

Reconstructing Fire History in Sonoma County Using Tree Ring Analysis

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Background

- 2017 Sonoma Complex fires
 - burned nearly 110,000 acres
 - loss of 24 lives
 - ~\$7 billion in damages
- Motivation
 - Improve understanding of fire history within natural and human-built environment is critical
- Dendrochronology
 - the use of tree rings to study and reconstruct the history of wild fires
- Effects of fires on trees
 - Fires can leave fire scars or calluses on trees



Research Question

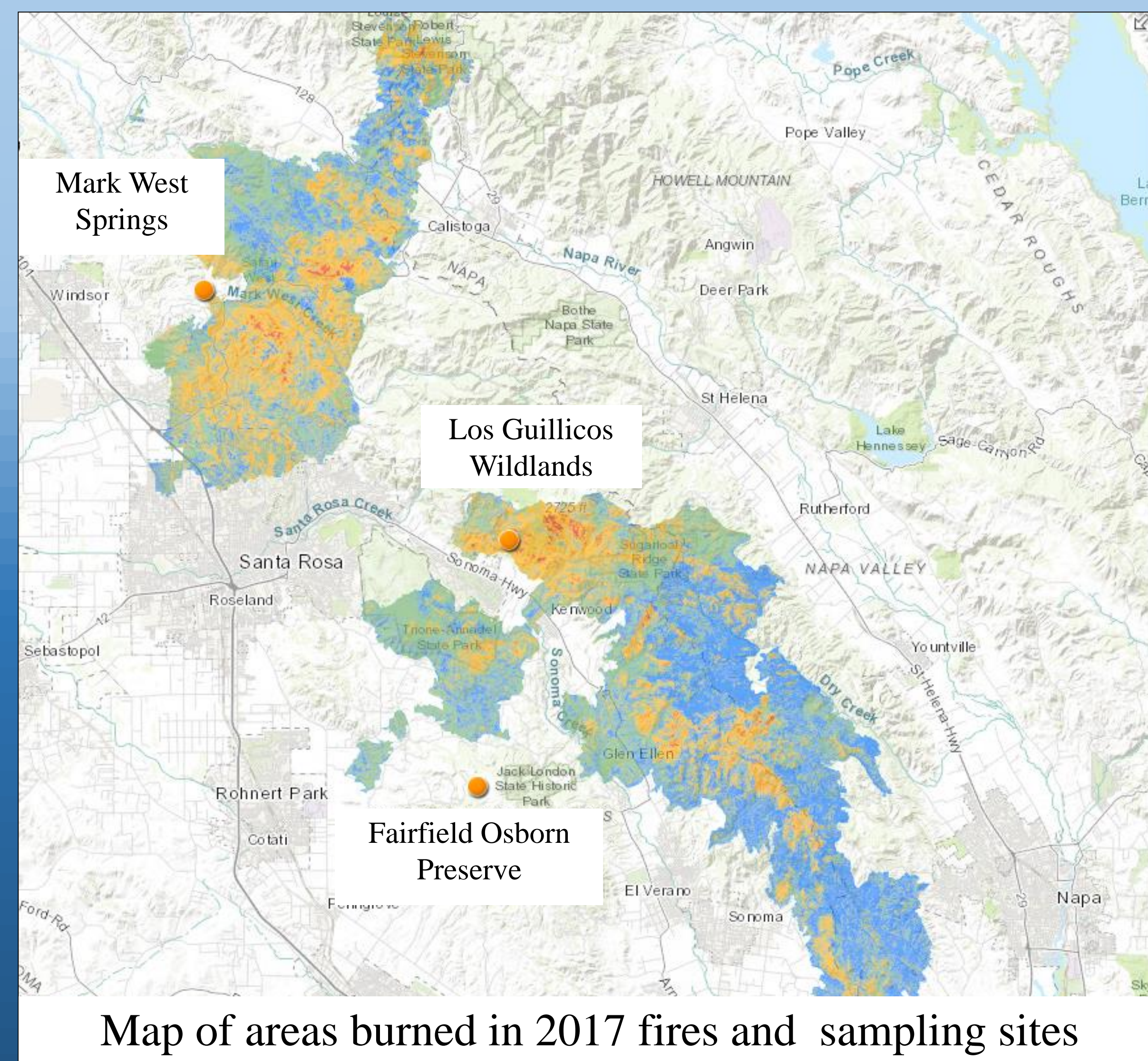
- Reconstruct the return interval of fire in differing ecosystems in Sonoma County

Methods

- Sample species: *Quercus agrifolia*
- Location: Mark West Springs, Santa Rosa, CA
- Samples cut into “cookies” and sanded down to 800 grit
- Dissection microscope used to count tree rings

Sampling Sites

Location	Species	# of Samples
Fairfield Osborn Preserve	<i>Umbellularia californica</i> and <i>Quercus agrifolia</i>	12
Mark West Springs	<i>Quercus agrifolia</i>	4
Los Guillicos	<i>Pseudotsuga menziesii</i>	~10

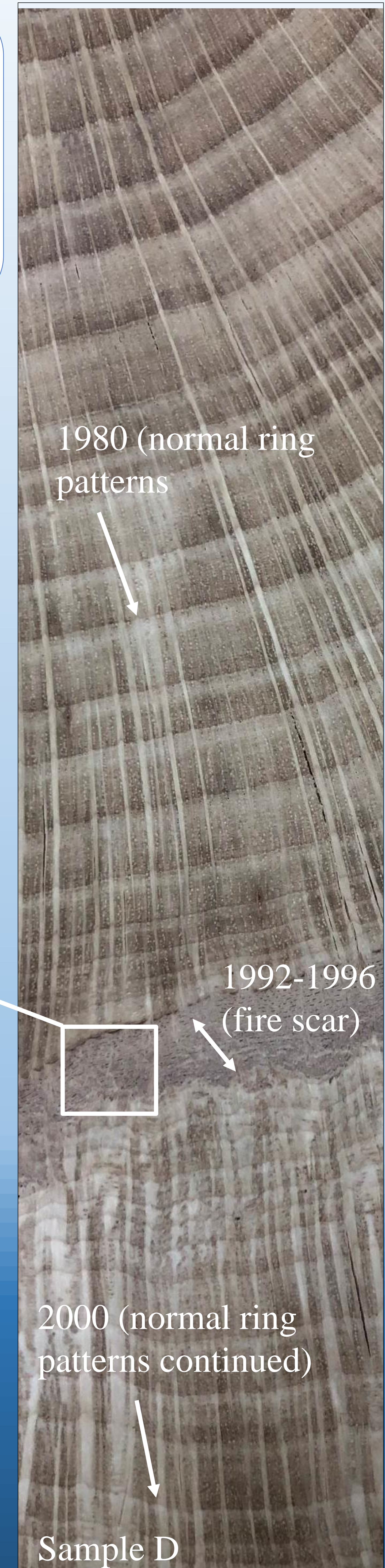


Preliminary Results

- | | |
|-----------------------|-----------------------|
| Sample D | Sample E |
| • One fire scar | • One fire scar |
| • 109 years old | • 122 years old |
| • 56 cm diameter | • 62 cm diameter |
| • Fire scar 1992-1996 | • Fire scar 1984-1999 |

Discussion

- Fire scar calluses
 - Age to early to mid-1990s
 - Precise aging currently difficult due to nature of damage
- Likely correlate with
 - 1996 Porter Creek Fire



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References

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Sample D