



**Resilience, it's the Perennials Stupid!**  
**By Mike Zielinski**  
**Compilation by Aliana Reichert-**  
**Eberhardt**  
**December, 2008**

January 2004, Osgood Mountain Range

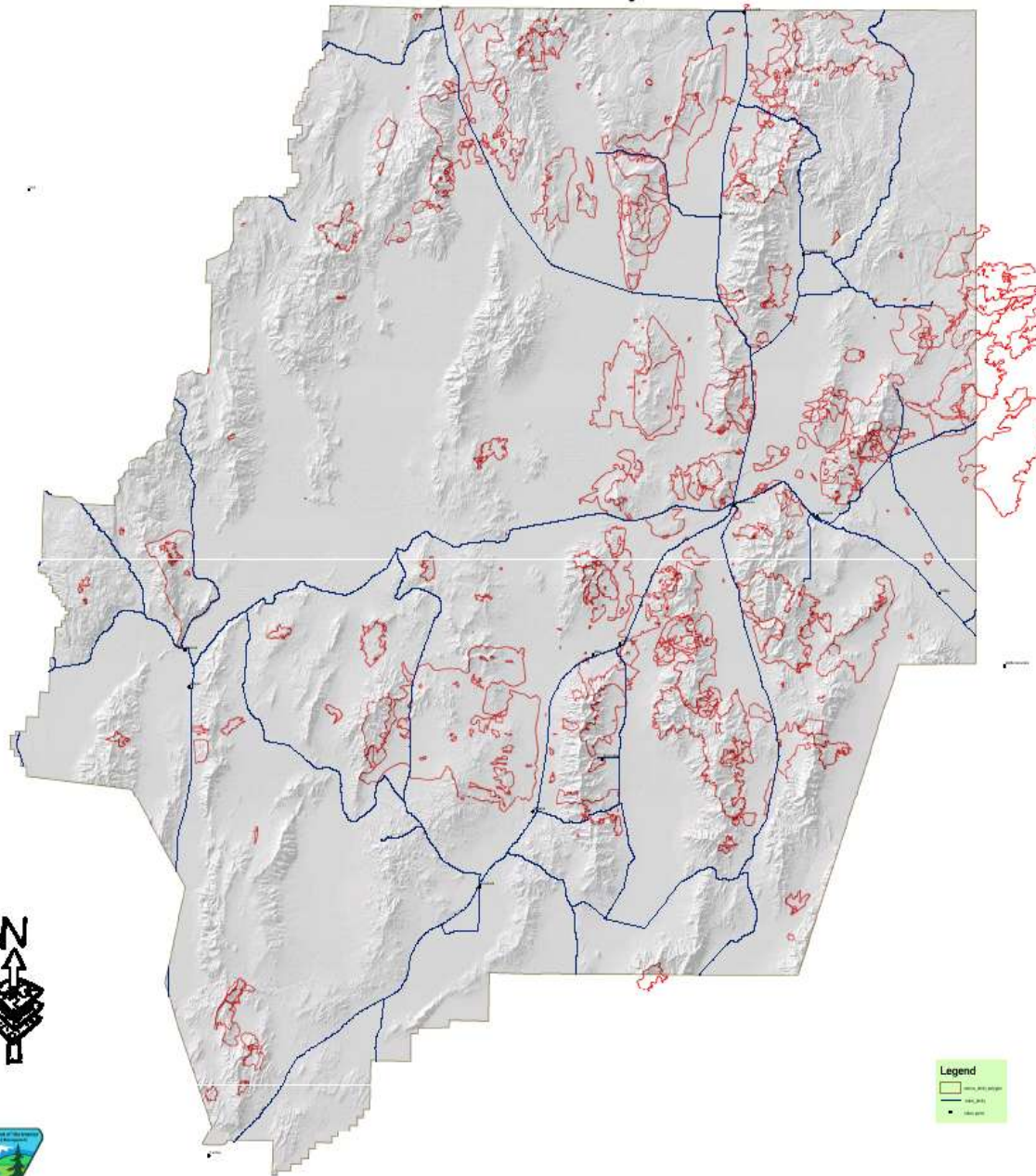
# Winnemucca District



# Winnemucca District 2.5 Million Acres Burned 1984 through 2008



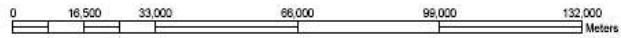
# Fire History



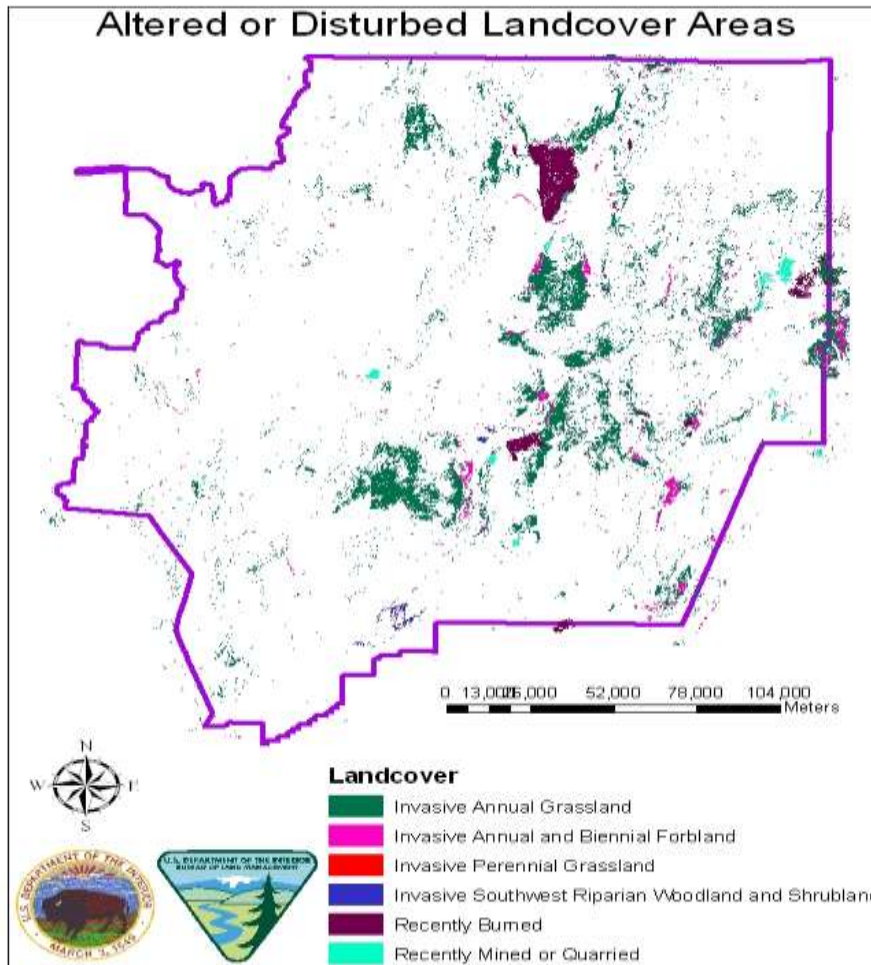
Fire History 2008

**Legend**

- Fire History
- 2008
- 2009



# Disturbed Lands

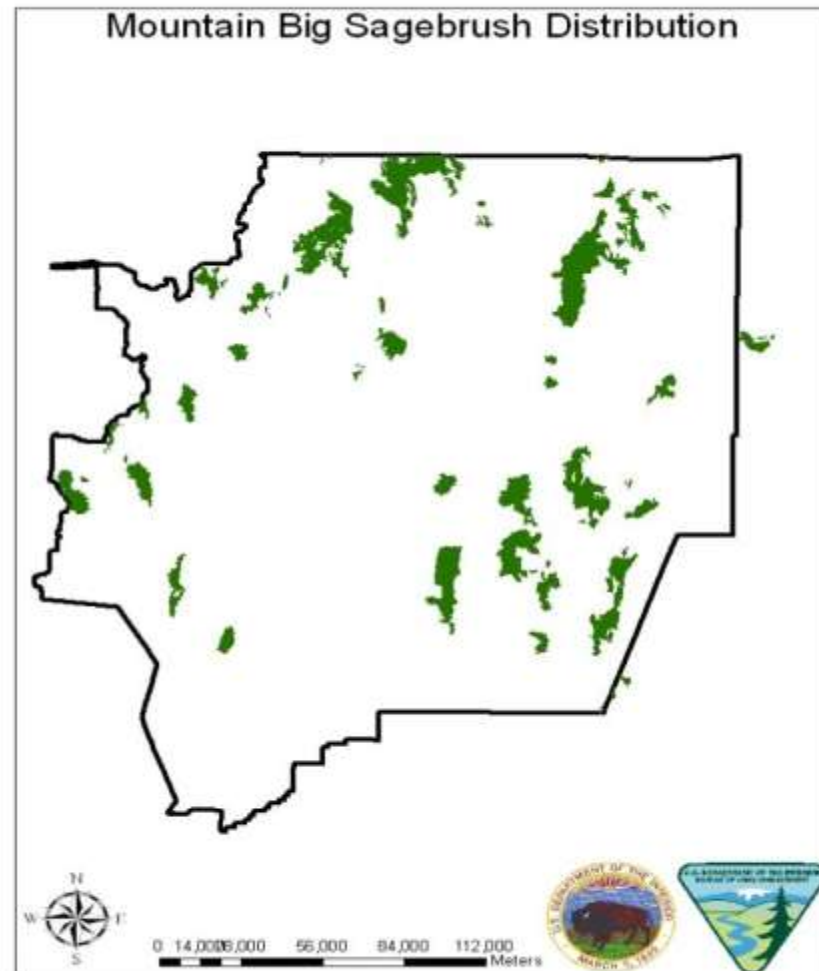


Disturbance	Acres
Invasive Annual Grassland	708,540
Invasive Annual and Biennial Forbland	94,682
Invasive Perennial Grassland	2,374
Invasive Southwest Riparian Woodland and Shrubland	12,793
Recently Burned	104,564
Recently Mined or Quarried	21,115
<b>Total</b>	<b>944,068</b>

# Impacts to Sagebrush Plant Communities by Fire

	<i>Total Acres</i>	<i>Acres Burned</i>	<i>% Burned</i>
Sagebrush scrub	5,472,478	1,289,589	24
Wyoming big sagebrush	2,651,451	756,652	29
Mountain big sagebrush	789,781	217,860	28
Big sagebrush	285,583	61,715	21
Low gray sagebrush	587,176	109,960	19
Black sagebrush	158,183	22,953	15
Lahontan sagebrush	845,304	106,225	13
Basin big sagebrush	143,138	14,191	10
Theetip sagebrush	2,615	33	1

# Mountain Big Sagebrush



Dutch Flat Fire  
Osgood Mountains  
Granite Creek

Granitic South Slopes 12 to 14  
Three years old

September 1999

10 years old

July 2006

10 years old

July 2006



Dutch Flat Fire  
Osgood Mountains  
Summer Camp Creek  
Granitic Slope 14 plus

7 years old



August 2003



August 2003

One Year



September 1997



September 1997

Rodeo Fire  
Bilk Creek Mountains  
Loamy Bottom 12-16  
2 years old



July 1990

# Rodeo Fire

## Bilk Creek Mountains

### Loamy Bottom 12-16

### 7 years old



June 1995

	Density (plants/m <sup>2</sup> )		% Cover	
	1990	1995	1990	1995
<b>Crested Wheatgrass</b>	1.08	0.56	0.99	1.45
<b>Sandberg's Bluegrass</b>	0.34	0.67	1.38	0.71
<b>Mountain Big Sagebrush</b>	2.03	3.64	1.10	17.99
<b>Rabbitbrush</b>	0.04	0.50	0.00	3.69
<b>Blue Flax</b>	0.22	0.11	0.14	0.86
<b>Small Burnett</b>	0.34	0.11	0.40	0.03

Railroad Fire  
Sonoma Range  
Loamy Slope 12-14  
2 years old



July 1988

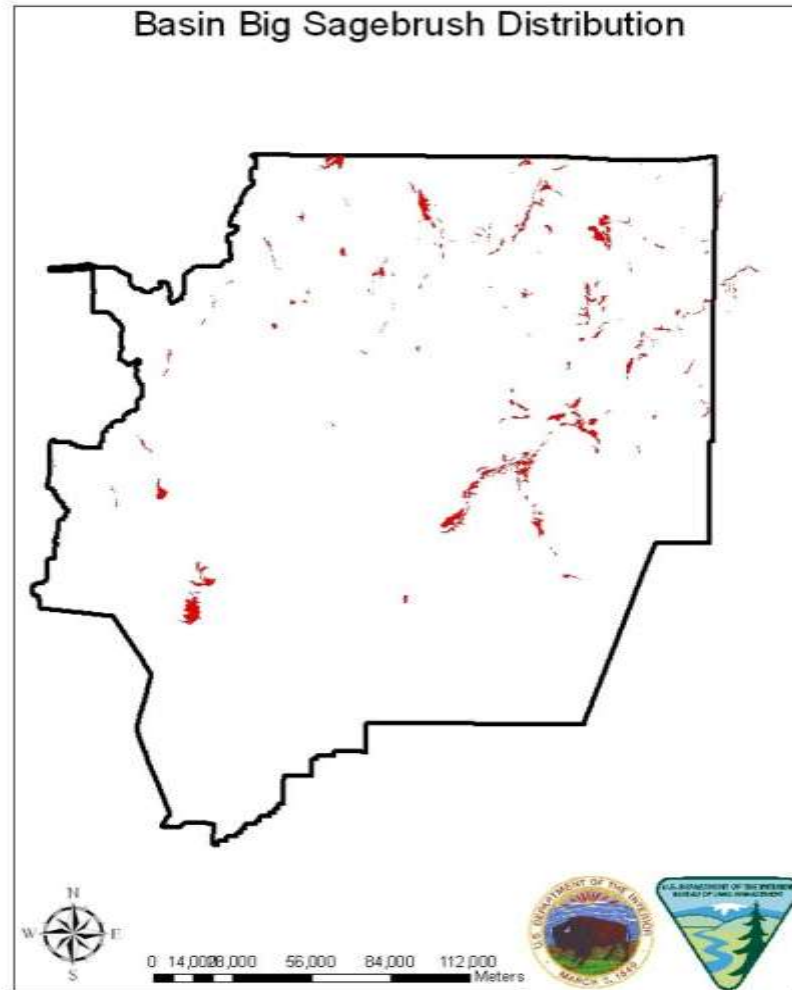
# Railroad Fire Sonoma Range Loamy Slope 12-14 9 years old



June 1995

	Density (plants/m <sup>2</sup> )	
	1988	1995
<b>Sandberg's Bluegrass</b>	0.78	0.00
<b>Crested Wheatgrass</b>	1.23	0.00
<b>Blue Flax</b>	0.11	0.00
<b>Rabbitbrush</b>	0.04	4.93
<b>Mountain Big Sagebrush</b>	0.00	3.03

# Basin Big Sagebrush



Eightmile Fire  
Quinn River Valley  
Sodic Terrace 8-10  
One year old



June 1988

# Eightmile Fire Quinn River Valley Sodic Terrace 8-10 18 years old



June 2005

	Density (plants/m <sup>2</sup> )		% Cover	
	1988	2005	2005	2005
<b>Crested Wheatgrass</b>	1.79	7.06		10.19
<b>Squirreltail</b>	0.56	0.00		0.00
<b>Creeping Wild Rye</b>	23.55	0.00		0.11
<b>Sandberg's Bluegrass</b>	0.34	0.00		0.09
<b>Basin Big Sagebrush</b>	0.00	1.30		21.74
<b>Rabbitbrush</b>	0.00	0.22		4.23



Moore Fire  
Bloody Run Hills  
Loamy Bottom 8-14  
One year old



June 1995

# Moore Fire Bloody Run Hills Loamy Bottom 8-14 10 years old



August 2004

	Density (plants/m <sup>2</sup> )	
	1995	2004
Crested Wheatgrass	7.80	5.83
Sandberg's Bluegrass	1.91	7.18
Basin Big Sagebrush	0.90	2.47
Rabbitbrush	0.00	0.34

Paradise Fire  
Paradise Valley  
Sodic Terrace 8-10  
2 years old



June 1994

# Paradise Hill Paradise Valley Sodic Terrace 8-10 6 years old



May 1998

	Density (plants/m <sup>2</sup> )	
	1994	1998
<b>Crested Wheatgrass</b>	2.24	0.78
<b>Basin Big Sagebrush</b>	1.03	0.44
<b>Rabbitbrush</b>	0.09	0.12
<b>Fourwing Saltbrush</b>	0.19	0.20

# Paradise Hill Fire 1992

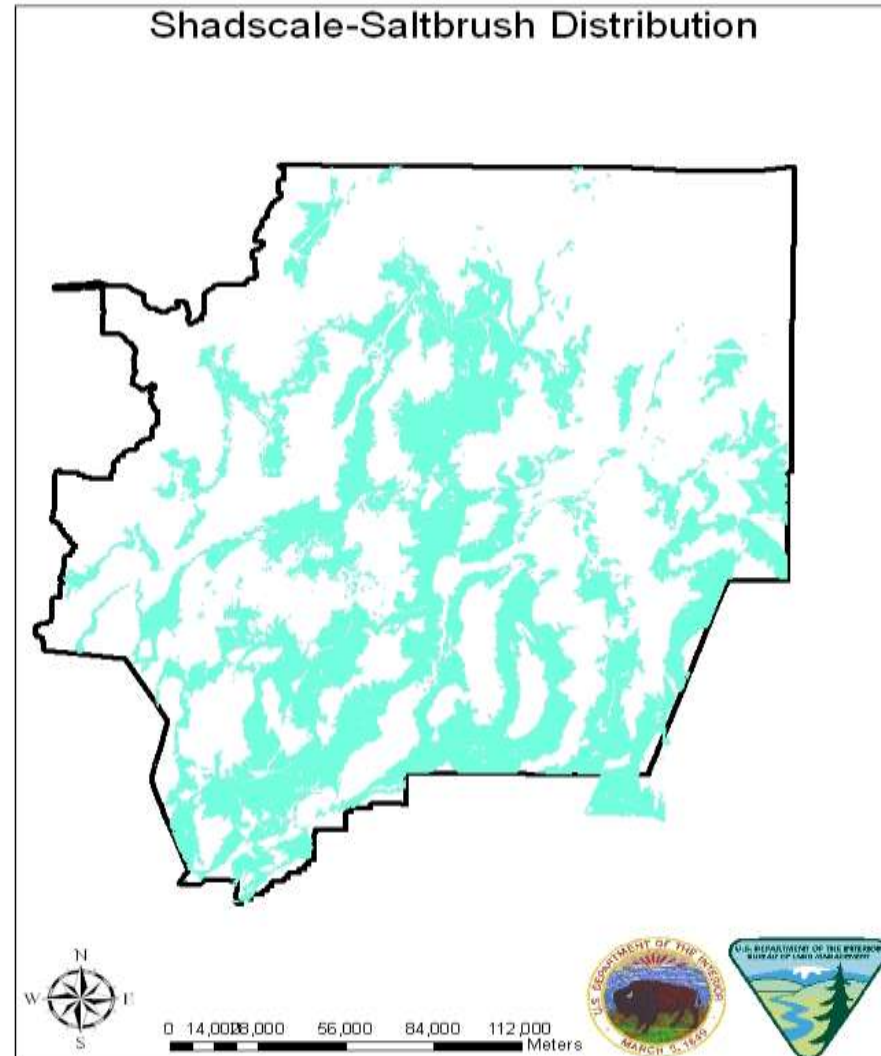
Paradise Valley

12 years of recovery implemented by broadcast seeding



February 2004

# Shadscale-Saltbrush



Pettit Fire  
Osgood Mountains  
Loamy 8-10  
One year old



July 1986

# Pettit Fire

## Osgood Mountains

### Loamy 5-8

### 9 years old



June 1994

	Density (plants/m <sup>2</sup> )		
	1986	1987	1994
<b>Sandberg's Bluegrass</b>	7.06	6.62	1.01
<b>Bud Sagebrush</b>	0.20	0.77	1.27
<b>Shadscale Saltbrush</b>	0.09	1.29	1.73

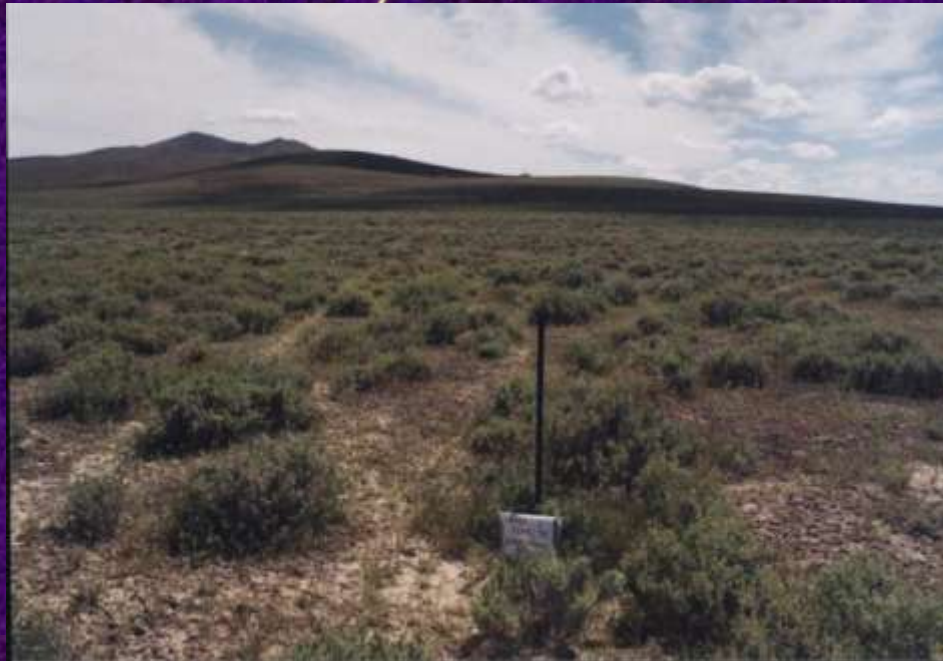


Amax Fire  
Siverstate Valley  
Loamy 5-8  
One year old



July 1986

# Amax Fire Silverstate Valley Loamy 8-10 13 years old



May 1998

	Density (plants/m <sup>2</sup> )	
	1986	1998
<b>Shadscale Saltbrush</b>	10.59	1.66
<b>Bud Sagebrush</b>	1.60	6.73

Wilder Fire  
Bilk Creek Mountains  
Loamy 5-8  
One year old



September 1986

# Wilder Fire Bilk Creek Mountains Loamy 5-8 6 years old



July 1991

	Density (plants/m <sup>2</sup> )	
	1986	1991
<b>Squirreltail</b>	0.45	0.11
<b>Shadscale</b>	5.89	2.94
<b>Bud Sagebrush</b>	0.00	1.41

Poker Brown Fire  
Majuba Mountain  
Loamy 4-8  
One year old



October 2000

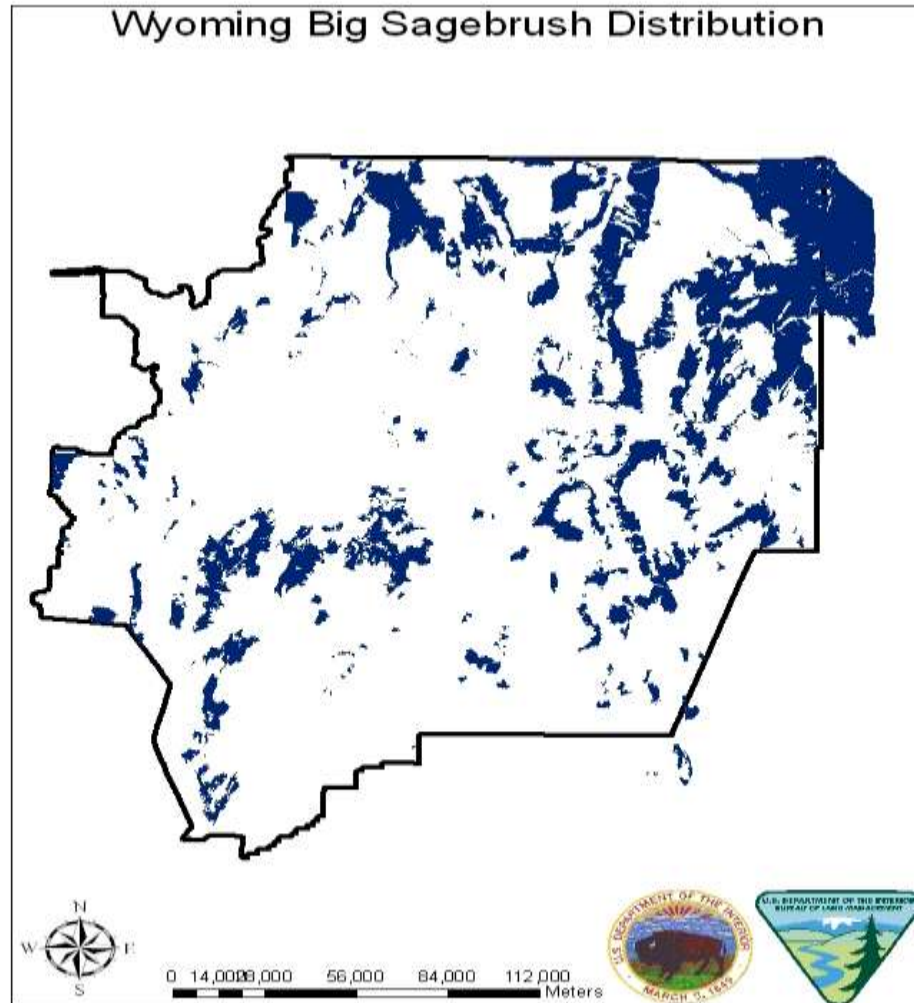
# Poker Brown Fire Majuba Mountain Loamy 4 to 8 8 years old



October 2007

	Density (plants/m <sup>2</sup> )	
	2000	2007
Shadscale Saltbrush	0.0	0.45

# Wyoming Big Sagebrush



Wilder Fire  
Bilk Creek Mountains  
Loamy 8 -10  
4 years old



June 1988



# Wilder Fire Bilk Creek Mountains Loamy 8 -10 24 years old



July 2008

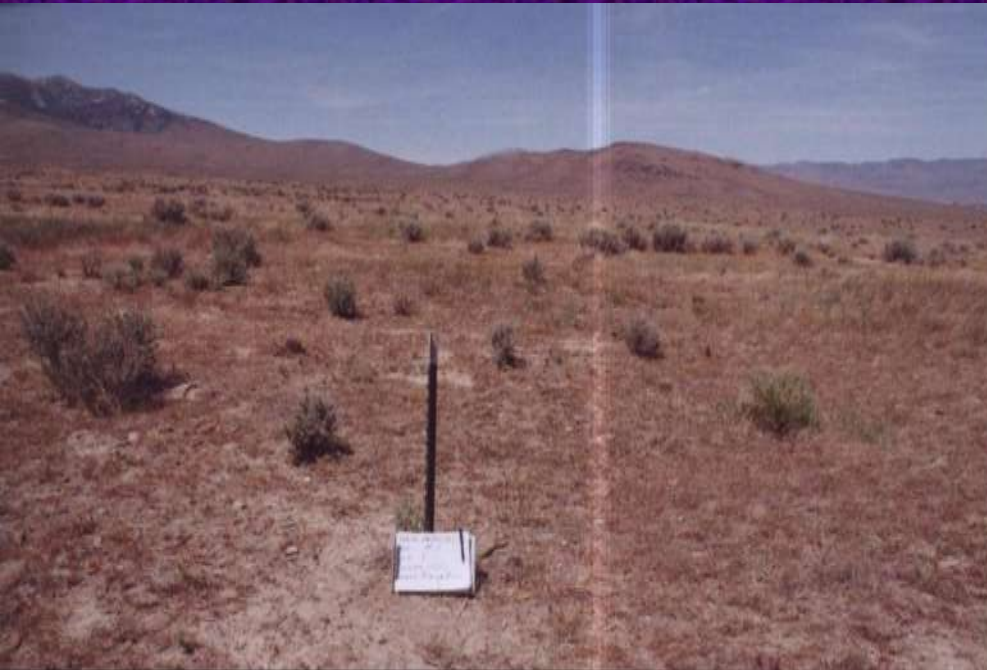
	Density (plants/m <sup>2</sup> )	
	1986	2008
<b>Crested Wheatgrass</b>	6.29	5.84
<b>Bottlebrush Squirreltail</b>	0.66	0.11
<b>Rabbitbrush</b>	0.22	0.22
<b>Wyoming Big Sagebrush</b>	0.00	3.25

Provo Fire  
Paradise Valley  
Loamy 8 -10  
One year old



June 1986

# Provo Fire Paradise Valley Loamy 8 -10 22 years old



June 2007

	Density (plants/m <sup>2</sup> )		% Cover	
	1986	2006	1986	2006
<b>Crested Wheatgrass</b>	17.72	0.78	6.41	0.85
<b>Sainfoin</b>	0.67	0.00	1.20	0.00
<b>Small Burnett</b>	1.01	0.00	1.19	0.00
<b>Intermediate Wheatgrass</b>	0.00	0.22	0.00	2.49
<b>Sandberg's Bluegrass</b>	0.00	3.25	0.00	1.09
<b>Wyoming Big Sagebrush</b>	0.00	0.44	0.00	1.06

Montana Fire  
Thacker Pass  
Loamy 8-10  
One year old



August 1986

# Montana Fire Thacker Pass Loamy 8 -10 20 years old



June 2005

	Density (plants/m <sup>2</sup> )		% Cover	
	1986	2005	1986	2005
<b>Annual Species</b>	41.01	306.18	28.80	30.24
<b>Perennial Species</b>	2.13	4.72	0.43	7.49

Sentinel Fire  
Quinn River Valley  
Loamy 8-10  
One year old



August 1986

# Sentinel Fire Quinn River Valley Loamy 8-10 20 years old



June 2005

	Density (plants/m <sup>2</sup> )		% Cover	
	1986	2005	1986	2005
<b>Annual Species</b>	40.33	422.47	21.24	37.75
<b>Perennial Species</b>	4.26	.44	1.12	2.08

Montana Fire  
Mountain Mountains  
South Slope 8-12  
One year old



August 1986



# Montana Fire Montana Mountains South Slope 8-12 20 years old



July 2005

	Density (plants/m <sup>2</sup> )		% Cover	
	1986	2005	1986	2005
<b>Sandberg's Bluegrass</b>	1.23	2.92	1.48	4.25
<b>Squirreltail</b>	0.44	0.00	0.71	1.03
<b>Thurber's Needlegrass</b>	0.34	1.01	0.60	1.20
<b>Rabbitbrush</b>	0.59	0.15	0.18	4.98
<b>Big Sagebrush</b>	0.00	0.07	0.00	1.11

# Willow Creek Fire 1993

Santa Rosa Range

11 years of old

First sagebrush seeding



Moore Fire  
Bloody Run Hills  
Loamy 8-10  
One year old



June 1995

# Moore Fire Bloody Run Hills Loamy 8-10 10 years Old



August 2004

	Density (plants/m <sup>2</sup> )		% Cover	
	1995	2004	1995	2004
<b>Sandberg's Bluegrass</b>	1.91	2.58	1.55	2.11
<b>Wyoming Big Sagebrush</b>	0.09	0.27	0.00	0.84
<b>Fourwing Saltbush</b>	0.11	0.06	0.08	0.28
<b>Forage kochia</b>	0.90	2.81	0.53	5.50
<b>Alfalfa</b>	9.10	0.00	1.95	0.00

# Moore Fire

## Bloody Run Hills

### 10 years of recovery



February 10, 2004



February 23, 2004

Androno Fire  
Santa Rosa Mountains  
Loamy 8-10  
One year old



July 2000

# Androno Fire Santa Rosa Mountains Loamy 8-10 9 years old



March 2008

	Density (plants/m <sup>2</sup> )		% Cover	
	2000	2008	2000	2008
<b>Sandberg's Bluegrass</b>	9.3	5.28	3.50	1.70
<b>Crested Wheatgrass</b>	1.23	1.34	0.80	0.80
<b>Fourwing saltbush</b>	0.00	0.11	0.00	4.40
<b>Wyoming Big Sagebrush</b>	0.00	0.11	0.00	2.50

Buffalo Fire  
Santa Rosa Mountains  
Loamy 8-10  
2 years old



June 1999



# Buffalo Fire Santa Rosa Mountains Loamy 8-10 11 years old



March 2008

	Density (plants/m <sup>2</sup> )		% Cover	
	1999	2008	1999	2008
<b>Sandberg's Bluegrass</b>	3.36	9.53	3.90	5.40
<b>Crested Wheatgrass</b>	3.59	2.47	0.90	2.00
<b>Squirreltail</b>	0.11	0.45	0.50	0.40
<b>Wyoming Big Sagebrush</b>	0.45	0.00	0.00	1.10

# Buffalo Fire 1997

## Santa Rosa Mountains

### 7 years of recovery



February 2004

# Sagebrush Seedlings

## 2 years old



February 2004

# Even Ugly Dogs Need a Place to Play

