

Carnivore community response to a large wildfire in San Diego County, California



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Photo: Scott Tremor

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ILLINOIS NATURAL HISTORY SURVEY





The Cedar Fire



- Ignited October 25, 2003
- Burned 280,278 acres (113,425 ha)
- Largest and most devastating fire in California history

Impact on San Diego County:

- 14 deaths, 111 injuries
- 2,200 homes destroyed
- 600 commercial structures
- \$32.5 million to control



The Landscape

Chaparral vegetation:

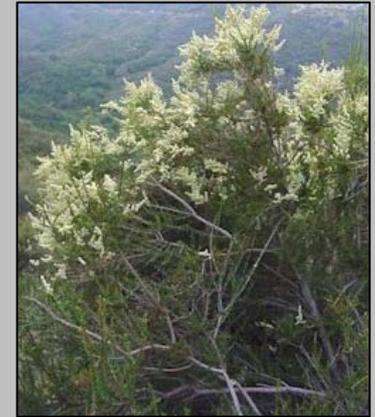
- Semi-arid shrubland typical of Mediterranean climate
- Diverse flora and fauna
- Fire prone habitat
- Expanding human-wildland interface



Photos: Paul Schuette

Chamise

Adenostoma fasciculatum



Ceanothus leucodermis



Manzanita

Arctostaphylos glandulosa



What are the impacts of a large scale disturbance, such as fire, on this threatened ecosystem?

- Multi-taxa approach: vegetation, small mammals, bats, carnivores

How are carnivores responding to this disturbance?

–Community approach

–Focus on Gray fox, Coyote, and Bobcat

Coyote

Canis latrans



Gray fox

Urocyon cinereoargenteus



Bobcat

Lynx rufus



Objectives:

1. Compare activity among 3 Burn Categories:

Edge: < 3 km from fire perimeter

Interior: > 4 km

Unburned

Burn Edge



2. Determine activity patterns across seasons:

Fall

Winter

Spring

Winter 2006



Spring 2006

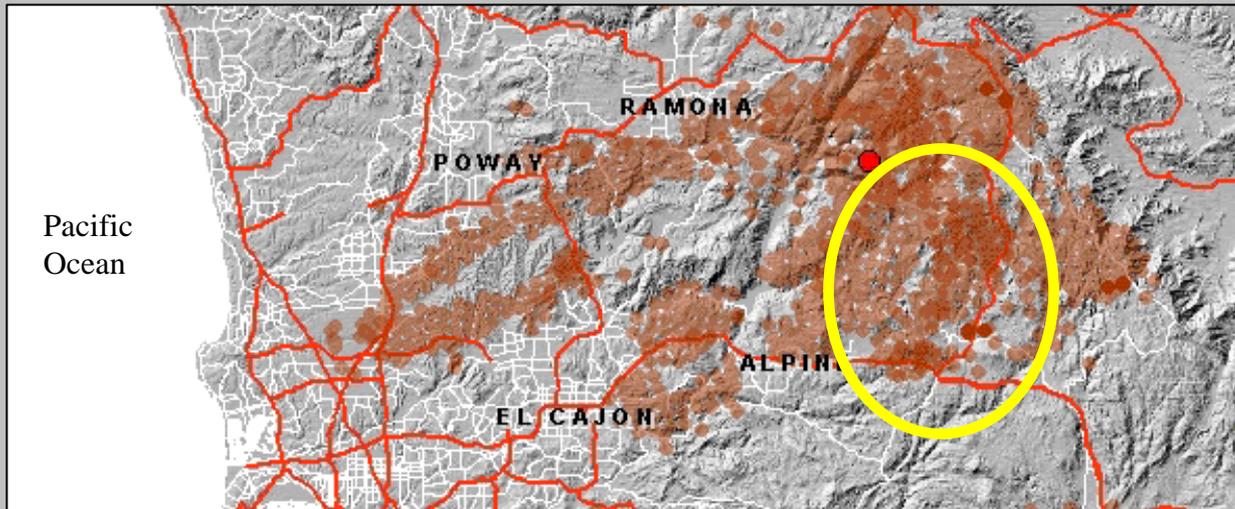


Study Area:

- ~ 60 km (37 mi) east of San Diego
- Cleveland National Forest & Cuyamaca Rancho State Park
- Elevation: 800-1400 meters

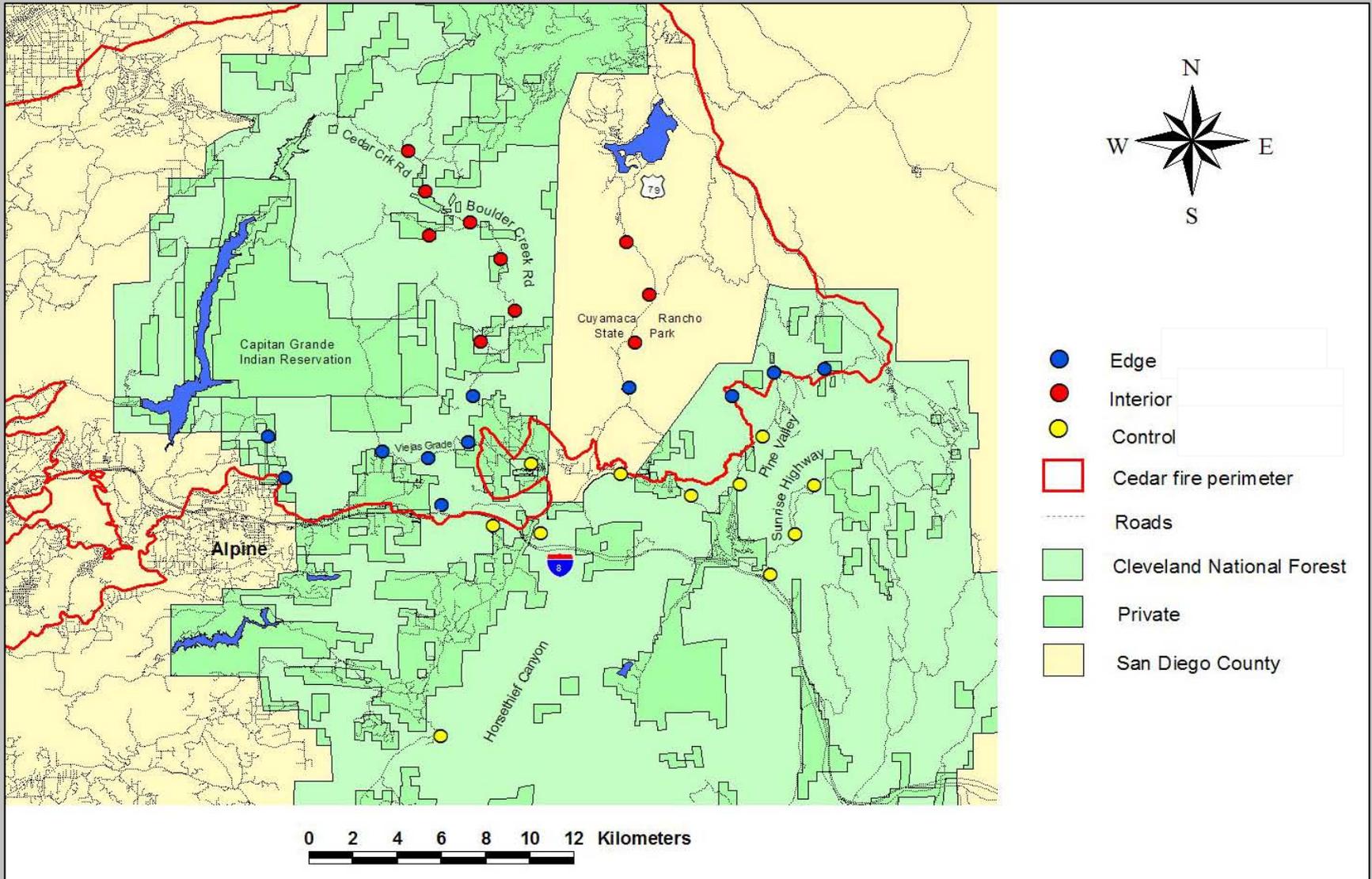


San Diego County



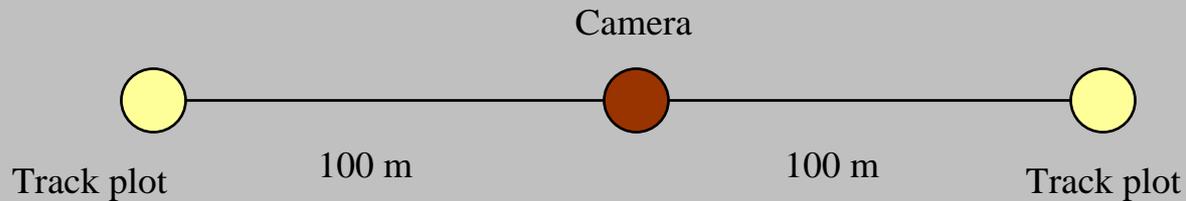
Site Selection:

Sites separated > 2 km



- Each site:
 - 1 motion sensor camera
 - 2 gypsum track plots
 - Each baited with scent lure (Carman's Pro's Choice)

N=1



Game-Vu camera



Sampling

- Sites surveyed for 8 nights/season
- Species recorded as present (1) or not-detected (0) at camera and track plots



Bobcat-*Lynx rufus*



Coyote-*Canis latrans*



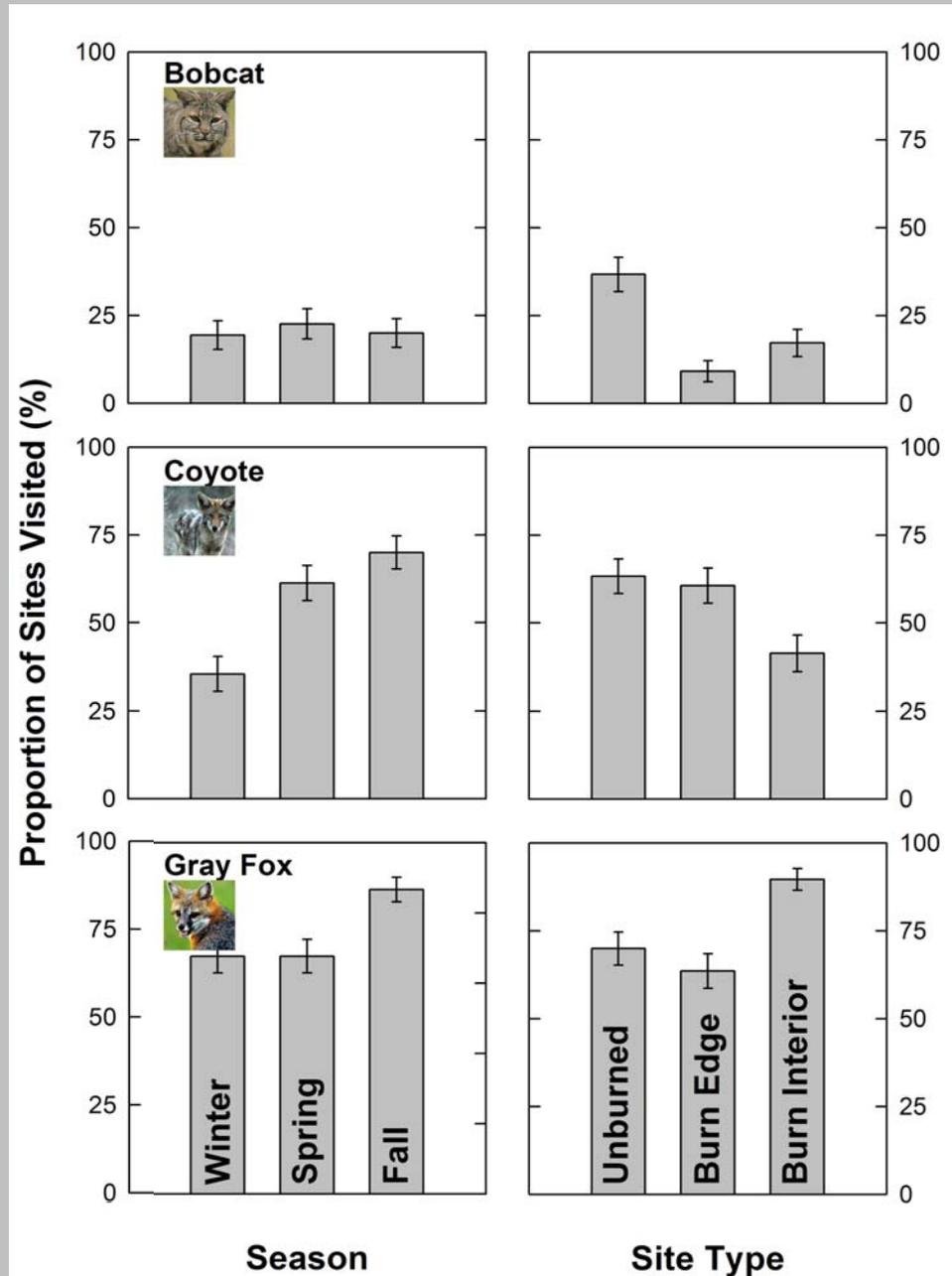
Gray fox-*Urocyon cinereoargenteus*

Statistics:

- Logistic regression to model the presence of each species
- Additive model with Season and Site type
- Species considered present if found at camera or track plot
- Presented as significant if $p < 0.05$



Results:



Conclusions:

How can we explain these activity differences?

- Coyote ↓ BURN INTERIOR ↑ Gray fox

- Avoidance mechanisms (Farias et al 2005, Fedriani et al 2000)
- Shared space use (Neale and Sacks 2001)

- Bobcat ↑ UNBURNED

- Prefers dense cover (Litvaitis and Harrison 1989)



www.prescottcreeks.org



<http://www.geocities.com>



<http://www.exzoobrance.com>

Future Analyses:

- Compare track plots and cameras
- Continue data collection: Bobcats
- DNA analyses of hair samples
- Incorporate small mammal & vegetation data



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