Native Californian Use of Fire in Weed Management

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California’s Vegetation
Indigenous Management Techniques

- Tilling (digging)
- Coppicing (pruning)
- Burning (prescribed fire)
Example: Yosemite

• 1866 – 15 years after first European visitor to region

• 1961 (1994 insert) – Encroachment due to lack of fire disturbance

Gruell 2001
Reasons to Manage
## Cultural Fire Return Intervals

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

- **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

Parr and Anderson, 2006

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

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

- 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