

# Overview - Rangeland Technology & Equipment Council

*"Promote the wise use and improvement of rangelands through the supporting functions of equipment development and application of innovative technology" focusing on:*

1. Site Preparation and Seeding
2. Plant Materials
3. Fire- **FUELS MANAGEMENT**
4. Seedbed Ecology
5. Weed Management
6. Structures
7. Information and Publications



# Range Seeding Committee organized in 1946 to develop equipment and technologies to address land degradation issues in the Western US



Past to Present:  
Range Seeding Committee  
evolved to "Vegetative  
Rehabilitation & Equipment  
Workshop" to RTEC today

# Development of the Rangeland Drill



First rangeland drill constructed by the Forest Service in Oregon in 1951.



Range Seeding Committee designed and Laird Welding and Manufacturing sold the first the drill in 1955



# Recent Equipment Development



Rangeland Drill Improvements

# Revegetation Equipment Catalog

## Contents

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Controlling plants  
mechanically

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Controlling plants by fire

Site preparation

Fertilization and  
mulching

Seeding

Specialized planters

Contact us



Produced in cooperation with:  
Rangeland Technology & Equipment Council  
USDA Forest Service  
USDI Bureau of Land Management

**On the web at “<http://Reveg-catalog.tamu.edu>”**

A dramatic landscape photograph featuring a bright sun low on the horizon, partially obscured by dark, silhouetted mountain ranges. The sky is filled with large, dark clouds, some of which are illuminated from below by the sun, creating a strong contrast and a lens flare effect. The foreground is dark and appears to be a field of low-lying vegetation.

**"RTEC Business Meeting" Follows----**  
**Help Us Plan the 2014 Orlando Workshop**



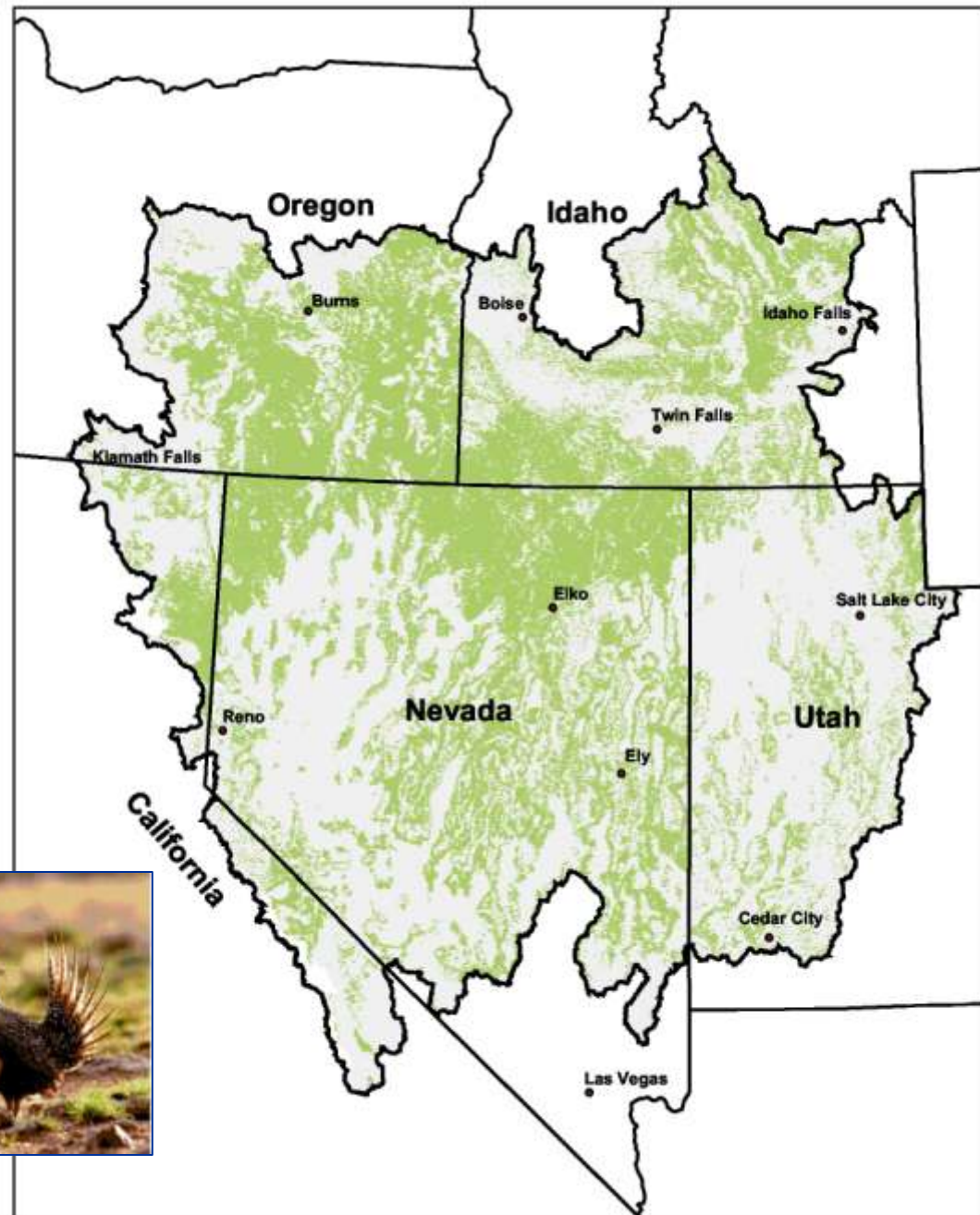
# Lessons Learned from the Great Basin: Land of Big Fires and Multiple Fuels Management Strategies

Mike Pellant  
USDI Bureau of Land Management  
Boise, ID



# Sagebrush in the Great Basin

- 57 million acres of sagebrush in the Great Basin (54% of total remaining)
- Rapidly disappearing biome -invasive plants & wildfires





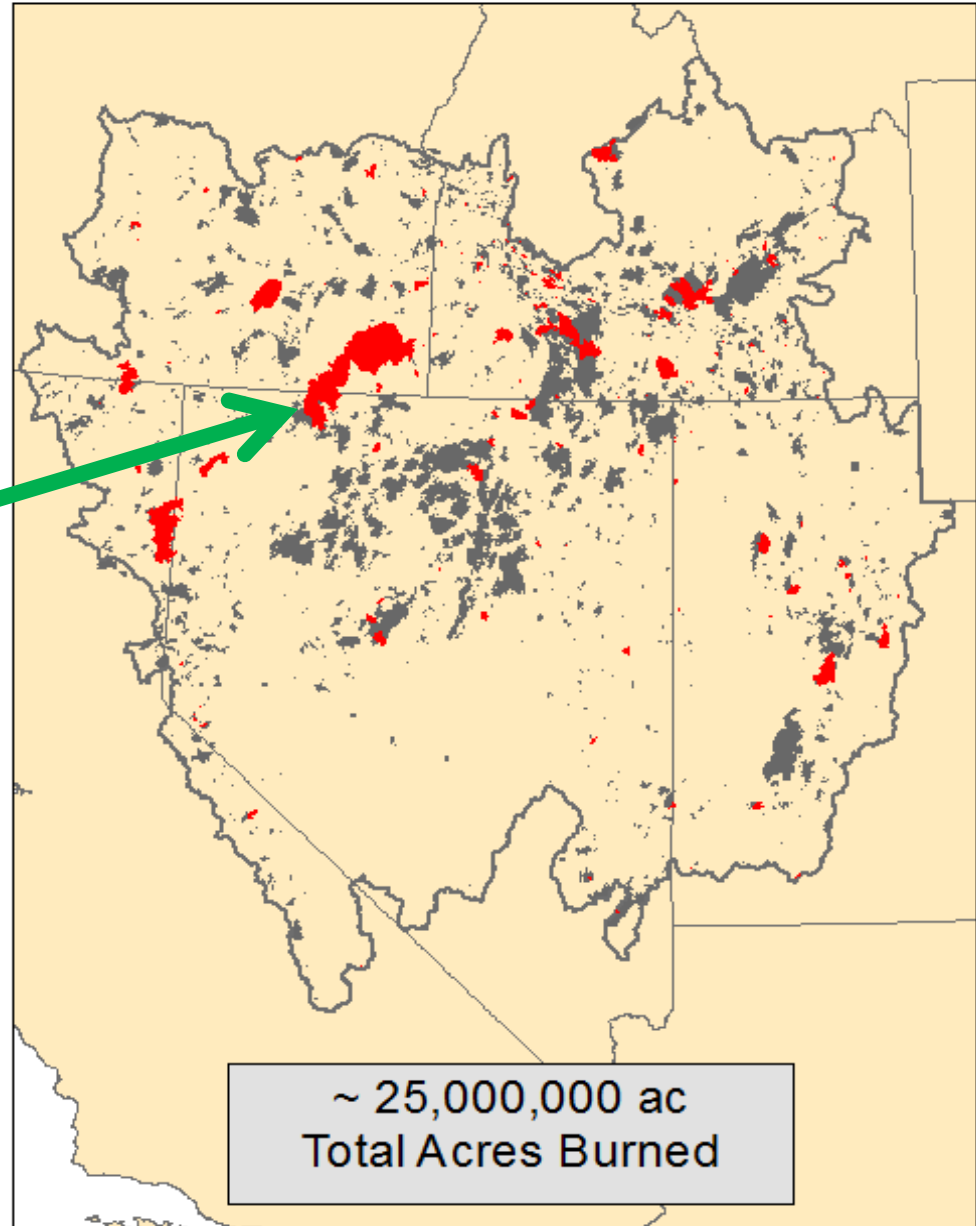
# Cheatgrass-Wildfire Cycle



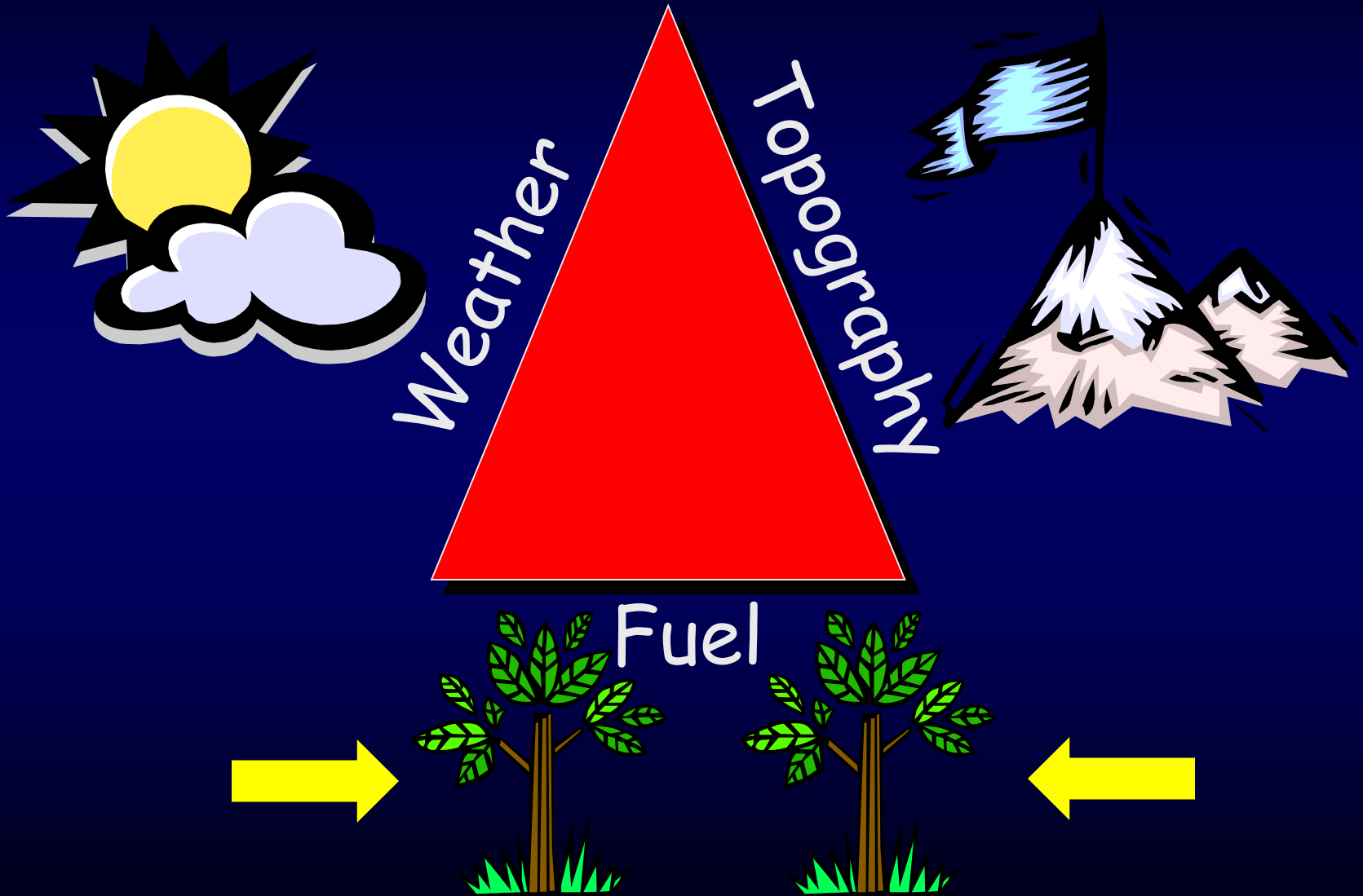
# 2012 Fire Season

- 3.3 million acres burned
- Holloway/Long Draw Fires- 1 million acres

## Great Basin Fires 1990 - 2012



# Rangeland Fire Triangle





# Rangeland Fuel Characteristics

1. Fine (grass) versus coarse (woody) and horizontal continuity (closeness)
2. Load(amount) & vertical distribution (ladder fuels)
3. Water content (% water)
4. Volatility (flammability)

# 1. Fuels Management- Reduce fuel continuity





## 2. Fuels Management- Increase the proportion of plants with a higher moisture content (cool vs. warm season)



Crested wheatgrass



Forage kochia



# Fuels Management- Reduce coarse fuel loads and/or modify structure.

Big sagebrush



Increased fire fighter safety and effectiveness of backfires

Great Plains-  
Replace tall and mid grasses with short grasses?

Crested Wheatgrass



# Fuels Management- Reduce More Flammable Fuels (volatile oils)



3 ft tall Rabbitbrush plants



Pinyon/Juniper Woodland





# Approaches to Fuels Management

1. Biological- Livestock
2. Mechanical
3. "Black Line" Fire Breaks
4. Herbicide
5. Fire Resistant Plantings-  
Greenstrips





# Biological Fuels Control- Livestock

## "Targeted or Prescriptive Grazing"



Sheep Use- Carson City, NV

Sheep/Goat Use- Kuna, ID

# Targeted Grazing



## TARGETED GRAZING:

*A natural approach to  
vegetation management  
and landscape enhancement*

*Targeted Grazing = The application of a specific kind of livestock at a determined season, duration, and intensity to accomplish defined vegetation or landscape goals.*

## CHAPTER 8: Targeted Livestock Grazing to Suppress Invasive Annual Grasses

<http://www.cnr.uidaho.edu/rx-grazing/Handbook.htm>

# Fuels Control- Livestock at Landscape Scale



## Variables:

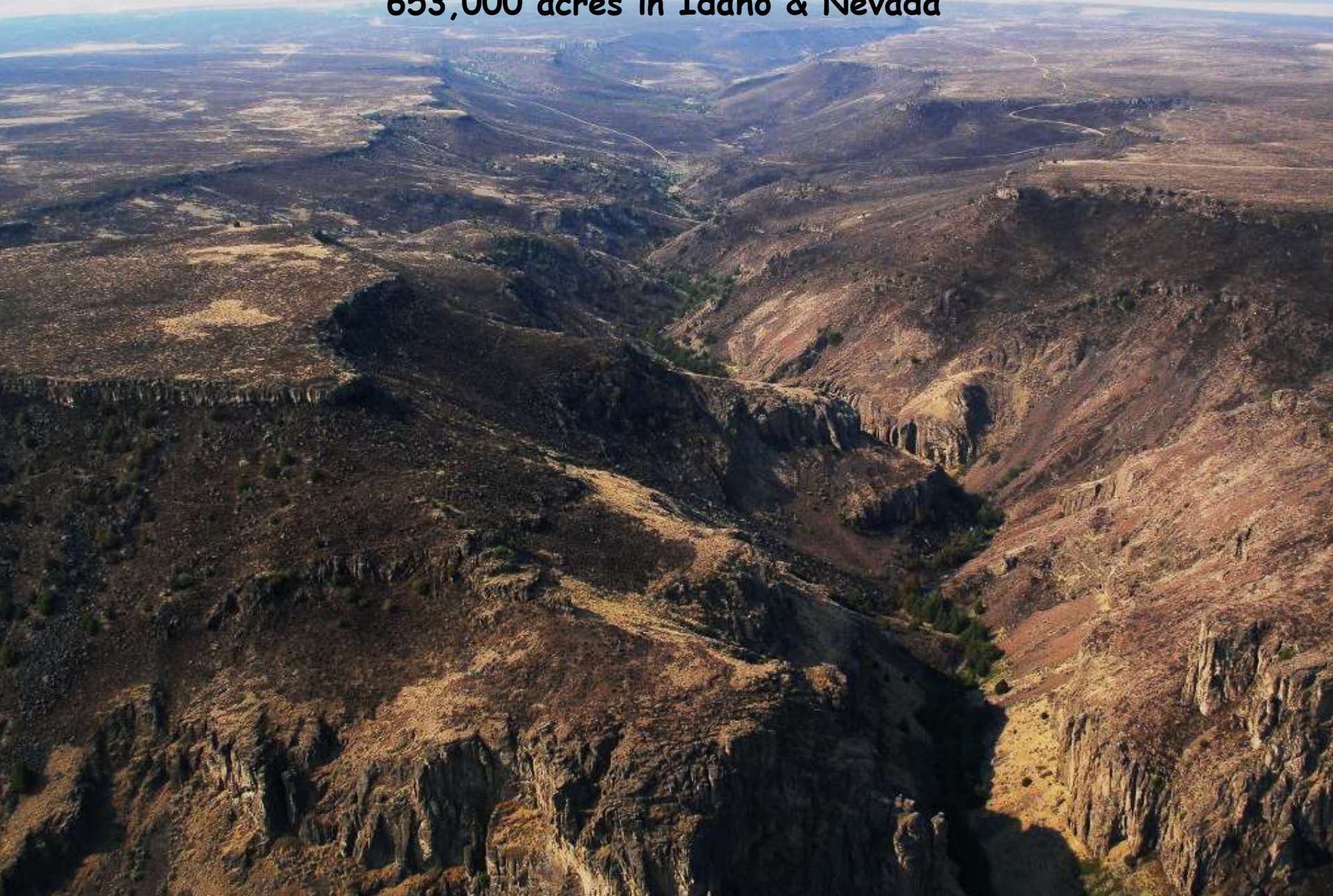
- Season of use
- Intensity of use
- Distribution
- Duration of use
- Class of livestock

In order to reduce fuels on Great Basin rangelands you must repeat appropriate grazing practices over a multi-year period under different climatic conditions over a large, diverse landscape.



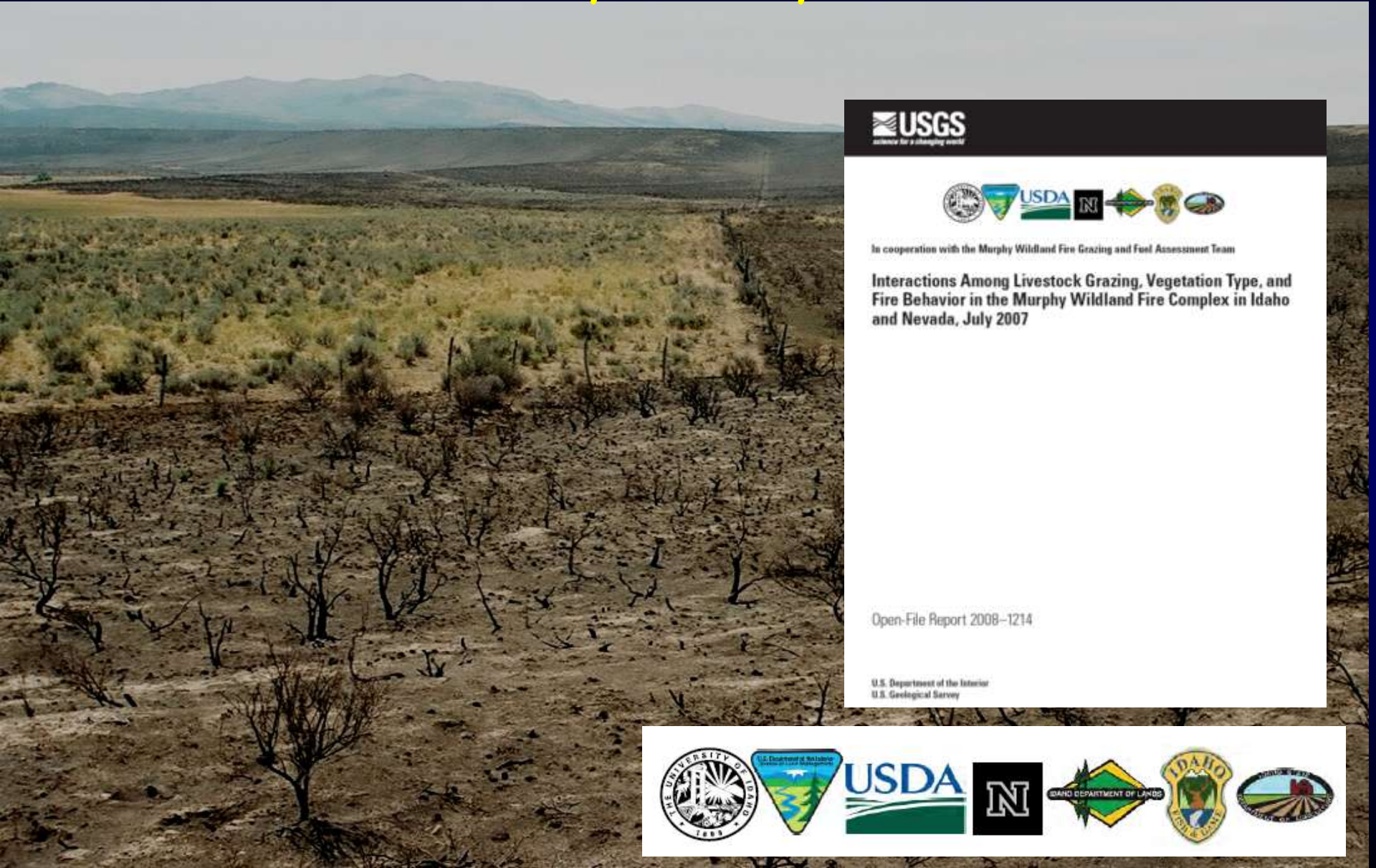
# 2007 Murphy Complex Fire

653,000 acres in Idaho & Nevada





# 2007 Murphy Complex Wildfire- Livestock, Fuels, and Fire



In cooperation with the Murphy Wildland Fire Grazing and Fuel Assessment Team

**Interactions Among Livestock Grazing, Vegetation Type, and  
Fire Behavior in the Murphy Wildland Fire Complex in Idaho  
and Nevada, July 2007**

Open-File Report 2008-1214

U.S. Department of the Interior  
U.S. Geological Survey



# Murphy Complex Fire-August 2007

Crested Wheatgrass

Ungrazed    Grazed

Big Sagebrush





What is needed is a  
landscape not a  
project approach...  
strategic and  
targeted grazing.



Considerations for Strategically Reducing  
Fuels and Wildfires on Public Lands in the  
Great Basin with Targeted Grazing



Prepared by  
Great Basin  
Restoration Initiative Workgroup  
January 2010



# Fuels Management- Livestock Unintended Consequences

Mid-1980's



Secondary  
Impacts from  
Livestock Use

2007



# Fuels Management-Mechanical Control

Types of equipment selected to reduce fuels depends on many factors including (but not limited to):

1. Objective- total (fire break) or partial reduction in fuels
2. Soil and slope limitations
3. Cost
4. Effectiveness
5. Potential for increase in weeds



# Total Mechanical Control of Fuels-Fire Break



Competition control is focused on removing current year plants before seeds become viable...eventually reseed?

Removing fuels after they have cured-no long-term benefits in terms of reducing future fuels.



# Total Mechanical Control of Fuels-Fire Break



Erosion potential-  
no ground cover

What happens when  
annual fuelbreak  
maintenance is  
discontinued?



Halogeton



# Total Mechanical Control of Fuels-Fire Break

## Width

Narrower less impacts and costs less with marginal efficiency.



Wider is more effective, creates a bigger impact and costs more.



Width/effectiveness depends on adjacent fuel and fire weather.



# Partial Fuel Reduction-Mowing to Reduce Fine Fuels



- High cost per unit area
- Potential for fire starts
- Regrowth-additional costs
- Rock and slope limitations

# Partial Fuel Reduction-Removing Woody Fuels with a "Bulldog"

Treats 12-15 acres per day at \$600/ac  
(clearances, planning, & implementation)



# Partial Fuel Reduction-Removing Woody Fuels with a Chainsaw

- Selective but labor/cost expensive.
- Minimal environmental impacts.
- Can be applied in different stand ages





# Partial Fuel Reduction Mechanical- Limitations



Missed lower  
limbs or young  
trees...project  
longevity

Scatter, pile or  
pile and burn?



# Fuels Management- Burn a Blackline

- Effective in Removing all Fuel
- Risk/Liability Issues
- Requires Special Equipment
- No Soil Disturbance
- Nitrogen Release





# Issues with Burning Blacklines

## Invasive Species



Knapweeds



Rush skeletonweed

## Application



Reduce litter to  
improve effectiveness  
of herbicide

# Fuels Management-Herbicides

- 
- A photograph of a tractor pulling a wide-spread herbicide sprayer across a dry, brushy field. The tractor is in the center, moving away from the viewer. The sprayer has long, horizontal booms on either side of the tractor, with nozzles visible. The field is covered in low-lying, dry vegetation. In the background, there are utility poles and a clear sky with some clouds.
- Cost Effective with Risks
  - Requires Special Equipment
  - No Soil Disturbance
  - No Nitrogen Release

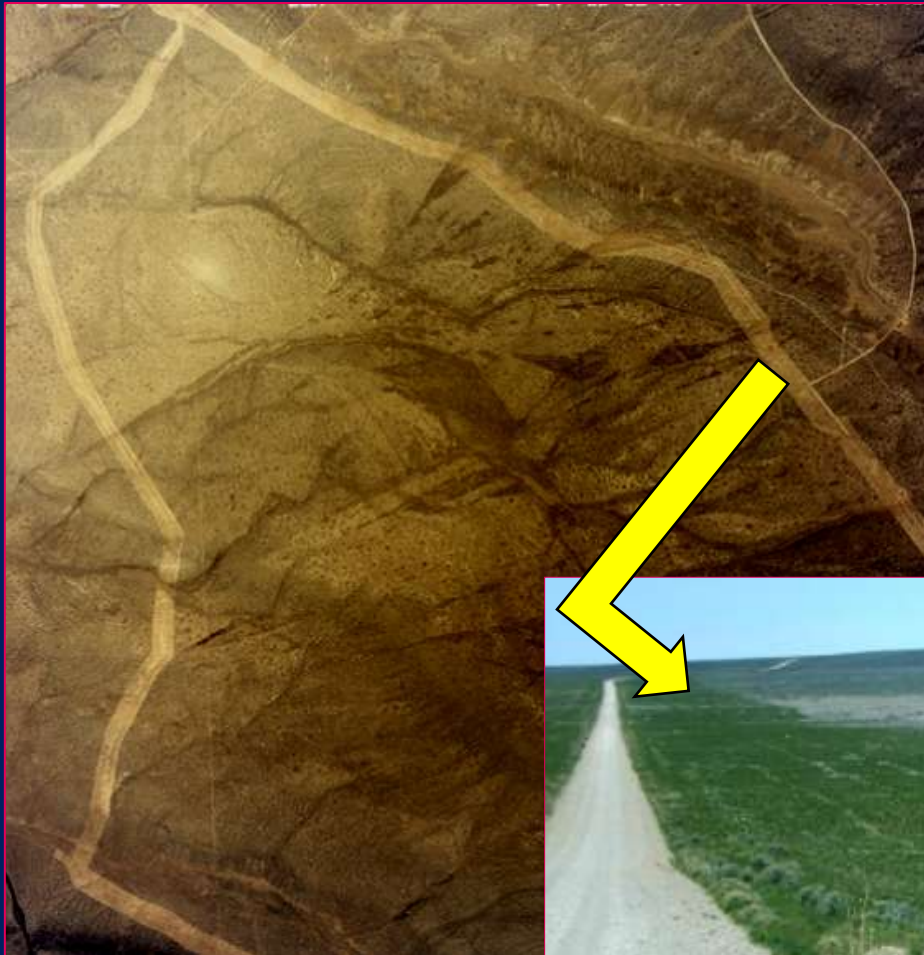


# Fine Fuels Management

Reduce cheatgrass and promote perennial plants.



# Fuels Management- Plant Fire Resistant Vegetation



Estalish strategic strips of vegetation that stay green longer ("greenstrip") than adjacent fuels



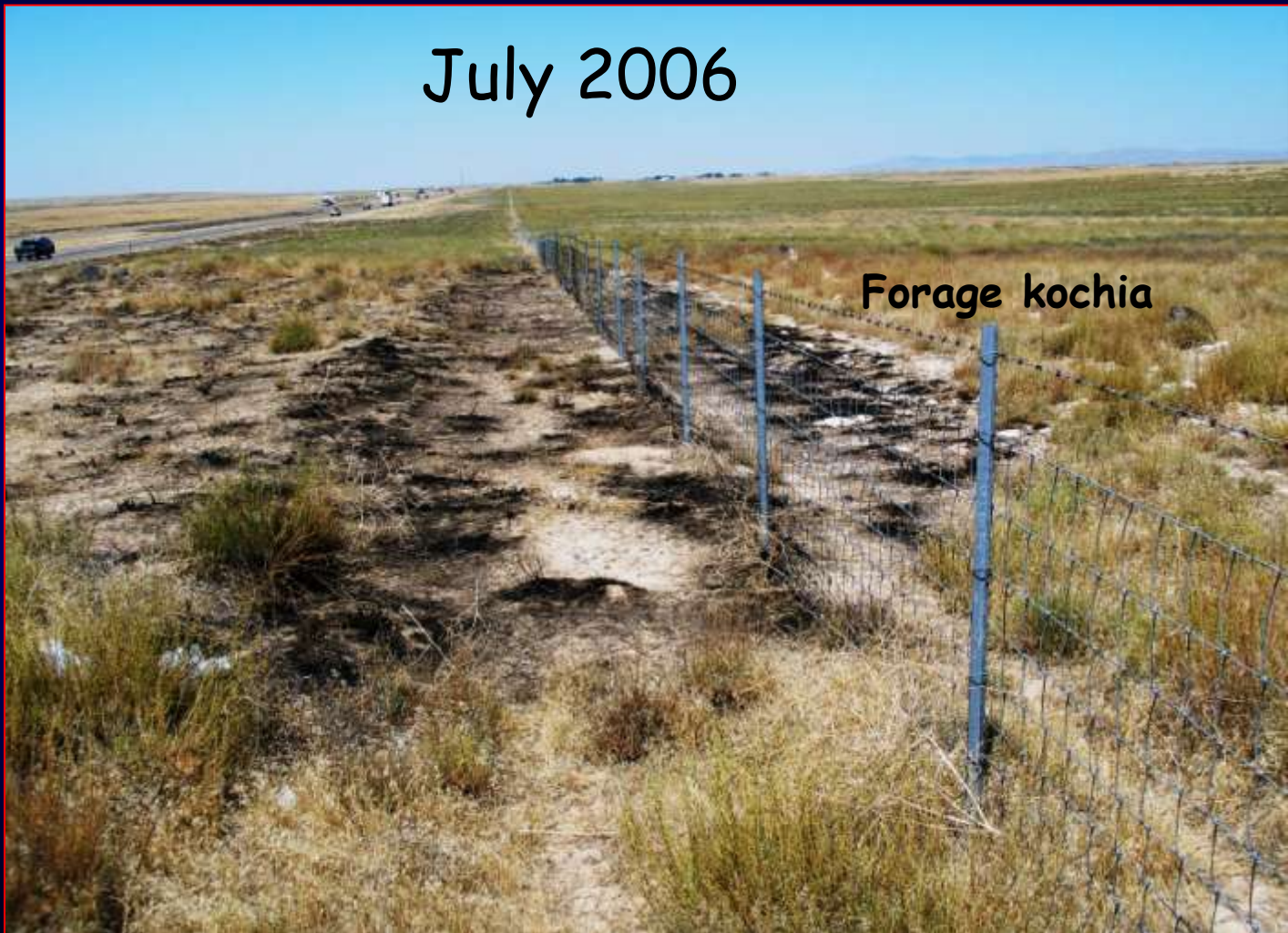


# Fuels Management- Reduce Fuel Continuity



# Lockman Butte Greenstrip: I-84 Just West of Mountain Home

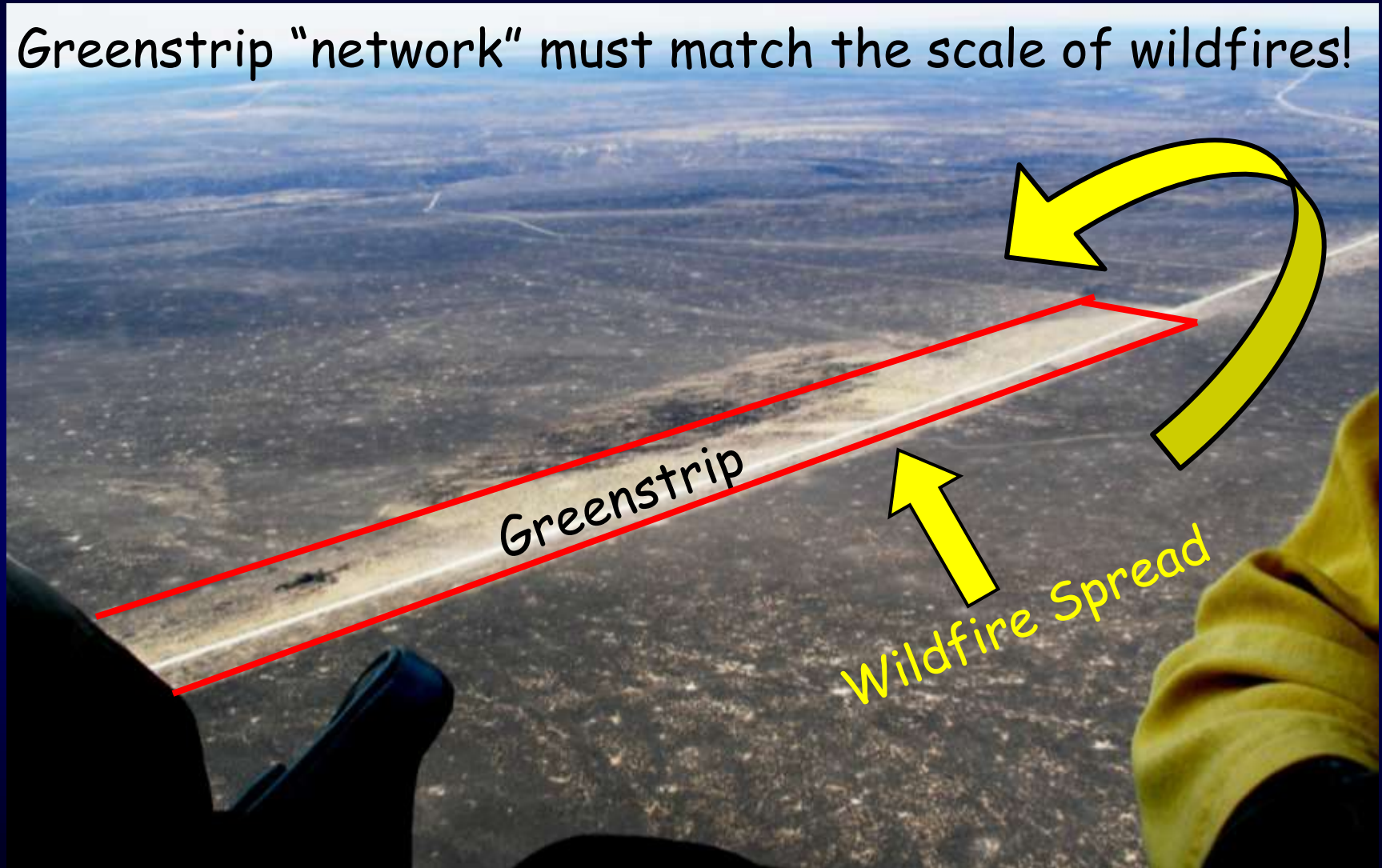
July 2006





# 2007 Murphy Complex Wildfire -Idaho

Greenstrip "network" must match the scale of wildfires!



# Integrated Fuels Management: Targeted Livestock Grazing & Greenstrips—1+1=3





# Lessons Learned

- Fuels management is a proactive alternative to fire suppression...."pay now or pay more later!"
- Don't trade one problem for another....unintended consequences
- Coordinate and integrate projects appropriate to the wildfire scale