

Native Californian Use of Fire in Weed Management

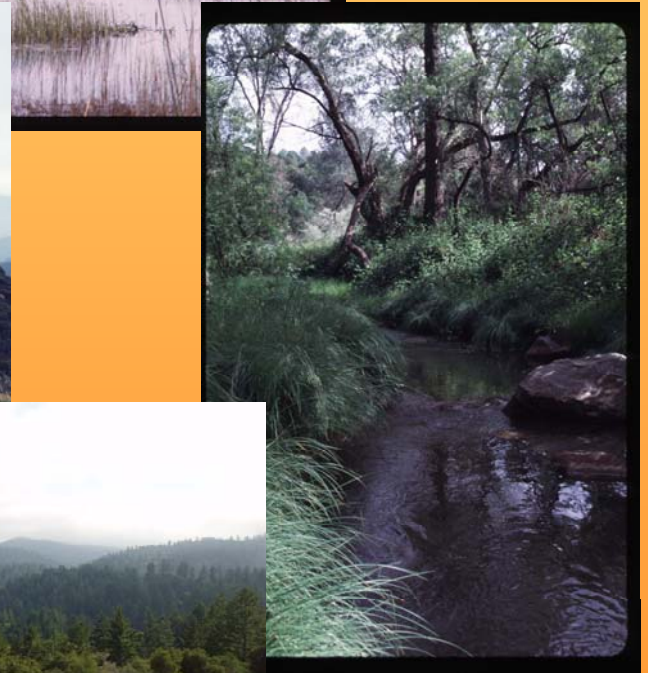


Don L. Hankins, Ph.D.

California State University, Chico

Dept. of Geography and Planning

California's Vegetation



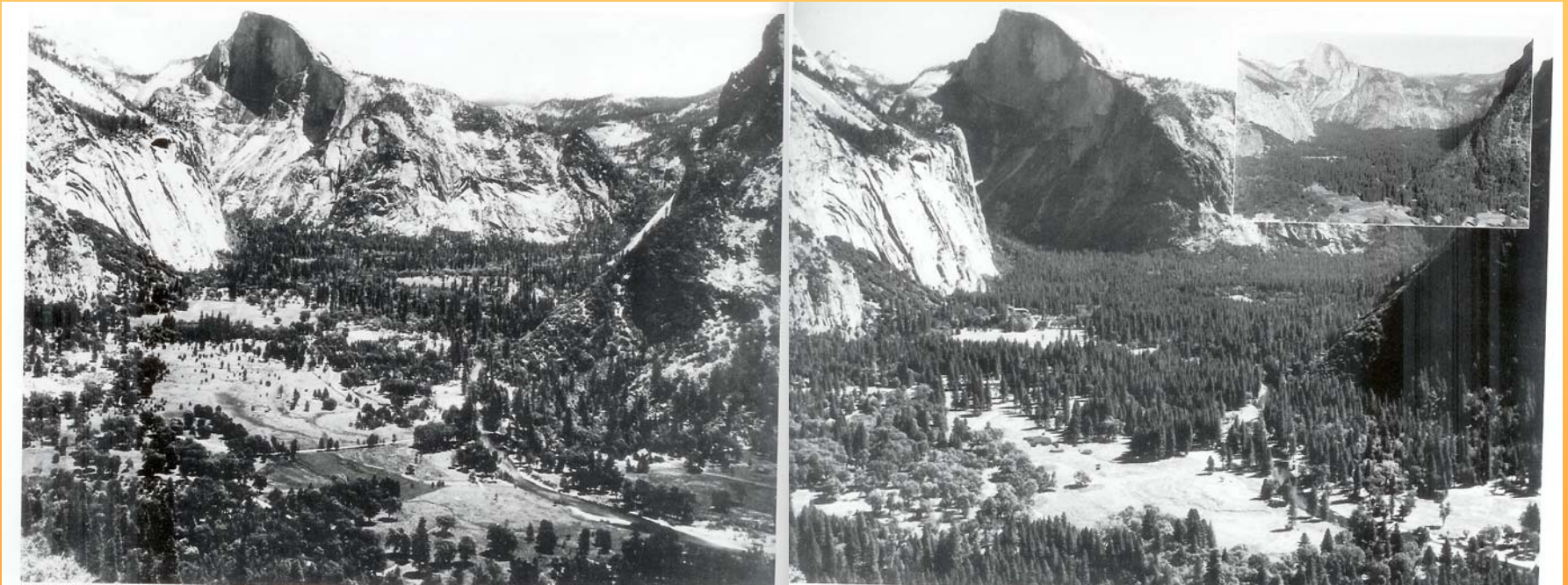


Indigenous Management Techniques



- Tilling (digging)
- Coppicing (pruning)
- Burning (prescribed fire)

Example: Yosemite



Gruell 2001

- 1866 – 15 years after first European visitor to region
- 1961 (1994 insert)– Encroachment due to lack of fire disturbance



Reasons to Manage






Cultural Fire Return Intervals

General Community Type	Hypothetical Indigenous Fire Regime
Riparian Forest	<i>4 – 15 years</i>
Oak Woodland/Savanna	<i>2 – 5 years</i>
Conifer Forests	<i>5 – 15 years</i>
Floodplain	<i>4 – 15 years?</i>
Chaparral/Scrub Communities	<i>10 – 50 years</i>

- Outcome
 - Shorter FRI
 - Fewer large fires
 - Mixed intensity and severity



Key Considerations For Indigenous Burning

- What is the objective of the burn (*e.g.*, single species -v- multi-species, desired complexity, scale, etc.)?
- Seasonal timing and conditions
- What is an appropriate fire return interval to achieve long-term desired results?
- Coordination with others (neighbors and agencies)



Patterning Heterogeneity: Mosaics

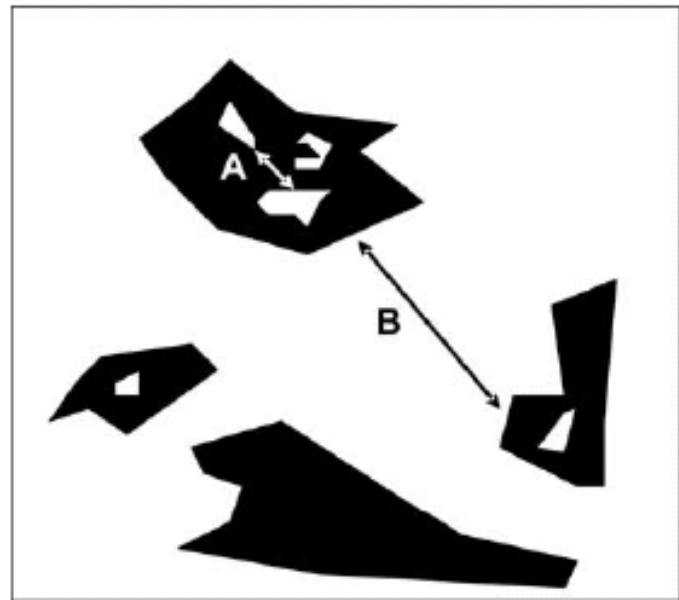


Figure 1. Patches that make up the mosaic viewed at different levels: A, intrapatch (within) patchiness, and B, interpatch (between) patchiness.

Parr and Anderson, 2006

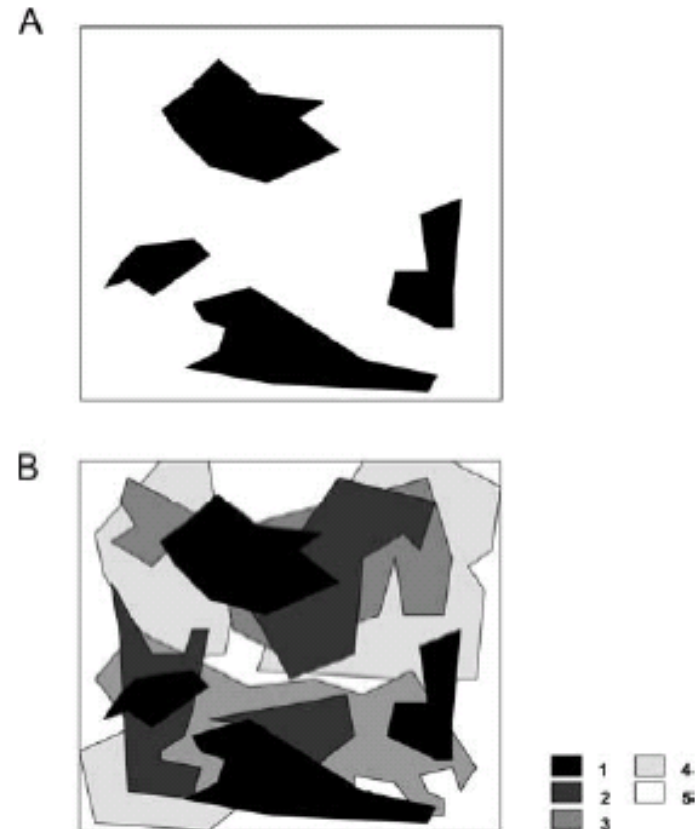


Figure 2. Patch mosaics interpreted in terms of (a) the visible mosaic and (b) the invisible mosaic. The legend in this example refers to postfire fuel age (in years). These patches are not visible like the recently burned patches that comprise the visible mosaic.



California Invaded



- Arrival of new species
- Rapid dispersal
- Integration into cultural uses
- Altered Processes





Changing Fire and Policy Regimes

- Spanish settlement
1769

- Policies against burning

- Mexican Period 1821

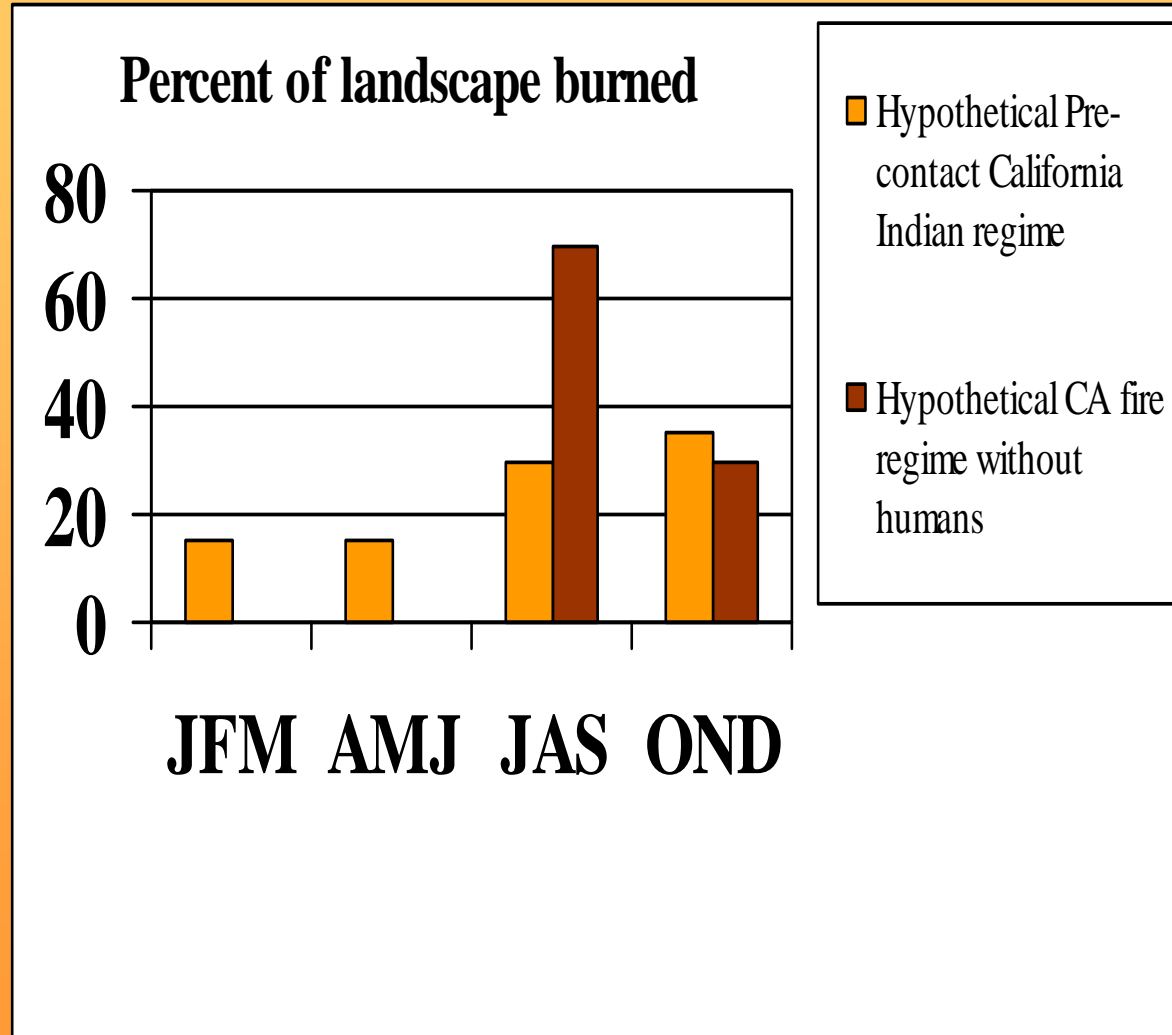
- Land grants restricted access to traditional territories

- American Period 1848-
Present

- Further privatization of traditional territories

- Exclusion

- Policy and Liability Issues



Native Weeds Wanted



Courtesy of NMAI-Smithsonian

- Invasive, but hard to find culturally significant plants
 - Showy milkweed
 - Narrow-leaved milkweed
 - Indian Hemp
- Desirable common invasives
 - California blackberry
 - Cattails



Applications, Findings, and Future Directions



Implications of Fire as a Tool



- **Potentially eradicate/reduce invasive species**
- Conserve habitat for rare, threatened, or endangered species (including culturally rare)
- Maintain a biological and structural diversity
- Mitigate wildfires