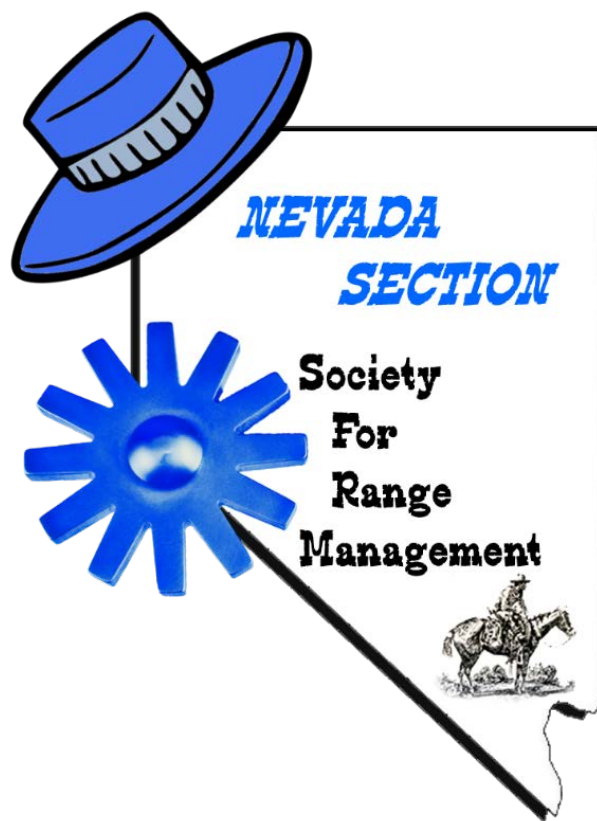


# Nevada Section Society for Range Management

2017 Winter Meeting

January 10-11, 2017 ♦ Reno, Nevada

## Plant Materials and Methodologies for Great Basin Rangelands



**ABSTRACTS**

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Jay Davidson

### **Challenges in Restoring and Rehabilitating Arid Lands**

Most of Nevada and large portions of the western United States can be classified as arid. Arid lands are defined in numerous ways but most agree that lands experiencing less than ten inches of annual precipitation are considered arid. In Nevada, vast areas receive less than six inches of precipitation annually. When arid lands experience other disturbances such as wildfire, vehicle traffic or mining, natural revegetation is very slow to occur. Farming in these areas is only possible with irrigation and when irrigation water is withdrawn and used for other purposes natural revegetation has again proven to be extremely slow to non-existent. Because natural revegetation is so slow, to occur, efforts to supplement this process are ongoing throughout the West. However, impediments to successfully reestablishing vegetation in these areas include; the lack of natural precipitation, altered/poor soil conditions, lack of adapted plant materials, wind erosion, competition from exotic and/or native seed species, unrealistic expectations or desires of the interested public and low economic values associated with these sites.

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Robert R. Blank

### **Cheatgrass Soil Engineering/Perennial Grass Suppression of Cheatgrass: The Yin and Yang of Plant Competition in Northern Nevada.**

Our research reveals that cheatgrass is able to “engineer” or alter the soil to increase nutrient availability, and thereby, increase its competitive ability. Cheatgrass engineering of the soil implies a greater range for its potential expansion. Established perennial grasses, however, can suppress cheatgrass. We investigated the mechanistic underpinnings of perennial grass suppression of cheatgrass, which is a combination of reducing nitrogen availability, changing the dominant form of mineral N, and allelopathy. Increased ability of perennial grasses to suppress cheatgrass can possibly be targeted for plant selection.

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<https://bobblanksoilresearch.shutterfly.com/pictures>

Dan Harmon and Charlie Clements

### **The Role of Weed Control in Rangeland Rehabilitation**

Disturbed rangelands present significant challenges to land managers and private land owners. While controversy exists as to how to restore or rehabilitate these degraded rangelands, an integrated management approach including weed control and seeding efforts provides the best possible solutions. Complimentary methods of herbicides, land fallowing and perennial grass seeding can lead to functioning productive rangeland plant communities. Knowledge gained from herbicide and plant material tests can ensure the reliability and effectiveness of rangeland rehabilitation efforts. We will present case studies of successful cheatgrass control and range management that spans more than two decades. Emphasis will be placed on the role of weed control prior to seeding efforts and how the seeding success relies on the success of cheatgrass control and a reduction of cheatgrass seedbanks. By reducing cheatgrass seedbanks, competition is reduced during the perennial grass seedling establishment year and ultimately leads to successful perennial establishment and sustained cheatgrass suppression over time.

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Kevin B. Jensen, Joseph G. Robins, Craig Rigby, Tom Jones, and Blair L. Waldron

### **Establishment of native and introduced perennial grass species in rangeland seeding**

As a result of wildfire, livestock, wildlife, human activities, and drier hotter growing conditions, lower-elevation Basin and Wyoming big sagebrush rangelands have undergone large-scale conversion from a diverse, healthy perennial plant-dominated ecosystems to near monocultures of invasive annual grasses, particularly, cheatgrass and medusahead. Seedling establishment and plant persistence are of paramount importance to a successful rangeland seeding. Historically in the early 1900's and continued through much of the 19<sup>th</sup> century, revegetation efforts focused on the use of introduced grasses such as crested wheatgrass and Siberian wheatgrass because of their superior stand establishment, plant persistence, and competitive ability to suppress invasive annual grasses under dry hot environments receiving less than 300 mm average annual precipitation. With the increased emphasis in the last decade to utilize native species in rangeland restoration seedings, plant breeding efforts have focused on seed yield, seedling establishment, persistence, and competitiveness in the following species; bottlebrush squirreltail, basin wildrye, slender wheatgrass, bluebunch wheatgrass,

Snake River wheatgrass, thickspike wheatgrass, Sandberg bluegrass, and western wheatgrass. Across multiple rangeland locations, the newer varieties in most instances had increased seedling frequency vs. older varieties. Examples will be given that describes plant selection and subsequent improvement compared to the unimproved plant materials.

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Kirk Davies

### **Revegetation of exotic annual grass-invaded rangelands**

Revegetation of exotic annual grass-invaded rangelands is challenging with high rates of failure. Successful revegetation first starts with effective control of exotic annuals. Effective control may require integrated treatments. Following control, high establishment of perennial vegetation is critical to limiting re-invasion by exotic annuals. Introduced perennial bunchgrasses more reliably establish and compete better with exotic annuals than native bunchgrasses on drier sites. However, on cooler and wetter sites or with above average precipitation, native perennial vegetation may have good establishment and limit exotic annual grasses.

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Kirk Ellern

### **Using Drones for Rangeland Analysis and Monitoring**

Unmanned Aerial Vehicles, commonly referred to as Drones, are highly effective tools for 3D mapping and vegetative analysis in agricultural settings. Using high resolution imagery and a host of remote sensing software techniques, *AboveNV* is now able to conduct census analysis on Sagebrush Ecosystem plant communities. This presentation will cover how Drones are used for land and range management and show several examples of projects developed over the past year.

<http://www.abovenv.com/>