

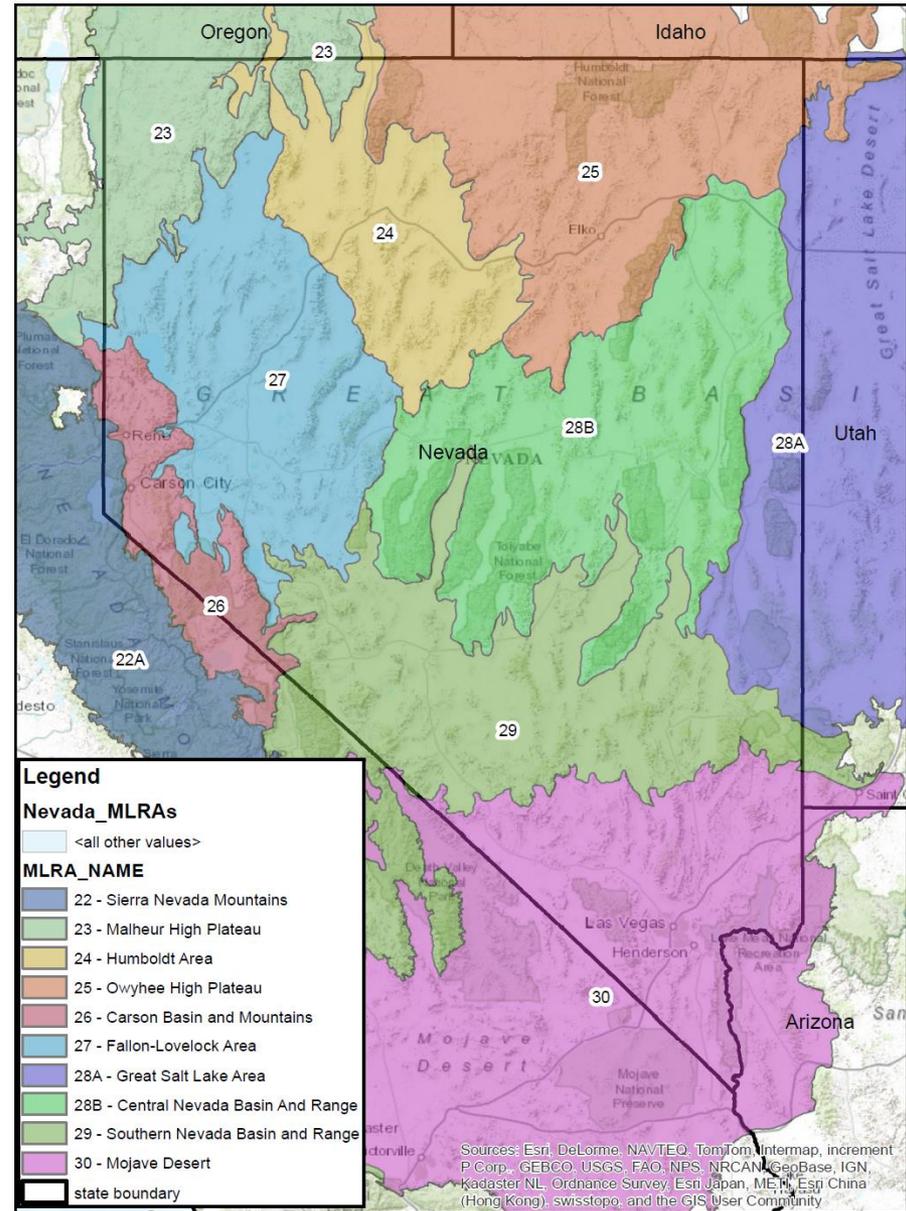
# Landscape-Scale Management Planning: Disturbance Response Groups & Ecological Sites

*Tamzen Stringham, Patti Novak-Echenique,  
Paul Blackburn*

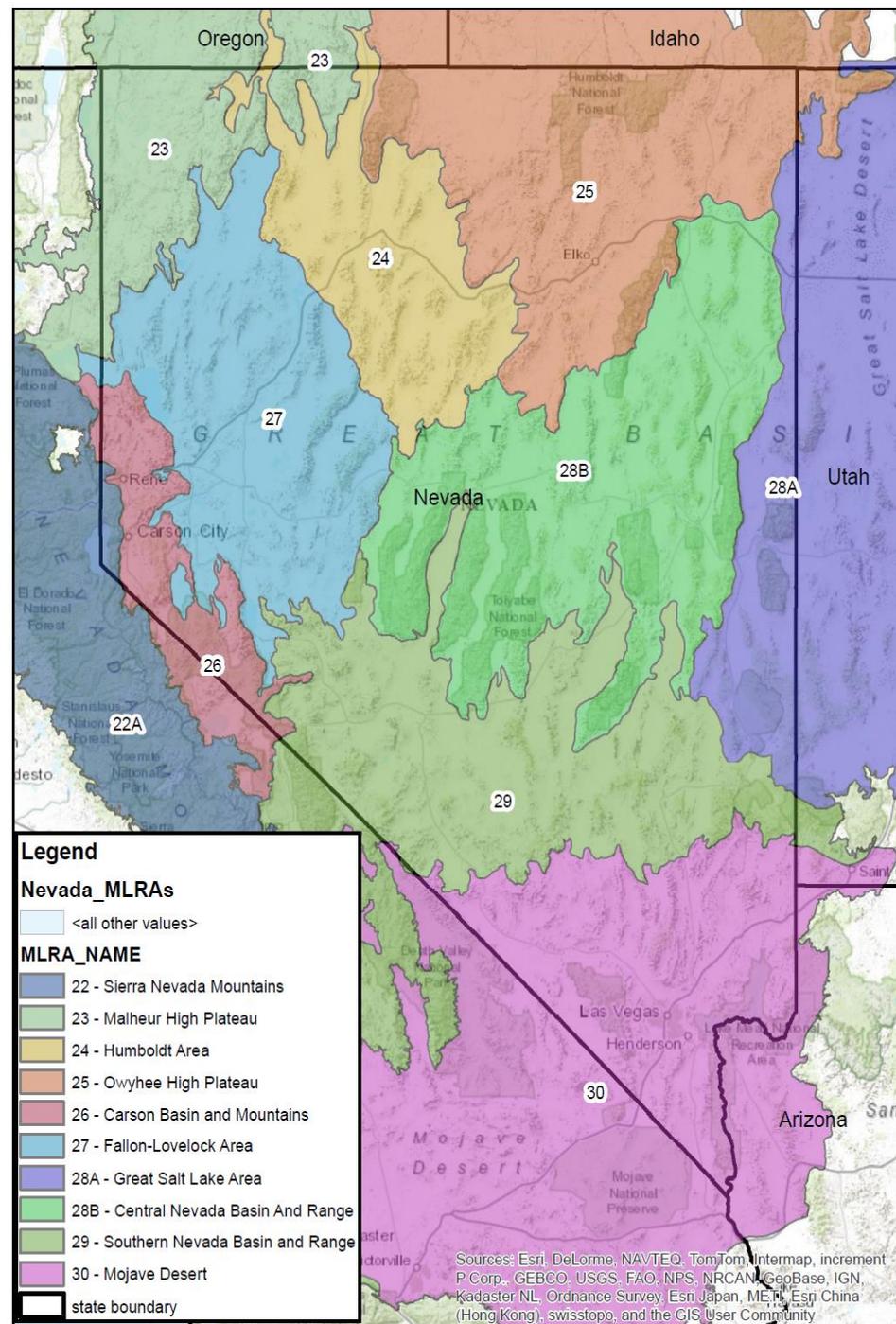


# Scale Issues & Ecosites

- MLRA 25
  - 9.6+ million ac
  - 69 eco sites
- MLRA 28B & 28A
  - 18.7+ million ac
  - 160+ eco sites
- MLRA 24
  - 7.6+ million ac
  - 54 eco sites
- MLRA 23
  - 3.6+ million ac

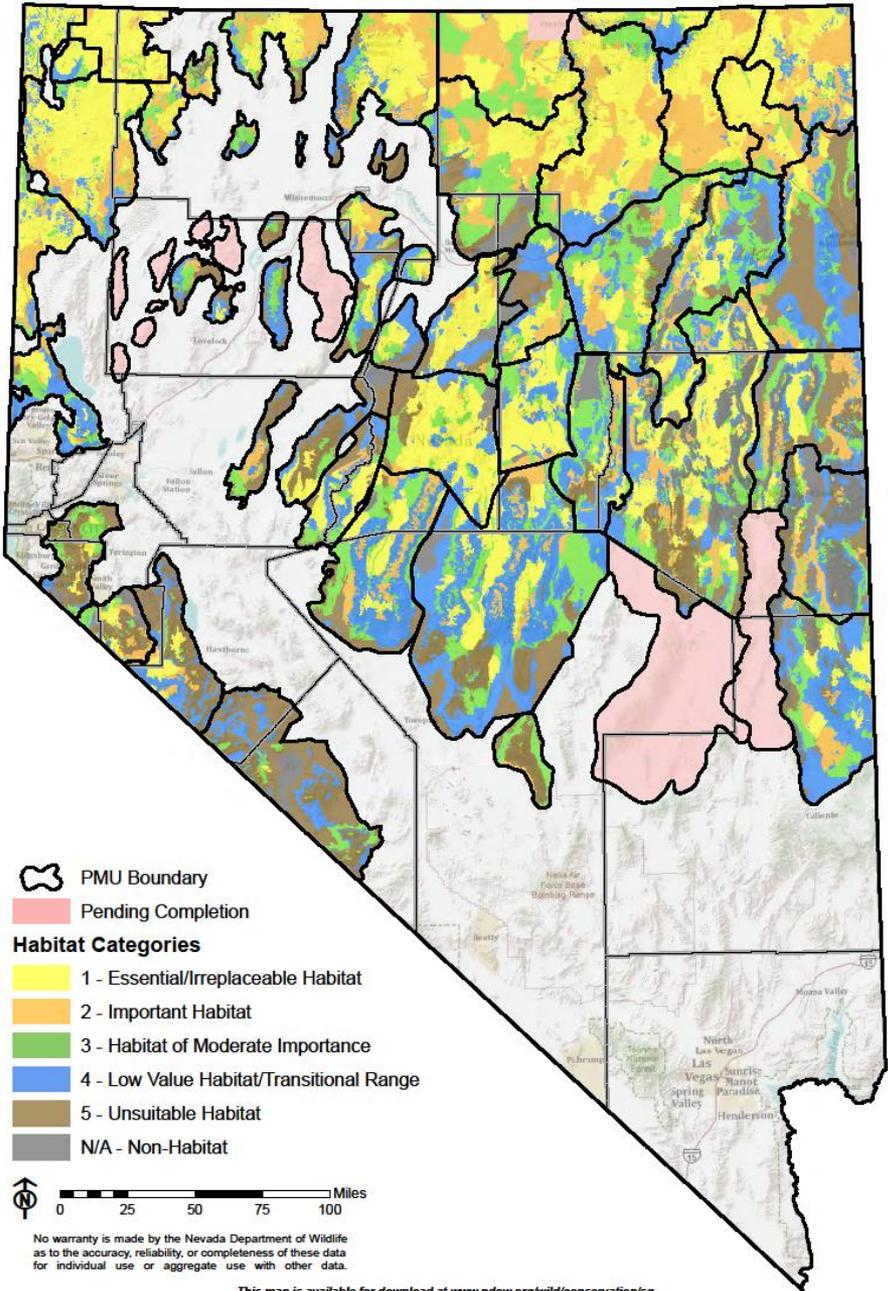


MLRA	2011 Acres Burned	2012 Acres Burned
23	724	793,333
24	112,809	80,383
25	39,352	145,331
28B	2,290	107,909





# Nevada Department of Wildlife Greater Sage-Grouse Habitat Categorization Map

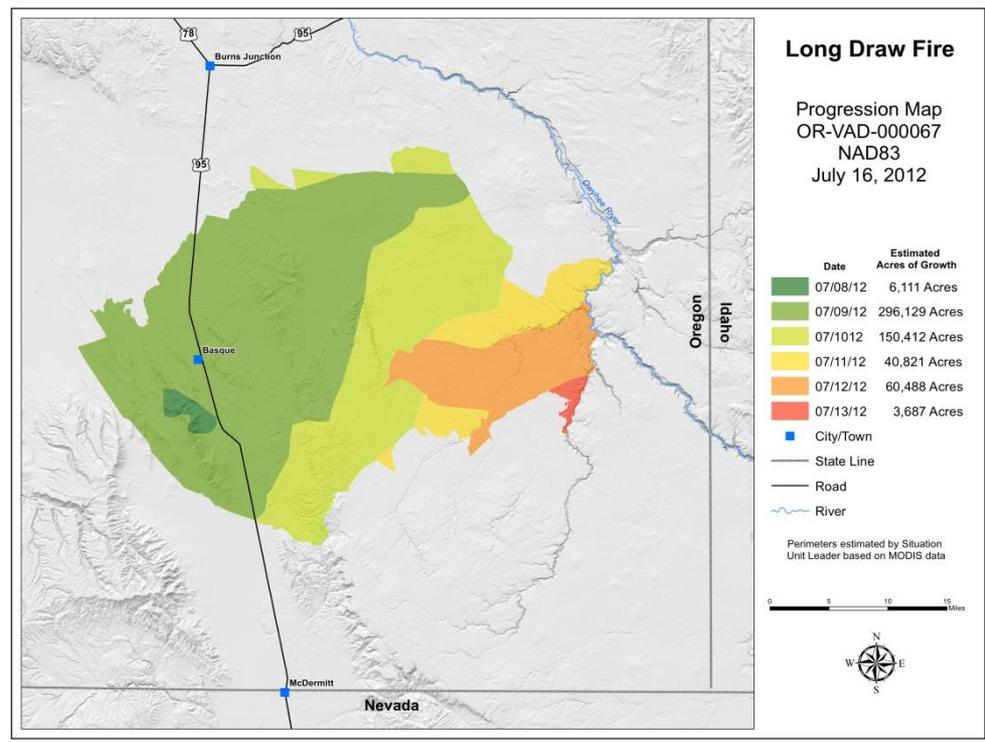
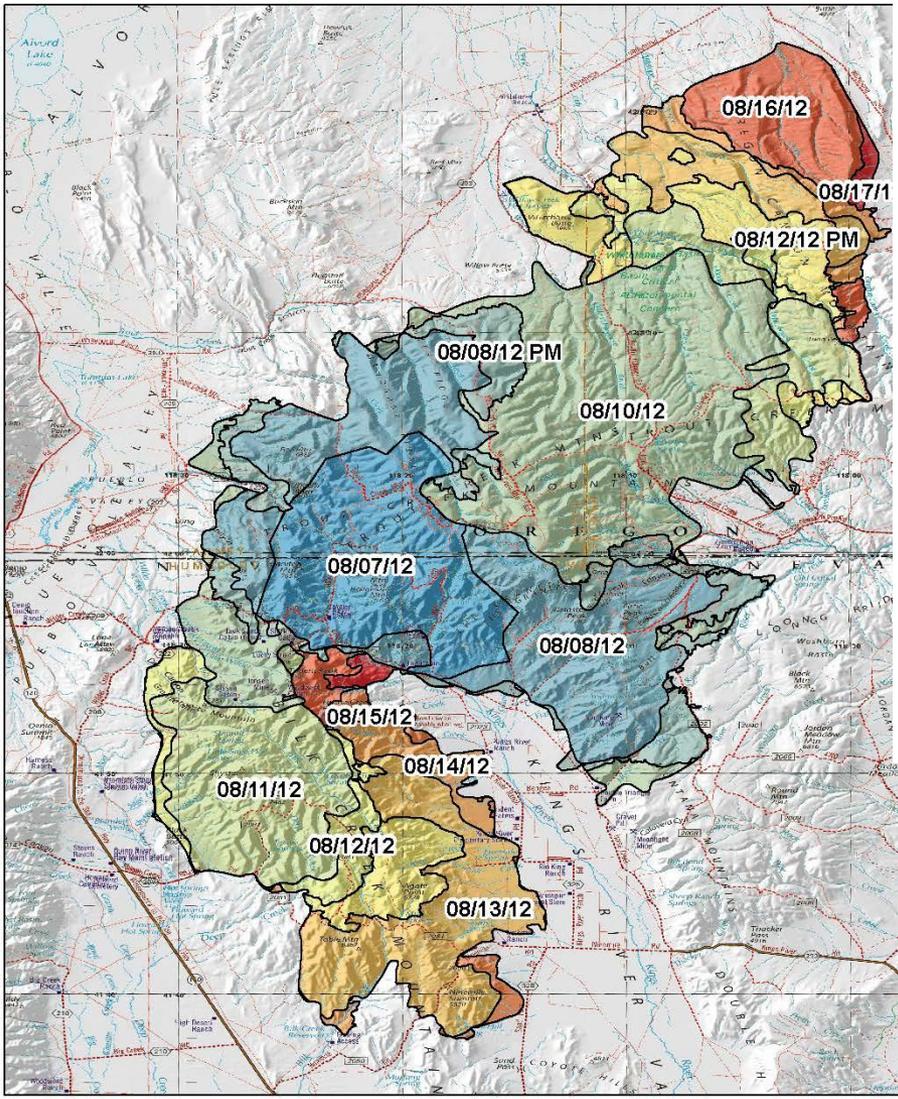


## Oregon



## Greater Sage Grouse Habitat





Planning Challenges  
 Core Habitat  
 > 1 million acres  
 2 MLRA's  
 2 States; multiple BLM Offices  
 Budgets

**Holloway Fire Progression Map**  
 August 17, 2012



# Developing Disturbance Response Groups



# Disturbance Response Groups

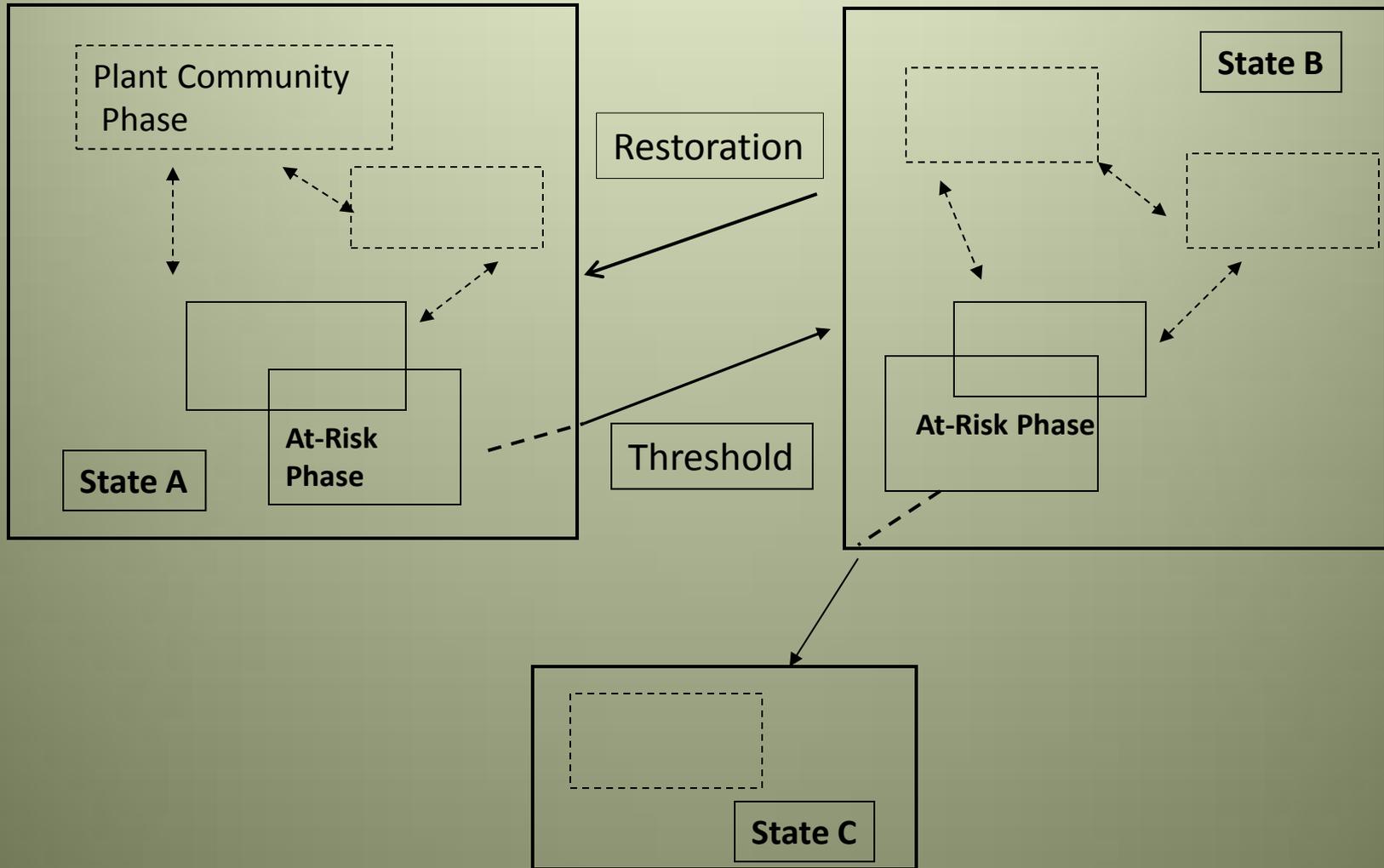
## Key Concepts

- Group of ES's that respond similarly to.....
  - Rate of response may vary
  - End point is same
- *STM is essentially the same*
- 'Ecological Dynamics' describes minor differences

# State-and-Transition MODEL

*Ecological Process Based Model*

MINIMUM SCALE FOR STATE = ECOLOGICAL SITE



# STM Development Process Disturbance Response Groups

- Assemble the core TEAM
- Invite others to participate in office / field events
- Teach the STM concepts to the core TEAM
  - Multiple times; office & field



Range Ecologist / STM

# Experience

Range / Plant

GIS

Soils

Range / Plant



# What is “process-based” thinking?

- Understanding that what we see is created by the functional capacity of ecological processes
- STMs describe ecological dynamics



# What is “process-based thinking?”

- What is driving the creation and maintenance of what I see?
- Process = amount per time (rate)
  - Infiltration rate
  - Nutrient cycling
  - Energy capture
  - Soil erosion
  - Etc.



# Ecological Dynamics

## Response to Disturbance

- Response to disturbances
  - Specie specific?
    - Know individual plant response
  - Dynamic soil properties
    - Vary by soil texture?
- Resilience
  - Climate
  - Soils
  - Plants



# STM Development Process

## Disturbance Response Groups

- MLRA or LRU scale
  - Build understanding of the climate, soils, plants
    - Soil scientist teach geology, soils, etc
    - GIS specialist create data layers of soil map units; fire events; roads; public / private land; etc.

# STM Development Process

- Range sites
  - Describe Reference Condition = State 1
  - Describes landscape, climate, soils, plants, production
  - Describes response to disturbance
- Team analyzes each site & determines how it responds to disturbance
- Group sites

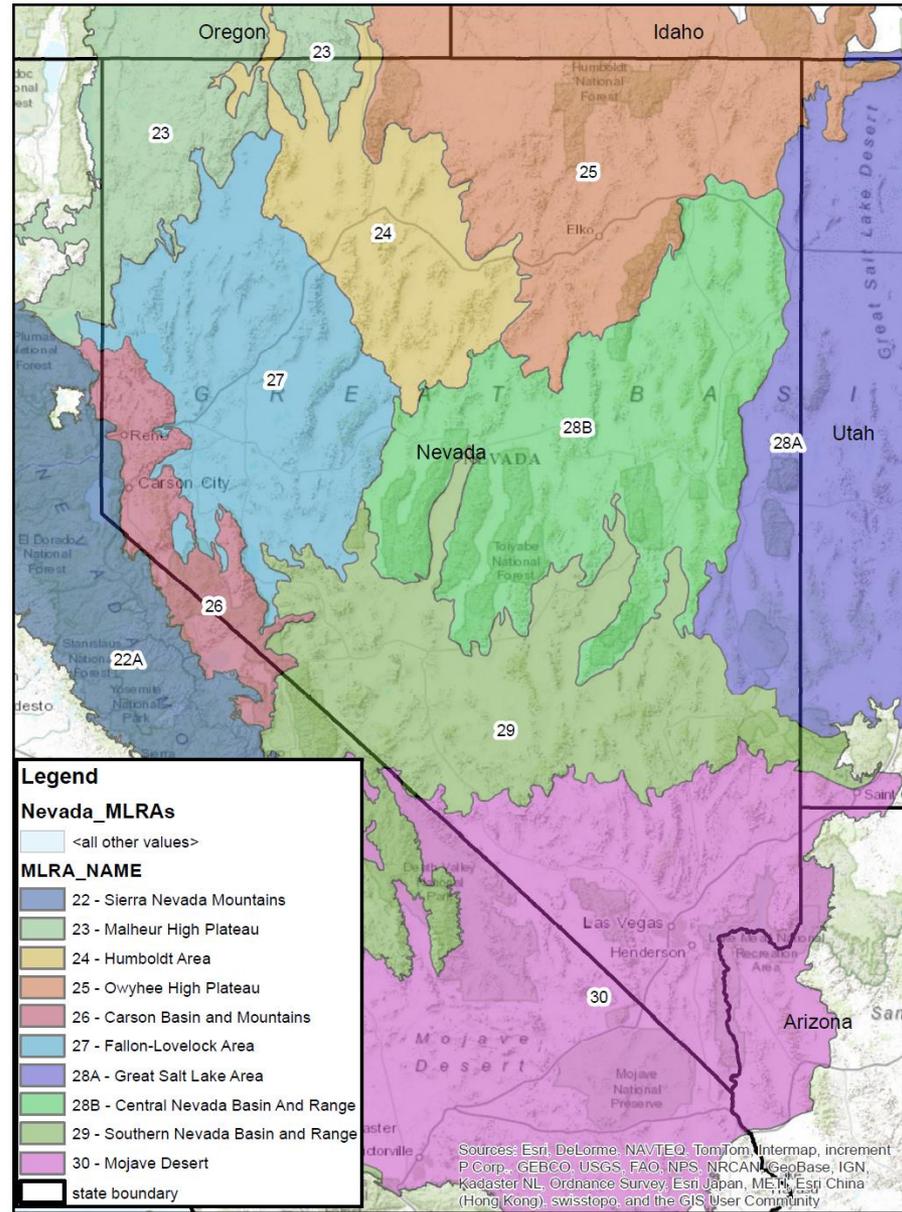
# STM Development Process

## Disturbance Response Groups

- Grouping process leads to building blocks for STM
  - Discussion involves
    - Soils and soil differences within groups
      - resilience
    - Plant species response to numerous disturbances
    - Response to repeated disturbance
- Modal site
  - greatest amount of acres mapped or
  - typical disturbance response of the group

# Scale Issues & Ecosites

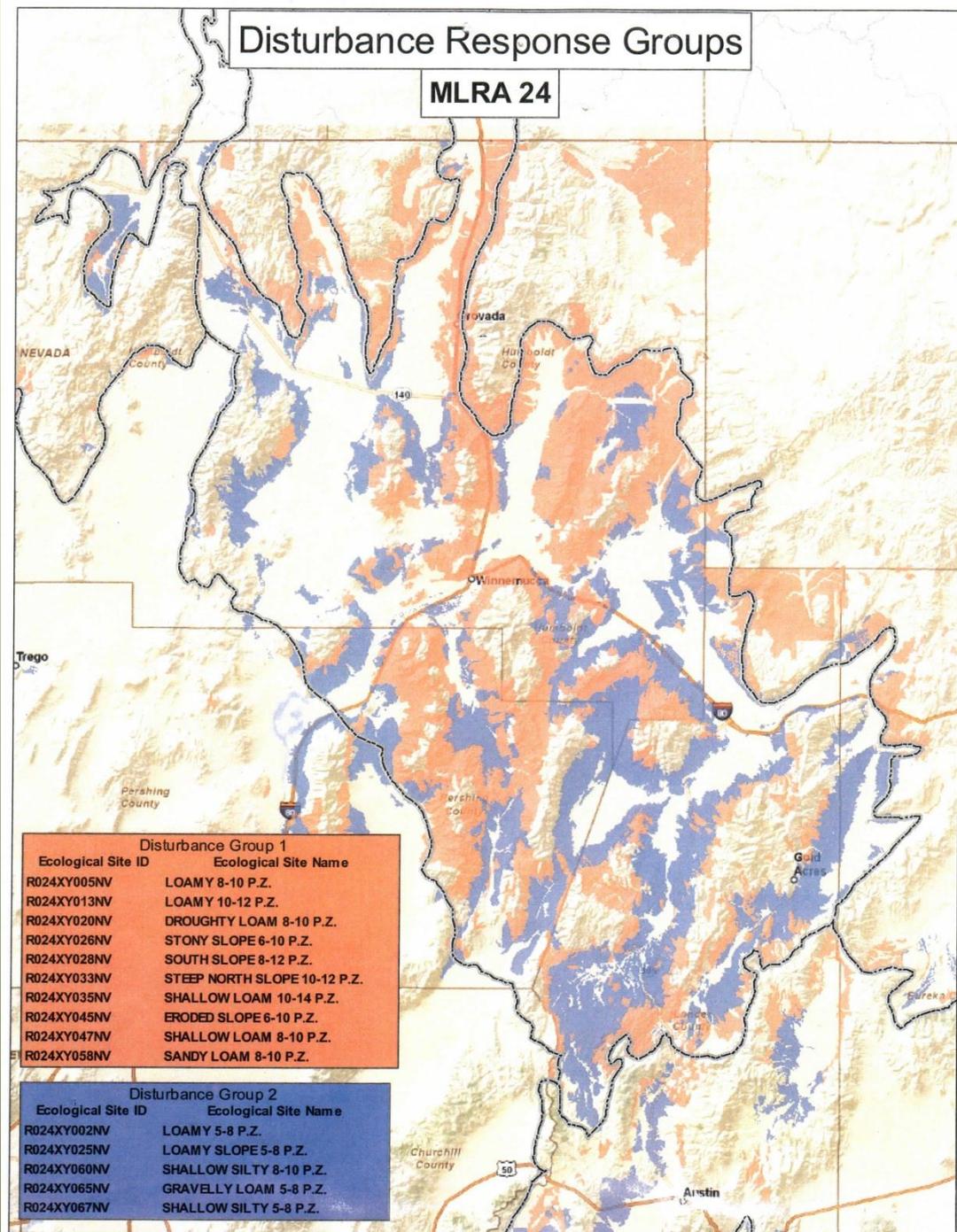
- MLRA 25
  - 69 eco sites
  - 12 DRG's
  - 115 field notes
- MLRA 28B & 28A
  - 160+ eco sites
  - 32 DRG's
  - 310 field notes
- MLRA 24
  - 54 eco sites
  - 11 DRG's
  - 74 field notes
- MLRA 23
  - 85 eco sites
  - 24 DRG's
  - 78 field notes to-date



# MLRA 24 NV Disturbance Response Groups

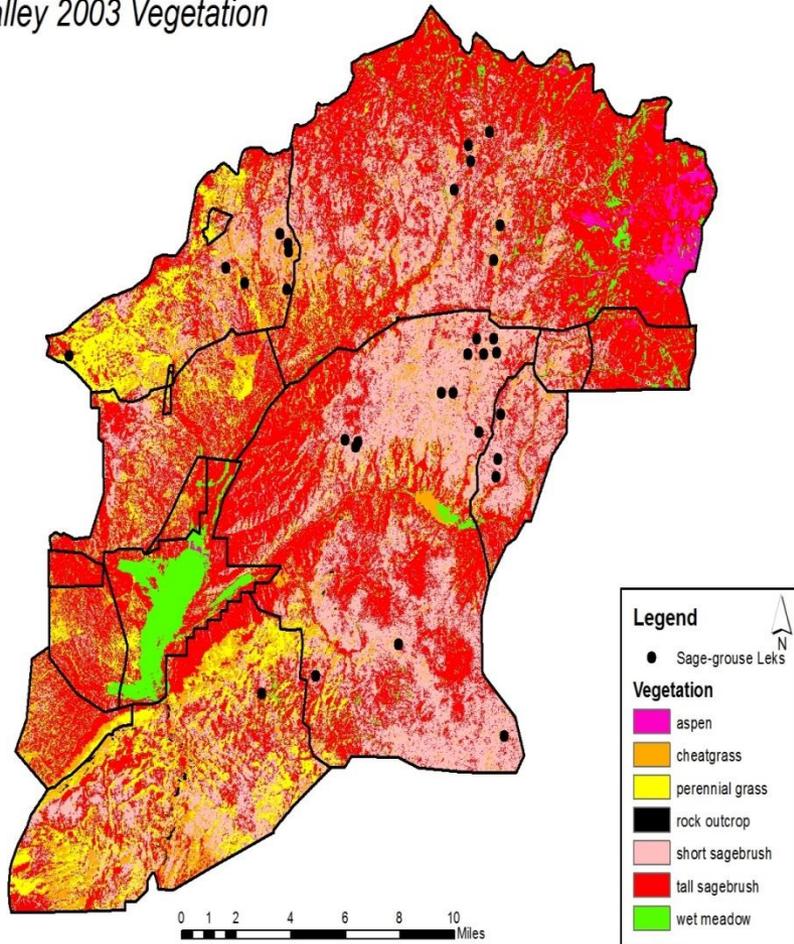
Group 1 ≈ 1.9 M ac  
Wyoming Sage  
Loamy 8-10 Modal  
≈ 1.0 M ac

Group 2 ≈ 1.6 M ac  
Salt Desert Shrub  
Loamy 5-8 Modal  
≈ 1.5 M ac

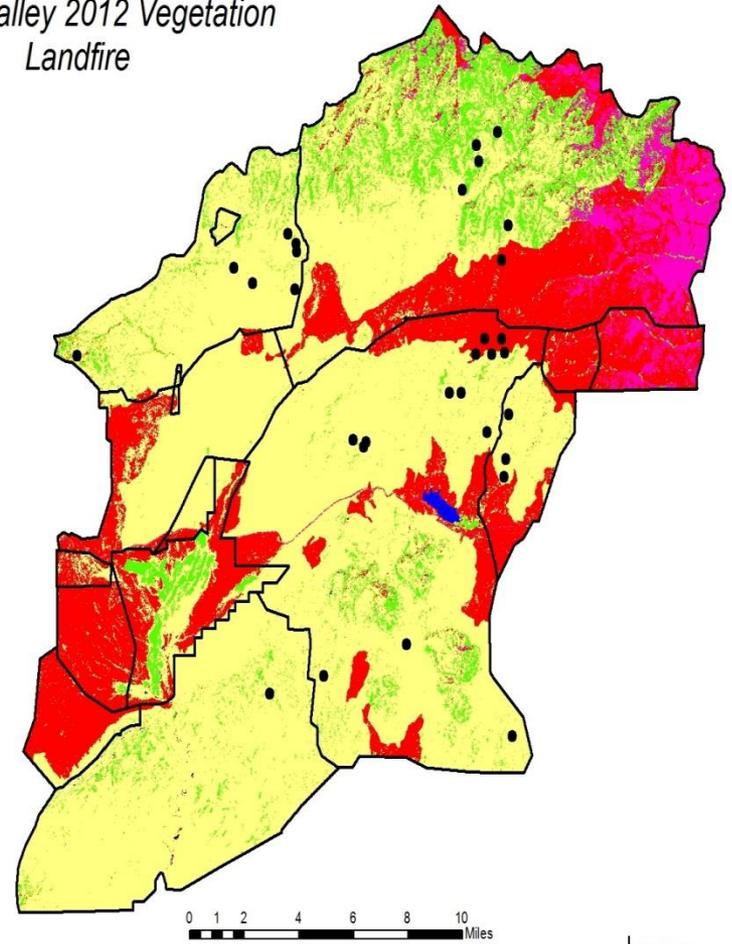


# Sagebrush Cover Change

Squaw Valley 2003 Vegetation



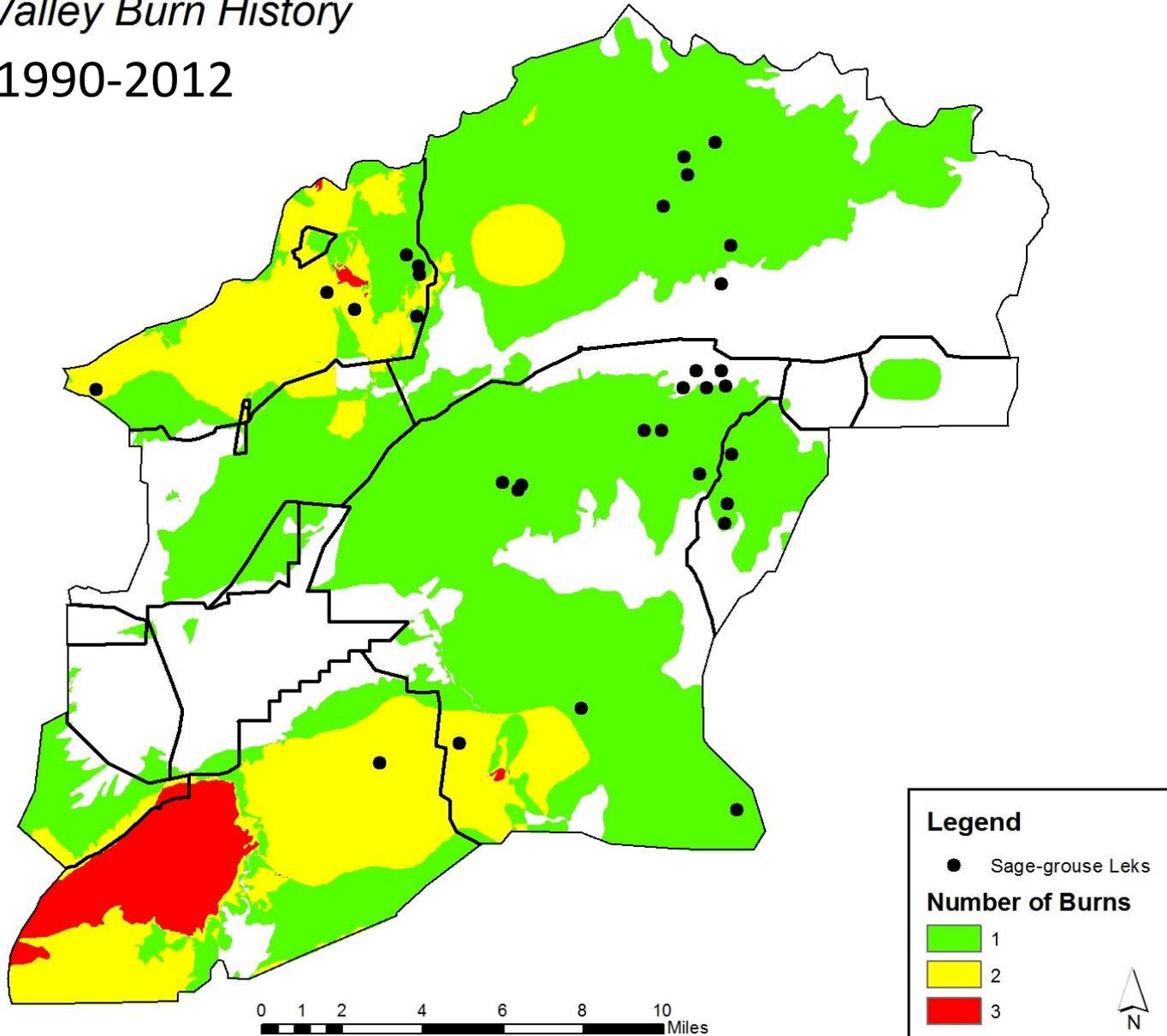
Squaw Valley 2012 Vegetation  
Landfire



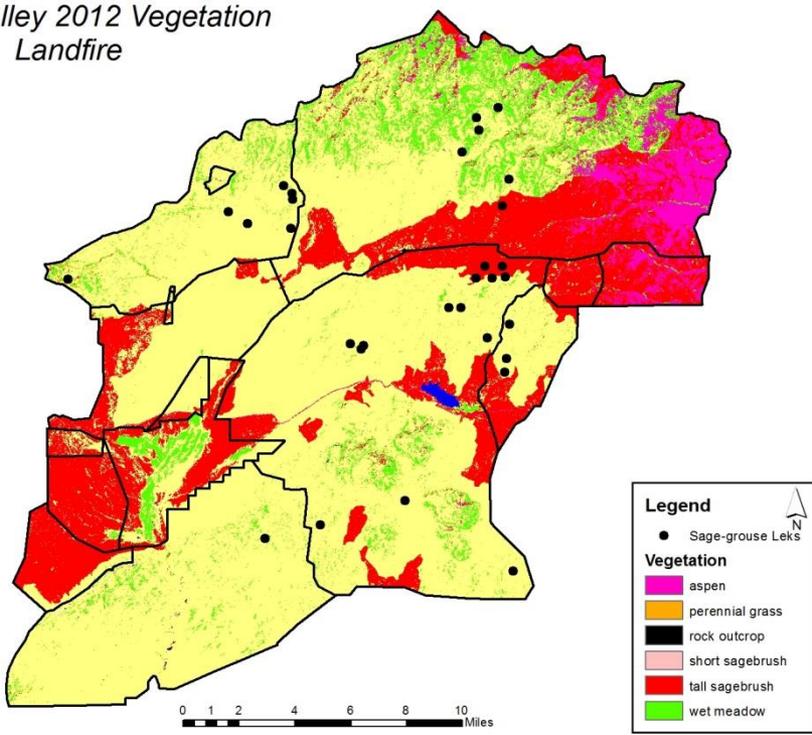
80% of ranch has burned 1 time; 30% 2 times; 9% 3 times

## *Squaw Valley Burn History*

1990-2012



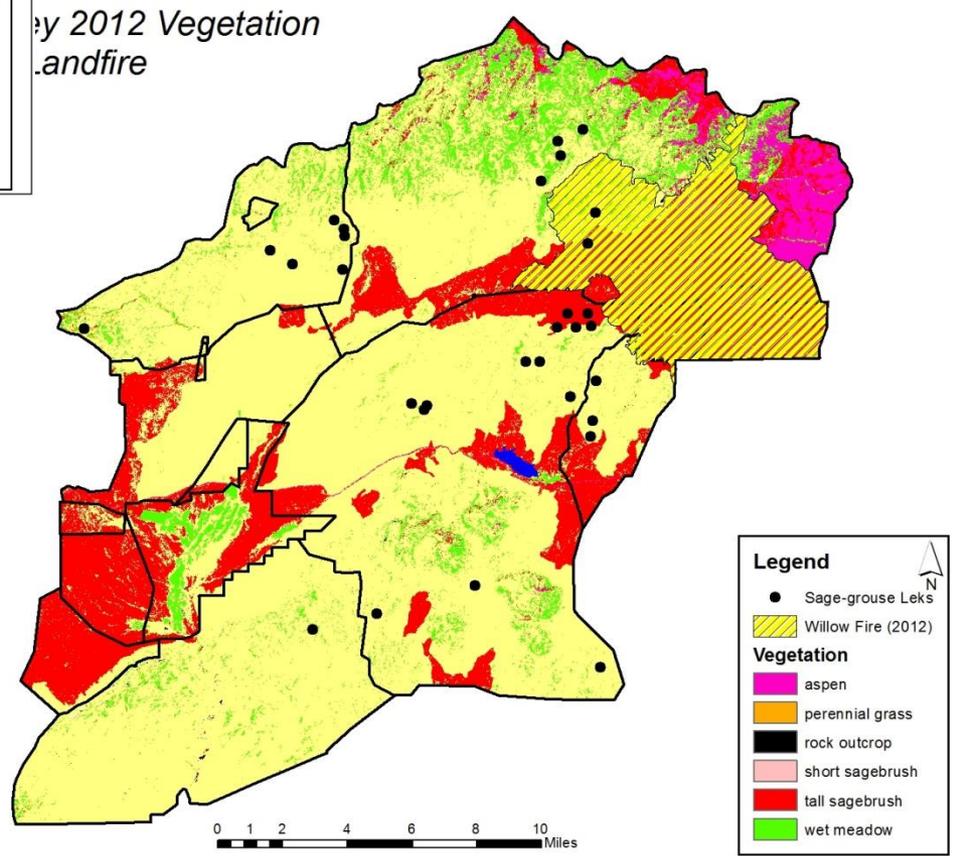
Squaw Valley 2012 Vegetation  
Landfire



Cost of Rehabilitation

Seeding = \$1 million

July 2012 Vegetation  
Landfire



# Cobbly Claypan



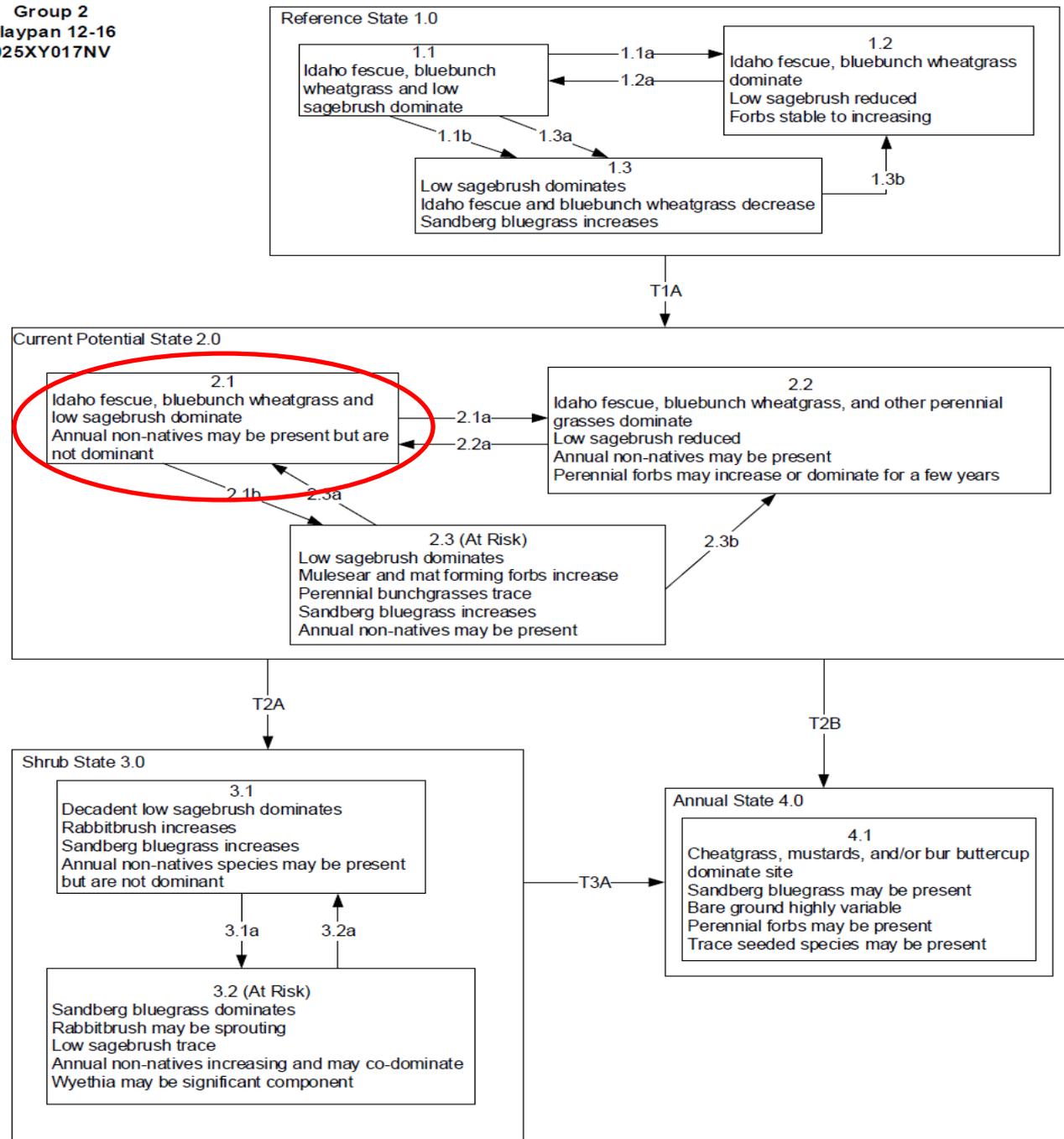
# Claypan 12-16



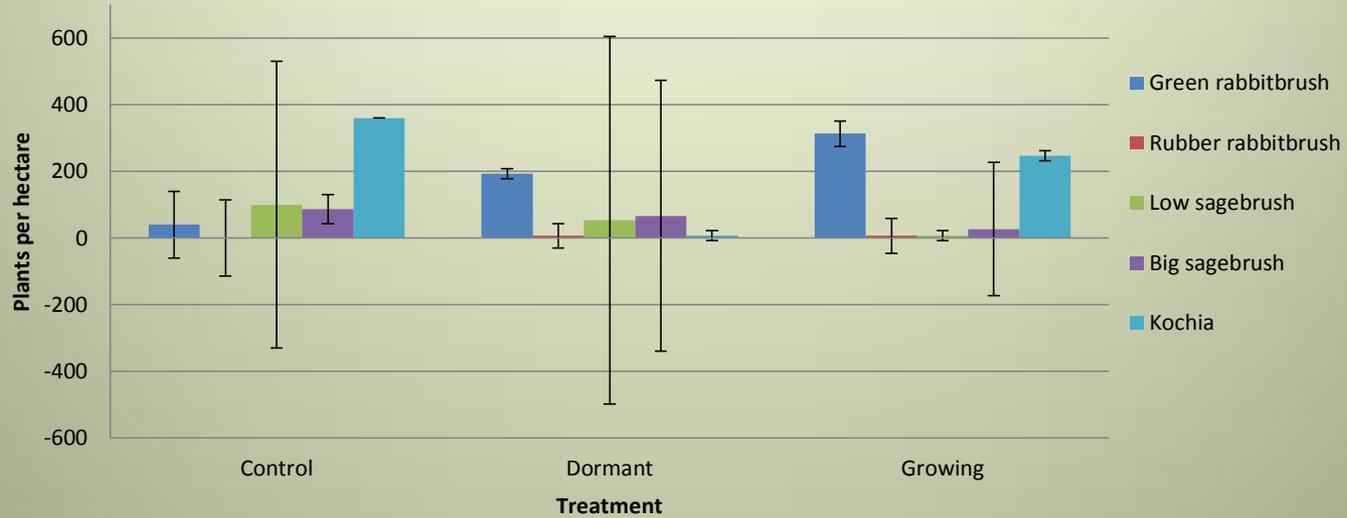
To SV Ranch



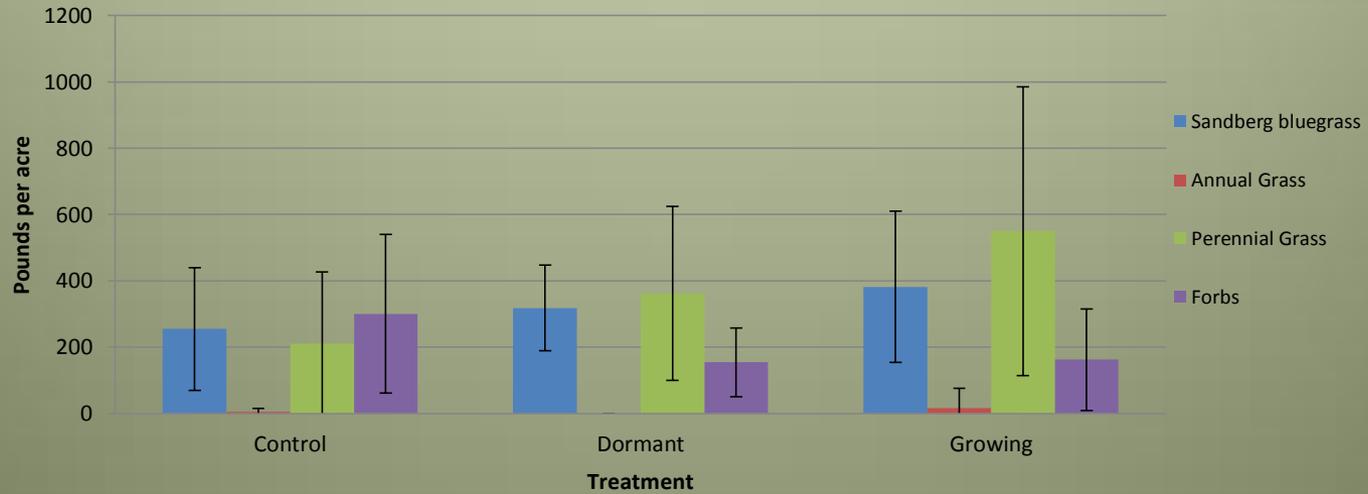
1. What phase before fire?
2. Management after fire?  
2.2a = with time Sagebrush will Re-establish



**Squaw Valley Live Shrub Density 2014**



**Average Annual Production by Functional Group  
Squaw Valley 2014**



# Conclusion

- DRG's Landscape Scale / ES scale model
- Incorporate Expert Knowledge & Data
- STM robust tool for decision making



# Management Applications

- **Wildlife habitat**
- **Monitoring – BLM AIM strategy**
- **Grazing Management**
- **Emergency Stabilization / Monitoring**
- **Drought Decisions**



# Timeline

- MLRA 24 Models: Complete
  - [tstringham@cabnr.unr.edu](mailto:tstringham@cabnr.unr.edu)
- MLRA 25 Models: June 30, 2015
- MLRA 28A and 28B: Complete
- MLRA 23NV: underway
- MLRA 26: underway
- MLRA 23 Oregon: Complete
  - [tstringham@cabnr.unr.edu](mailto:tstringham@cabnr.unr.edu)

