

PATTERNS AND DRIVERS OF LONG-TERM CHANGE IN SAGEBRUSH-STEPPE VEGETATION COMMUNITIES

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Acknowledgements

Field assistants

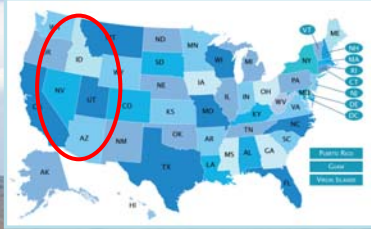
Lorna Emerich
Elaine Boyd
Marita Lih

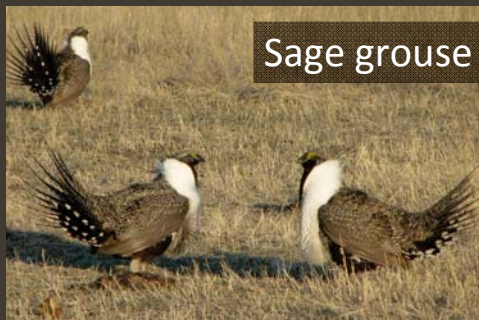
Private land-owners

Hiede Newsome
Mike Gregg
(US FWS)



Sagebrush-Steppe Habitats





Sage grouse



Sage sparrow

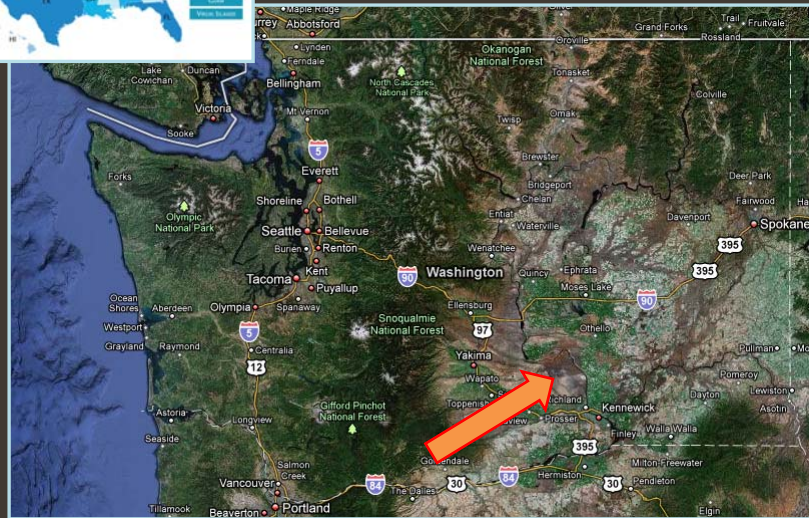
Sagebrush
obligate species



Pygmy rabbit



Threats: Land use change
Increasing wildfires
Species invasions



24 Command Fire (2000)
c. 65,000 ha
160,000 acres

Photos :
Heidi Newsome, USFWS (right)
Rajah Bose, Tri-City Herald (above)



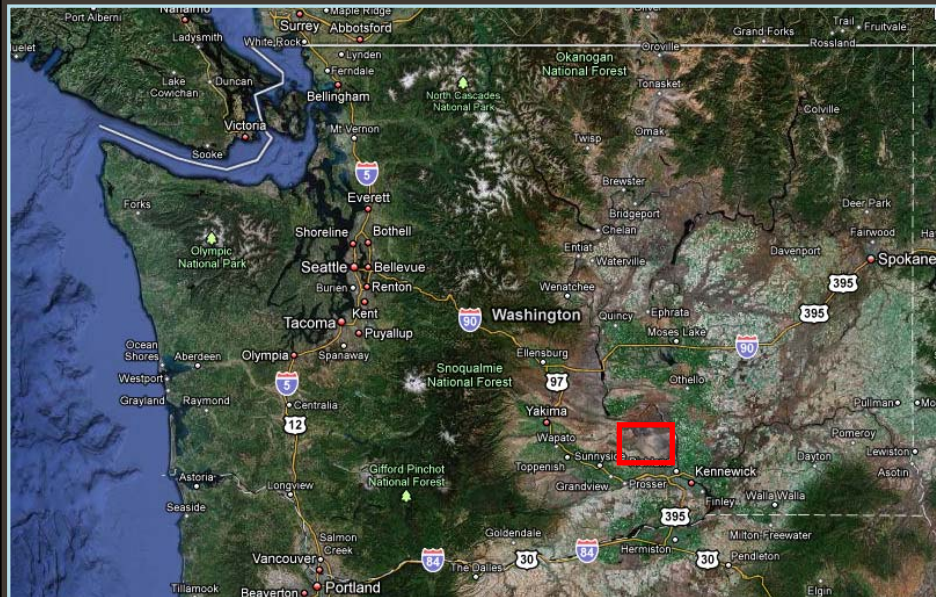


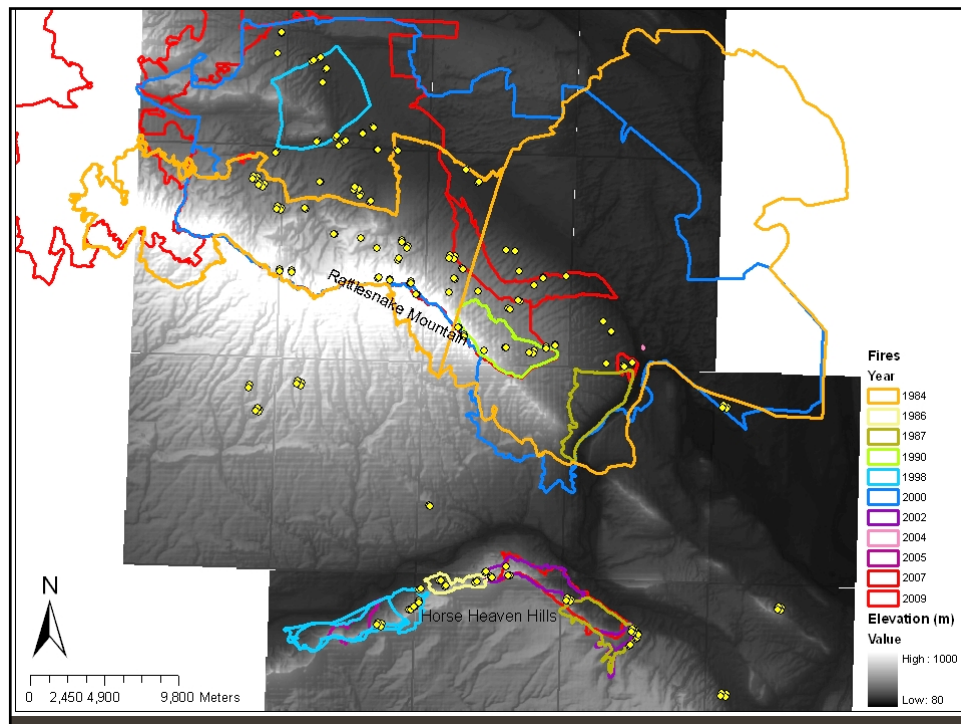
Objectives

- Examine impact of multiple disturbances
- Detect patterns in community composition
- Determine the extent of community recovery
- Develop simple methods to track change
- Understand key factors driving community change

Methods

- Permanent plots established 1992 to 1996
- Each plot = 1 - 5 transects, 100 or 200 m long,
- Transects within plots 200 to 400 m apart
- Transects burnt 0 – 3 times since established
- Some burnt areas received restoration treatments
- Monitoring history vary varied
- Total usable transect/year observations = 684



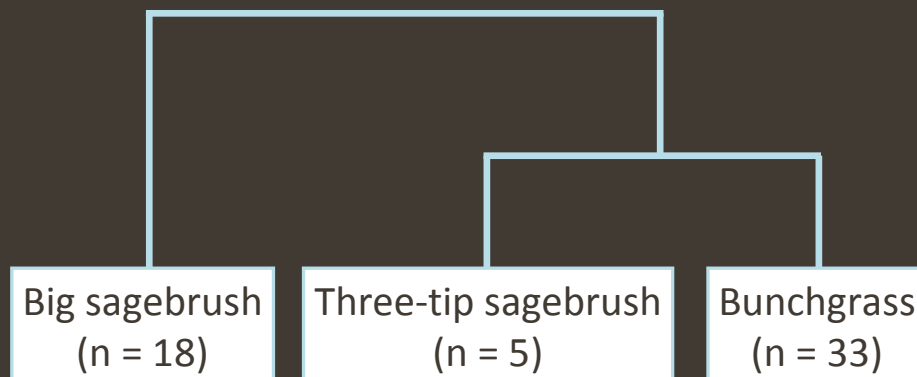


Statistical Analysis

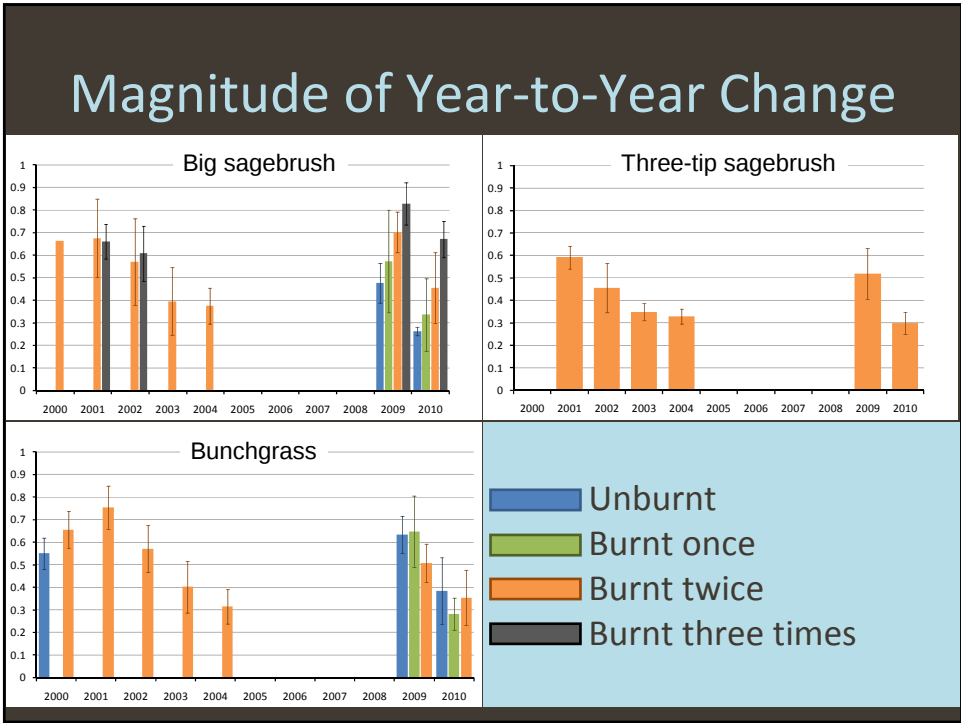
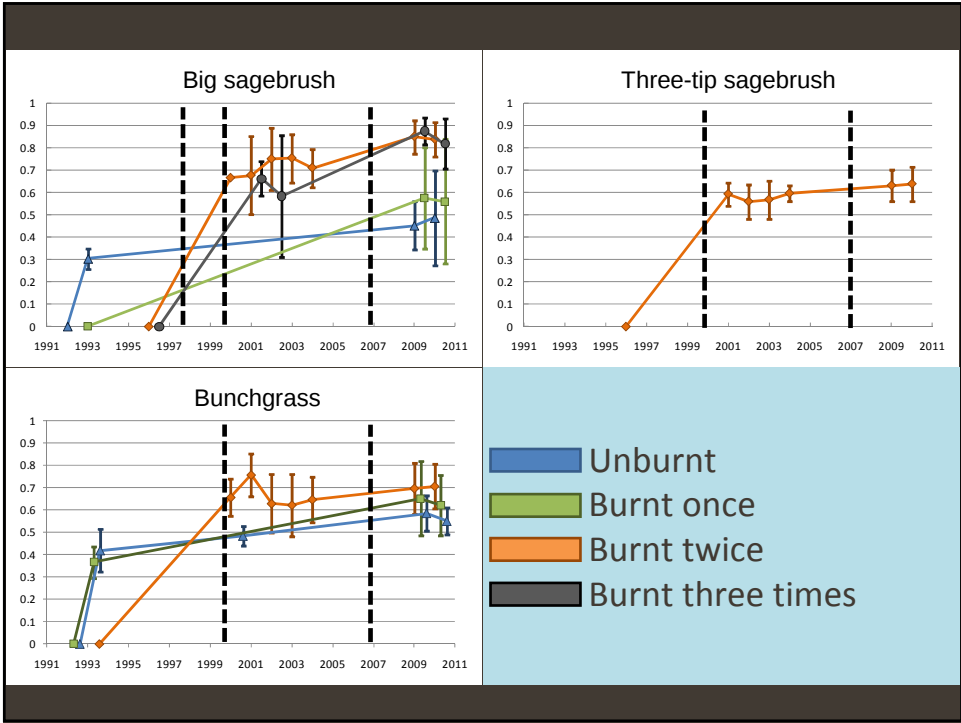
1. Cluster Analysis to identify community groups
2. Multivariate Control Charts to examine compositional change (Bray-Curtis dissimilarity) relative to:
 - Initial starting composition
 - Composition in previous years
3. Regression tree to predict total extent of change

Patterns in Community Composition

- Cluster Analysis



Change Related to Initial Composition

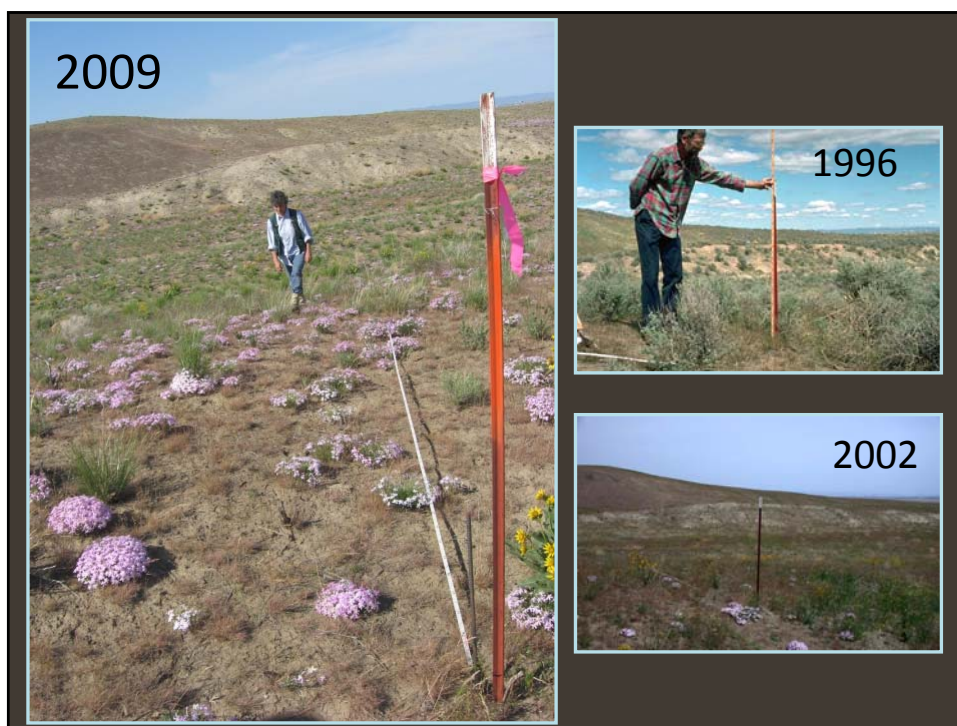


1996

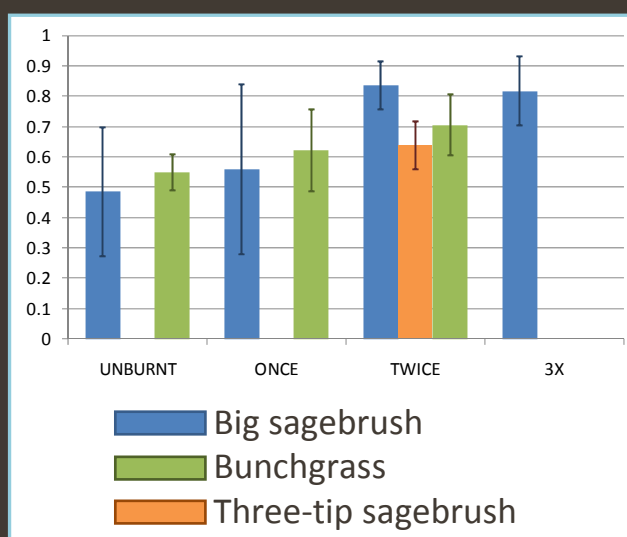


2002





Factors Driving Compositional Change

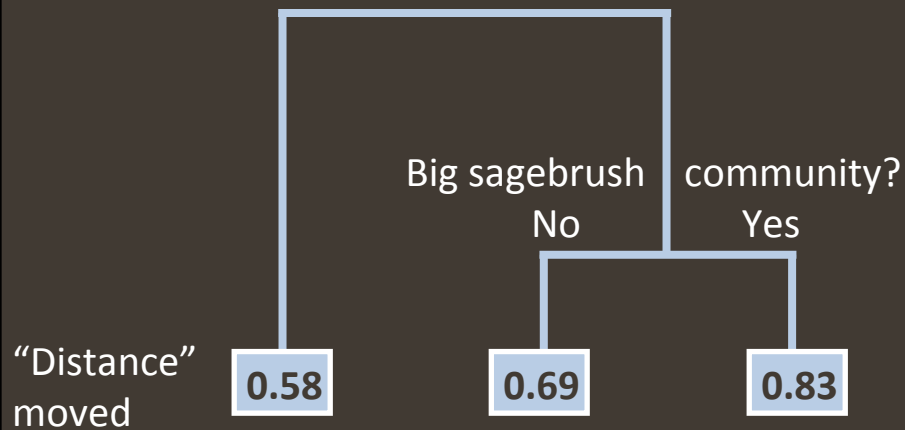


Factors Driving Compositional Change

Fire frequency / time since last fire

< 0.38

> 0.38



Conclusions



Conclusions

- MCCs are a valuable method to track change
- Change defined by fire history and plant functional traits
- Unburnt transects show noticeable change
- Further work required to analyse change with regards to “desirable states”



Information: <http://depts.washington.edu/firesale>
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