View Point

Commercial Wildland Harvested Seed and the Utah Connection

By Ronald M. Stevenson

On The Ground

- The need for large-scale disturbed land rehabilitation in the west is well known but is recently receiving new attention.
- Seeding appropriate species, varieties, and ecotypes is often needed to succeed in rehabilitation of these degraded landscapes.
- Key people, organizations, and early and continuing research in Utah have been very influential in providing valuable information for degraded land rehabilitation.
- Seed from the key species and ecotypes provided by wildland seed harvests are a very important part of successful land restoration. The wildland seed industry developed in Utah and dominates the supply of wildland seed in western land restoration.

Keywords: land rehabilitation, wildland seed, seed suppliers.

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Since the Mormon settlers came to Utah[i] in 1847, human influence on Utah's land has increased over the years. Some human influences or activities have altered and degraded the natural landscapes. The most common causes of degraded landscapes include increased wildfire occurrence with associated noxious and invasive weed invasion, mineral and energy development, over-grazing, and road construction, to name a few. As a result, millions of acres in Utah and other western states are degraded to some degree, often significantly so, and are providing few if any of the multiple benefits of which productive well-functioning ecosystems are capable. New activities or occurrences add additional acres each year of degraded landscapes. Seeding appropriate species, varieties, and ecotypes is often needed for successful rehabilitation of these degraded landscapes.

The restoration or rehabilitation of these western lands is a current hot topic, as emphasized by the recent Secretarial Order No. 3336; Rangeland Fire Prevention, Management and Restoration, 5 January 2015; The National Seed Strategy for Rehabilitation and Restoration 2015-2020; the Interagency Program to Supply and Manage Native Plant Materials for Restoration and Rehabilitation; the greater sage-grouse issue and others. Beyond discussions and plans, actual important land rehabilitation projects are underway but are limited by less than adequate funding.

What is Wildland-Collected Native Seed?

Most people know little of the interesting and important wildland seed industry. In two presentations I gave at the 2013 National Native Seed Conference, I provided a significant amount of information concerning the wildland seed industry. In this article I summarize the highlights.

What is Native Wildland Seed Harvesting?

Simply defined, wildland seed harvesting is the collection of seed produced by a native plants or populations of plants from a noncultivated field setting. It usually occurs in a remote wildland area but may be next to a road or a populated area. Approximately 50% of commercial wildland seed currently being harvested comes from various federal and state lands and 50% from private land. Wildland seed is almost always collected by hand methods because of regulatory or physical constraints, but in some cases mechanical harvesting is utilized.

Commercial wildland seed collection usually involves larger scale seed harvests for planting directly onto rehabilitation projects, not the small amount of 10,000 to 20,000 individual seeds normally collected for research or plant germplasm preservation. Depending on the species, yearly demand, yearly production, and other factors, commercial wildland seed collection can involve a relatively small amount for a species like Indian paintbrush to over 1,000,000 lbs per year for a species like big sagebrush. An estimate for the average yearly total amount of native wildland seed collected over the last 5

[i] The 70th Annual Society of Range Management Annual Meeting will be held in St. George, Utah 29 January–2 February 2017. This article highlights Utah range science and management. For more information on SRM Red Rock & Rangelands 2017, see http://rangelands.org/srm17/.

years would be 1,250,000 to 1,750,000 lbs per year, but the actual amount can vary significantly each year.[ii] Most large-scale harvests are for shrub species seed, but a number of forb species and some grass species are also collected. Any native species that is desired can be collected, but on a normal year an estimated 200 or more different species are collected for commercial use and many are collected from multiple locations. The number of different species collected on a regular basis is also increasing.

Seed Is Cheap

That commercial wildland seed is always expensive is a common belief and sometimes is true just because what is involved in obtaining it (i.e., usually hard labor, unfavorable seed production, limitations on when and where seed can be harvested, and other limiting and costly factors). However, especially if analyzing the cost of the seed on a per seed basis, many species are not expensive and a number are a great bargain. For example, the Wyoming big sagebrush subspecies is the most highly seeded shrub species. At an estimated average cost for the last 5 years of $75.00/lb of pure live seed (PLS) it sounds very expensive for a pound of seed. But considering that 1 lb of PLS of Wyoming big sagebrush has approximately 1,750,000 individual seeds per pound, it takes on a new perspective. The cost per individual PLS seed is 0.0043 cents. This means that one penny can buy 233 individual PLS seeds. An impressive 233 potential new sagebrush plants on a degraded landscape for a penny of investment in seed sounds like a bargain to me. Not all species are this cheap, but if one considers the large number of seeds in a pound, many are really a bargain.

Wildland Harvested Seed Only Makes up a Small Portion

There is a common belief that the amount of native wildland harvested seed used for degraded land rehabilitation or restoration is very small and insignificant in comparison to the amount of field-produced seed used. This is very incorrect. At the 2013 National Native Seed Conference, I gave a presentation in which I analyzed the seed used on four typical rehabilitation projects: the 2012 total Western States Bureau of Land Management (BLM) use; a Colorado coal mine use; a Nevada windmill farm use; and an underground 675-mile natural gas line right of way restoration seed use. Five interesting facts found in this analysis are as follows[iii]:

1. A total of 4,529,863 lbs of seed (both native and nonnative) was requested for these four typical projects (lack of funding reduced the actual amount planted by the BLM, but the seed was needed).
2. Of the total pounds, 73% are native and of the native species, 39% are available almost exclusively through wildland seed collections.
3. Of the total 115 different species used, 59 are wildland harvested, which is 51%.
4. On the Nevada windmill site, 82% of the pounds of seed used were from wildland-harvested seed.
5. Of the total pounds (both native and nonnative), 1,306,582 lbs were native wildland collected, which is 39%.

A presentation given by Paul Krabacher, former BLM national seed coordinator, showed that his data indicated that between 2009 and 2013, 33% of the total seed that the BLM used in their land rehabilitation programs comes from wildland harvested seed.[1]

From these examples it is easy to see that the total pounds of seed currently used are a significant percent of the total usage in degraded land restoration, making it an important contributor. When including the increased number of important species and ecotypes from wildland collecting for rehabilitation, it is doubly important.

The Utah Connection

Key people, organizations, and research in Utah both early and ongoing have provided very important specific methods, equipment, materials, and guidelines for successful western lands rehabilitation or restoration. Beginning in 1912 with the establishment of the Utah Experiment Station, later renamed the Great Basin Research Station/Center in 1918, well-known scientists and station directors such as Dr Arthur Sampson, often referred to in world literature as "the father of range management," and later A. Parry Plummer and others recognized the need for research and were very influential in establishing valuable information on how best to accomplish degraded land rehabilitation and other research.

A. Parry Plummer, the greatly respected and productive range and land restoration U.S. Forest Service (USFS) scientist from 1936 to 1979, has been credited as making a statement similar to this: ***I spent the first half of my career learning how best to get rid of sagebrush and the second half of my career learning the best way how to re-establish sagebrush.*** Although humorous, this is a very insightful statement showing one aspect of the evolution of range management and land restoration over the years. A. Parry Plummer's 1968 publication "Restoring Big Game Range in Utah"[2] was known as "the bible" of range restoration in the interior west for three decades,[3] a great tribute to his significant contribution to western land rehabilitation. Other important research sites and facilities located in Utah include the USFS Shrub Science Lab in Provo, Utah, constructed in 1975. Dr Durrant McArthur, project leader for this shrub research unit

[ii] Analysis and estimates by author based on public information of seed use by major government entities (Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, State Wildlife agencies, and other Federal and State government entities; multiple, various sources) and personal knowledge of nonpublished seed use from active participation in the business.

[iii] Information compiled and analyzed by the author and presented at the 2013 National Native Seed conference in Santa Fe, New Mexico. Calendar year 2012 BLM seed procurement information obtained from Ronald Smith, Boise, Idaho, BLM National Seed Warehouse Seed procurement specialist and private, unpublished seed use of three private business projects.