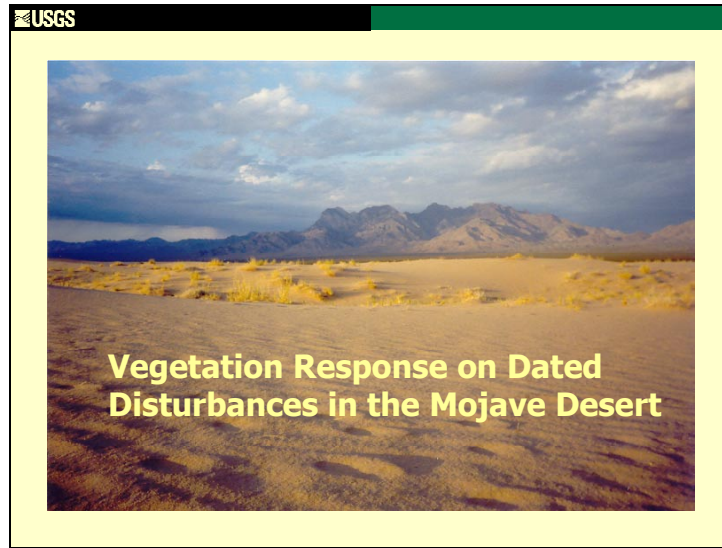


Slide 1



What dated disturbances are:

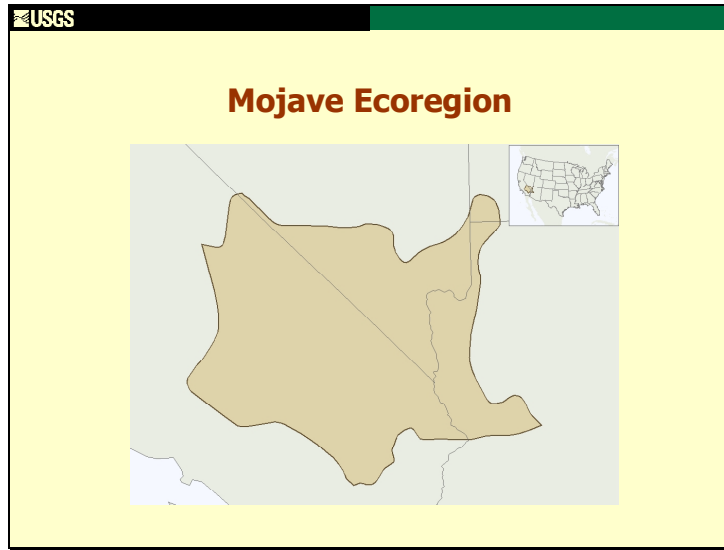
Why study of dated disturbances is important:

Allow observation of vegetation recovery response to a variety of land use activities

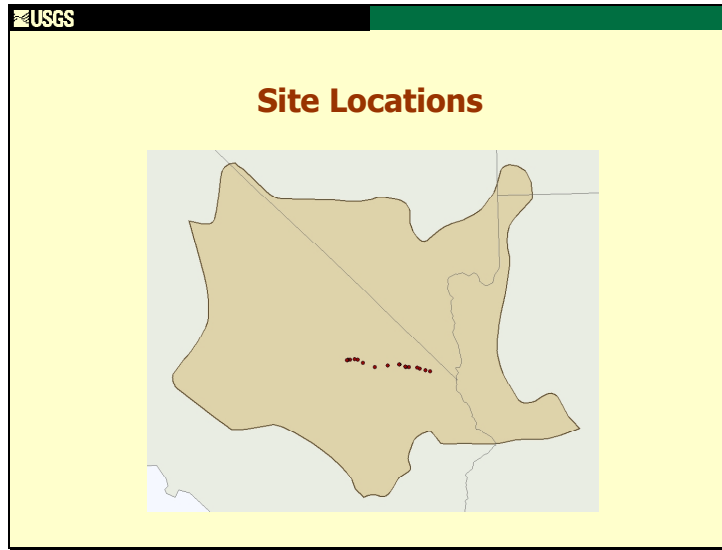
Measurement of vegetation recovery response at individual sites can lead to general models of recovery rates of vegetation cover and plant density and the trajectory of species composition recovery in the Mojave ecosystem.

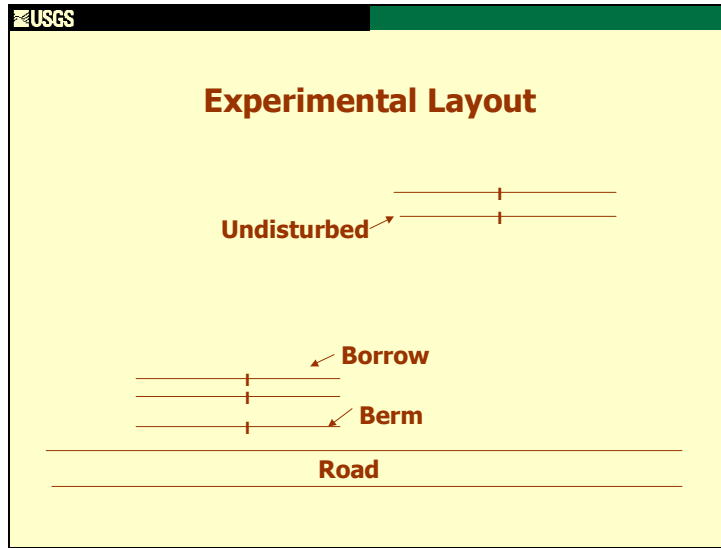
Such models will allow land managers to better predict the outcome of particular land use activities on vegetation and can be used to better understand succession in the desert ecosystem.


Slide 2



Slide 3








What is the trajectory of natural recovery?

- Total vegetation cover at a disturbed site can recover to undisturbed levels in 90 years
- Recovery of species composition may not be complete for up to a thousand years



Life-History Hypothesis of Natural Recovery

- Succession after disturbance is characterized by temporal changes in the life-history strategies of dominant plants
- The sequence of life-history types is proposed as (modified from Webb 1987, 1988):
 - Ruderal: Herbaceous annuals
 - Stress-tolerant ruderals
 - Stress-tolerant competitors
 - Stress tolerators

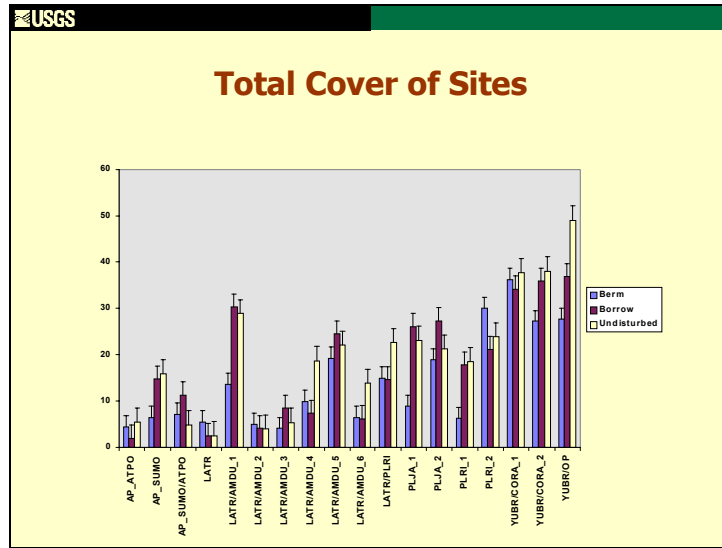
Ruderal species are annual herbaceous, whether native or non-native.

Stress tolerant ruderals are short-lived shrubs and subshrubs with characteristically large seed production.

Stress tolerant competitors are short- to long- lived shrubs and trees with intermediate to slow growth and small seed production.

Stress tolerators are long-lived shrubs and trees with slow growth and small seed production.

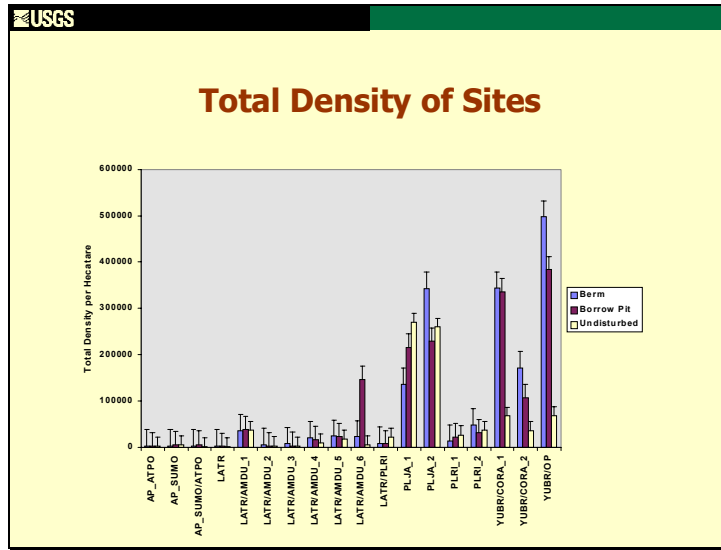
Slide 7



Total cover varies greatly between sites.

A simple Wilcoxon rank sum test for differences between the pairs of disturbance types and each with undisturbed did not show any significant differences at the .10 level. A two way (fixed effects) Anova also did not show significant differences in cover by treatment and by site.

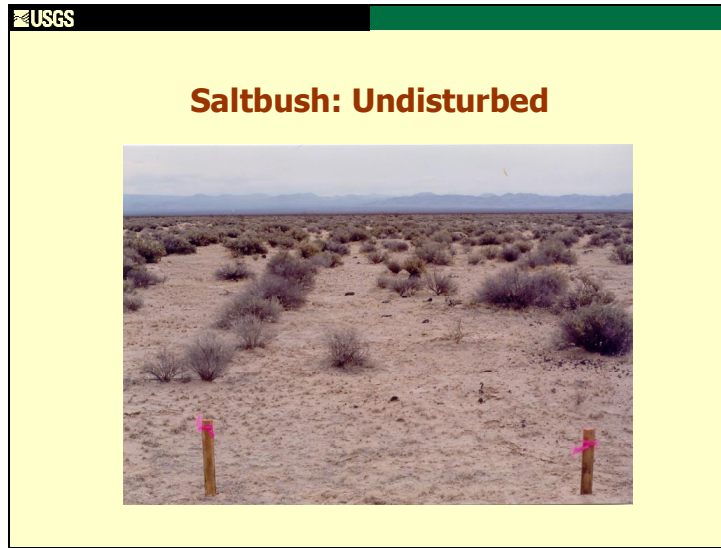
Slide 8

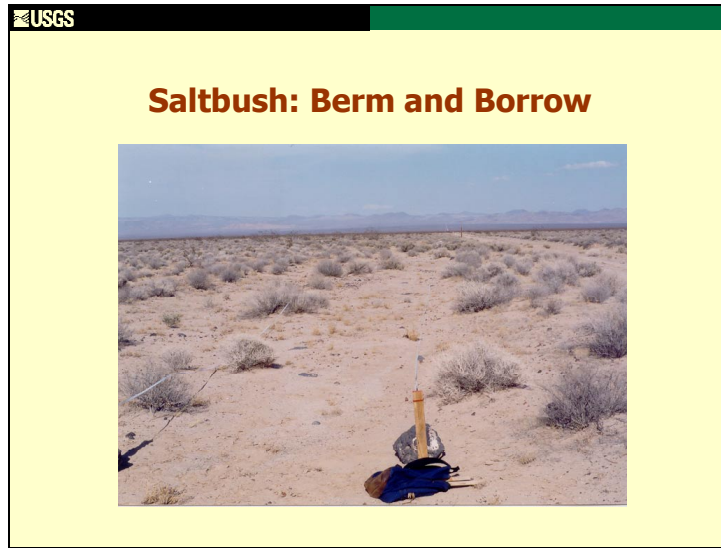


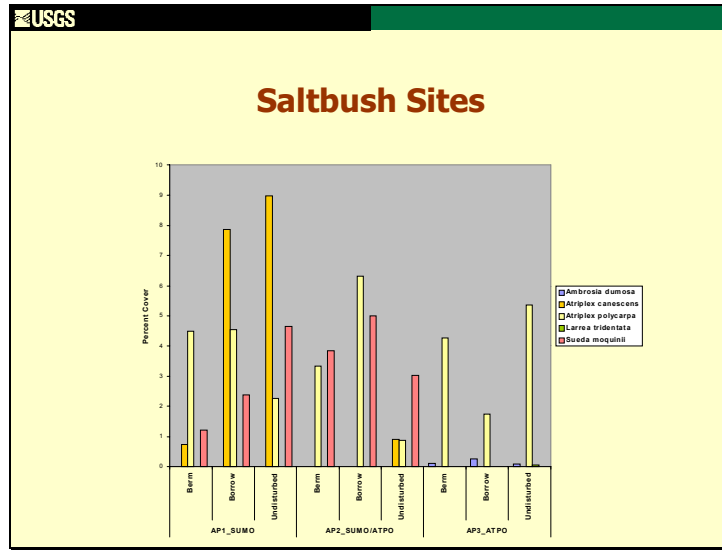
Density is not significantly different between the treatments.

The three sites with Yubr show higher density in the berm and borrow disturbance.

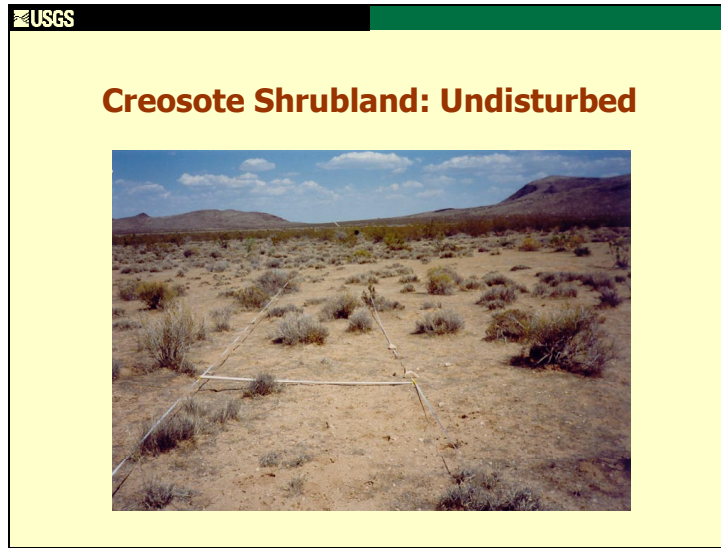
Slide 9

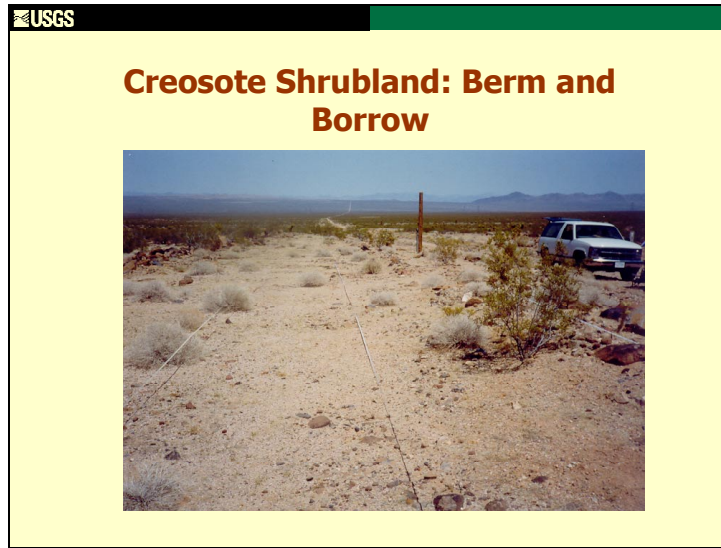


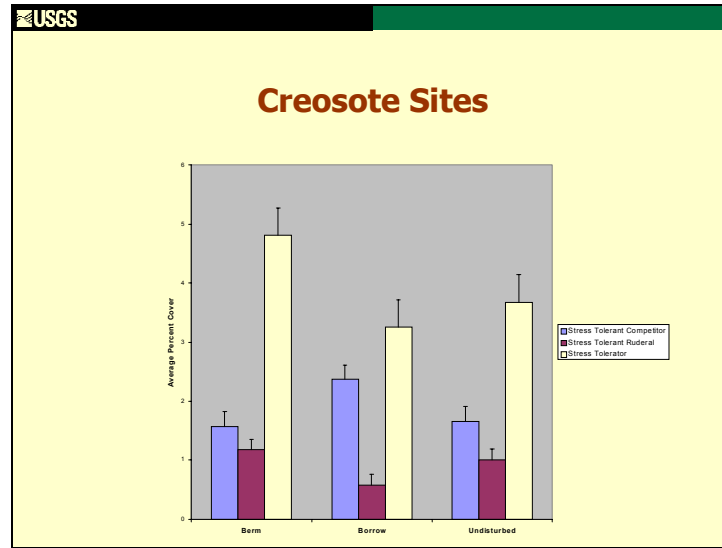




These sites occurred at the lowest elevation and reflect a gradient of alkalinity. Only five species occurred among the sites. The most common species are ‘stress ruderals’ under the life history classification scenario.

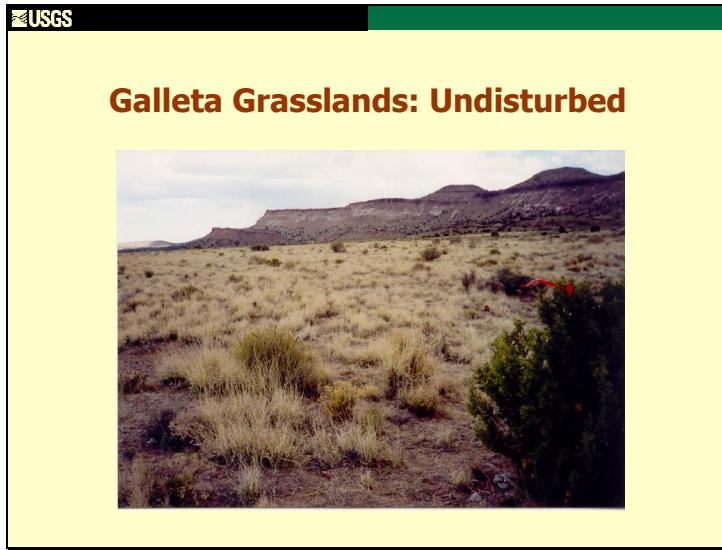







Contrary to expectation stress tolerant species occur in every treatment. Latr and yusc are the only two stress tolerators present. Yusc only occurs in undisturbed sites. One explanation for this may be in the clonal nature of Latr. The Latr present on the treatments may reflect root sprouting from individuals that were disturbed during placement of the coaxial cable line but that were not killed.

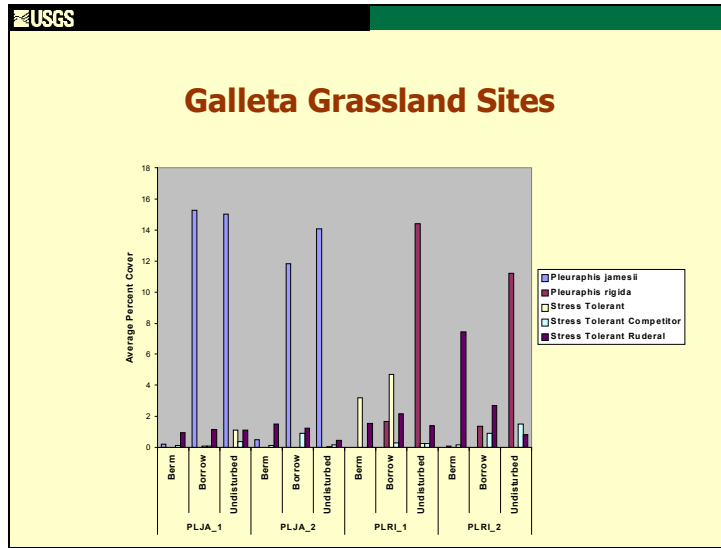
At least 37 species among these sites.

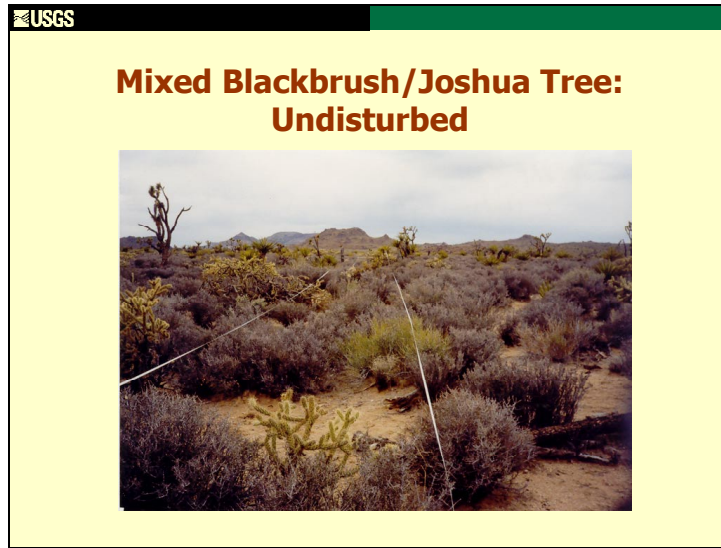


USGS

Galleta Grasslands: Berm & Borrow



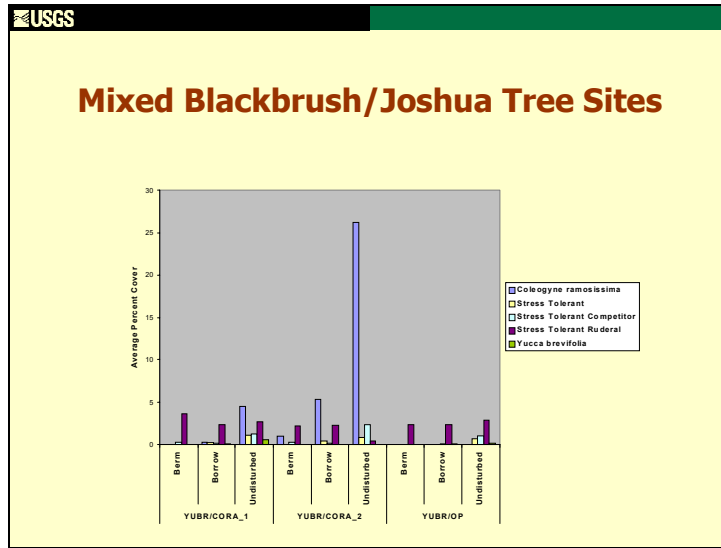





 **Mixed Blackbrush/Joshua Tree:
Berm & Borrow**




The photograph shows a desert environment with a mix of blackbrush and Joshua trees. A berm and borrow are visible in the foreground, indicating a specific site of interest. The background shows a clear blue sky and distant mountains.






Findings

- Cover and density is near recovery in many sites
- Recovery of species composition is variable and seemingly linked to matrix vegetation assemblage
- High variability in site and species response



Other influences

- **Natural features and events:** Climatic events, surficial geology
- **Characteristics of disturbance:** Soil disturbance and compaction, size and shape of disturbance, chemical alterations during disturbance
- **Seed and propagule bank:** Proximity and dispersal characteristics of nearby pool of non-native ruderals, species composition of matrix, undisturbed, vegetation assemblage
- **Biotic influences:** Characteristics of resident herbivores, ground excavating fauna



Application of Findings

- Management of coaxial cable line
- Recovery at dated disturbances
- General model of succession in Mojave Desert

Slide 24

