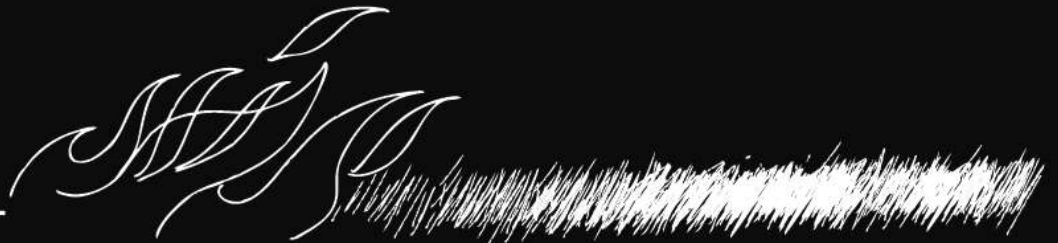


Sagebrush Recruitment Following Juniper Mastication in Western Utah

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West Desert District BLM

SALT LAKE BLM FUELS MANAGEMENT



Once upon a time.....



Stansbury Mountains 1901



Stansbury Mountains 2004



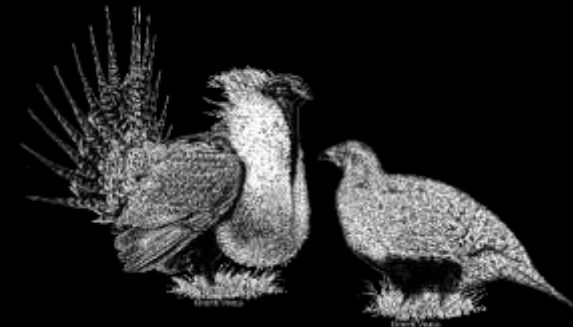
Where ecological thresholds have been crossed the goal is restoration, especially in sagebrush habitat



Ecological Goals of Fuels Projects



- Protect and/or improve wildlife habitat/range condition
- Increase the resiliency of ecosystems to invasive species
“Restoration should occur before the fire”



The Tool of Choice: Why?

- Easy to contract
- Low risk
- Selective thinning
- Mulch (seedbed prep, erosion control)
- Can be implemented year round













Key Questions

1. In conjunction with mastication, can sagebrush be seeded successfully in areas where it has been depleted due to juniper dominance?
2. Is it more effective to seed sagebrush before or after mastication?
3. Does juniper thinning via mechanical shredding stimulate natural recruitment of sagebrush?
4. Is the observed sagebrush recruitment due to the treatment or simply an episodic event driven by climate?
5. Does masticated debris play a role in the germination and establishment of sagebrush?

Sampling Methods

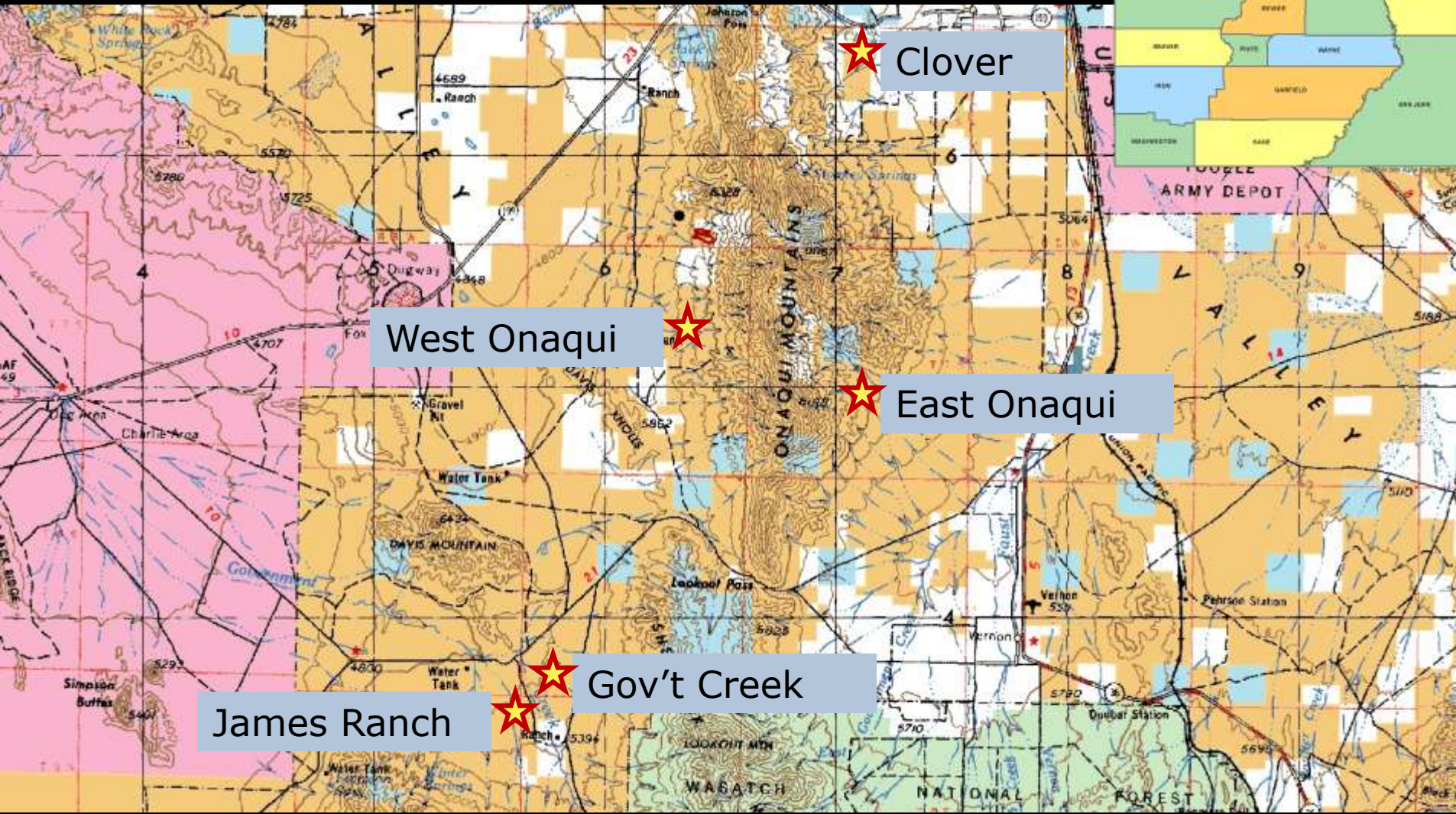
- 5 Sites; Multiple Treatments (bullhog vs untreated control; seed vs. no seed; pre vs. post)
- Mobile Belt Density Transects
 - Random
 - Variable width (8' to 16')
 - Variable length (.29 mile to .83 miles)
 - Two ARTRW8 size classes:
 - <6" (seedlings)
 - 6" to 12" (juveniles)
 - Average # of sagebrush seedling/juveniles per acre

2 Ecological Sites:

Borvant soil – Upland Shallow Hardpan (PJ)

Abela soil - Upland Stony Loam (PJ)

Locations



★ Clover

★ West Onaqui

★ East Onaqui

★ Gov't Creek

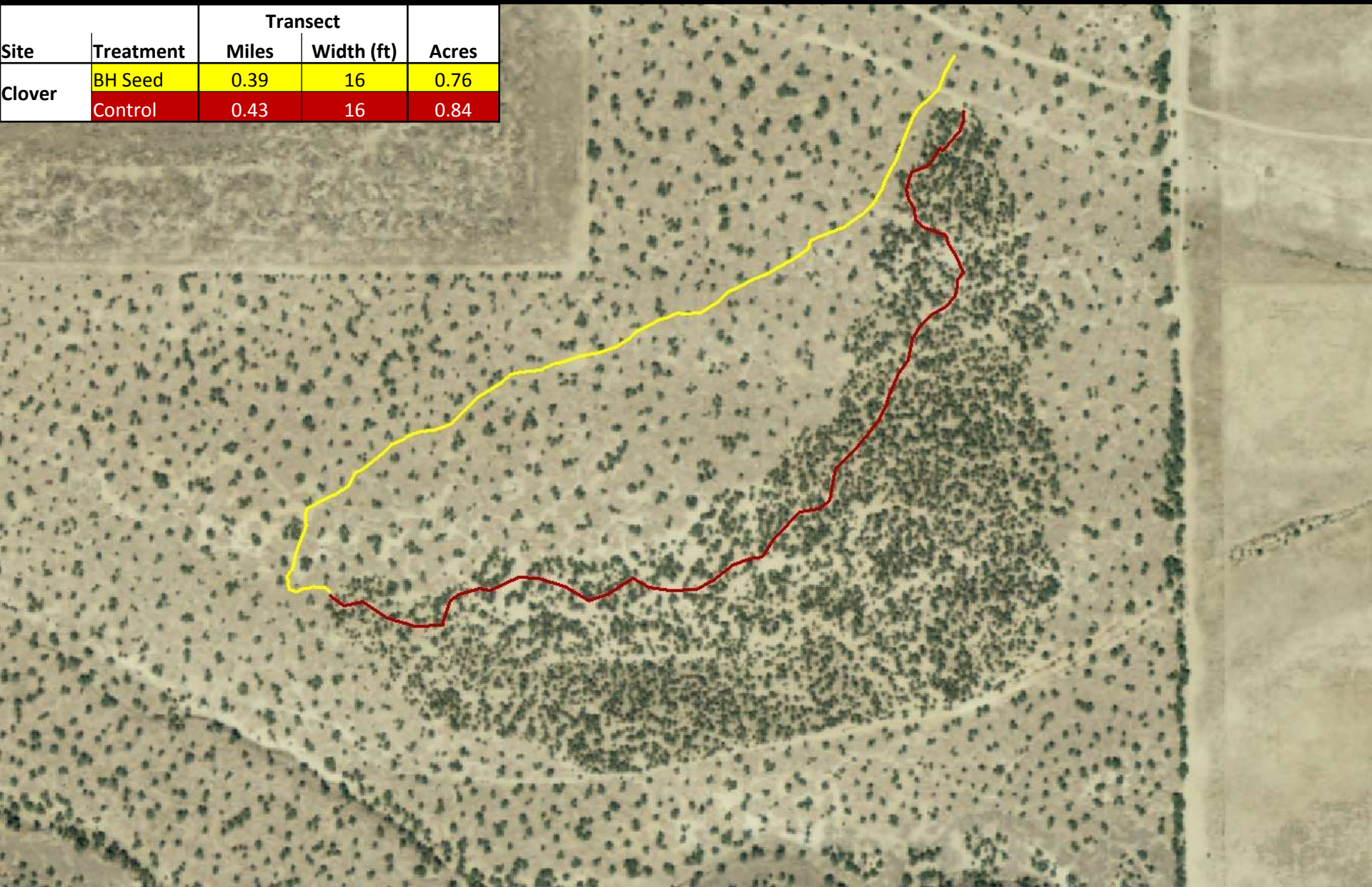
★ James Ranch

QUESTION

In conjunction with mastication, can sagebrush be seeded successfully in areas where it has been depleted due to juniper dominance?

Clover Creek Bullhog 2005/2006

| Site | Treatment | Transect | | Acres |
|--------|-----------|----------|------------|-------|
| | | Miles | Width (ft) | |
| Clover | BH Seed | 0.39 | 16 | 0.76 |
| | Control | 0.43 | 16 | 0.84 |



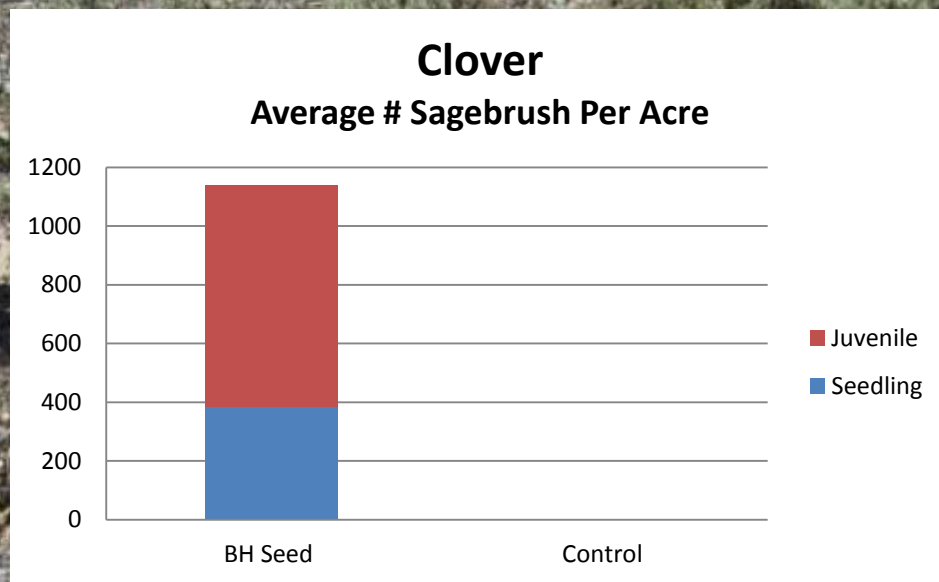
Clover Creek Bullhog 2005/2006











QUESTION

In conjunction with mastication, can sagebrush be seeded successfully in areas where it has been depleted due to juniper dominance?

Yes.

QUESTION

Is it more effective to seed sagebrush before or after mastication?

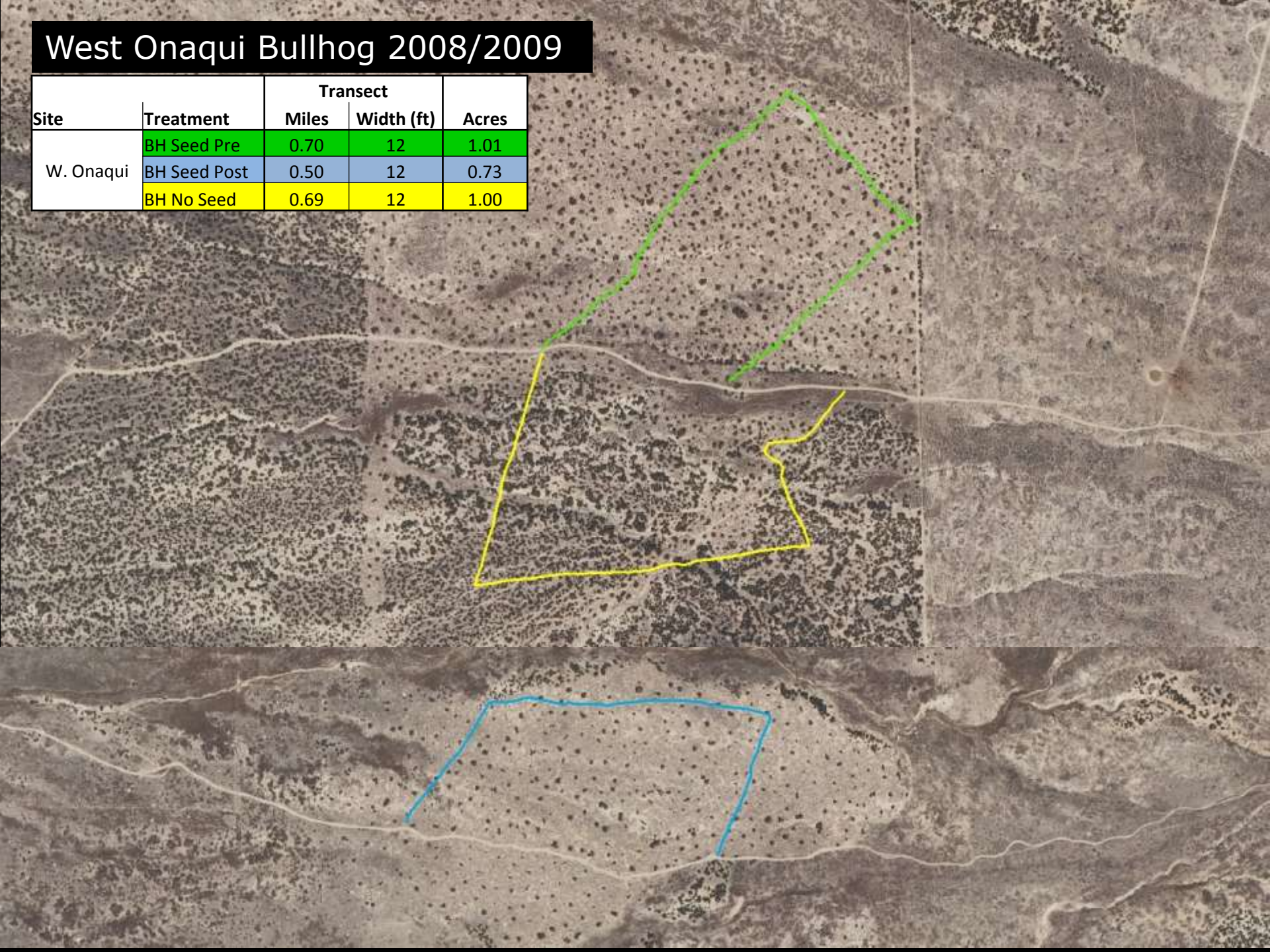


May 5, 2009
W Oregan BH
Plot 1
Transect 240

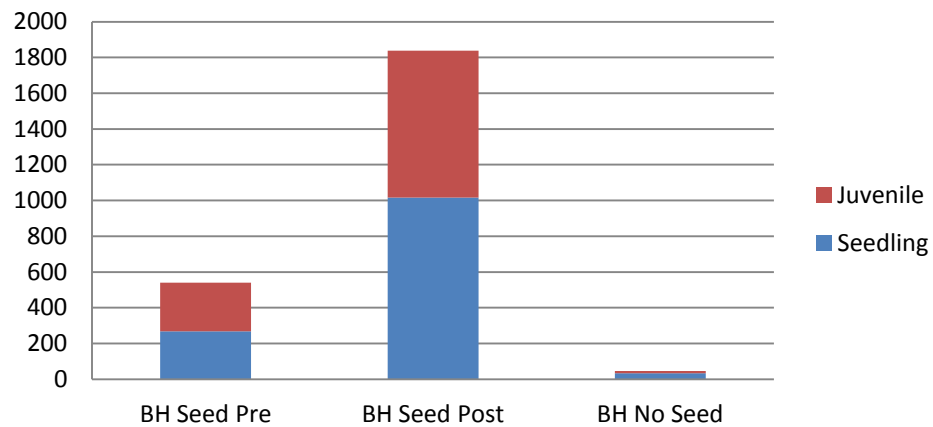


West Onaqui Bullhog 2008/2009

| Site | Treatment | Transect | | Acres |
|-----------|--------------|----------|------------|-------|
| | | Miles | Width (ft) | |
| W. Onaqui | BH Seed Pre | 0.70 | 12 | 1.01 |
| | BH Seed Post | 0.50 | 12 | 0.73 |
| | BH No Seed | 0.69 | 12 | 1.00 |



West Onaqui
Average # of Sagebrush per Acre



QUESTION

Is it more effective to seed sagebrush before or after mastication?

After.

QUESTIONS

Does juniper thinning via mechanical shredding stimulate natural recruitment of sagebrush?

Is the observed sagebrush recruitment due to the treatment or simply an episodic event driven by climate? If it were a climatic event then you would expect to see recruitment both in treated and non-treated areas alike.









Government Creek Bullhog 2004



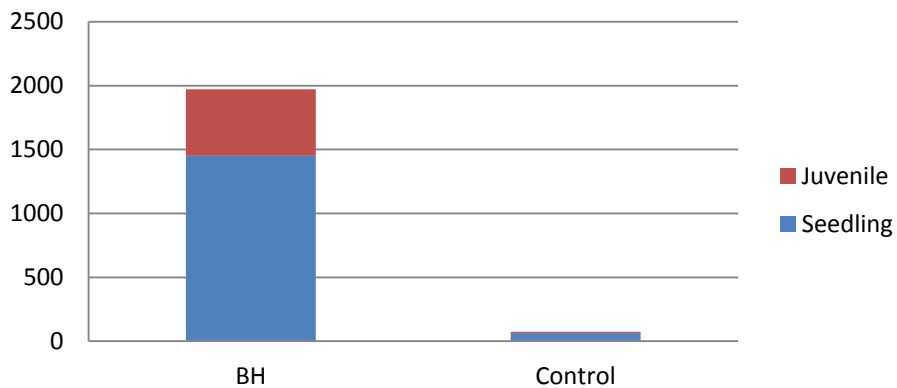
East Onaqui Bullhog 2006



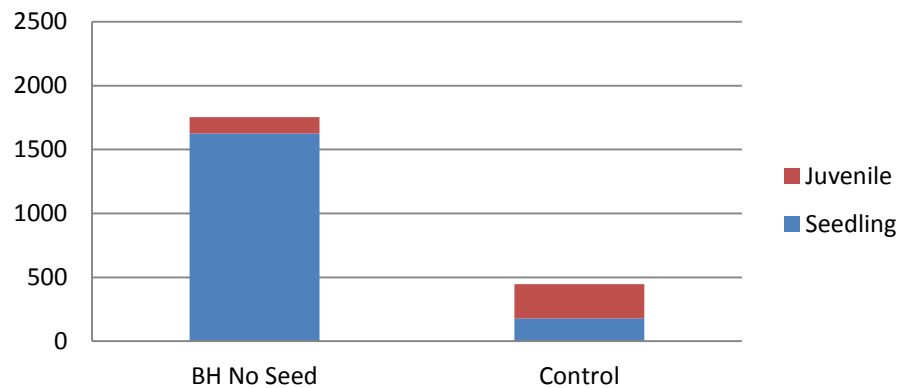
| Site | Treatment | Transect | | Acres |
|-------------|------------|----------|------------|-------|
| | | Miles | Width (ft) | |
| James Ranch | BH No Seed | 0.29 | 8 | 0.28 |
| | Control | 0.68 | 8 | 0.66 |
| Gov't Creek | BH No Seed | 0.67 | 12 | 0.97 |
| | Control | 0.83 | 12 | 1.21 |
| East Onaqui | BH No Seed | 0.52 | 12 | 0.75 |
| | Control | 0.55 | 12 | 0.80 |

James Ranch Bullhog 2008

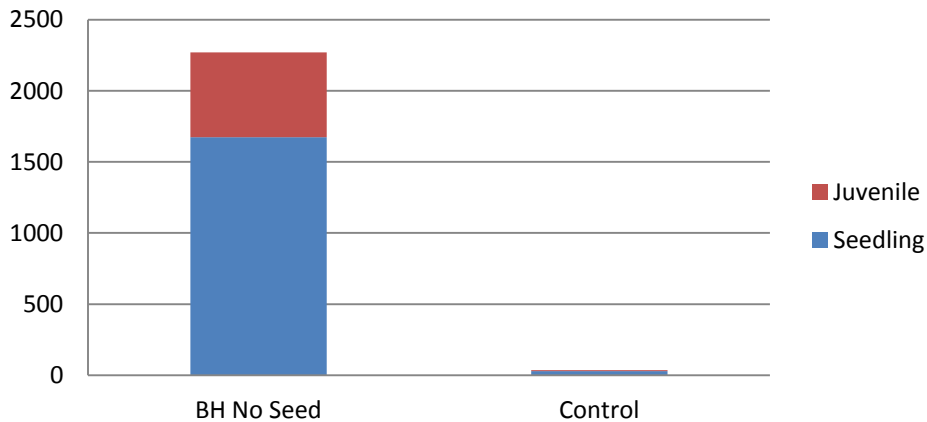
Gov't Creek
Average # Sagebrush per Acre



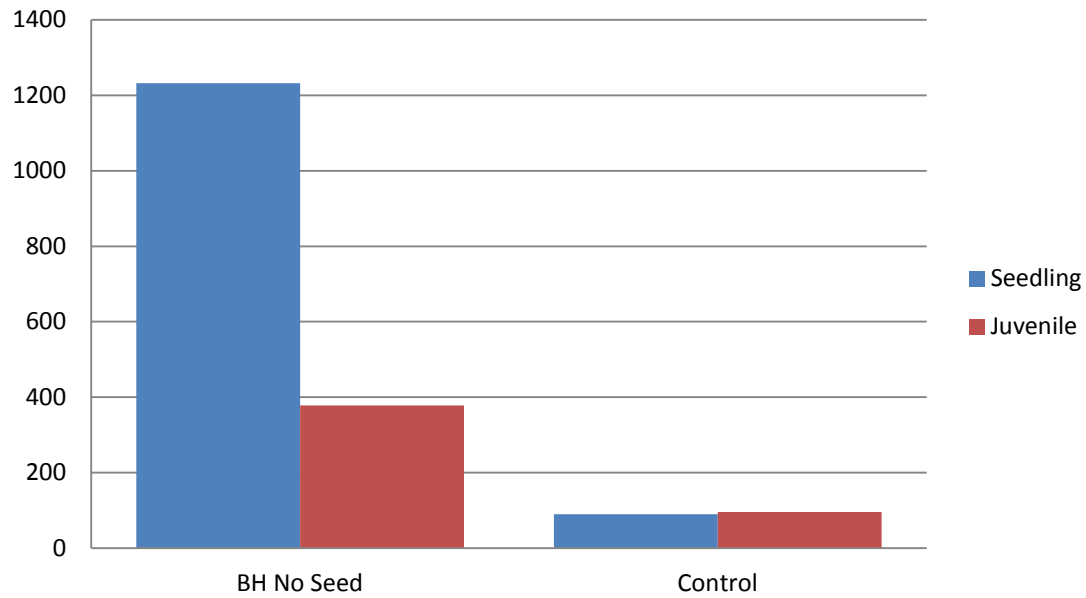
East Onaqui
Average # Sagebrush Per Acre



James Ranch
Average # of Sagebrush per Acre



Average # Sagebrush per Acre Across All Sites (Onaqui, Gov't Ck, James Ranch)



QUESTIONS

Does juniper thinning via mechanical shredding stimulate natural recruitment of sagebrush?

It appears to.

Is the observed sagebrush recruitment due to the treatment or simply an episodic event driven by climate? If it were a climatic event then you would expect to see recruitment both in treated and non-treated areas alike.

Because very little recruitment was observed in untreated areas there seems to be a link to the treatment (disturbance).

QUESTION

Does masticated debris play a role in the germination and establishment of sagebrush?








QUESTION

Does masticated debris play a role in the germination and establishment of sagebrush?

There seems to be a greater link to disturbance and possibly the removal of competition than to the mulch itself. More ARTRW8 seedlings occurred in the interspace than in the mulch even when a site was seeded.

A photograph of a dry, sandy landscape. The foreground is covered in light-colored sand and small, sparse green shrubs. A large, dark, weathered log lies horizontally across the lower-left quadrant. In the background, there is a dense line of dark green trees under a clear blue sky. The text "If mulch doesn't appear to be playing a major role in the germination and establishment of sagebrush then what is?" is overlaid in white, sans-serif font across the upper-middle portion of the image.

If mulch doesn't appear to be playing a major role in the germination and establishment of sagebrush then what is?



If mulch doesn't appear to be playing a major role in the germination and establishment of sagebrush then what is?

1. Increased seed production due to removal of competition
2. Disturbance

Summary

Bullhog Good

Would I recommend mastication as a tool for restoring sagebrush habitat? Yes; although this data is not “hard core” science it provides a basis for further examination. Similar results have been observed in masticated sites throughout Utah.

Questions?

