

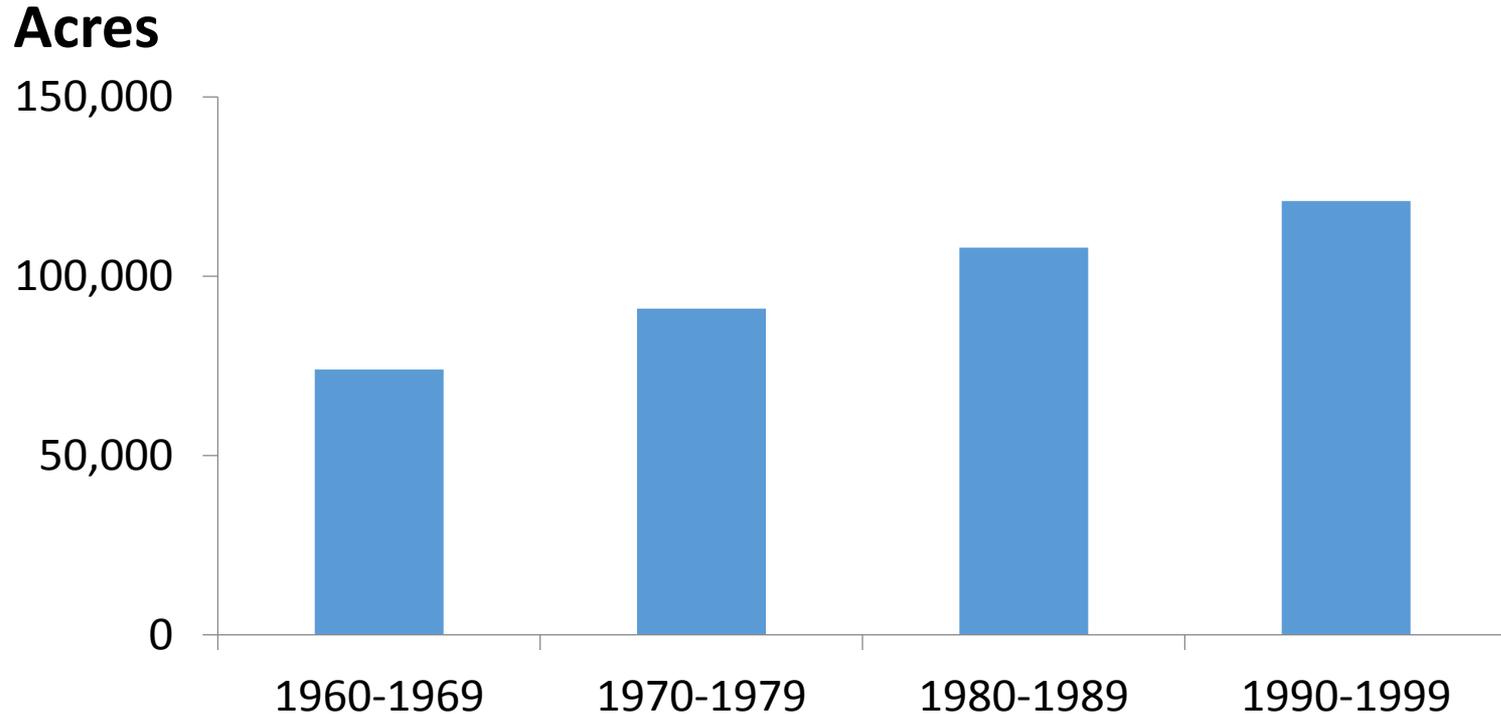
The natural benefits of fire

Discover the Natural Benefits of Fire in Yosemite and Kings Canyon National Parks

Kate Wilkin, PhD, Forest and Fire Advisor, University of California Cooperative Extension



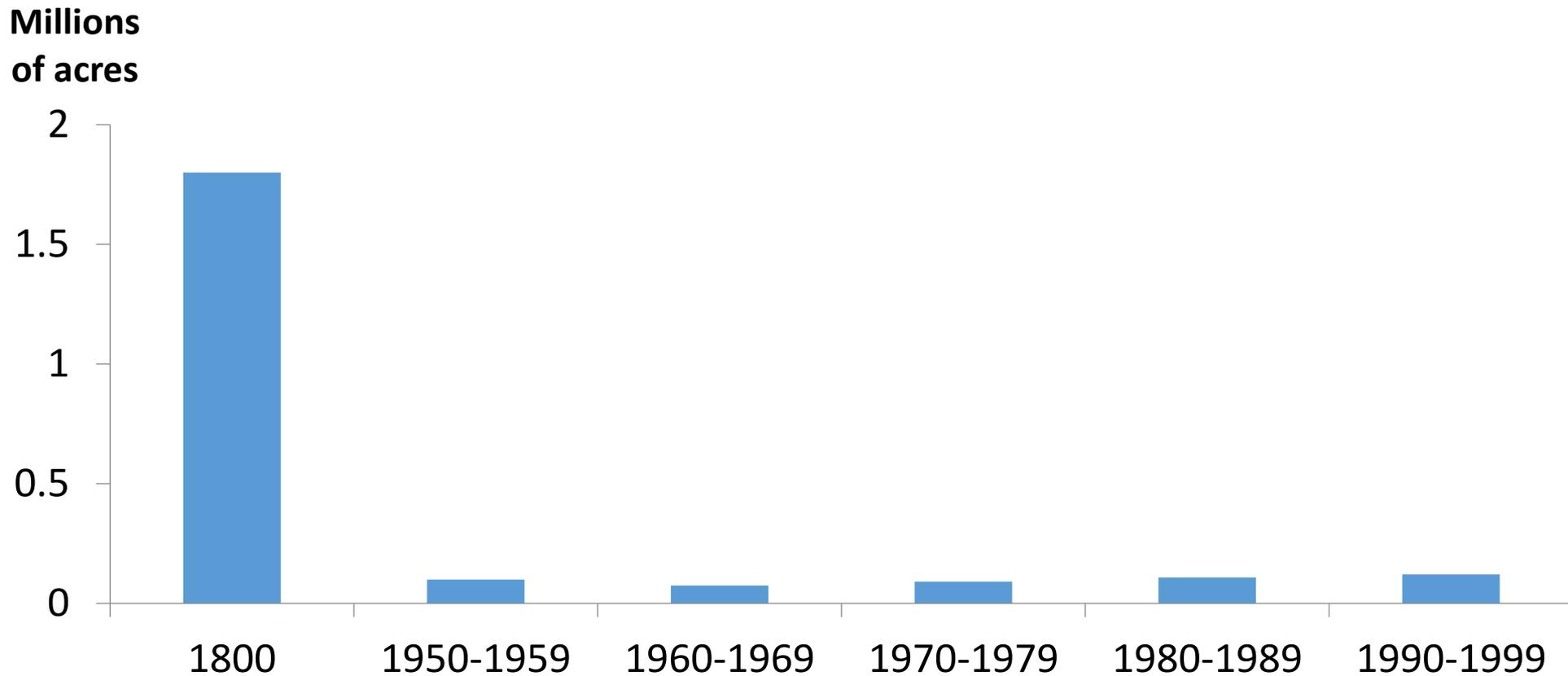
Annual average acres burnt in California



Adapted from

S. L. Stephens, R. E. Martin, N. E. Clinton, Prehistoric fire area and emissions from California's forests, woodlands, shrublands, and grasslands. *Forest Ecology Management* **251**, 205 (2007).

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Laura Cunningham's *Miwok man burns a Bay tidal marsh* from *A State of Change*



Laura Cunningham's Miwok woman gathers shoots after fire from A State of Change



Looking down Yosemite Valley by Albert Bierstadt



Firing back



Prescribed Fire



“Let It Burn”
Prescribed Natural Fire

Fire is an important ecological process

- Consumes vegetation and recycles nutrients
- Selects for fire adaptations
- Alters community composition and assembly
- Alters and creates biomes

From

W. J. Bond, J. E. Keeley, Fire as a global 'herbivore': the ecology and evolution of flammable ecosystems. *Trends in ecology & evolution* 20, 387 (2005).

Where Fire is Working

Discover the Natural Benefits of Fire in Yosemite and Kings Canyon National Parks



Wildland Fire Use



Yosemite National Park

Kings National Park

Wildland Fire Use



Wildland Fire Use



NPR's Capital Public Radio team on a three day backpacking trip

Wildland Fire Use Areas



Illilouette Creek Basin,
Yosemite
National Park



Sugarloaf Valley,
Kings Canyon National
Park

The Natural Benefits of Wildland Fire Use

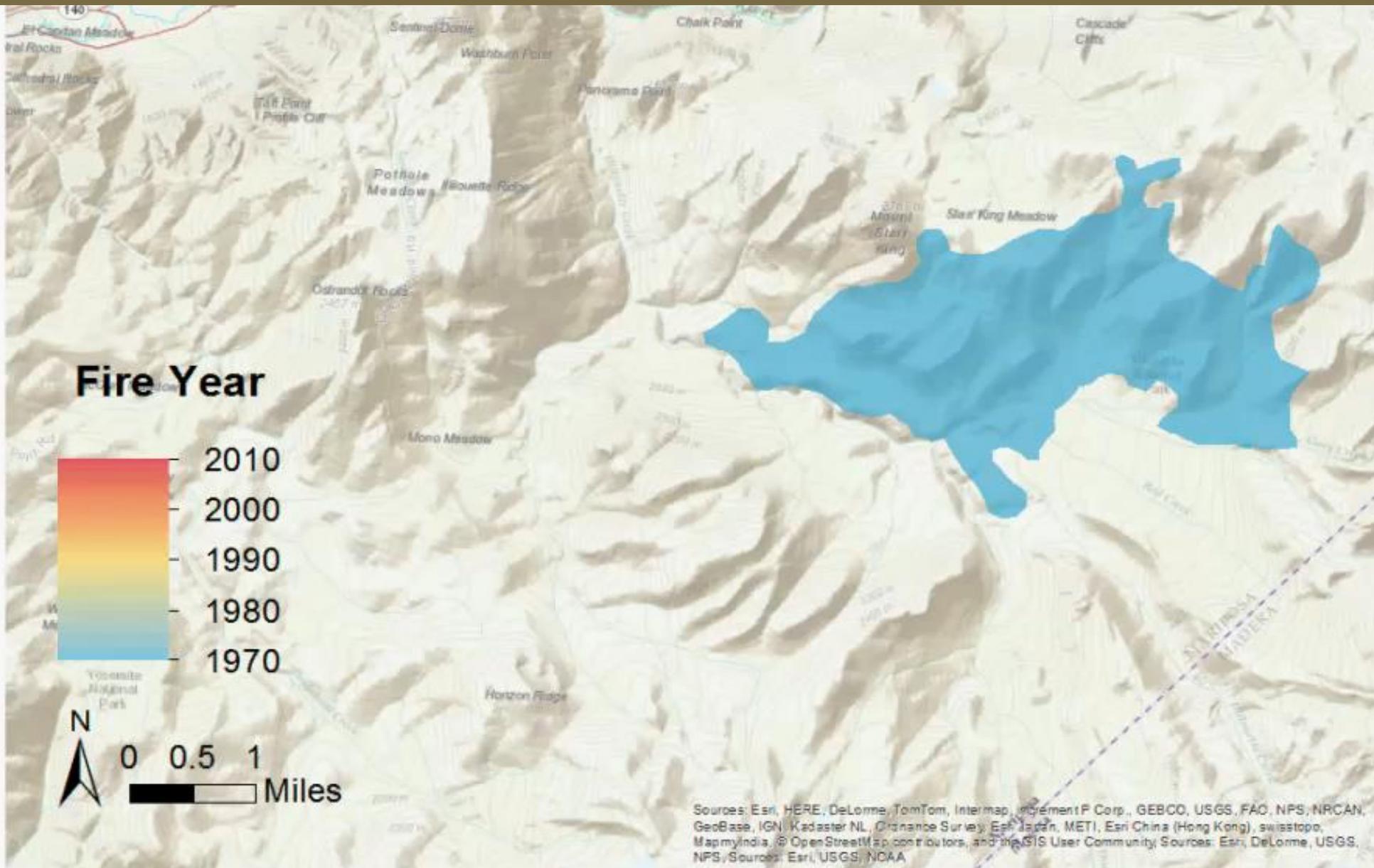


The Natural Benefits of Wildland Fire Use



Wildfire Resilience ... *wildfires become self-limiting!*

Based on Collins, 2009



Wildfire



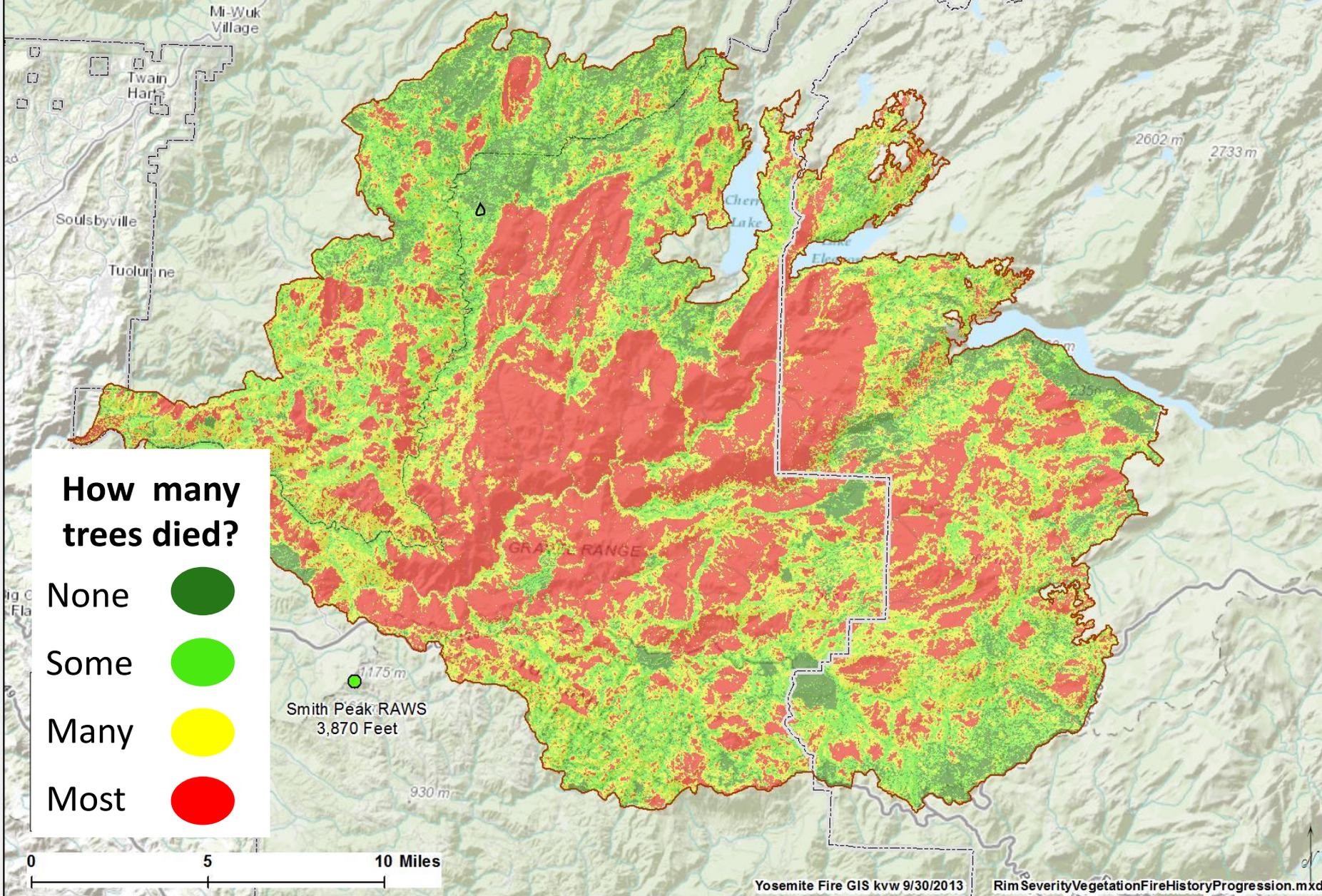
Prescribed fire



Wildfire fire use



The 2013 Rim Fire

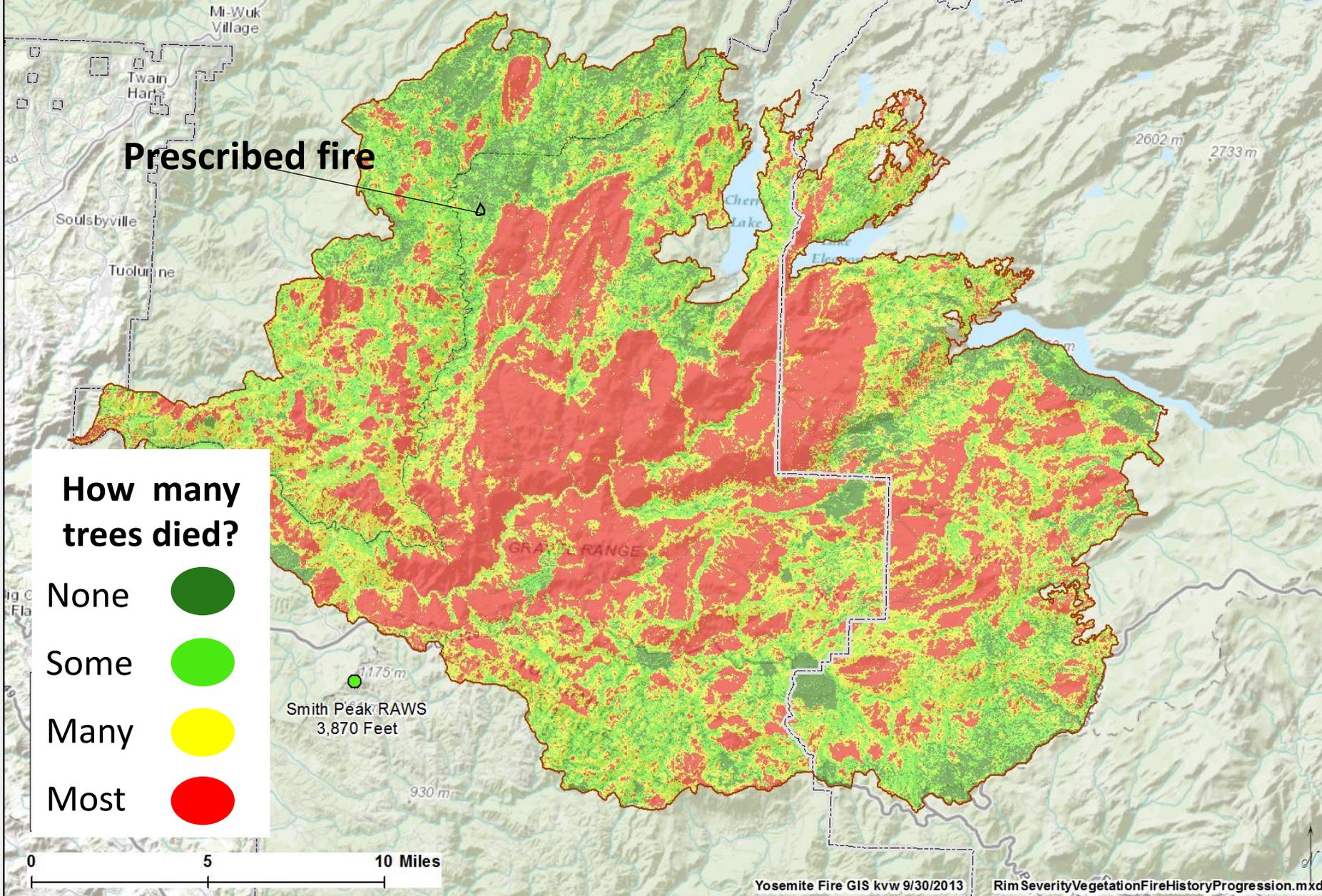


How many trees died?

- None 
- Some 
- Many 
- Most 

0 5 10 Miles

The 2013 Rim Fire



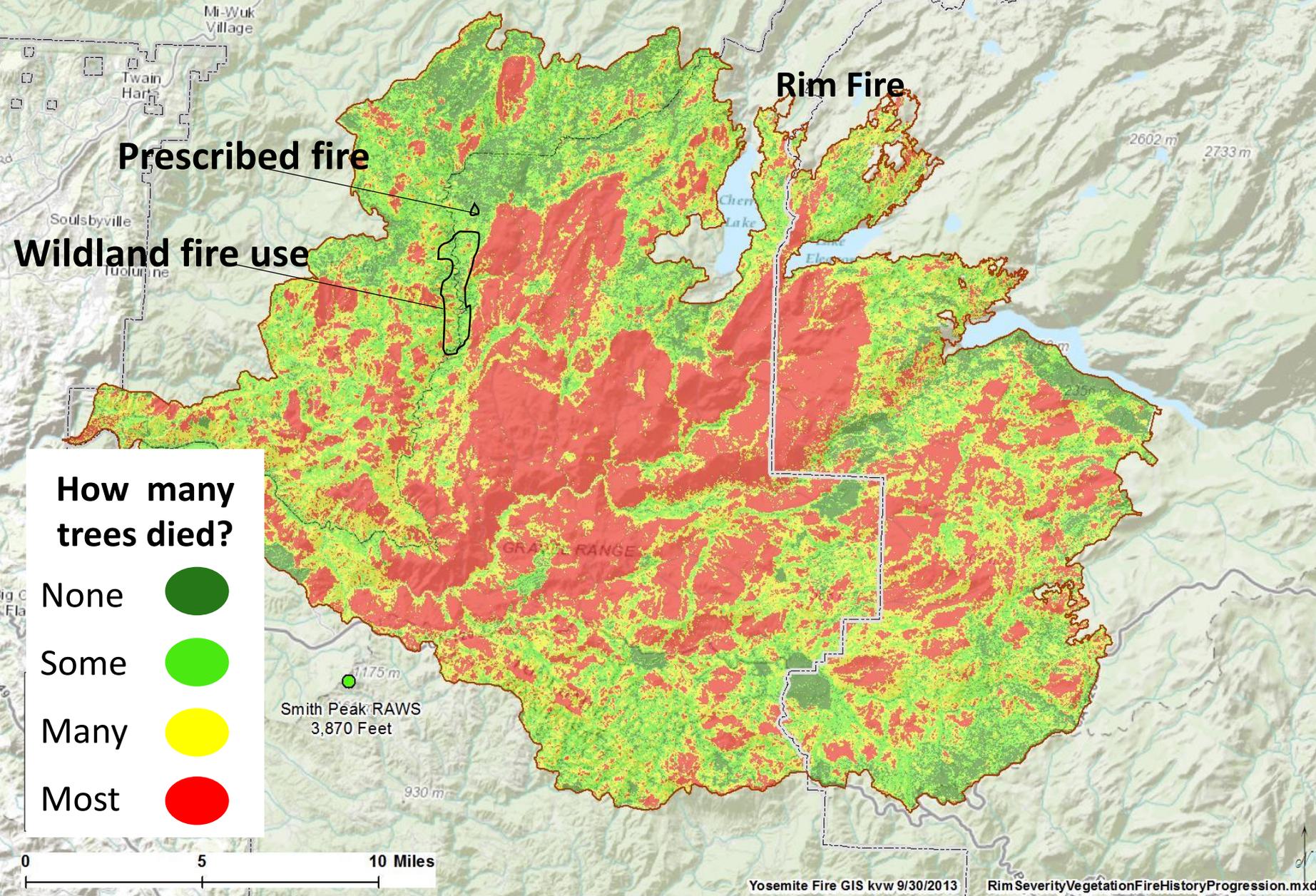
Prescribed fire

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The 2013 Rim Fire



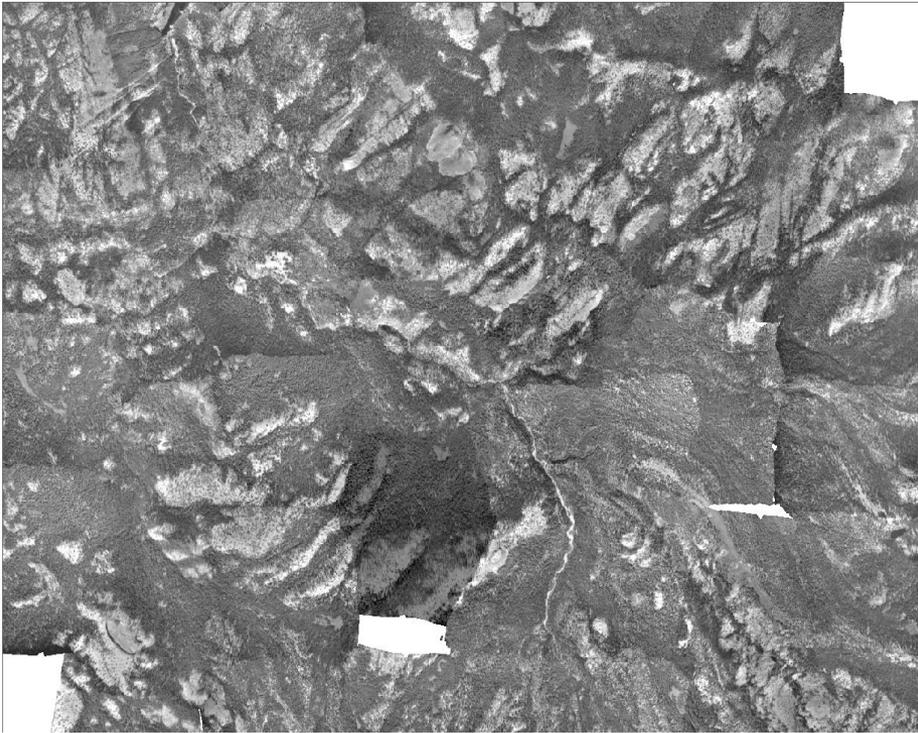
The Natural Benefits of Wildland Fire Use



Forest structure restored

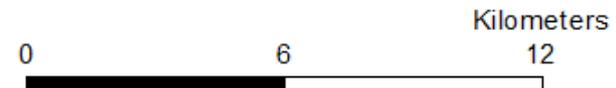
1969

100 years fire suppression



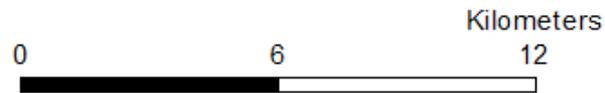
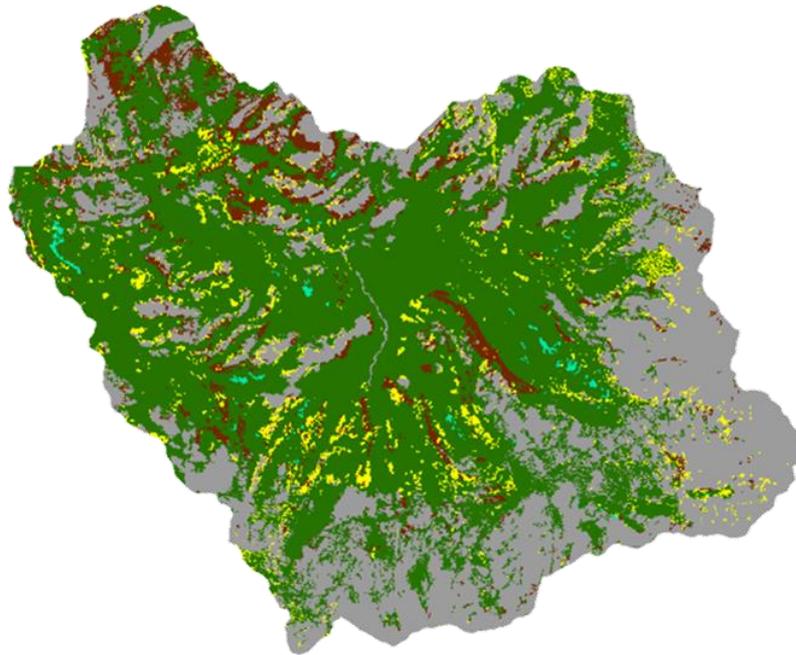
Source: Yosemite archives

Boisramé, G, S Thompson, M Kelly, J Cavalli, **K Wilkin**, and S Stephens. 2016. Vegetation Change During 40 Years of Repeated Managed Wildfires in the Sierra Nevada, California. In review at Landscape Ecology.



Forest structure restored

1969: 100 years of suppression



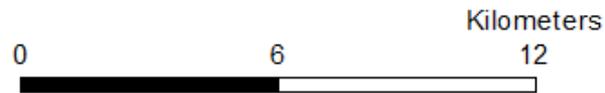
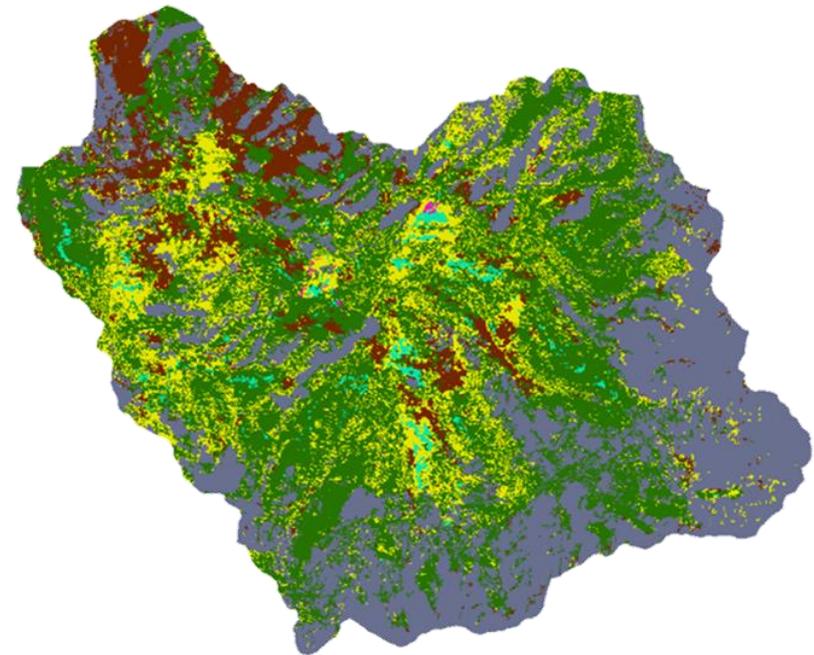
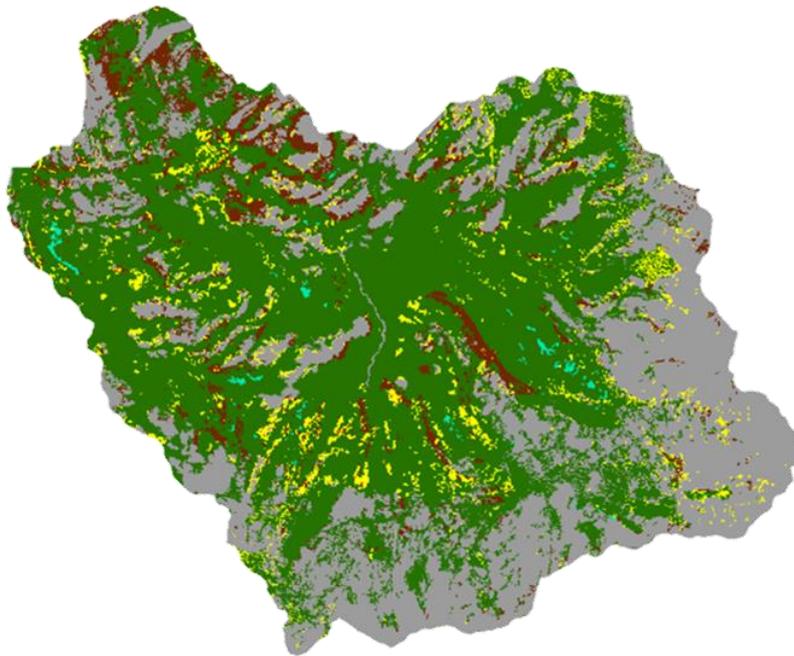
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Forest structure restored

1969: 100 years of suppression

2012: 40 years of burning

Wildland Fire Use

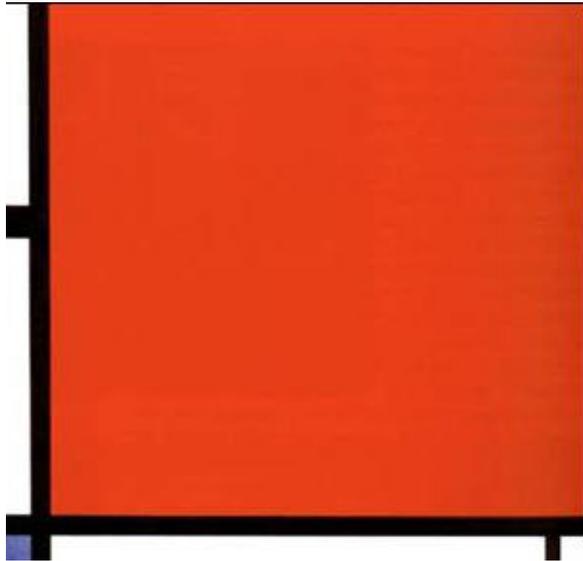


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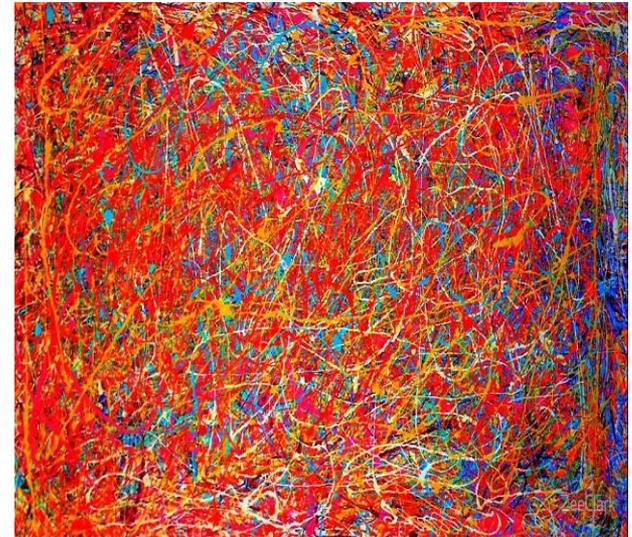
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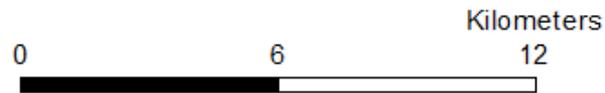
2012: 40 years of burning



Piet Mondrian



Jackson Pollock, Hot 9



- Granite
- Mixed Conifer
- Shrubland
- Sparse Grassland
- Dense Grassland
- Aspen

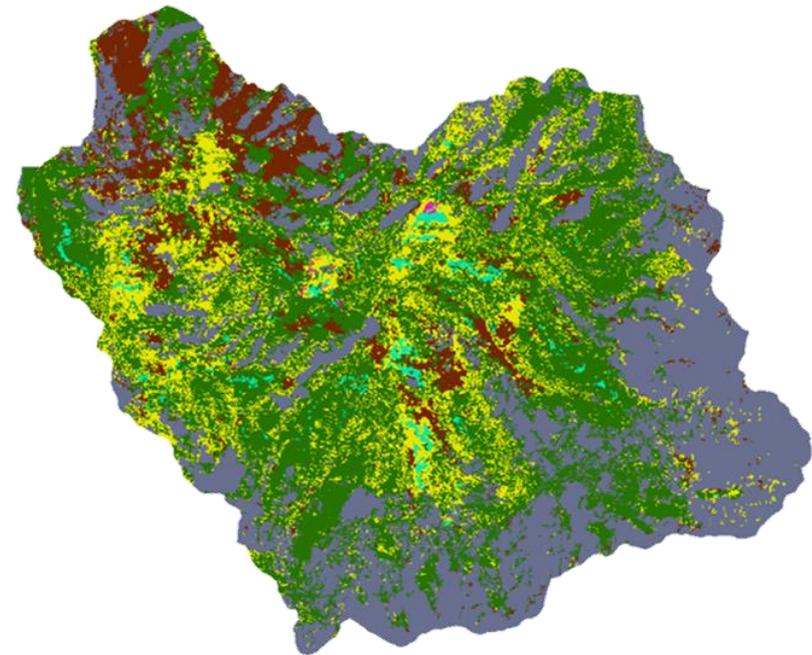
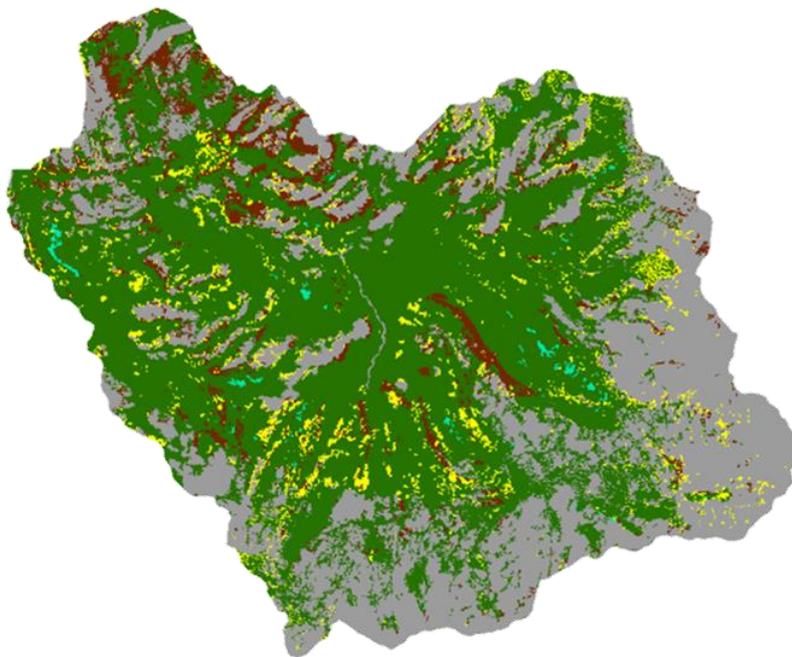
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Wildland Fire Use



Wildland Fire Use



Wildland Fire Use



Wildland Fire Use



Wildland Fire Use



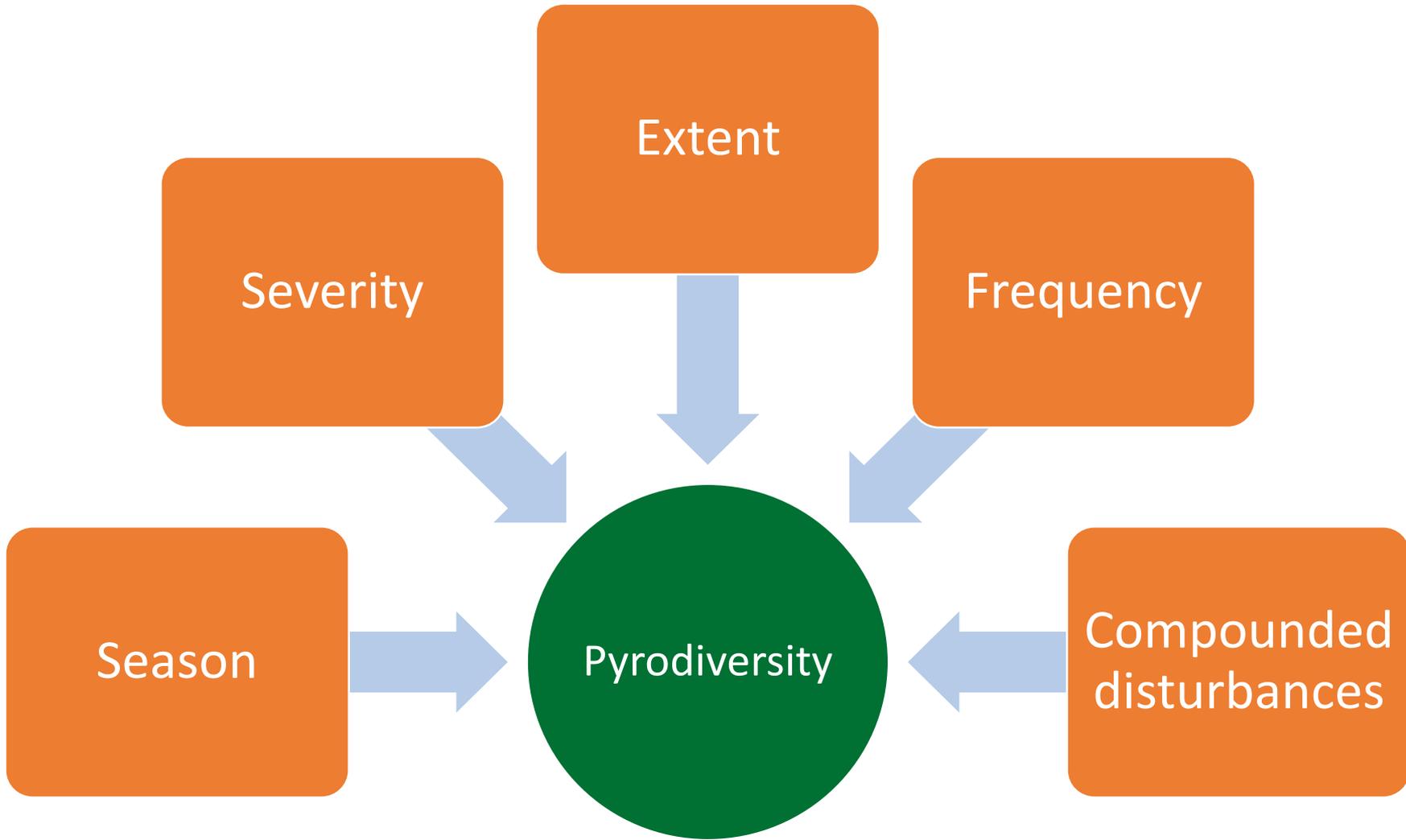
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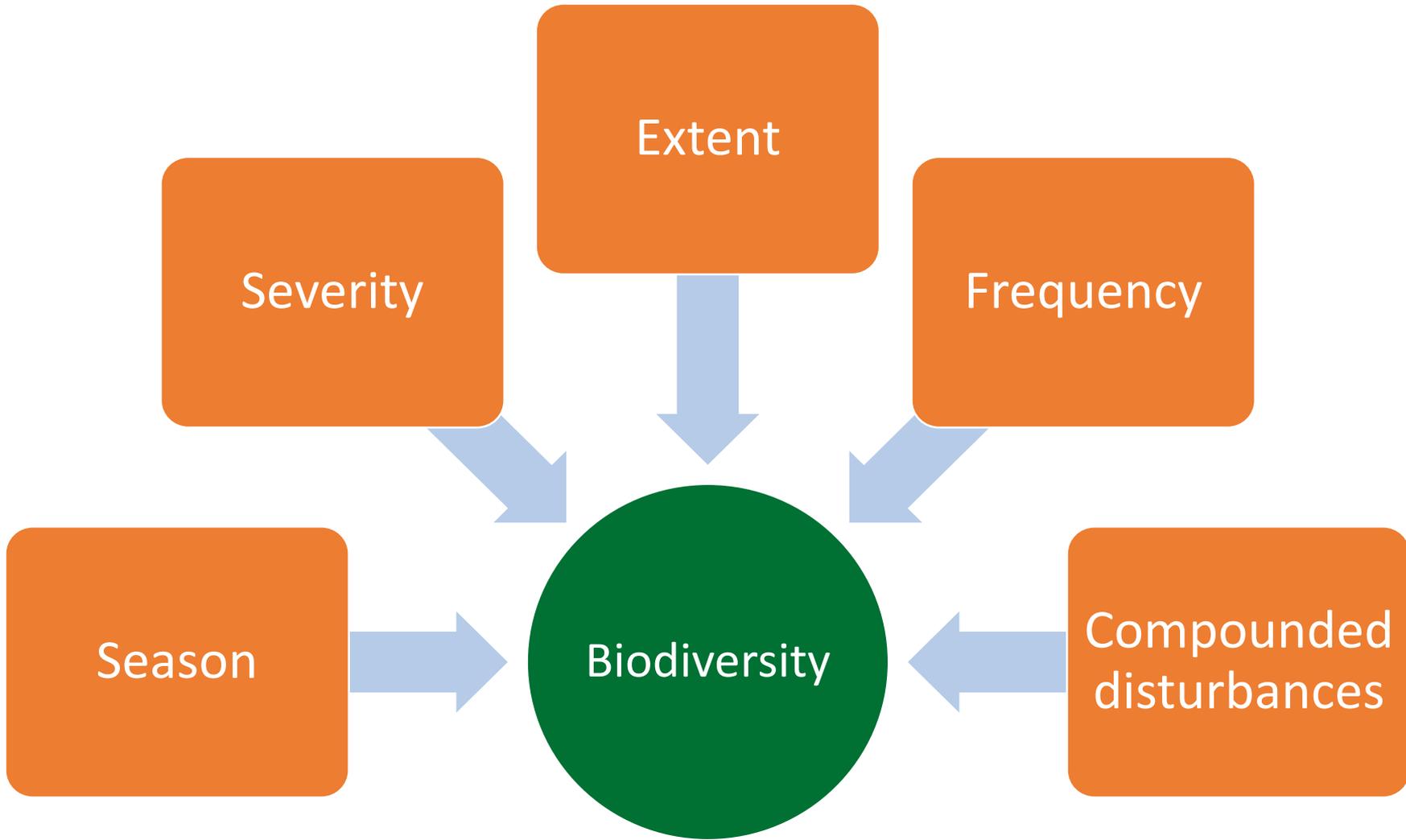


The Natural Benefits of Wildland Fire Use

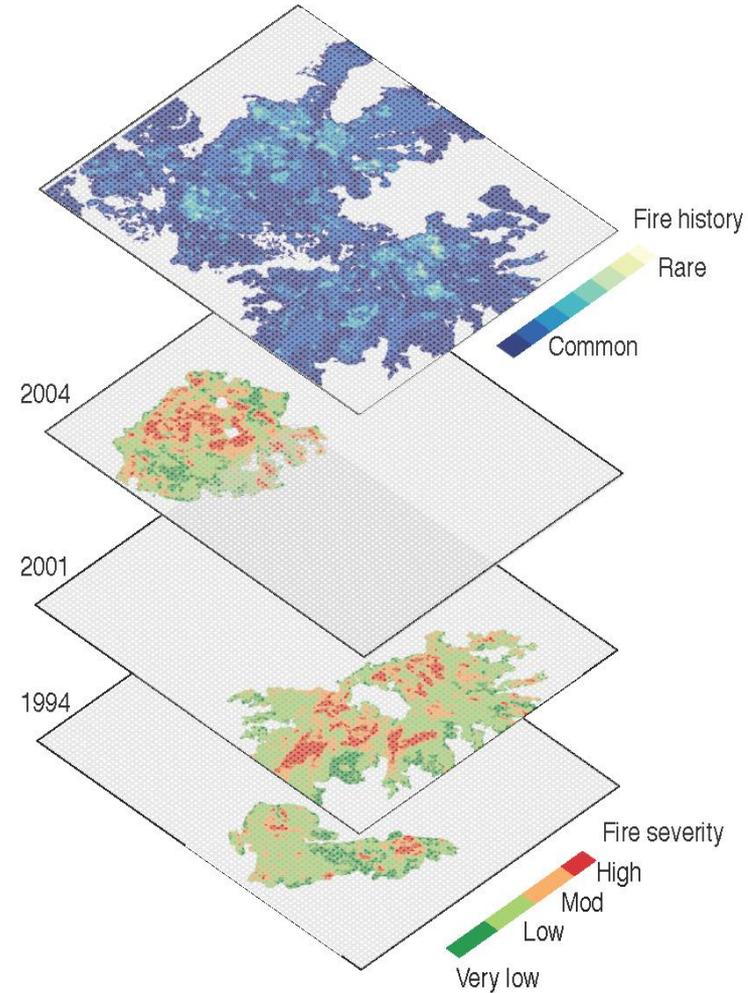






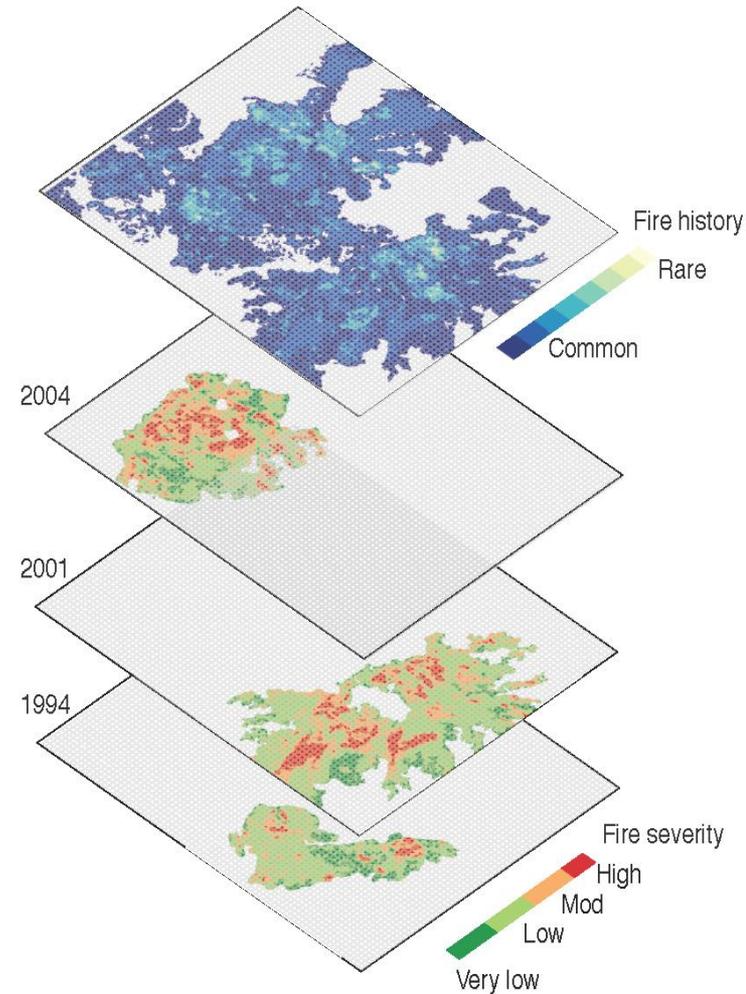


Does pyrodiversity beget biodiversity across taxa?



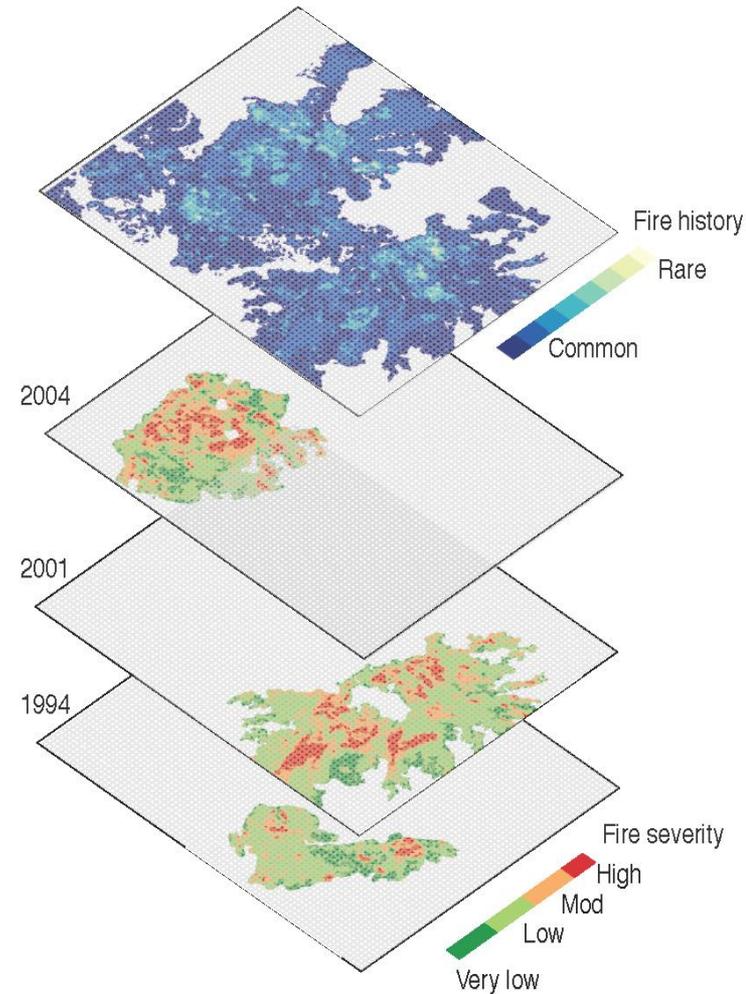
Does pyrodiversity beget biodiversity across taxa?

✓ **Plants (250 m)**



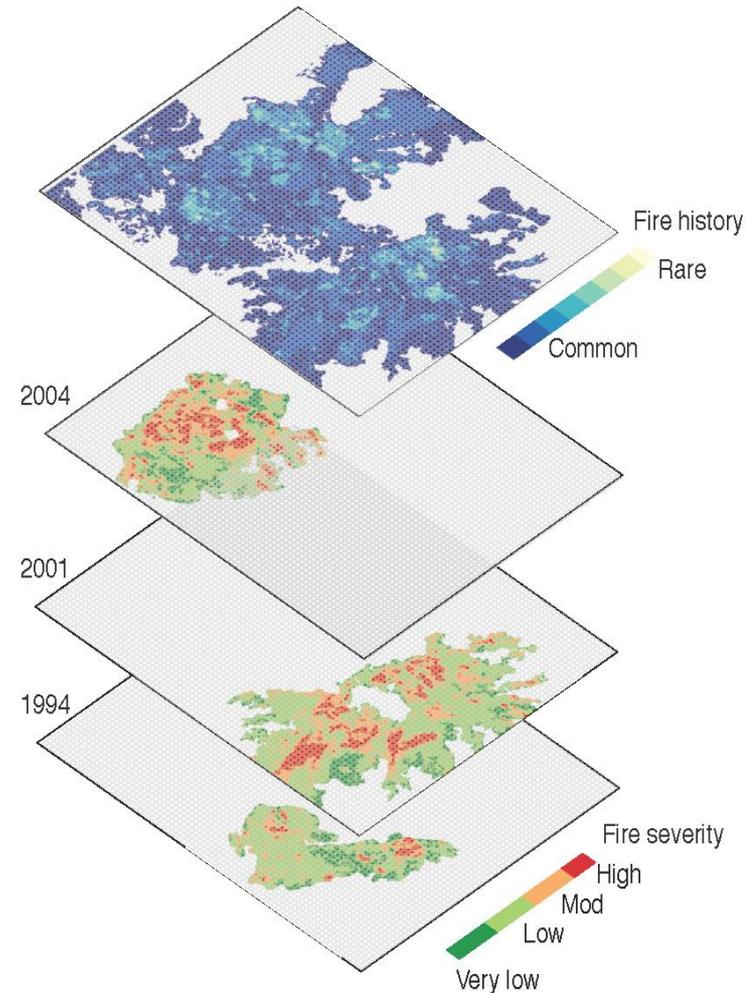
Does pyrodiversity beget biodiversity across taxa?

- ✓ **Plants (250 m)**
- ✓ **Pollinators (150 m)**



Does pyrodiversity beget biodiversity across taxa?

- ✓ **Plants (250 m)**
- ✓ **Pollinators (150 m)**
- ✓ **Plant-Pollinator interactions (150 m)**





The Natural Benefits of Wildland Fire Use

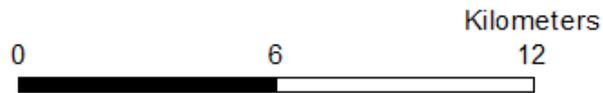
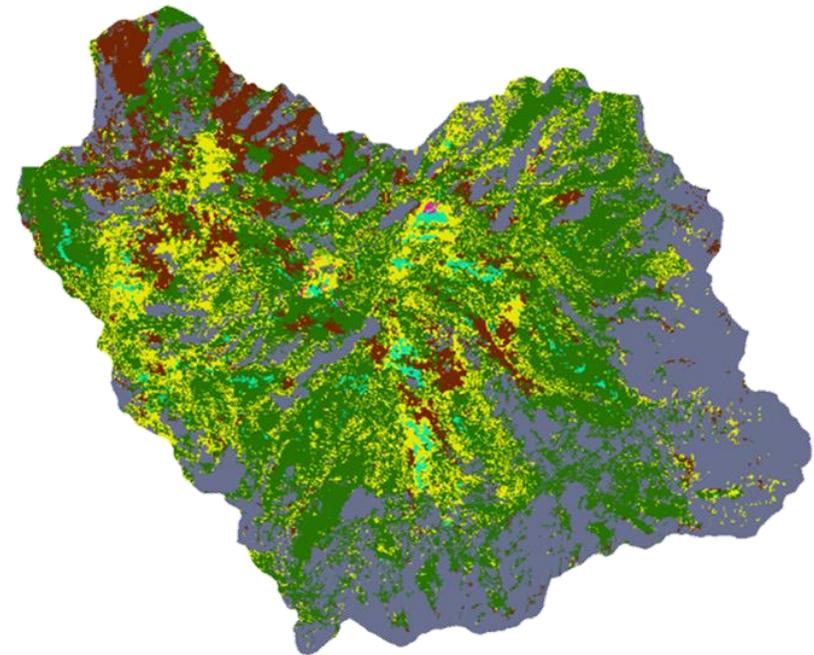
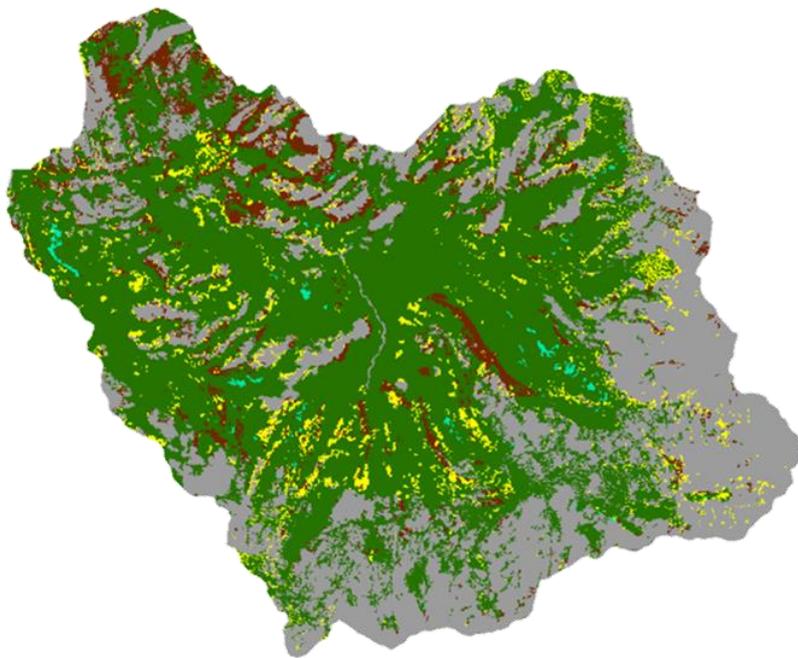


Wetlands restored

1969: 100 years of suppression

2012: 40 years of burning

Wildland Fire Use



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The Natural Benefits of Wildland Fire Use



The Natural Benefits of Wildland Fire Use



Wildland Fire Use Surrogates





Questions, comments?

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University of California Cooperative Extension

