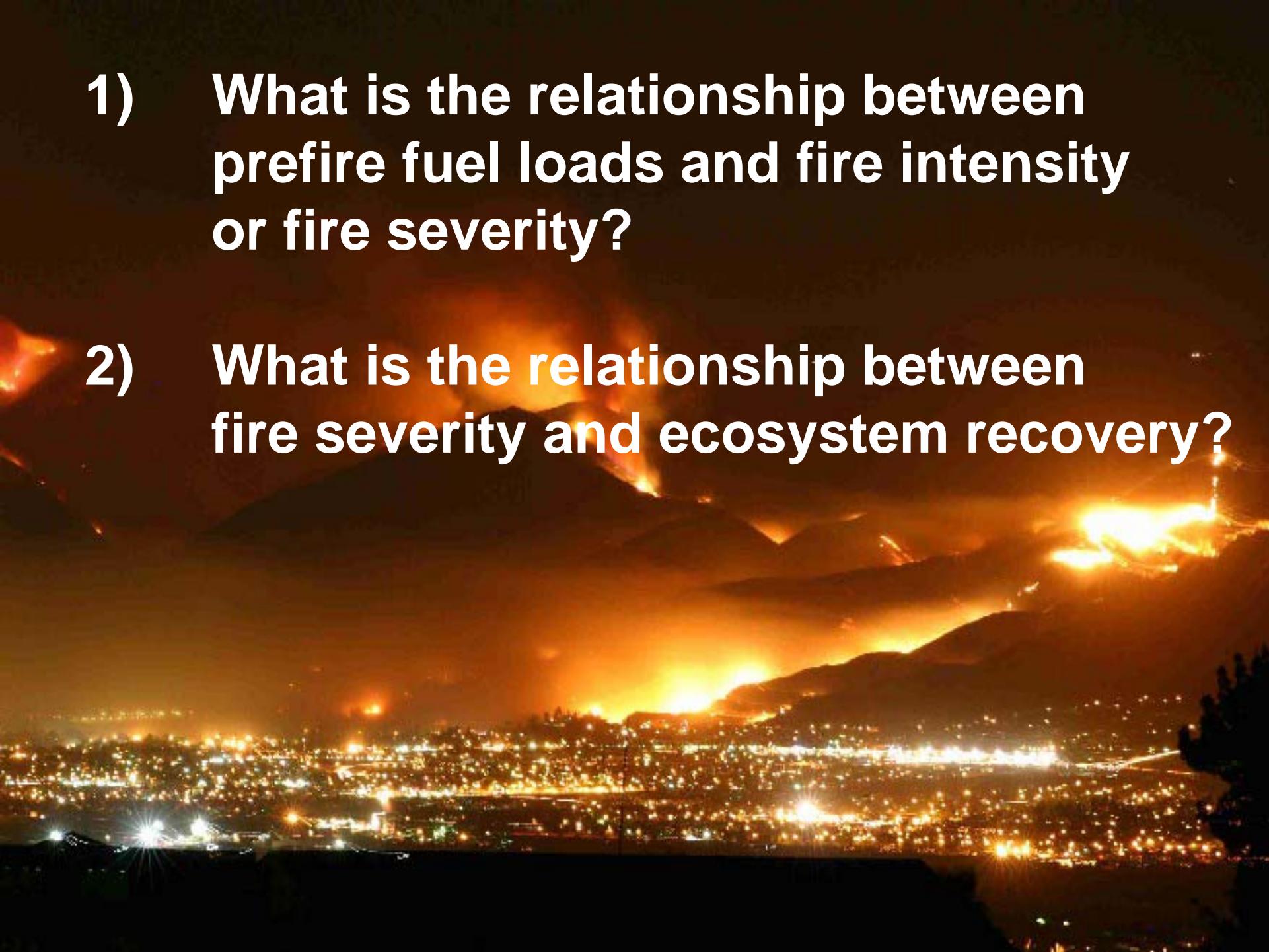


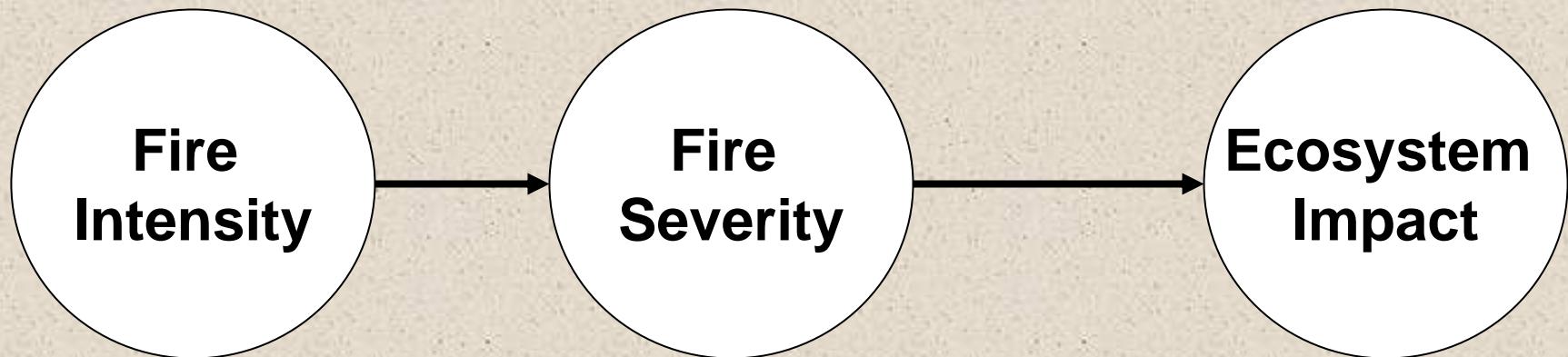
2003 Wildfires in Southern California:

Impact of Fuel Age on Fire Severity and Vegetation Recovery

Jon E. Keeley & Teresa Brennan

**USGS Western Ecological Research Center
Sequoia-Kings Canyon Field Station
&
UCLA Department of Ecology and Evolutionary Biology**

- 
- A dramatic photograph capturing a massive wildfire at night. The fire, with its intense orange and yellow flames, rages across several hills and mountains. In the foreground, the lights of a densely populated city are visible, their numerous small lights contrasting with the bright inferno above. The smoke from the fire fills the air, creating a dark, hazy atmosphere.
- 1) What is the relationship between prefire fuel loads and fire intensity or fire severity?
 - 2) What is the relationship between fire severity and ecosystem recovery?

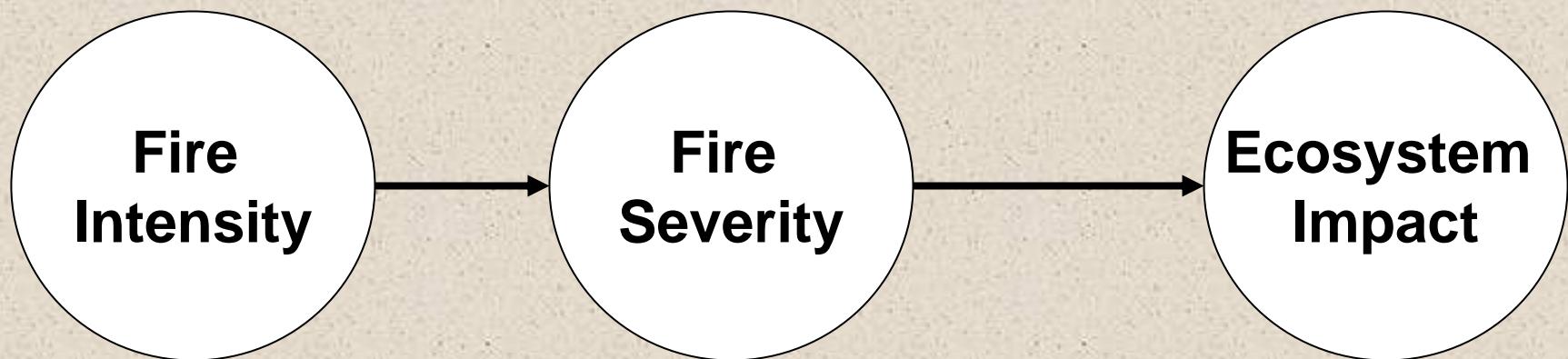


Fireline intensity
Smoldering combustion
Maximum temperatures

Mortality
Biomass loss
Soil structure

Erosion
Vegetation recovery
Biodiversity resilience

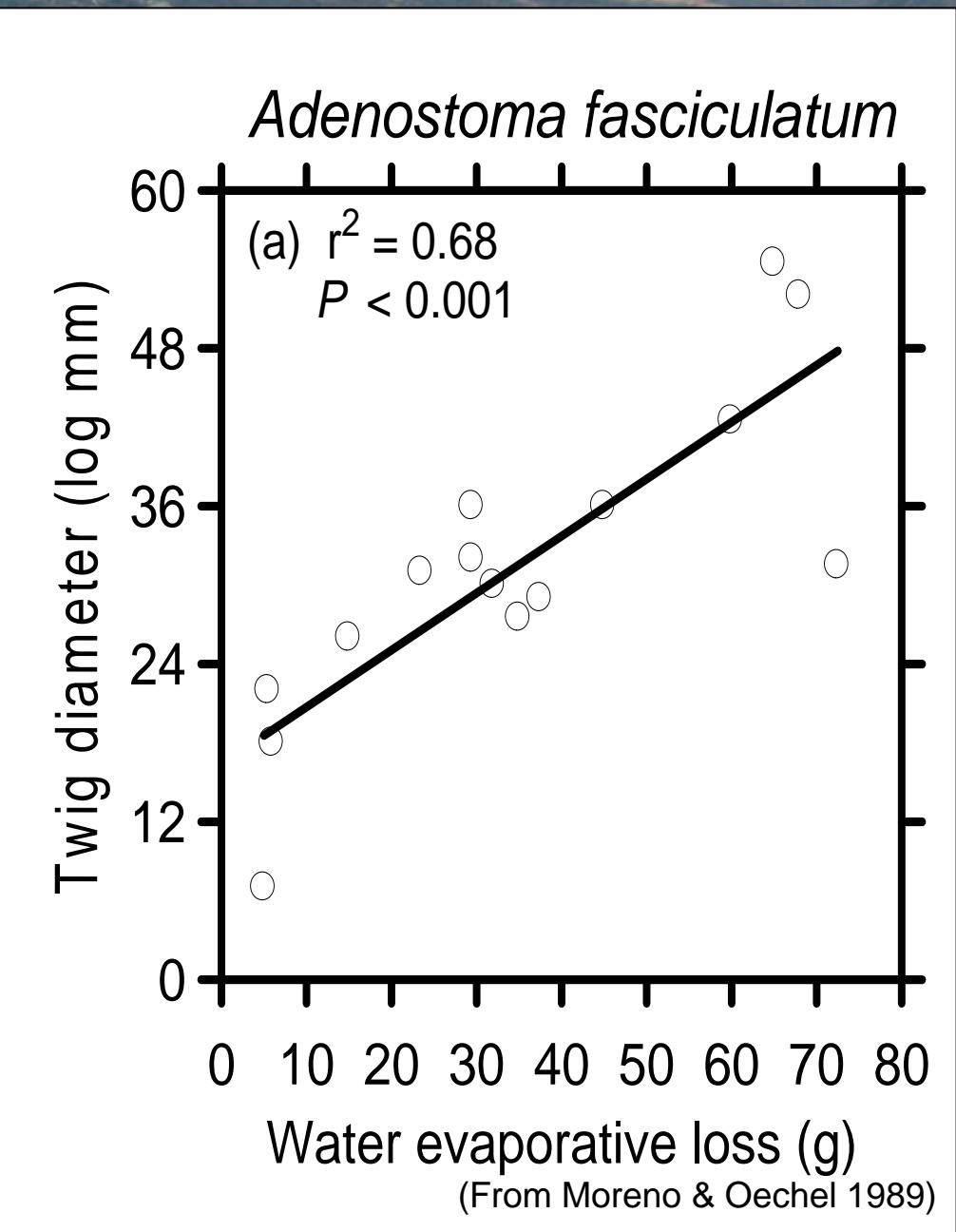




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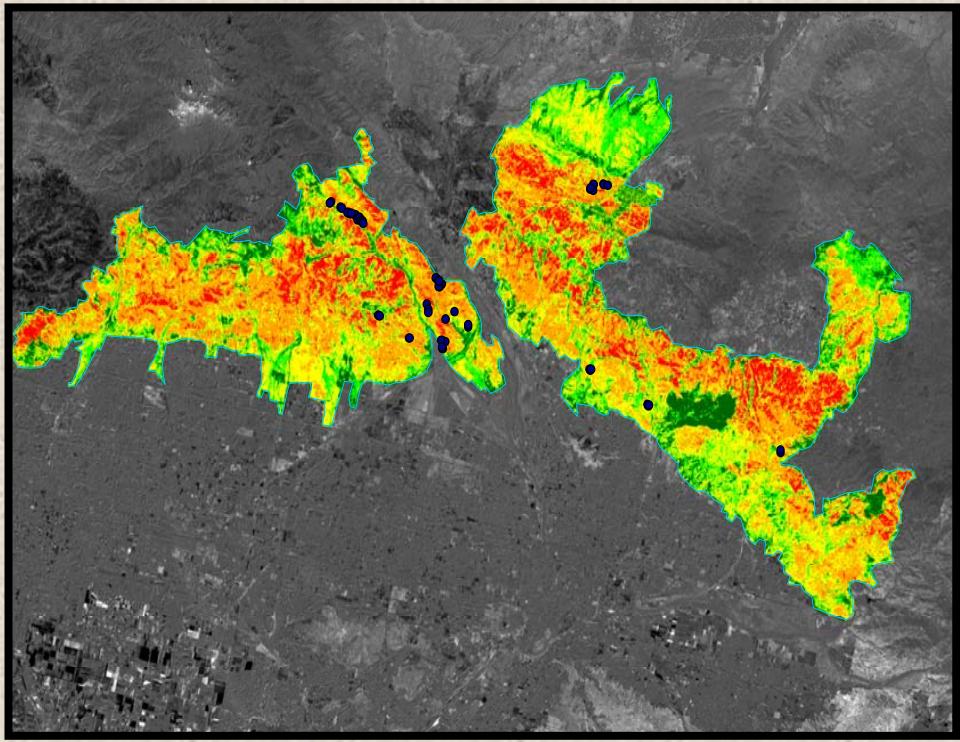
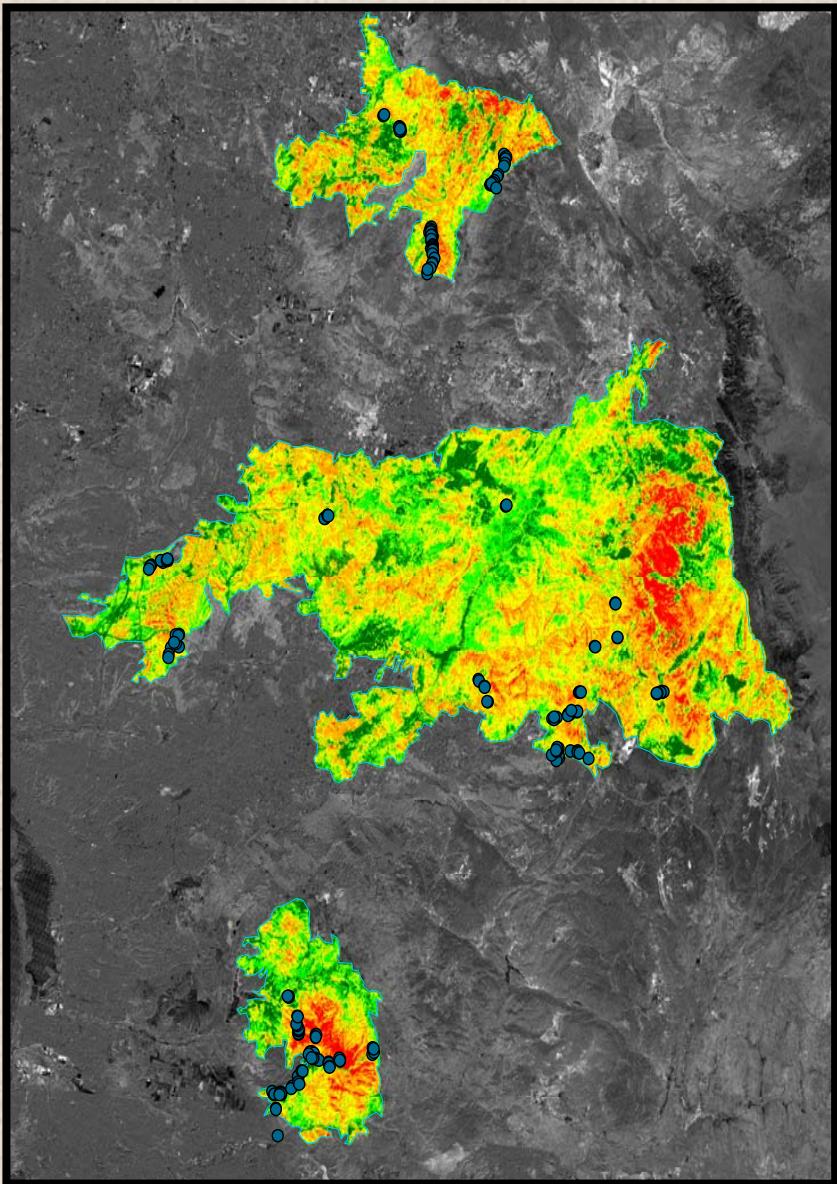
Erosion
Vegetation recovery
Biodiversity resilience





A photograph of a man walking away from the camera across a dry, scrub-covered hillside. The sky is a clear, pale blue. In the foreground, a white rectangular sign with a black border is mounted on a dead, charred branch. The sign contains handwritten text: "EJ1" on top, "B" below it, and "7-16-05" at the bottom.

EJ1
B
7-16-05





Old Fire / Grand Prix



Paradise Fire





Cedar Fire



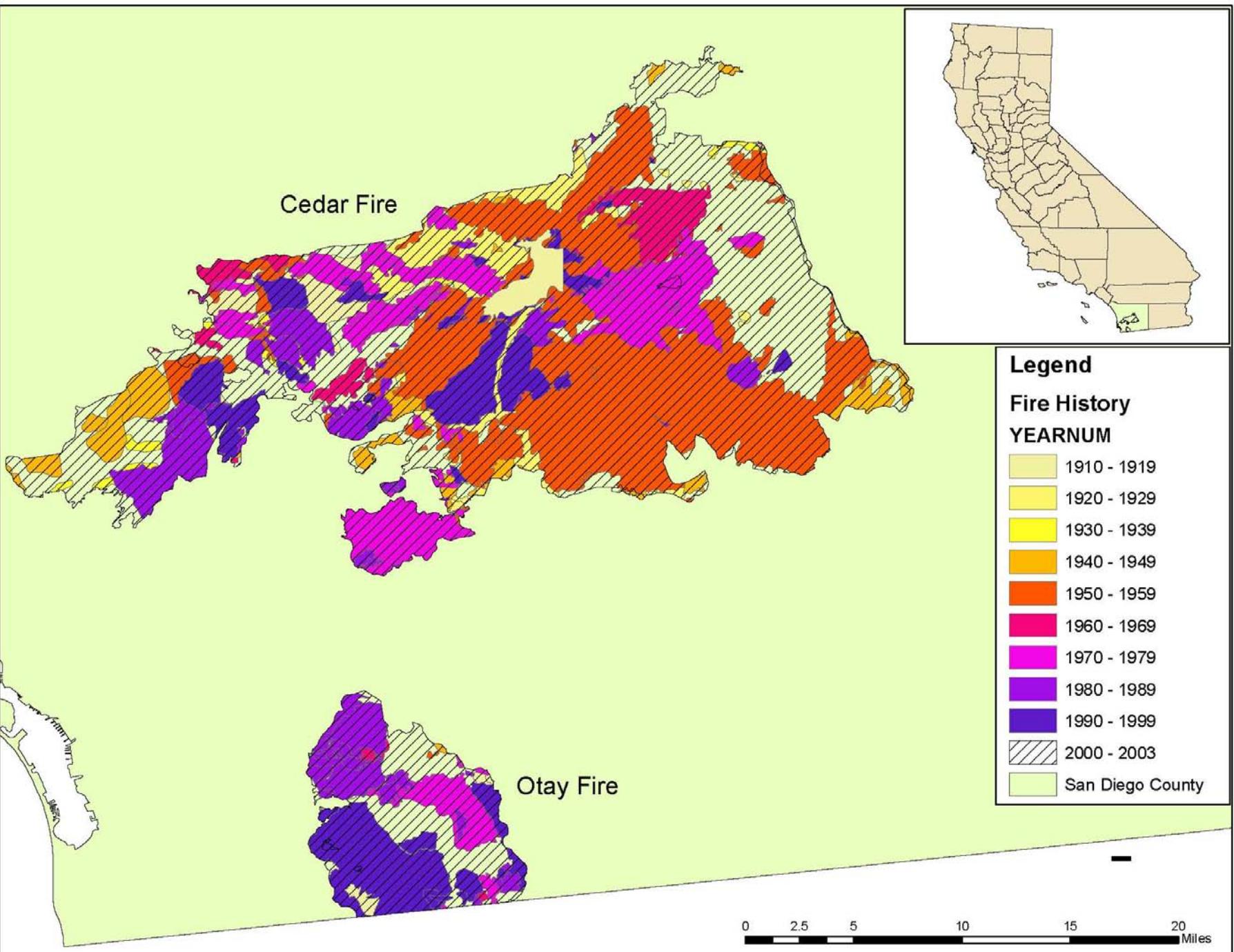
Otay Fire

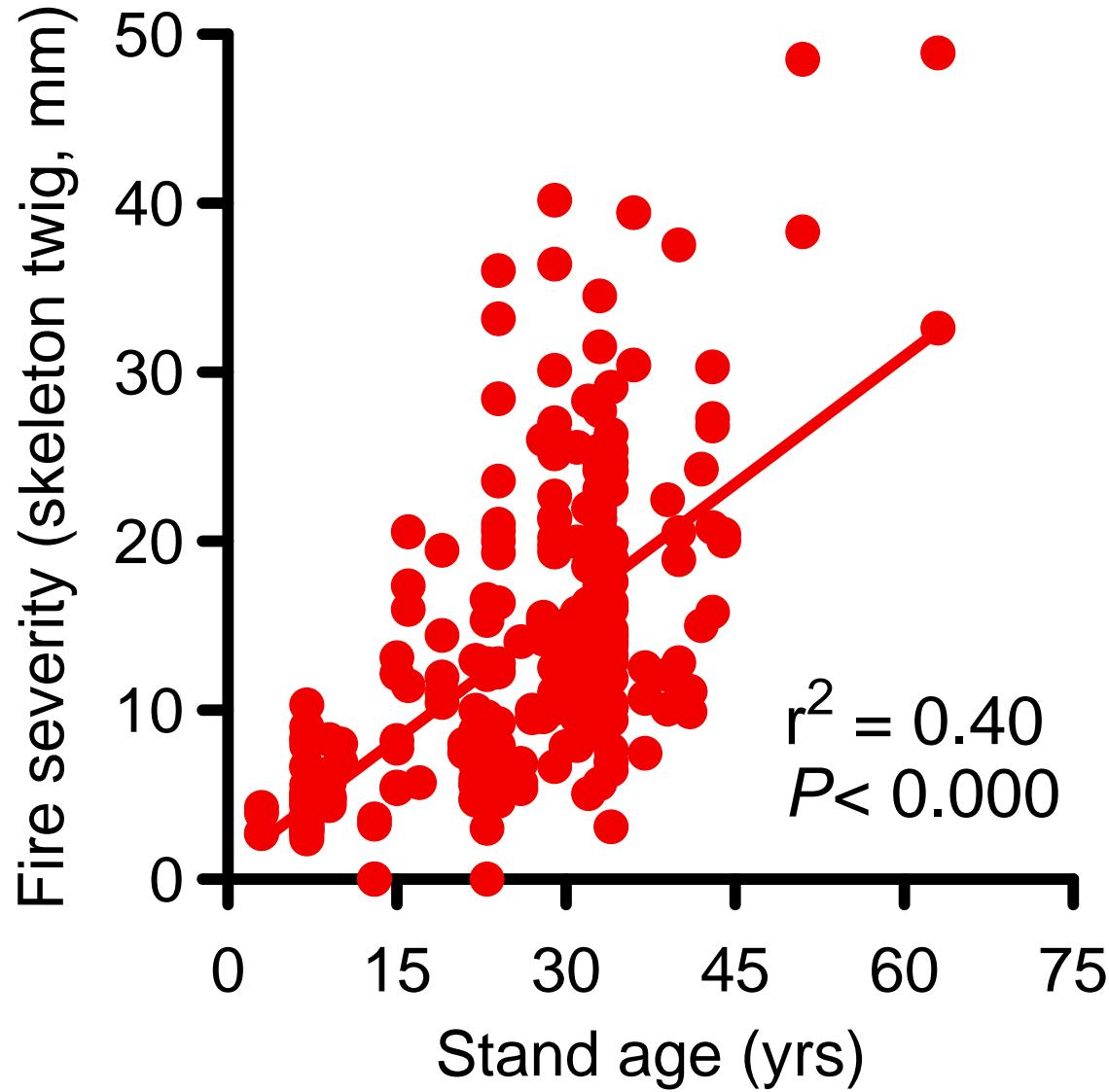


Hypotheses

Ho 1: Fuel load is an important factor controlling fire intensity

Prediction: As prefire stand age increases fire severity increases





Hypotheses

H_0 1: Fuel load is an important factor controlling fire intensity

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fire severity increases

Conclusion: **Supported**

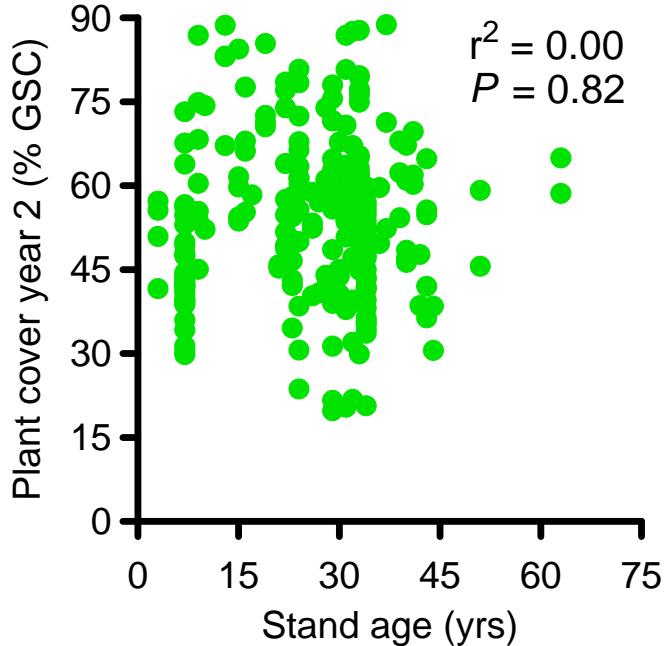
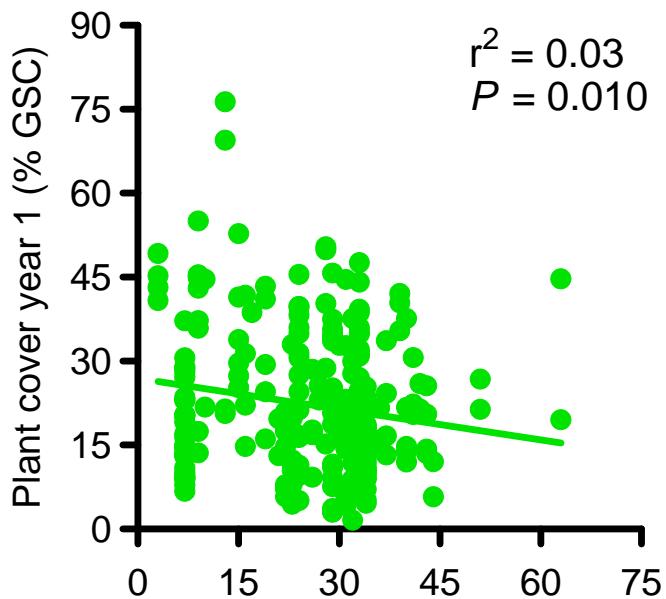
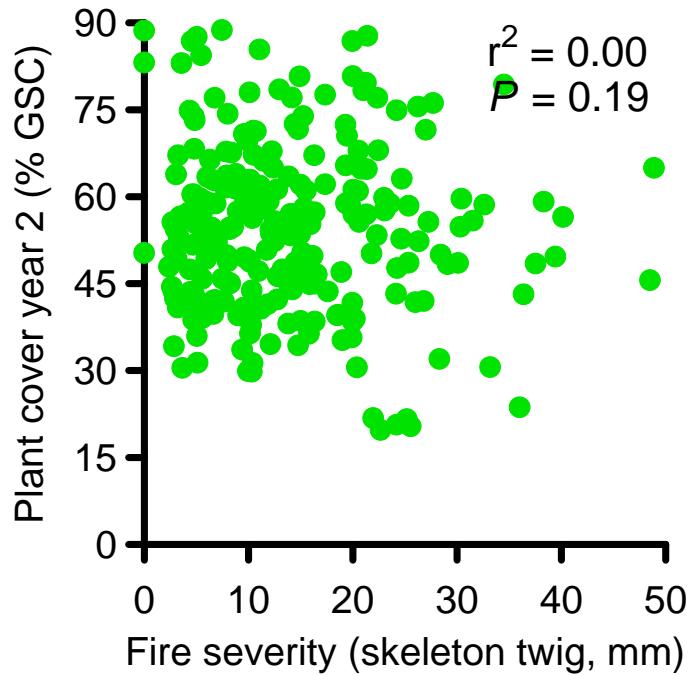
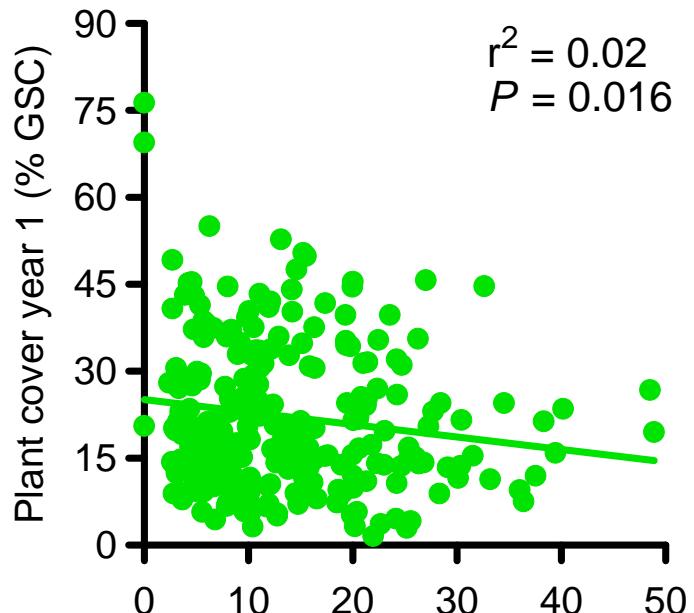
Hypotheses

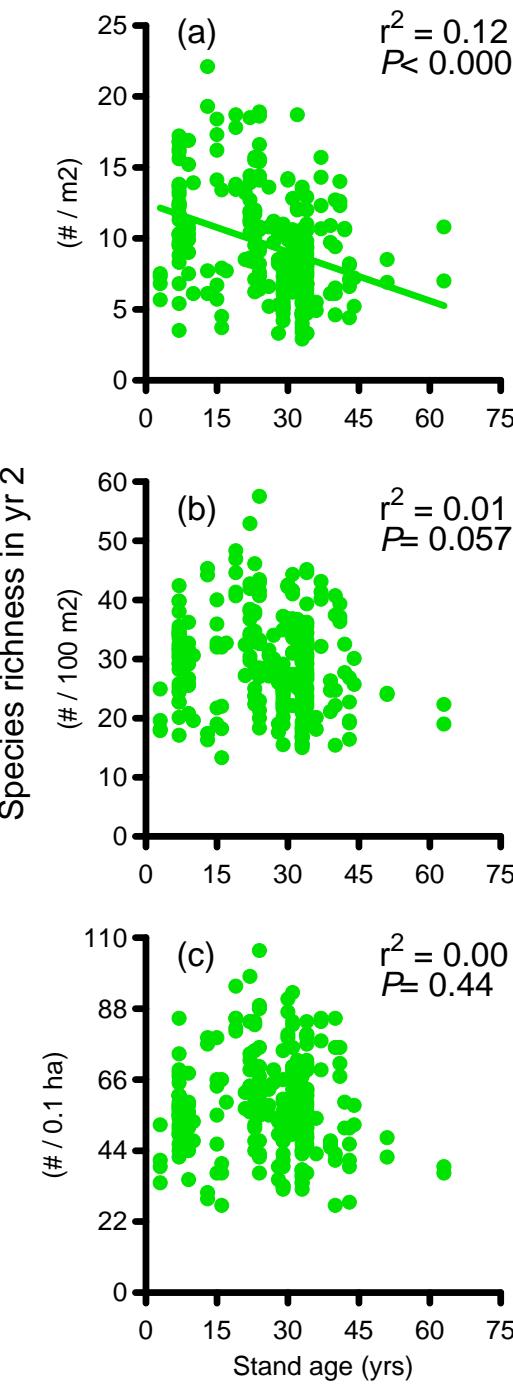
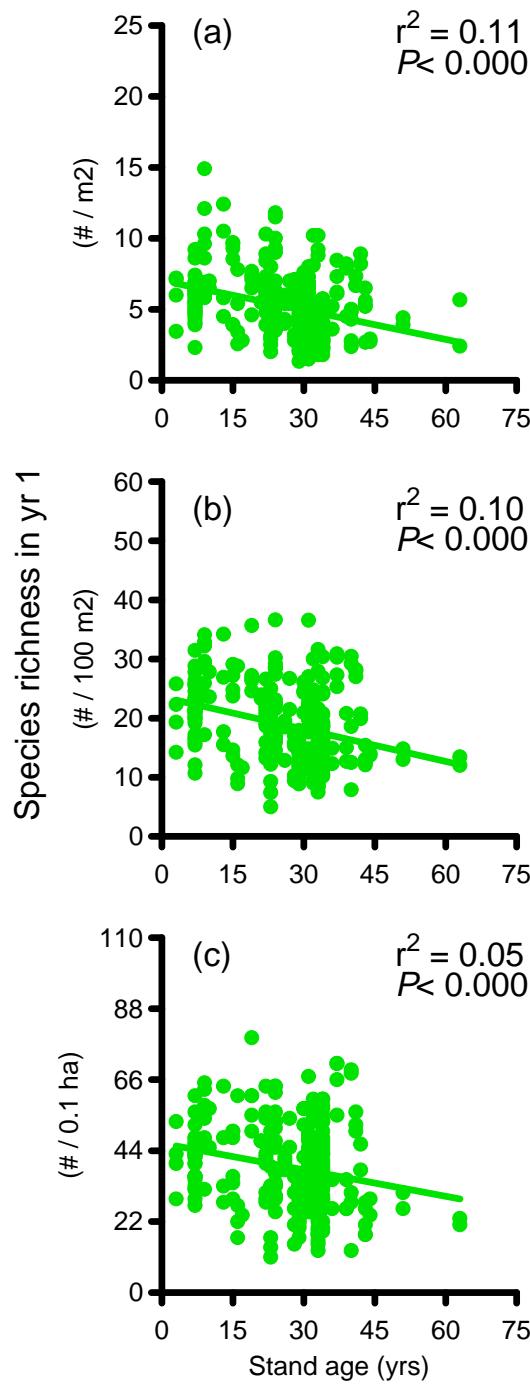
Ho 2: As fire severity increases, impacts on ecosystem recovery increase.

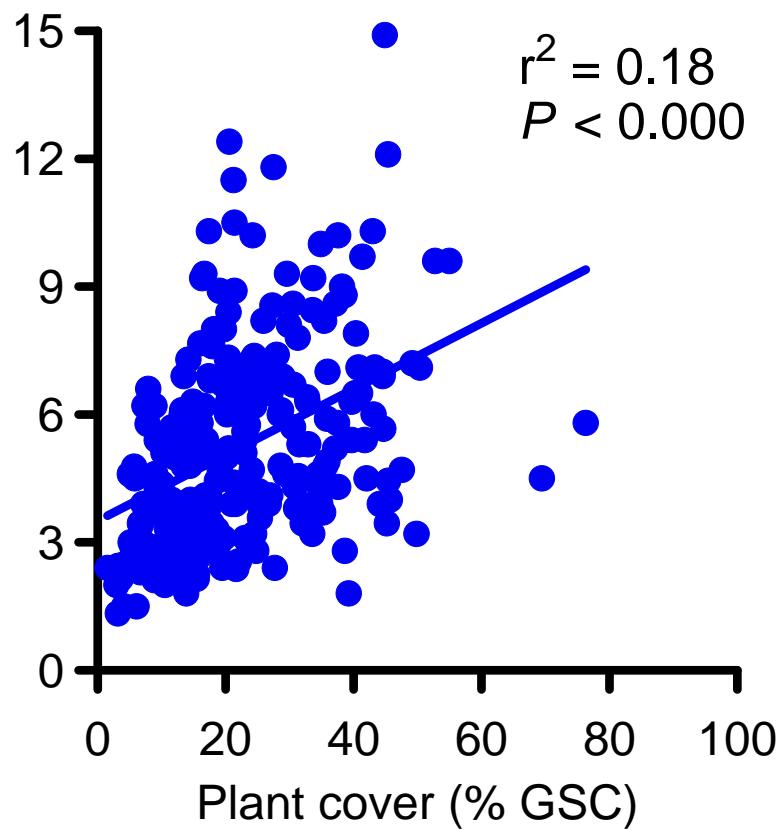
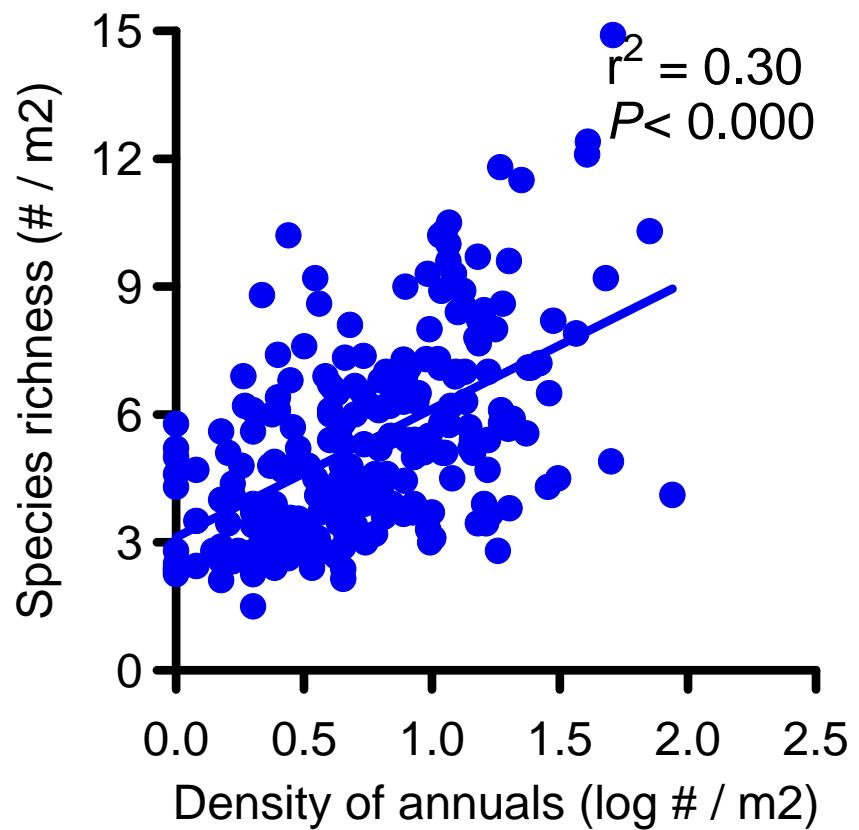
Predictions:

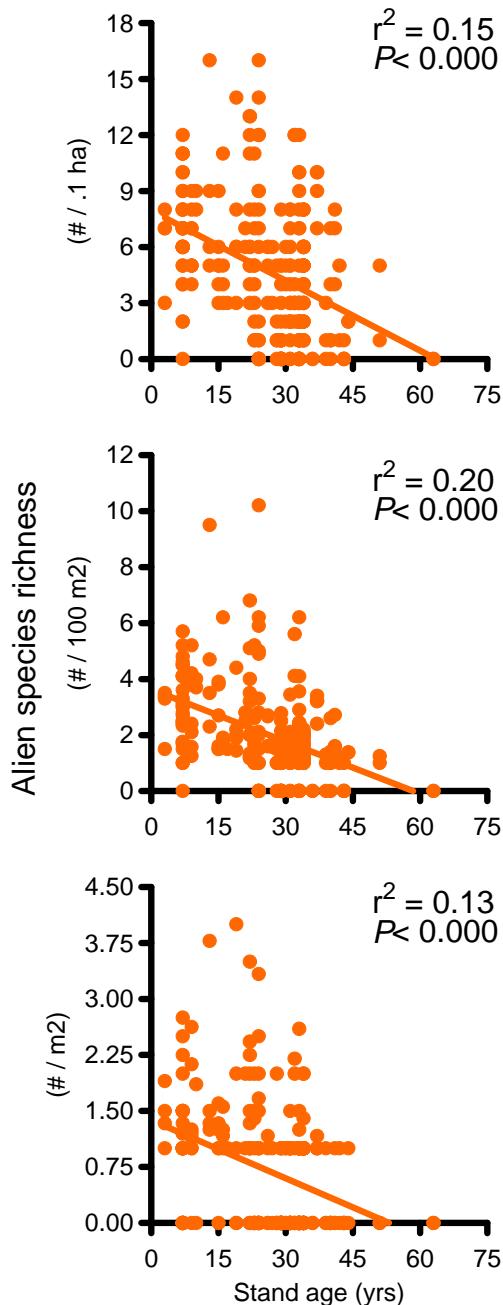
As fire severity increases there will be

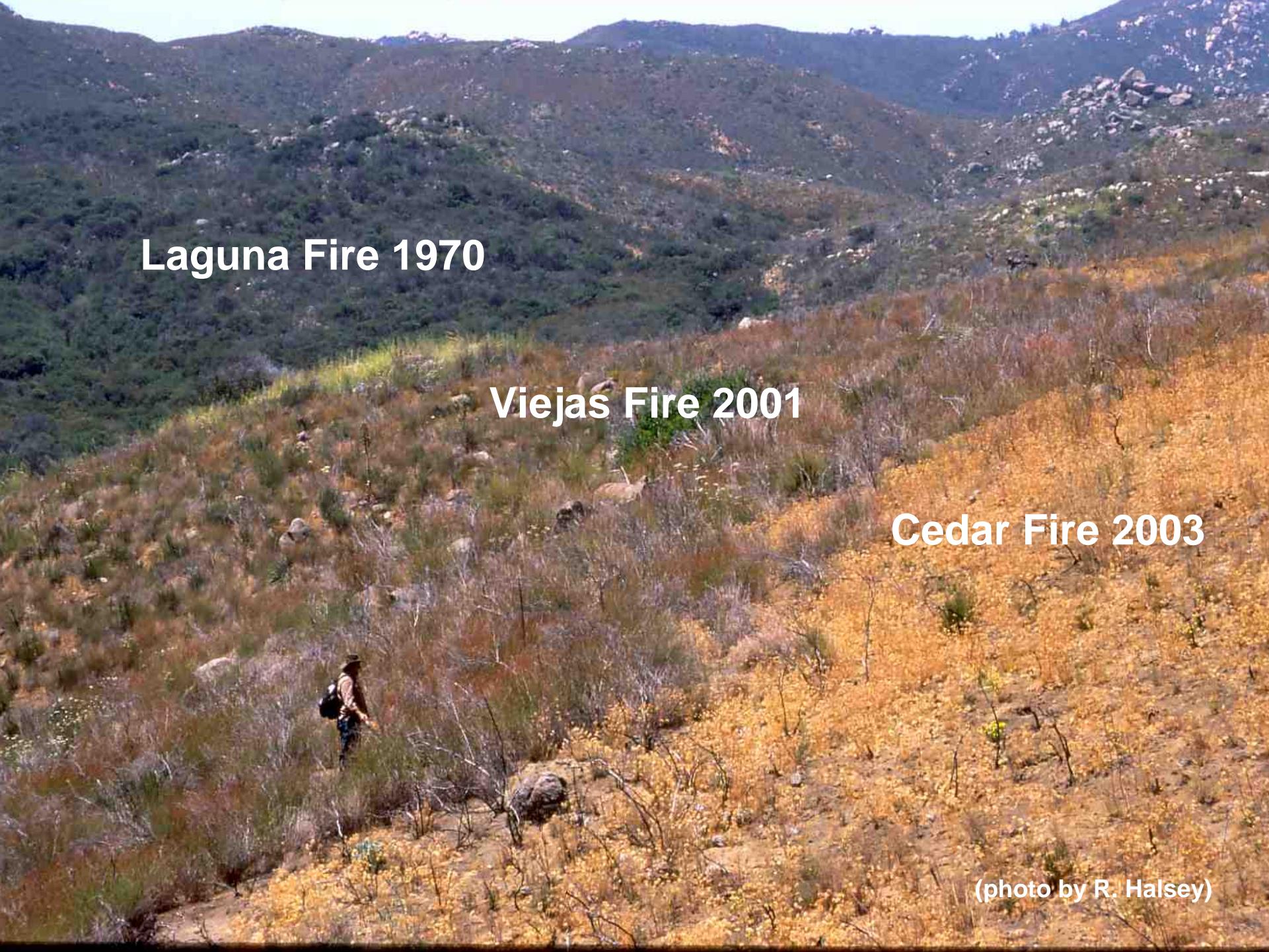
- Decreased plant cover**
- Decreased species richness**
- Increased alien invasion**









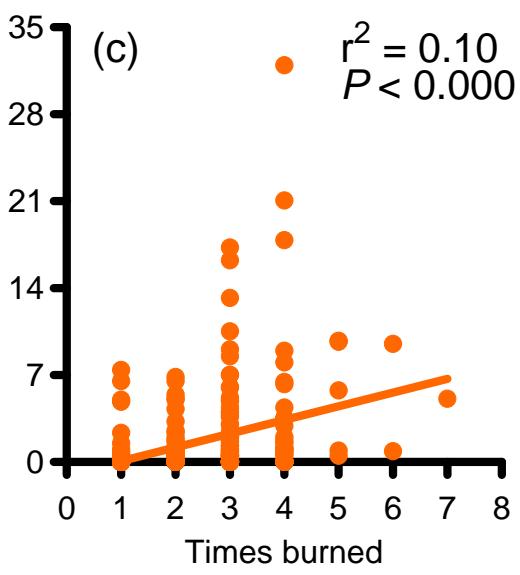
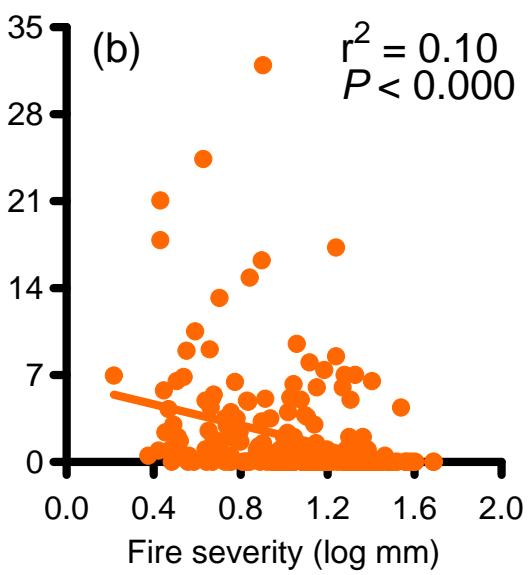
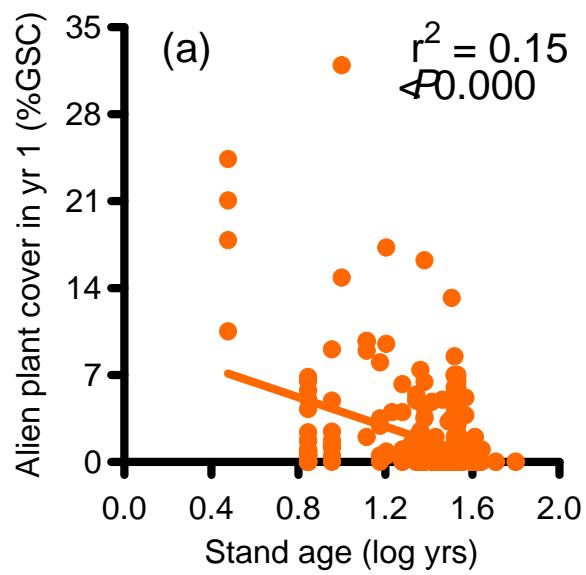


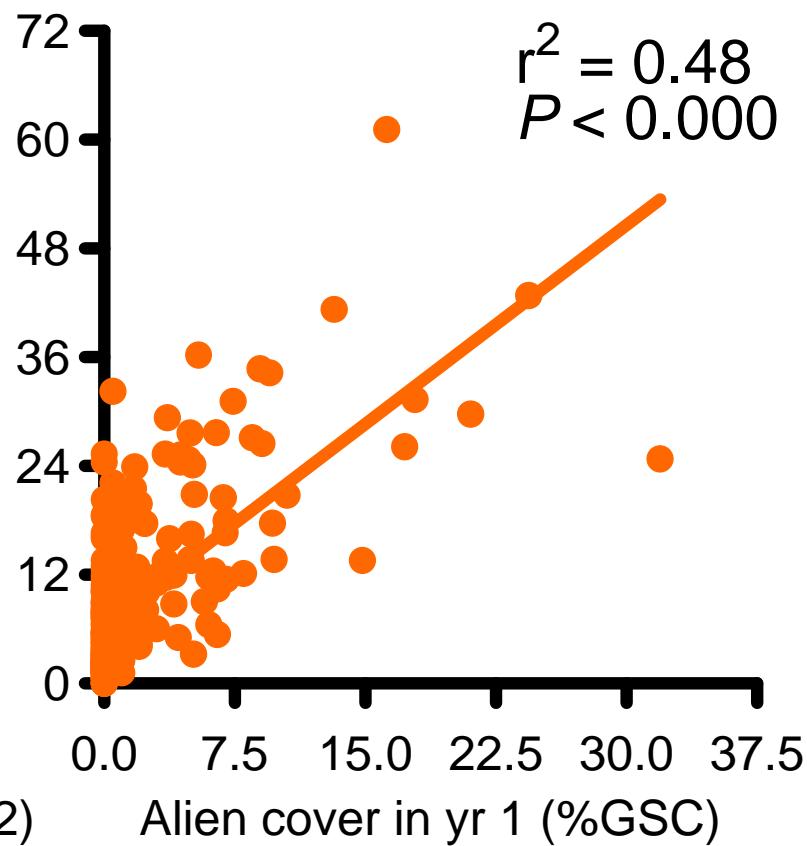
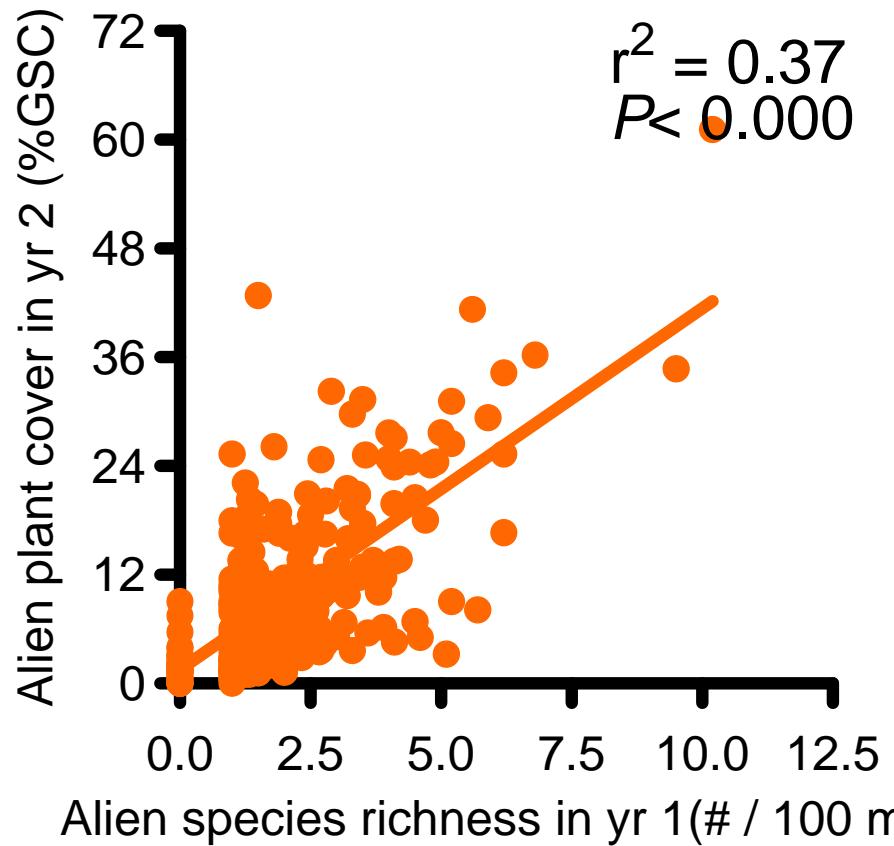
Laguna Fire 1970

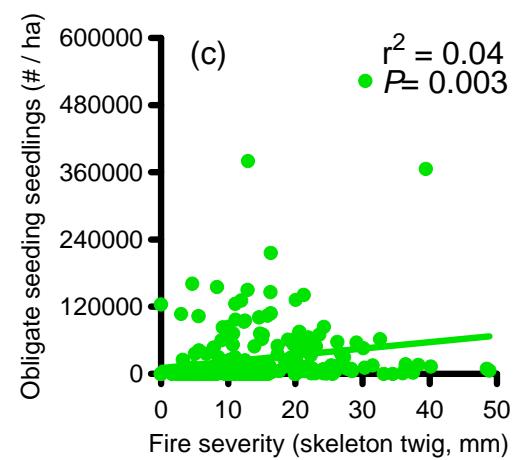
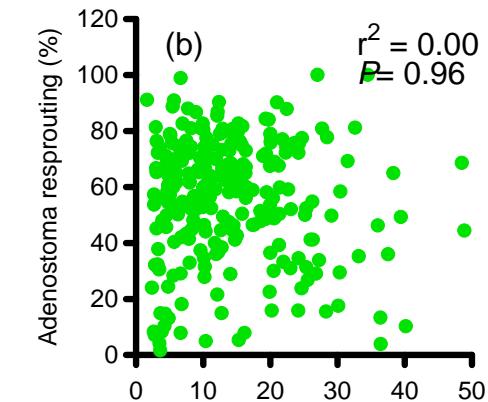
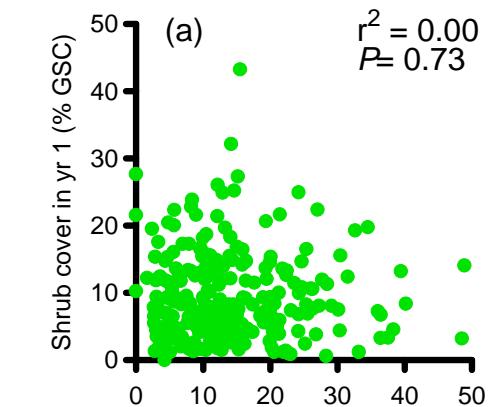
Viejas Fire 2001

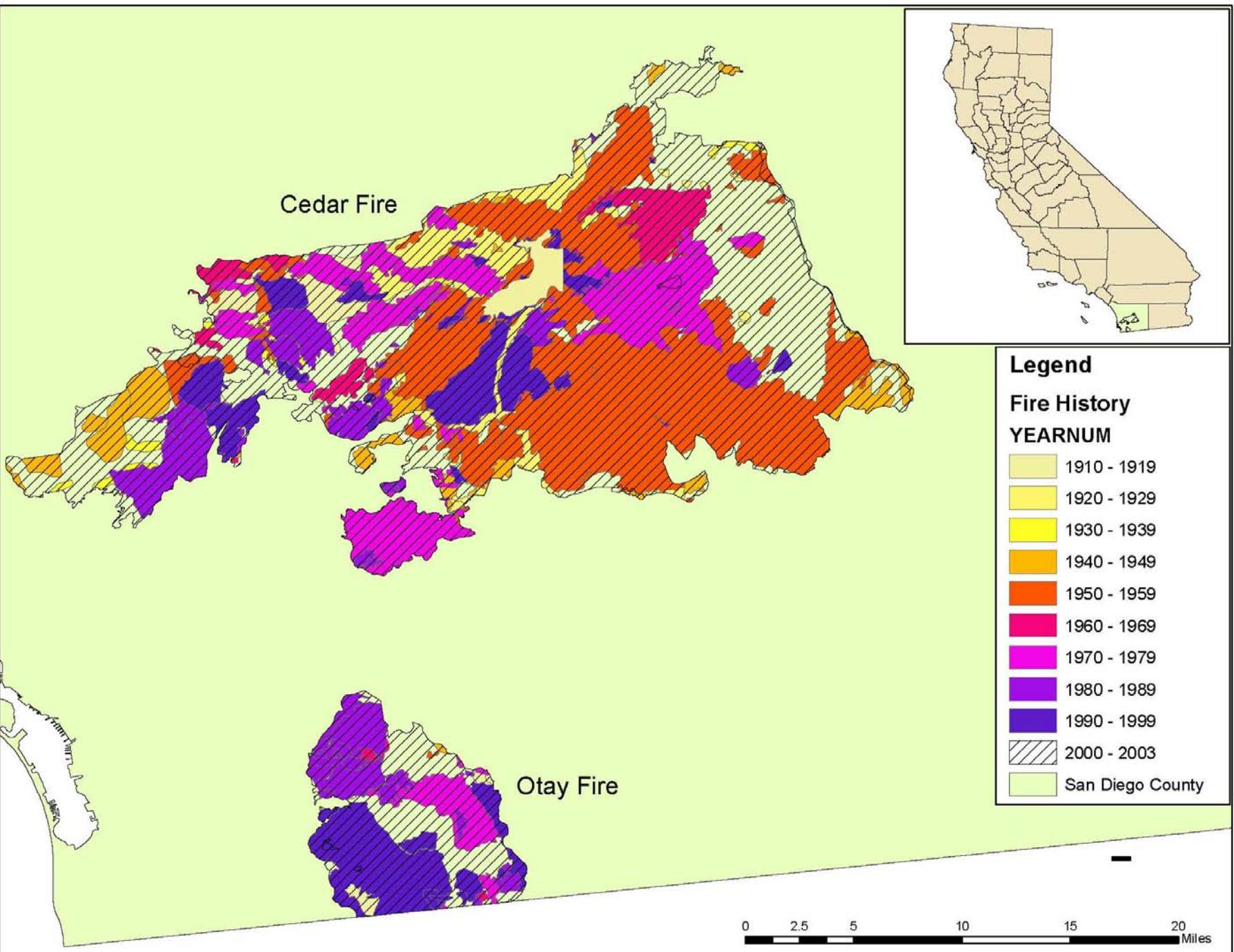
Cedar Fire 2003

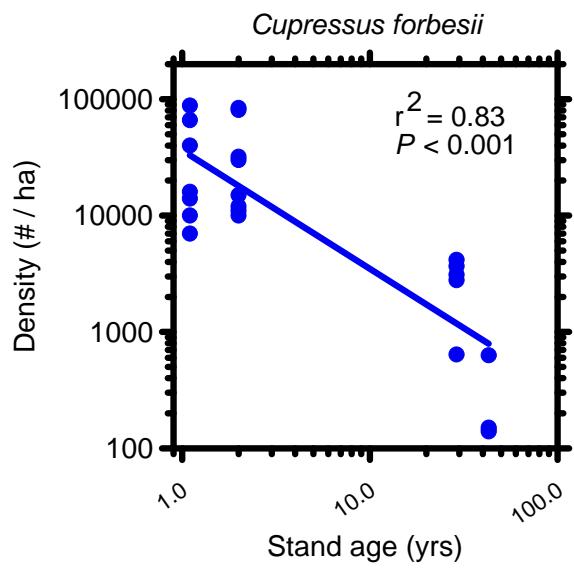
(photo by R. Halsey)









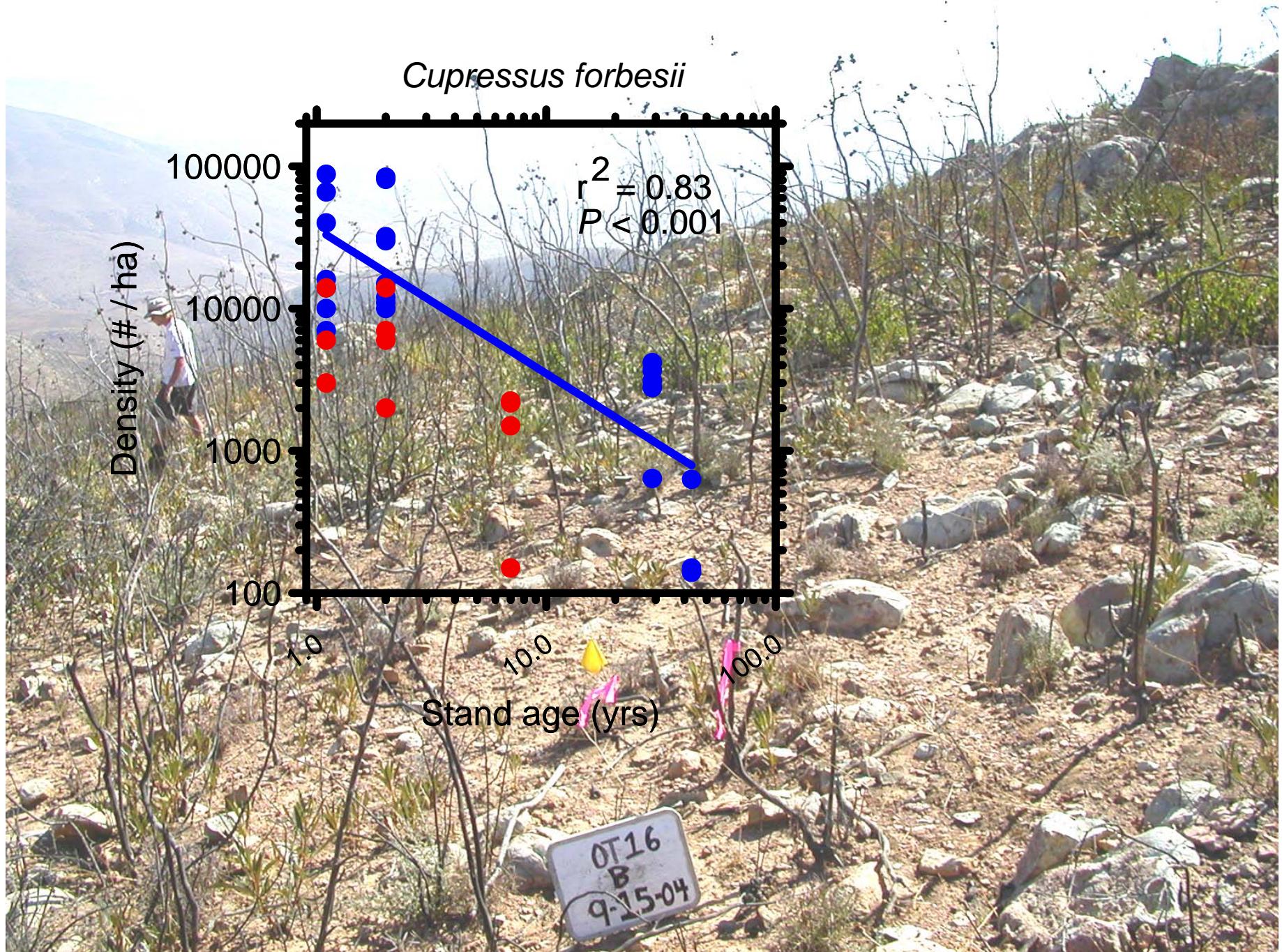
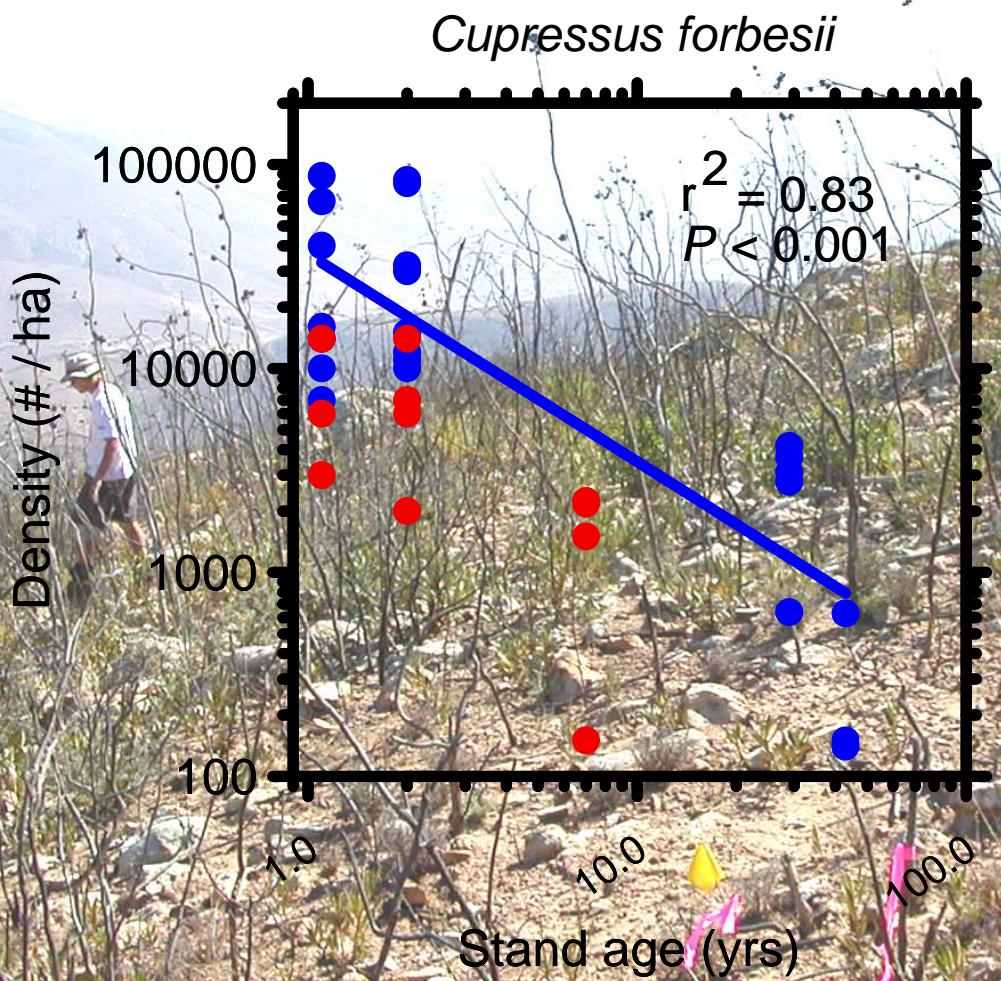




OT16
B
9-15-04

Otay Mtn. *Cupressus forbesii* populations

Last fire (yrs)	Prefire density (#/ha)	Postfire seedlings (#/ha)
7 (14)	1,515	1,500
29	28,167	70,667
43	307	35,333



Conclusions

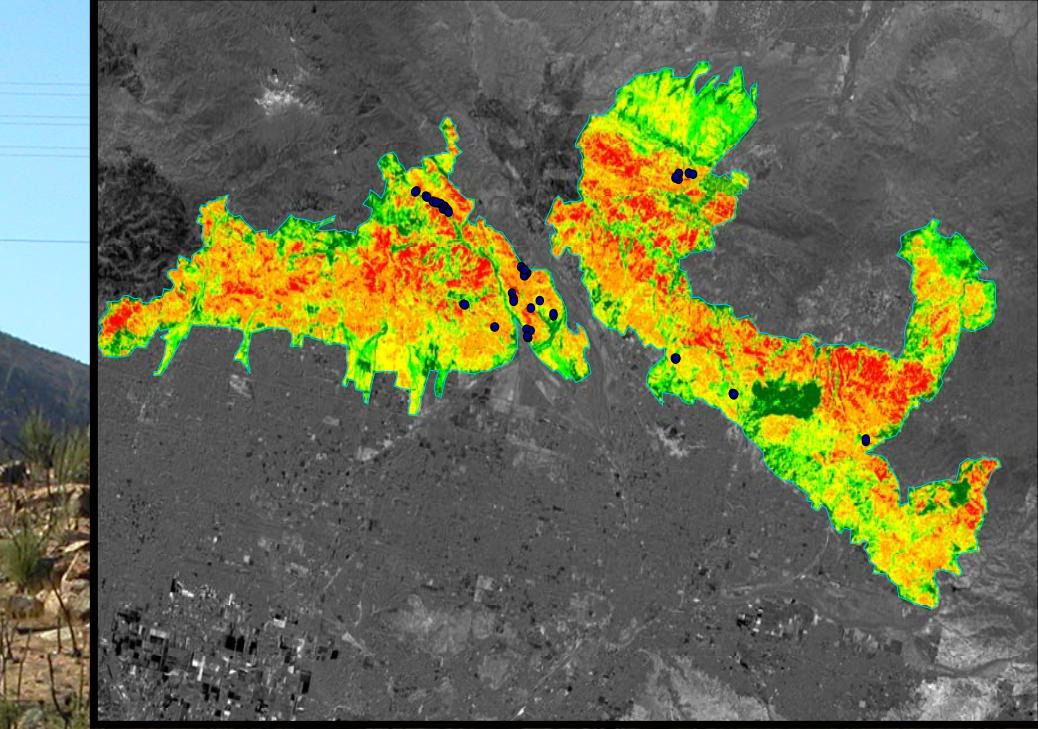
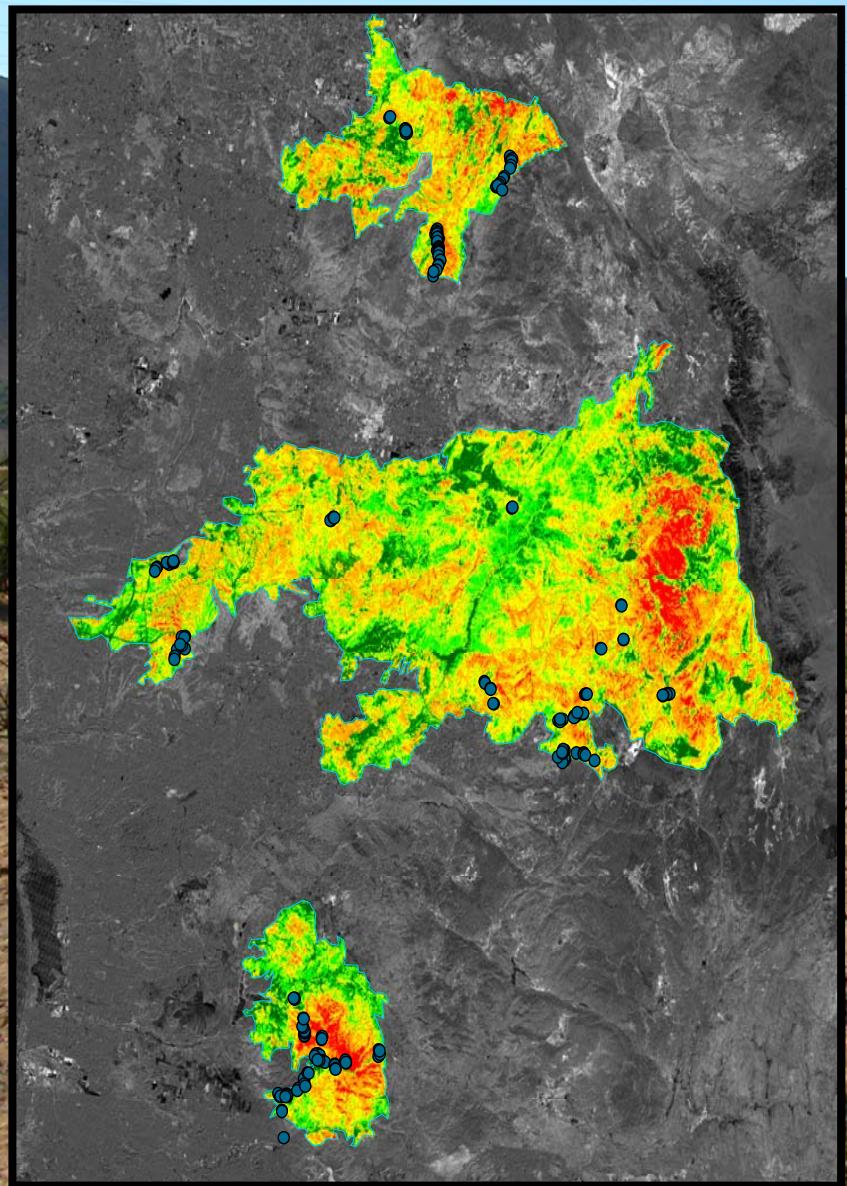
High fire severity:

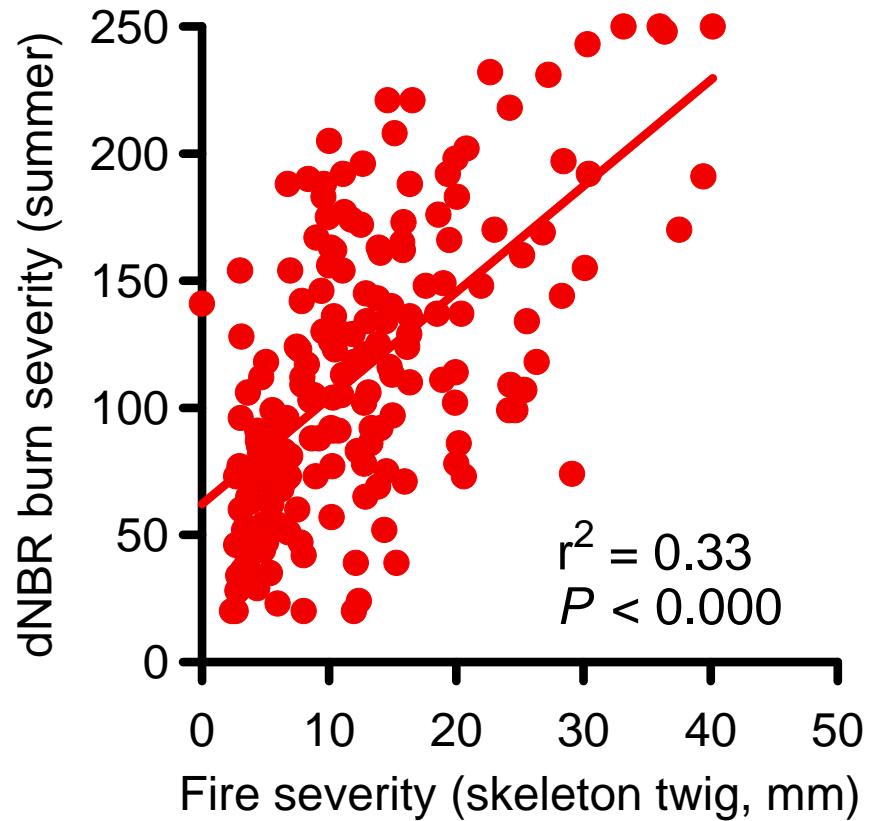
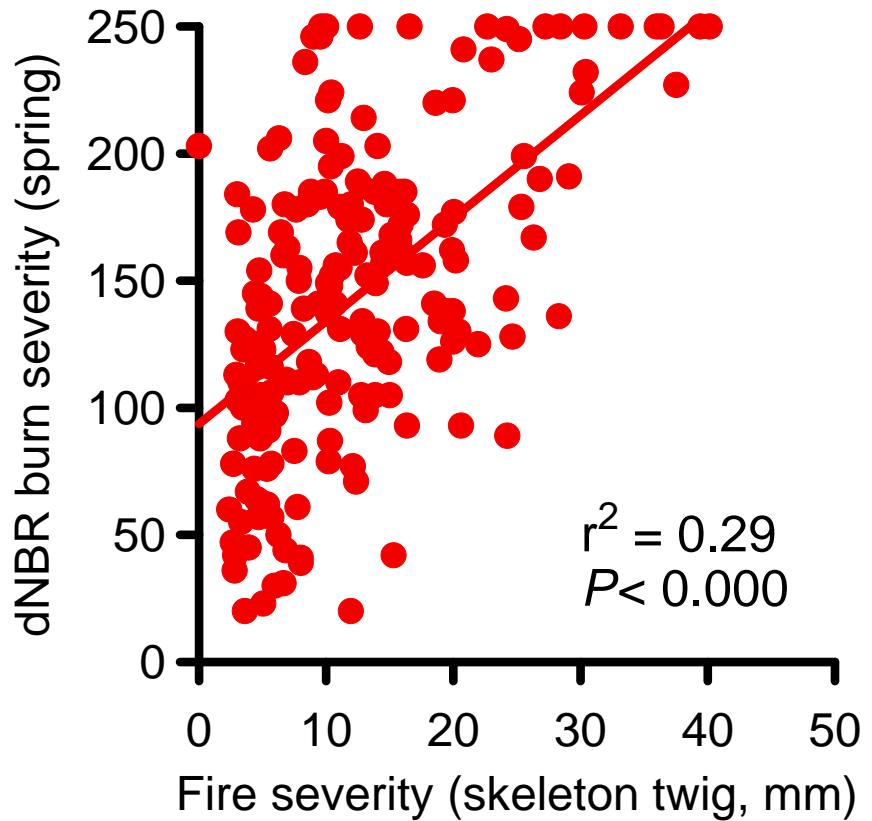
Does not inhibit vegetation recovery

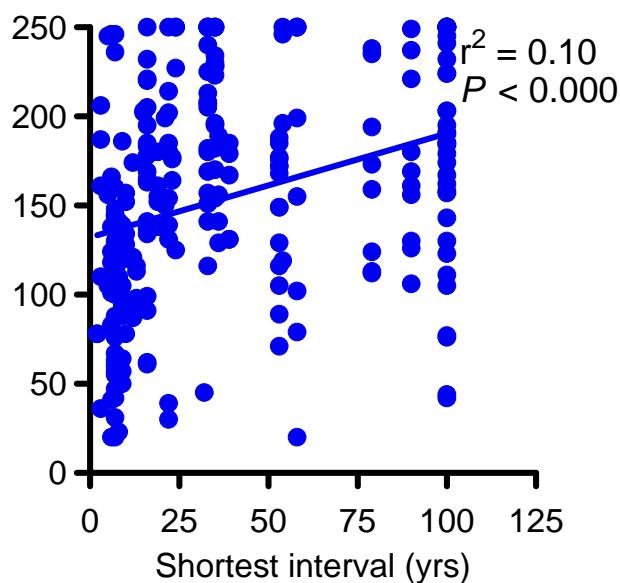
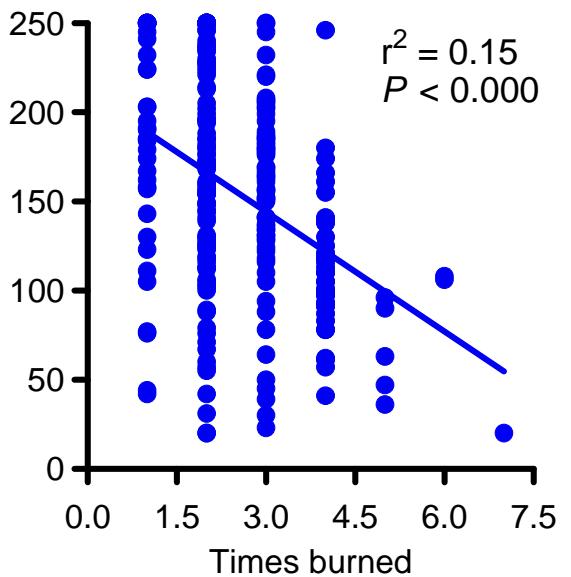
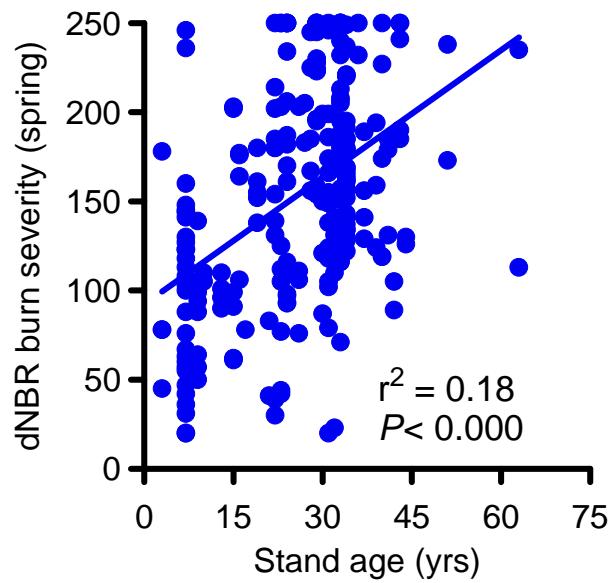
Has a significant effect on immediate species richness but this effect largely disappears by the second season

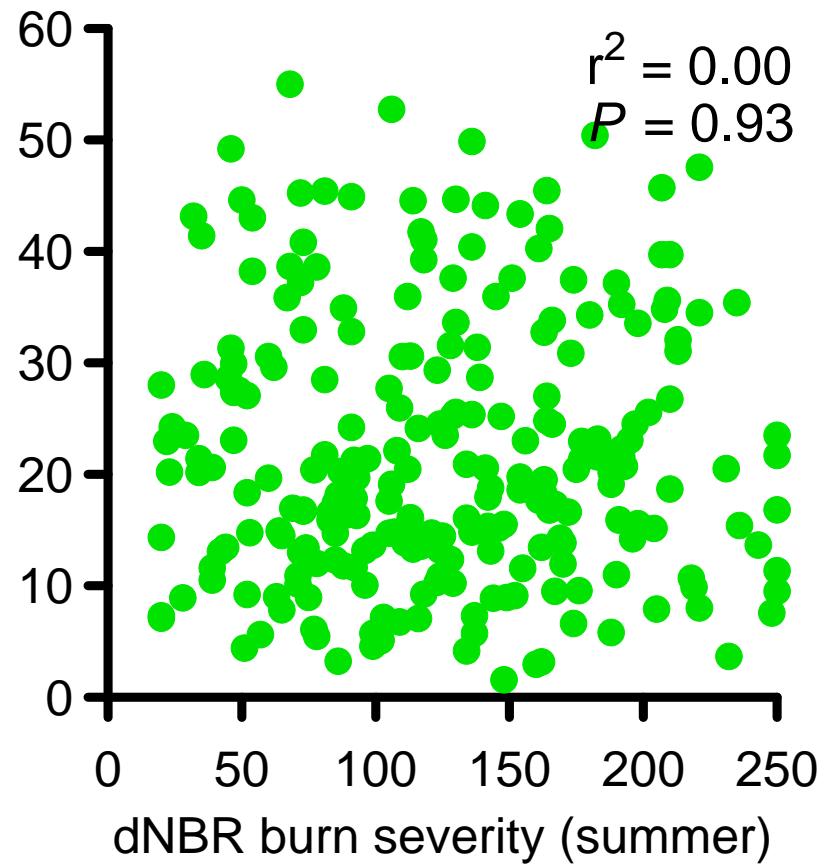
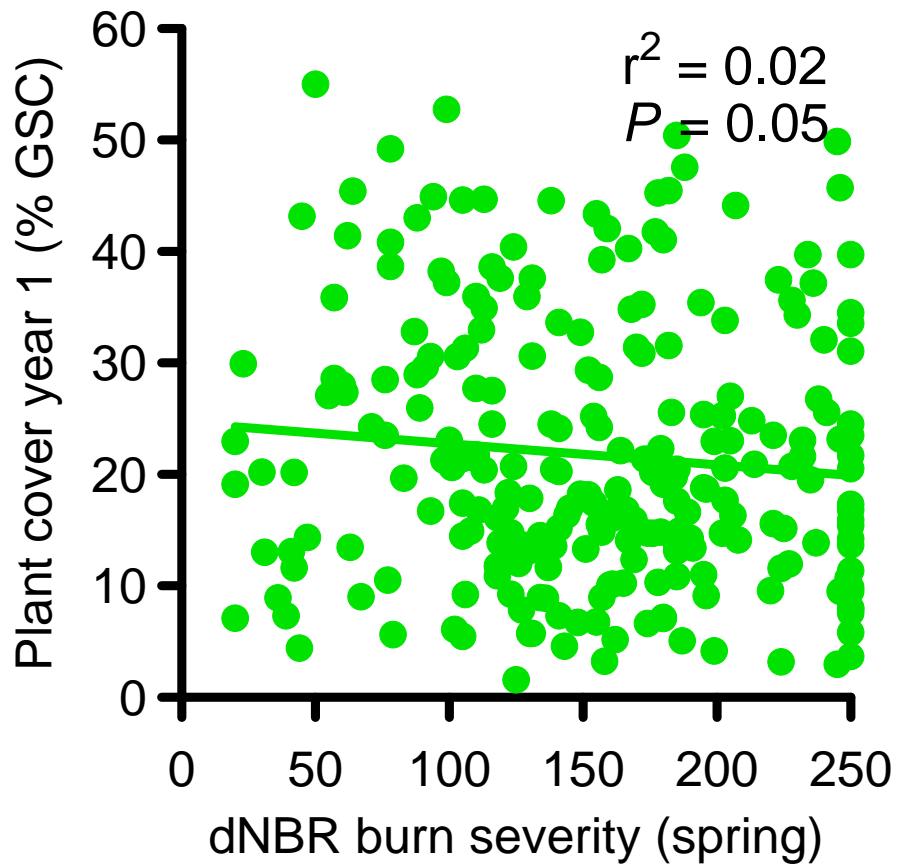
Inhibits alien invasion both in cover and diversity

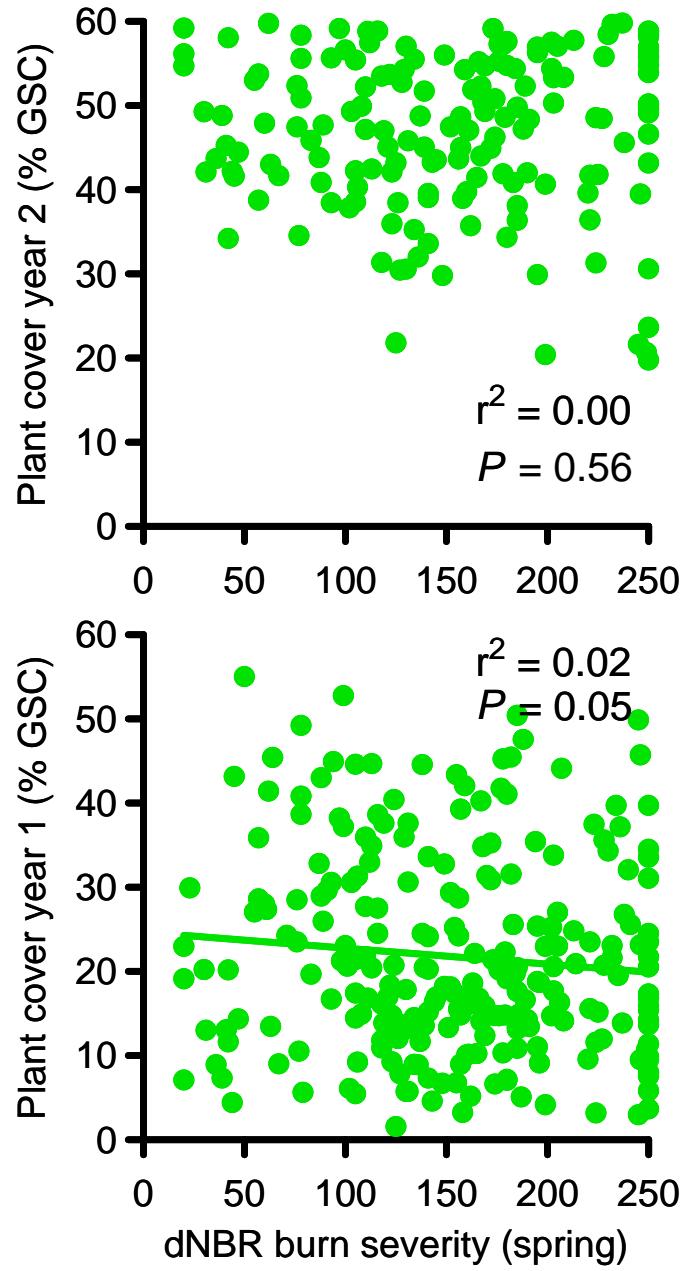
May have opposite effects on different species

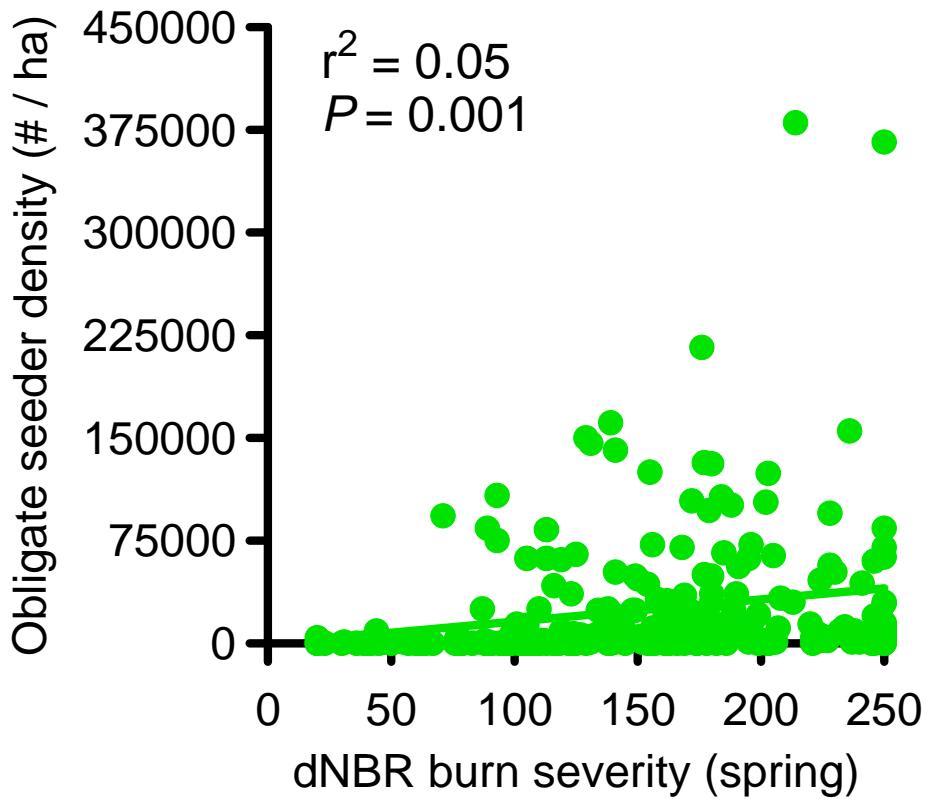
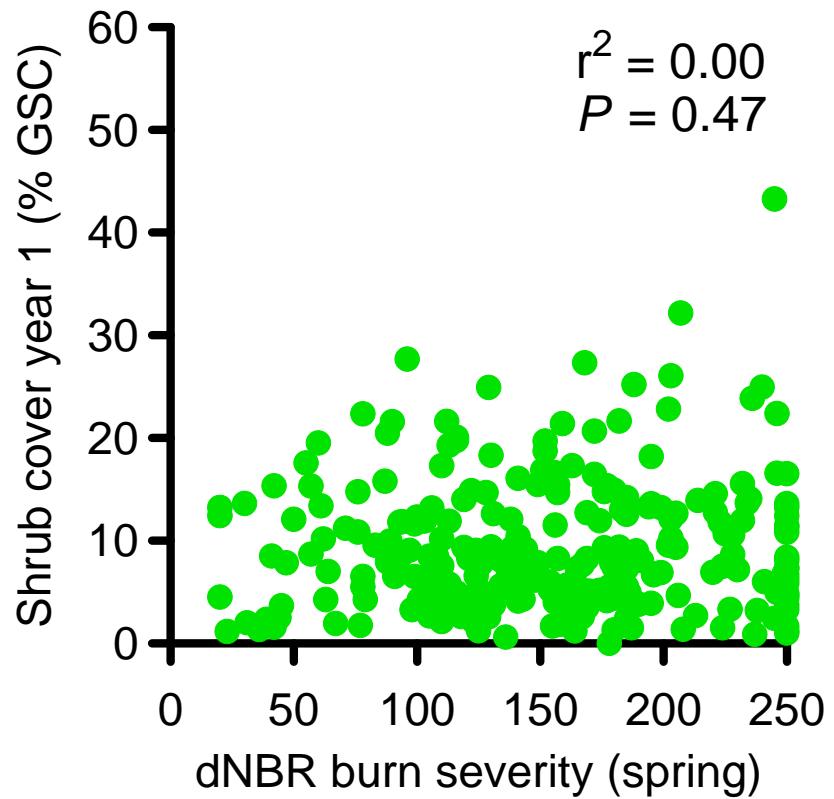


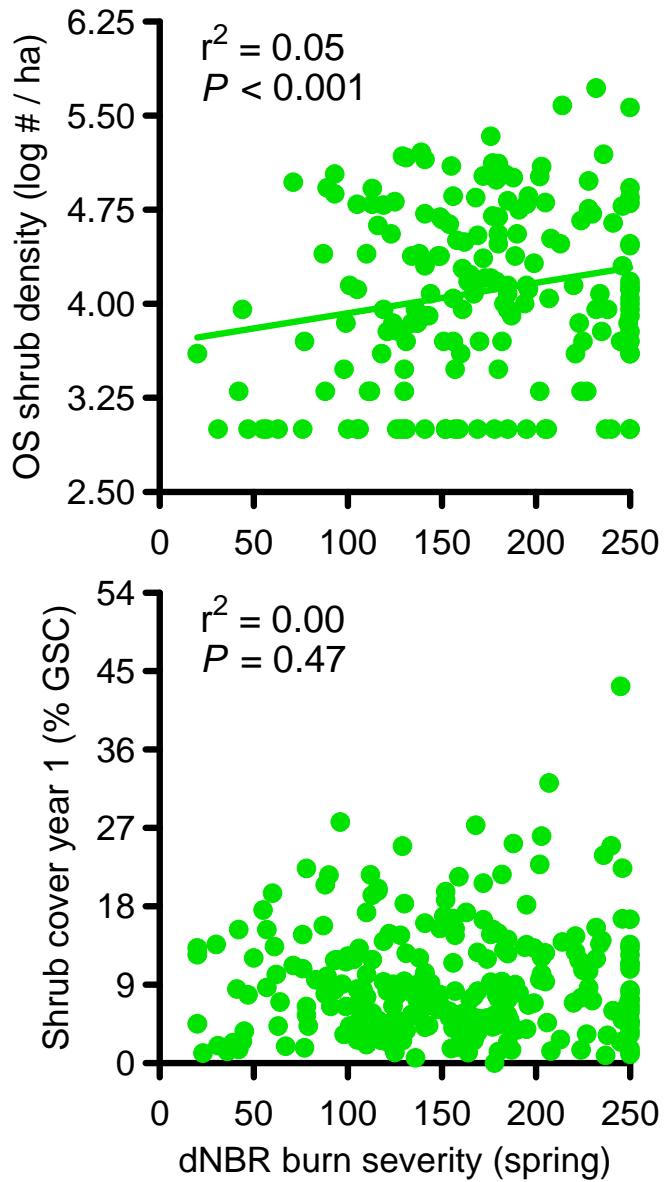


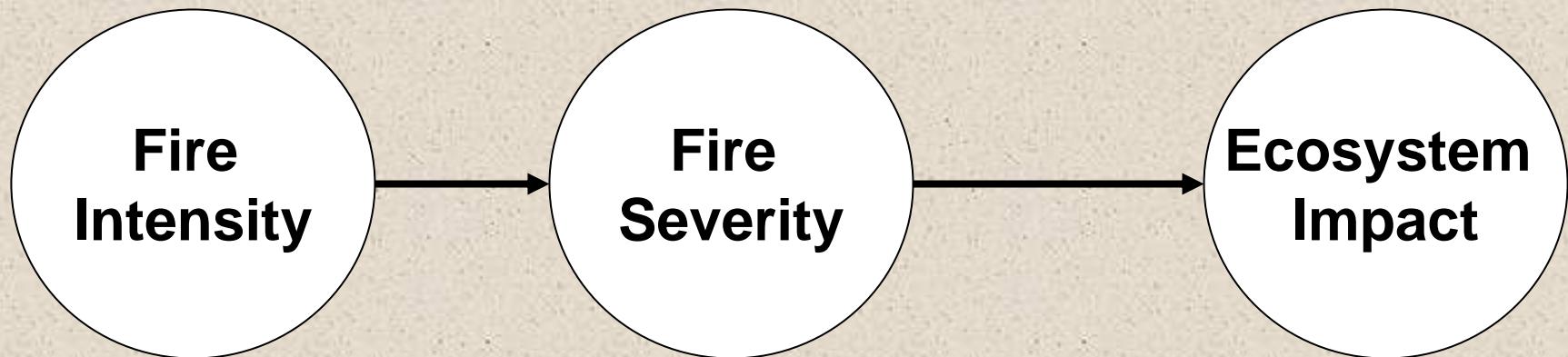












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A close-up photograph of several purple flowers, likely geraniums, with water droplets on their petals. The flowers are in sharp focus against a blurred green background.

Acknowledgments

Instrumental to this work:

Anne Pfaff

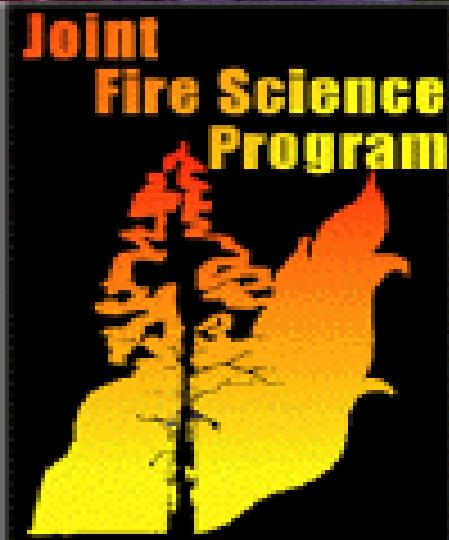
Darren Kane

Paul Schuette

Kristen Bednarczyk

Meghan Blair

C.J. Fotheringham



*Acknowledgments
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