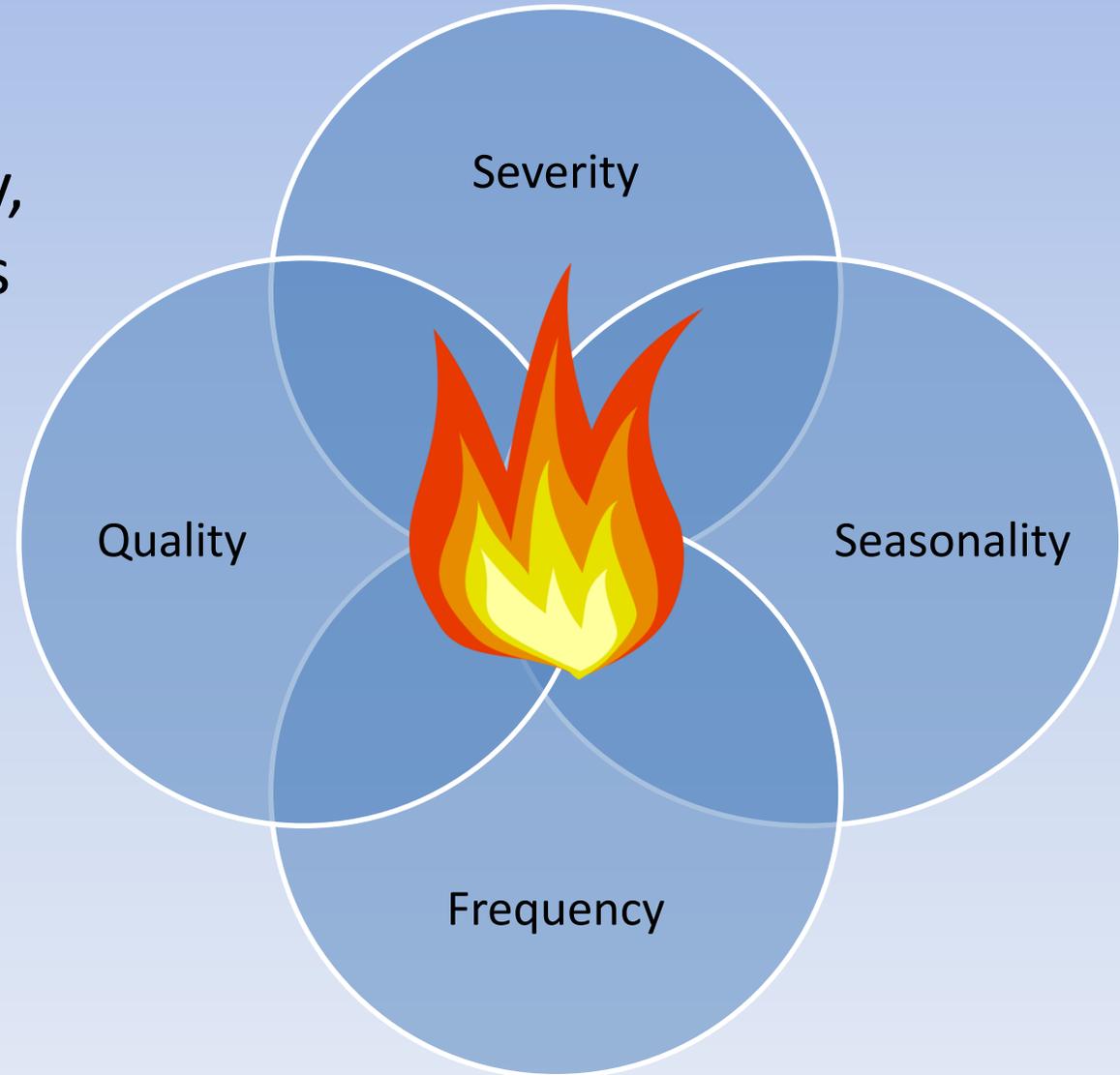


Can't do true ecosystem management with fire

Can do Pyro-silviculture in stands

Pyrosilviculture

- The integration of fire ecology, history, and use into decisions about forest manipulation



An example from Blodgett Forest's expansion of Rx fire use

Blodgett Forest:

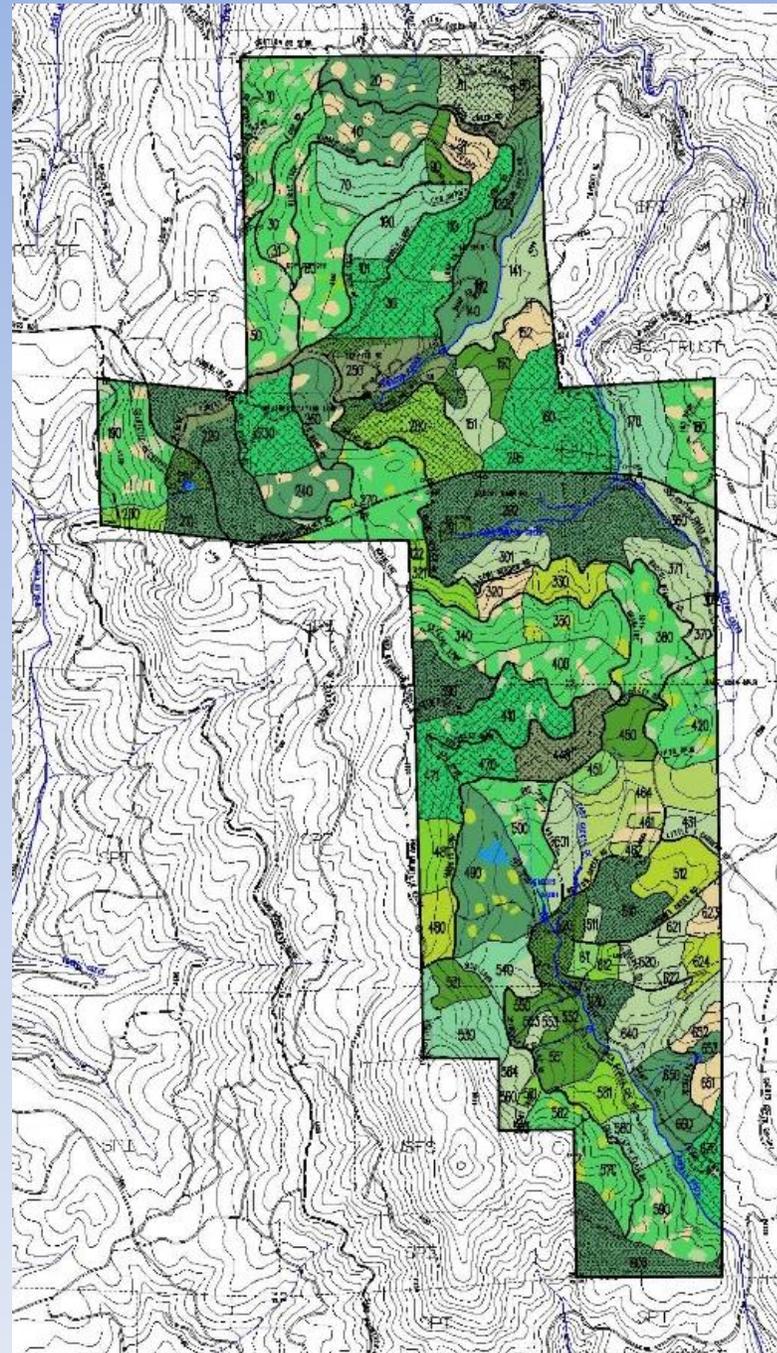
Private land (UC Board of Regents)

2,900 acres

Productive mixed conifer (60" precip/yr)

~5 month annual drought

Point FRI: 12 yr median, 60 yr max



Why expand use of fire at Blodgett?

Research

Resilience

Protect timber

Protect habitat diversity

Protect infrastructure

To be a good neighbor

“There is no problem that fire can’t solve” ?

Experimental young
stand burning



When?

- During fire season
- Whitaker's July 2012 with NPS



When?

- Fall with permit (USFS or Cal Fire)
- Fire and Fire Surrogate burns
- With and w/o Cal Fire help



When?

- Winter (Jan – April), without permit
- With Blodgett staff (2-5)
- With students (~20)
- Feasible where canopy cover was low (50%)
- Feasible where fuel bed was dry: masticated fuel, pine needle beds
- Feasible where plants were flammable: Bear clover, bracken fern



Compartment 250, 68 acres maintained with winter burning

When?

- Spring, with/without permit (~April-June)
- Have shied away b/c not synchronous with natural regime
- E.g. ground nesting song birds
- Burn when you can?

Young stand undesired effects



Where?

Has evolved from strategic placement
(fuelbreaks) to stand-wide

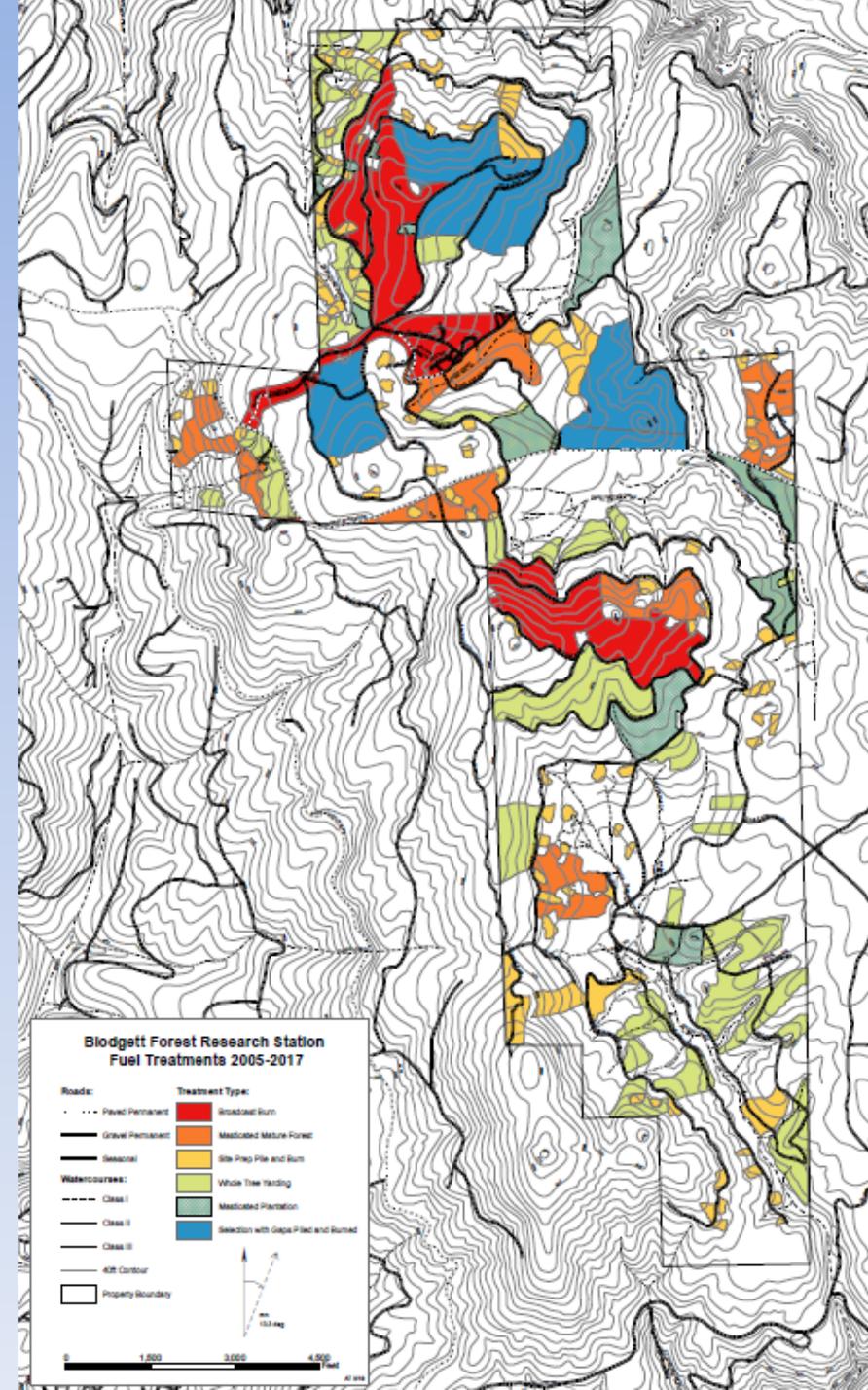
1 to 30 acres at a time

Area regulation:

Treatable acres (A) = 2000

Rotation (R) = 13 yrs (the FRI)

Per yr target $A_i = A/R = 154$ acres/yr

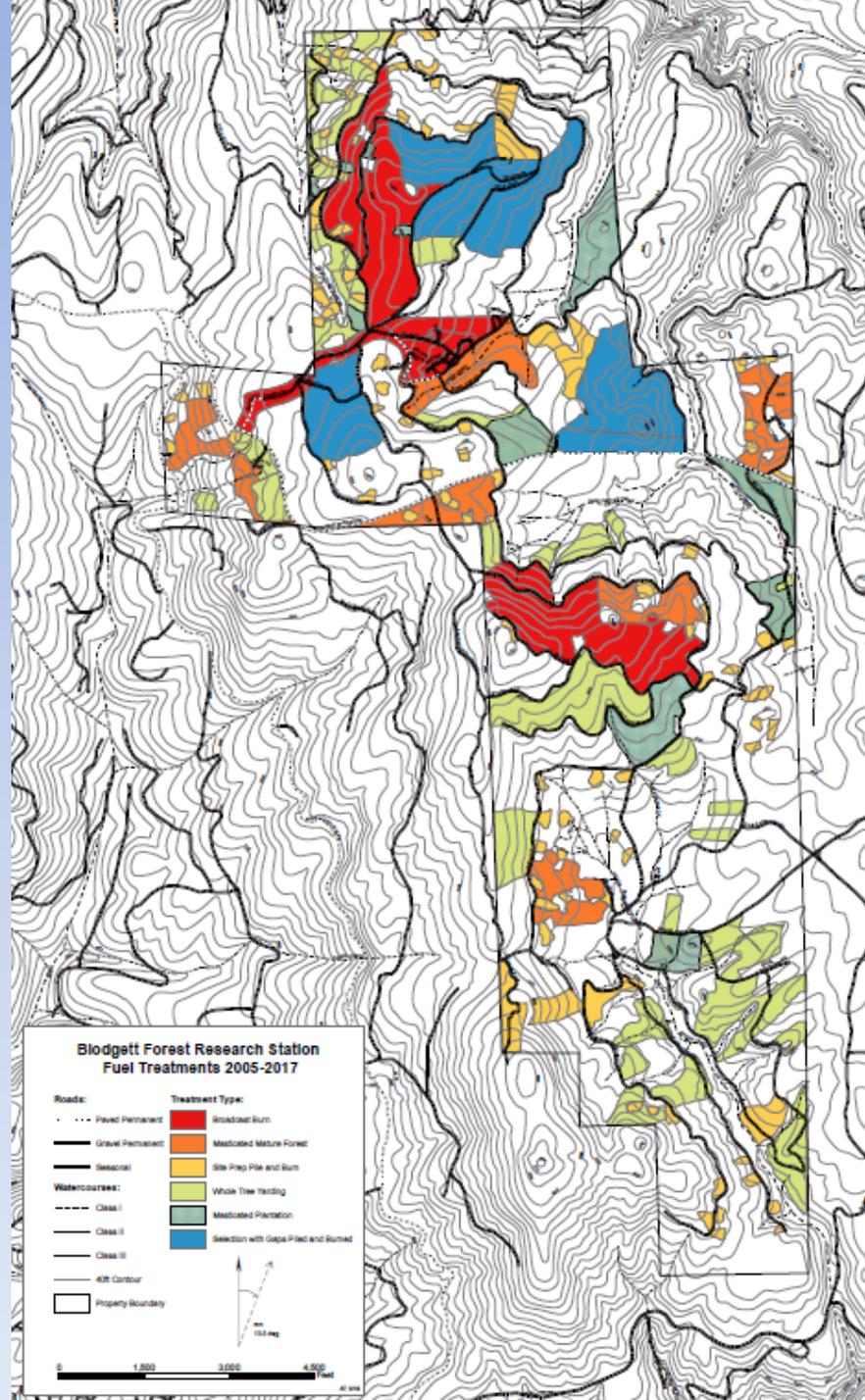


Has it worked?

Getting there...

Fire was necessary, but not sufficient

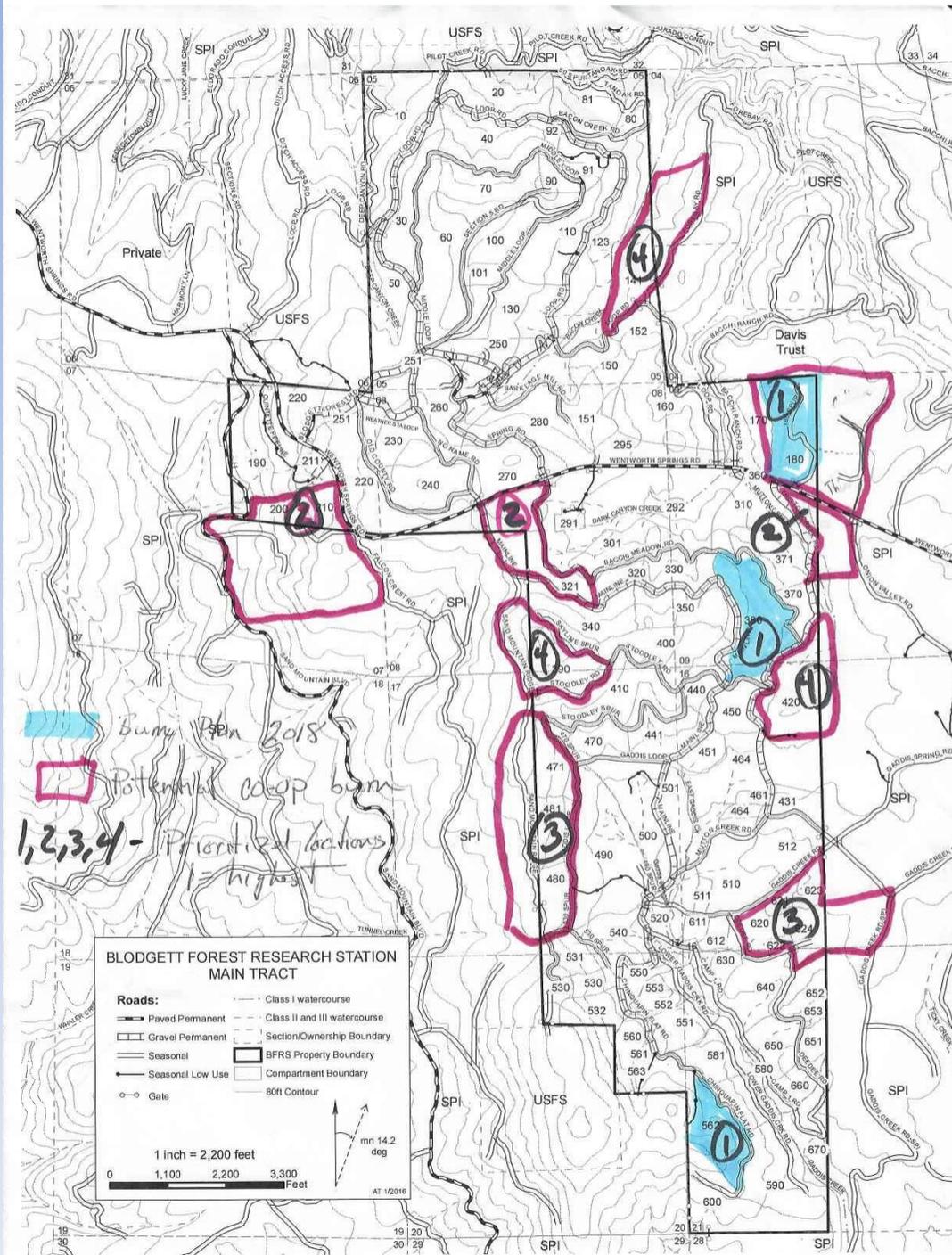
Chainsaws were necessary, but not sufficient



The future:

Build upon foundation with more burning, plus:

- Co-op with neighbor (SPI)
- Co-op burn with USFS?

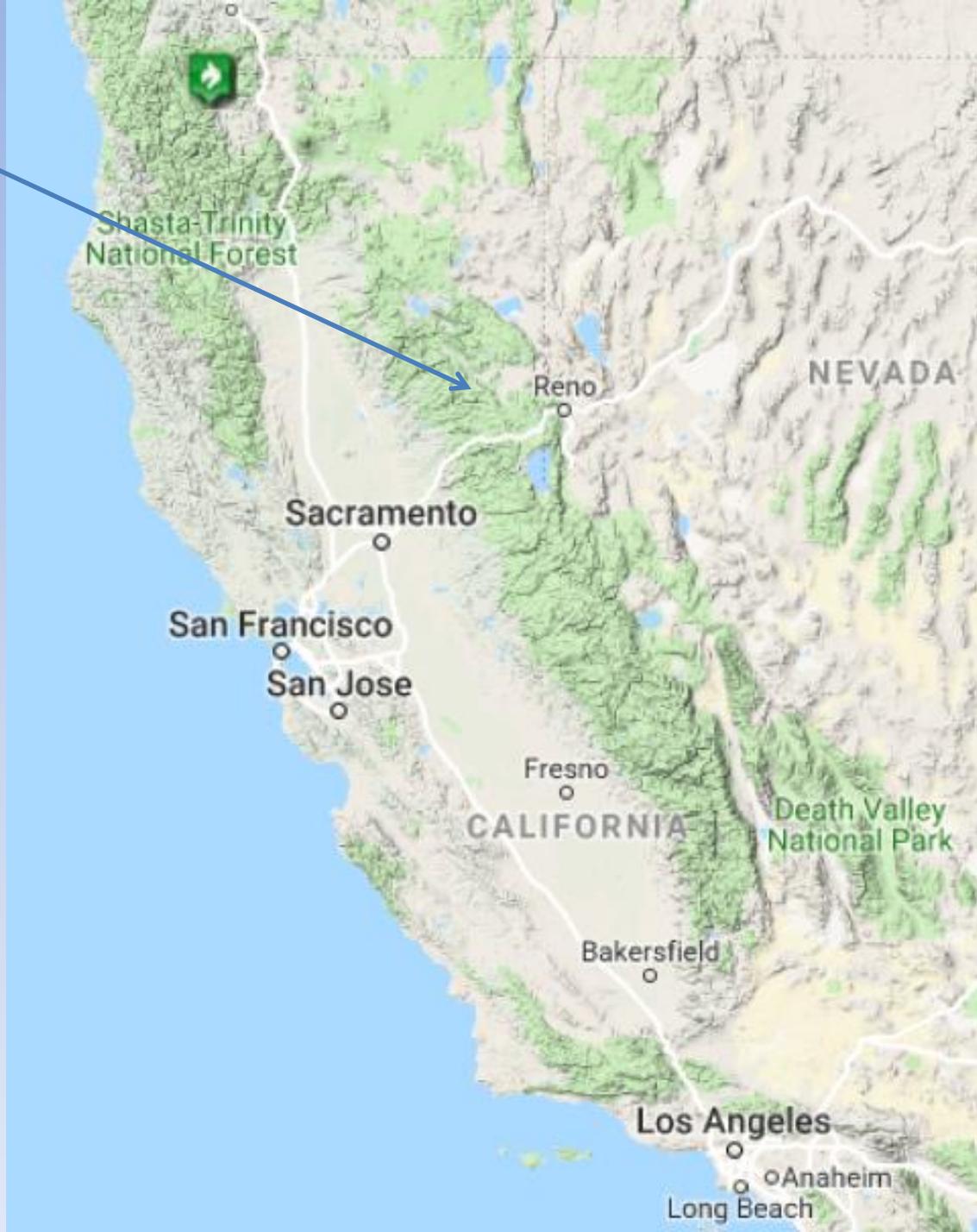


Failure looks like this.

What does success look like?

What is possible given air quality concerns?

Is winter burning becoming an option?



PRESCRIBED FIRE

As an Ecosystem Process