Utah - Park Valley

Project Title: Using Targeted Grazing, Prescribed Fire and Herbicide Practices to Rehabilitate Cheatgrass-Infested Rangeland in Park Valley, Utah

Location: Box Elder County, Utah - Approx 150 miles NW of Salt Lake City

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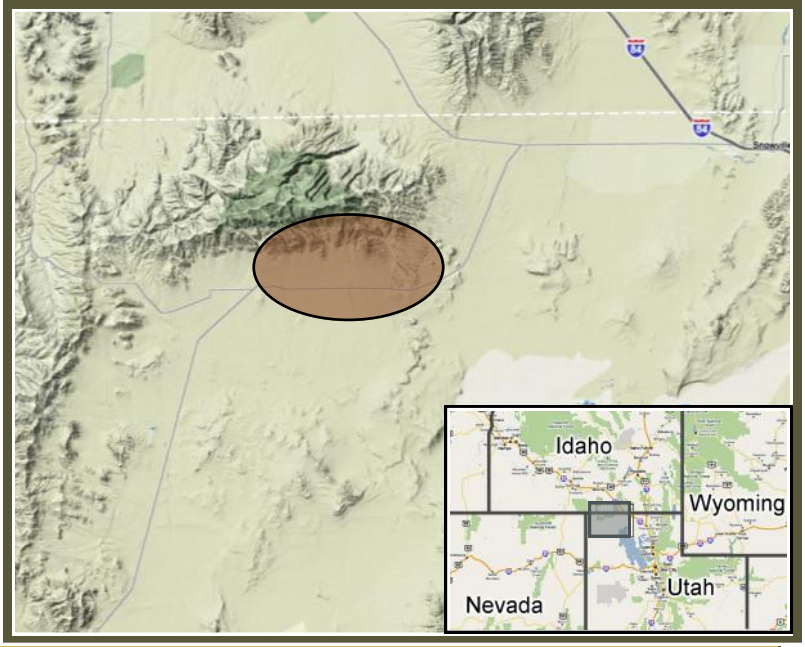
Park Valley Utah Locator Map



Brief Area History: Settlement of Park Valley began in the 1870's but really took off during the land boom of the 1910s. Settlers in Park Valley raised cattle and sheep. Livestock grazing was instrumental in the introduction and spread of invasive plant species in the Great Basin. Settlement was also accompanied by a great deal of land clearing to obtain homestead patents and for agriculture. The fallowed fields and cleared lands abandoned by homesteaders were staging areas of disturbed soil that harbored invasive species.

Cheatgrass has greatly expanded in Park Valley since the early 1980s. In the last decade, wildfires in 1999 and 2005 have left large expanses of primarily cheatgrass. Sandberg's bluegrass and squirreltail do occur, but at less than 2% ground cover. Attempts to seed crested wheatgrass have been highly successful in certain areas if seedings occurred immediately after fires. The areas chosen for the EBIPM demonstration studies are in areas that have been unsuccessfully seeded.

The Fisher Creek Watershed in Park Valley, Utah sits north of the Great Salt Lake and within the Great Basin area of the West.

Geographical Information:
Elevation: 4,800-5,300 feet
Annual Precipitation: 8-12 inches
Common Native Vegetation: big sagebrush, black greasewood, bottlebrush squirreltail, Indian ricegrass, western wheatgrass
Common Soil Types: 1– Semidesert Alkali Loam; 2– Semidesert Loam
Fire Regime: Prior to 1980's, this region rarely experienced wildfire. However, with the cheatgrass invasion, fires occur as often as every 5 years.

Objectives:

- Evaluate EBIPM Principles at operational scales.
- Establish weed prevention areas.
- Characterize historical ecology of past dry land farming disturbances and characterize how these activities have altered soils and vegetation.
- Reduce dominance of cheatgrass, black greasewood and green rabbitbrush
- Establish a stable plant community by seeding of crested wheatgrass, Siberian wheatgrass, Russian wildrye, forage kochia and Great Basin wildrye to improve winter grazing potential.
- Identify the effects of targeted grazing, prescribed fire, and herbicide on rangeland seeding success and on dynamic soil properties.

Progress:

Grazing-Fire-Herbicide Demonstration:

Two sites were selected and perimeter fences have been installed and/or repaired and sites were fully assessed to determine treatment options. At each site we established a split plot design with 2 replications of the fire treatment (whole plot factor), and random combinations of herbicide and grazing (split plot factor). A total of 112 micro-plots were also established at each site for increased replication and as a contingency. Grazing occurred in spring 2009 with poor results. In essence cheatgrass rapidly grew back with ideal precipitation conditions in June. The fire treatment was conducted in November 2009 and successfully burned greater than 70% cheatgrass and other dried fuel within respective plots. A week later the herbicide imazapic was aerially applied at 4 oz/acre to the appropriate plots. The seeding was conducted in mid-December with rangeland drills.

Herbicide and Rangeland Seeding Demonstration:

A site was selected in spring 2008, and two herbicides, 2,4-D and picloram. were aerially applied to reduce the cover of black greasewood and green rabbitbrush. In late fall 2008, four perennial grass plant releases from the USDA-ARS, Forage and Range Lab. in Logan, were seeded in 10-acre plots each replicated 3 times with a randomized complete block design.

This photo was taken prior to treatment in Park Valley in the spring and patches of cheatgrass are already easily identifiable by the purple-ish color of their seedheads.

A prescribed fire treatment was conducted in November 2009 and successfully burned greater than 70% cheatgrass and other dried fuel within respective plots.

Accomplishments:

Grazing-Fire-Herbicide Demonstration:

Grazing treatments were attempted in early summer 2009 to reduce cheatgrass seed production but high precipitation caused cheatgrass to have a second productivity period after cows were removed. The grazing treatment may be repeated in 2010 with a new collaboration with Lance Westmoreland, who owns land adjacent to the demonstration areas. Cover and density of all species was monitored and soil resin stakes were installed; stakes were removed in June 2009 and analyzed.

Herbicide and Rangeland Seeding Demonstration:

An inventory with 10 randomly placed frequency grids per plot monitored in July. Preliminary assessments of seedling emergence in April and June of 2009 show excellent establishment of seeded species.

Outcomes:

Held a field tour in summer 2009 sponsored by the Box Elder County Conservation District to showcase treatments. Over 50 were in attendance. New projects with Lance Westmoreland were drafted for 2010.