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







<u>Past to Present</u>: 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

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
- 4. Seedbed Ecology
- 5. Weed Management
- 6. Structures
- 7. Information and Publications

<u>http://rtec.rangelands.org/index.htm</u>

Recent Equipment Development

STOROUGH RIDER 622 Rangeland Drill Improvements

Revegetation Equipment Catalog

Contents

Home

Forward

Tractors

All-terrain vehicles GPS

Controlling plants

mechanically

Controlling plants

chemically

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"

"RTEC Business Meeting" Follows----Help Plan the 2013 Workshop

Aerial Seeding <u>Wyoming</u> Big Sagebrush in the Northern Great Basin



Mike Pellant, Great Basin Restoration Initiative Coordinator, BLM, Nevada State Office (Boise) & Don Major, Fire/Landscape Ecologist, BLM, Boise State Office Input provided by Cindy Fritz, Boise District BLM and Tom Warren, Elko District BLM.

Focus Areas for Study



Study Approach

- Post fire rehab seeding (3 yr.) monitoring data- USGS Land Treatment Digital Library.
- Research/Studies
- Long-term landscape assessments—Low level, high resolution aerial photography



Site Level Monitoring--Issues

 Monitoring for 3 yrs. post seeding is inadequate for sagebrush.



 High level of landscape heterogenity—problems with adequate sampling.



 Difficult to ramp-up project data for landscape interpretations.





Elko District Monitoring 2006-07 Projects

- 2006—8 fires aerially seeded with WY Artr with minimal (no) success.
 Susie and Gopher Fires???
- 2007-15 fires aerially seeded with WY Artr; only three seedings had sagebrush (average 430 shrubs/ac).

2007 Gopher Fire

July 2011



2007 Susie Creek Fire

October 2011

the station of the state

Hard Straft

Inconsistent documentation of seeding conditions, sagebrush PLS, and seed source



2007 Elko District Aerial Seeding 2



Sagebrush Subspecies 12 of 35 projects with sagebrush sampled

- Four projects had only Wyoming big sagebrush.
- Eight projects had Mountain and/or Basin big sagebrush plants mixed with Wyoming big sagebrush.





Idaho BLM Technical Bulletin 2004-1

Research/Studies

- Research--Minimal on aerial seeding Wyoming
 big sagebrush. One exception: BSU MS thesis
 (Dalzell 2004).
- Case studies (project specific)-- Difficult to extrapolate results---different weather conditions, soils, level of competition, etc.



Evaluation of 35 WY Big Sagebrush Aerial Seeding Projects in Snake River Plain



- Control- Average density of 38 shrubs/ acre (27 projects-- no sagebrush)
- Seeded- Average density of 215 shrubs /acre (23 projects—no Artr)
- Nearby unburned sagebrush stands had an average density of 5,074 shrubs/acre

Persistence of 35 WY Big Sagebrush Aerial Seeding Projects in Snake River Plain



- 15 projects (43%)
 burned since project
 seeded.
- Of these 15 projects, five reburned after first fire.
- Success is measured by sagebrush seeding establishment (shortterm) and long-term persistence.

South-Central Idaho Wy Big Sagebrush Case Study

Summer 1994 wildfire, seeded in the fall of 1994



Loamy 8-10" PZ (Wyo. Big sagebrush/Thurbers needlegrass) ecological site

Pre-fire Situation

Seed Mixture

Species	Application	Seeding Rate (#'s/ac bulk)
Crested Wheatgrass	Drill	4.5
Russian Wildrye	Drill	1.5
Fourwing Saltbush	Drill	1.0
WY Big Sagebrush	Aerial	2.0
Alfalfa	Aerial	3.0
Yellow Sweetclover	Aerial	0.5
	Total	12.5

83 seeds/ ft^2

Seeded to Crested WG's @6 lbs/ac.



Green STP2 Rehab-June 2000 (6 years postfire)

Not seeded to Crested WG-native grass recovery

Both areas were aerial seeded with sagebrush at two pound/acre (bulk)



Long-term landscape assessments—Low level, high resolution aerial photography



1 m² Resolution Imagery





Integrating Ground & Aerial Photography



1987 Crater II Fire Rehabilitation Seeding















1987 Crater II Fire Rehabilitation Seeding





Long Term Ground-Based Monitoring Issues



Long-Term Sagebrush Seeding Success



1989 Lockman Greenstrip



1993 Fire Resistant Seeding

October 2008-Fire Resistant Seeding



October 2008 Adjacent Cheatgrass Area



Long-Term Sagebrush Seeding Success—Keep Fire Out!



Fire Regime prior to 1988, before treatments.

Fire regime post-1988, after treatments.





Initial Point 1995 Fire



Initial Point 1995 Fire

🕓 ର୍ ଷ୍

14 @

2011

A X

)) 2011

> Minimal evidence of sagebrush expansion from existing stands

> > ...Google

Imagery Date: 8/31/2011 🕘 1992

43°19'01.79" N 116°20'16.18" W elev 2905 it

© 2012 Google

Eye alt 19267 (t 🔘

N

South of Initial Point Fire-1992

Untitled Placemark

Untitled Placemark

541 ft

Image U.S. Geological Survey

© 2012 Google

Imagery Date: 6/3/1992 29 1992

6/3/1992

43°15'48.94" N 116°13'07.88" W elev 3303 It

Eye alt 5640 (t 🔘

South of Initial Point Fire-2011 0 0 0

Prioritize Sagebrush Stands Where Recruiting is Occurring for Protection & Suppression

14 4

8/31/2011

IN PI

Untitled Placemark

Untitled Placemark

Untitled Placemark

© 2012 Google

Eye alt 5640 (t 🔘

Google

Object-Based Image Analysis

Experimental Range

Findings

- Success of aerial seedings varies greatly.
- Aerial seeded WY big sagebrush appears to establish better in the higher elevation, more mesic landscapes in the Northern Great Basin.
- Long-term landscape monitoring is crucial to truly monitor sagebrush establishment & spread.
- Prioritize recruiting sagebrush stands for protection over non-recruiting stands.

Conclusions/Recommendations

- Improve/increase post-seeding (3-5-10 yr)
 monitoring using standardized USGS ES&R
 protocol with data input into the USGS Land
 Treatment Digital Library.
- Increase research/studies to determine causitative factors for sagebrush establishment, persistence, and spread.

© 2012 Coogle Image V.S. Geological Survey GOC

Conclusions/Recomendations

- Initiate long-term, landscape-scale monitoring of aerially seeded sagebrush and its expansion or contraction.
- Use high resolution aerial photography or satellite imagery (for example SPOT, Quickbird, etc.
- Apply findings to future WY sagebrush seeding projects---share findings.

Almost the End... Ground-based Wyoming sagebrush can

provide more consistent results....

New Technology

