



NOTICE OF RELEASE OF

# 'DISCOVERY' SNAKE RIVER WHEATGRASS

| Thomas A Jones

## ABSTRACT

'Discovery' Snake River wheatgrass (*Elymus wawawaiensis* J. Carlson & Barkworth [Poaceae]) has been released as a cultivar for use in rangeland seedings. The natural distribution of Snake River wheatgrass is limited to eastern Oregon, eastern Washington, and central and northern Idaho, but it is widely used as a surrogate for bluebunch wheatgrass (*Pseudoroegneria spicata* (Pursh) A. Löve [Poaceae]) in temperate portions of the Intermountain Region.

Jones TA. 2008. Notice of release of 'Discovery' Snake River wheatgrass. *Native Plants Journal* 9(2):99–101.

## KEY WORDS

*Elymus wawawaiensis*, Triticeae, Poaceae

## NOMENCLATURE

USDA NRCS (2008)

## COLLABORATORS

Utah Agricultural Experiment Station, Logan, Utah

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Seed field of Snake River wheatgrass. Photo by Dale Nielson

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**Species** | *Elymus wawawaiensis* J. Carlson & Barkworth  
**Common Name** | Snake River wheatgrass  
**Plant Symbol** | ELWA2  
**Accession number** | E-21

This cultivar was jointly released by the USDA Agricultural Research Service and the Utah Agricultural Experiment Station on 20 December 2007. It was tested under the experimental designation E-21.

## JUSTIFICATION

‘Discovery’ is intended as an alternative to ‘Secar’, the only previously available plant material of this species, released in 1980. ‘Secar’ has been successfully and widely used, but it is susceptible to drought conditions during establishment in the seeding year. Plant material with improved seedling establishment is more likely to be successful on drought-susceptible Intermountain rangelands.

## COLLECTION SITE INFORMATION

The 4 populations used to generate ‘Discovery’ (A-27, A-42, T-12, BBR synthetic) trace to materials collected in Whitman and Asotin counties in southeastern Washington and in Idaho County in central Idaho. A-27 was collected by KH Asay 10 km (6.2 mi) south of Riggins, Idaho, near Pollock on 5 August 1980. A-42 was collected by KH Asay 16 km (9.9 mi) northwest of Colton, Washington, on the Wawawai Road on 6 August 1980. T-12 was collected by TA Jones at the junction of the Wawawai Road and the Steptoe Canyon Road



Collection sites for germplasm used in developing ‘Discovery’ Snake River wheatgrass.

(Whitman County, Washington) northwest of Clarkston, Washington, on 16 July 1986. The BBR synthetic was generated by intercrossing 20 clones selected for resistance to bluegrass billbug (*Sphenophorus parvulus* Gyllenhal) from 6 populations from Whitman County, Washington (DS110, DS118, DS129, DS131, DS132, and DS133) and a seventh from Asotin County, Washington (DS 115) of a total of 21 accessions evaluated at the Deer Pens site, Logan, Utah. These accessions were collected by AM Davis and J Schwendiman in 1982.

## DESCRIPTION

‘Discovery’ Snake River wheatgrass (*Elymus wawawaiensis* J. Carlson & Barkworth [Poaceae]) is an awned, cross-pollinating, cool-season bunchgrass. At the time of Secar’s release (1980), this species had not yet been recognized and was confused with bluebunch wheatgrass. Snake River wheatgrass can be morphologically distinguished from bluebunch wheatgrass because Snake River wheatgrass possesses a greater degree of spikelet overlap, a more lanceolate glume shape, and greater seedling pubescence, but it lacks the seedling leaf marginal barbs of bluebunch wheatgrass (Jones and others 1991). Snake River wheatgrass has a considerably smaller seed than bluebunch wheatgrass. Snake River wheatgrass is always awned, while bluebunch wheatgrass may be awned or awnless. Snake River wheatgrass is always allotetraploid ( $2n = 28$ ), while bluebunch wheatgrass may be diploid ( $2n = 14$ ) or autotetraploid ( $2n = 28$ ) (Carlson and Barkworth 1997).

## METHOD OF DEVELOPMENT

‘Discovery’ is a multiple-origin plant material that was assembled based on results of a test of 15 Snake River wheatgrass accessions transplanted 5 April 1990 to a rocky west-facing slope at the Deer Pens site (Logan, Utah). On 5 December 1990 vigor scores were taken from these replicated plots. Significantly more vigorous than ‘Secar’ (1.7) were A-27 (4.3), A-42 (3.8), T-12 (3.6), and BBR synthetic (3.2). In 1991, clones from these latter 4 sources were intermated, and seeds were

harvested in bulk to generate E-21, the experimental designation for 'Discovery'.

'Discovery' was compared with 'Secar' in seeded trials at 2 sites in the Intermountain Region (Blue Creek Farm, Box Elder County, Utah, and Green Canyon, North Logan, Utah) and at 4 sites in the Great Plains (Miles City, Montana; Mandan, North Dakota; Mead, Nebraska; and Sidney, Nebraska). It is noted that Snake River wheatgrass is widely used in the Intermountain Region, but it is not used in the Great Plains. Because the 2 Intermountain sites showed no genotype  $\times$  location interaction, results of these sites were combined. Stand frequency of 'Discovery' in year 2 (2001) was 49.3%, greater than 'Secar' at 27.4% ( $P < 0.05$ ). Forage yield of 'Discovery' for years 2 to 4 was 108.0% greater than 'Secar' ( $P < 0.05$ ). No significant differences ( $P > 0.10$ ) were seen at the 4 Great Plains locations. 'Discovery' was also compared with 'Secar' in a transplanted trial at Millville, Utah, where it produced 18% greater straw weight across 2 densities the summer after establishment ( $P < 0.05$ ).

### ANTICIPATED CONSERVATION USE

The only previous release of Snake River wheatgrass is 'Secar' (Morrison and Kelley 1981), which was released in 1980 as a cultivar of bluebunch wheatgrass before Snake River wheatgrass was formally described (Carlson and Barkworth 1997). Although 'Secar' is considered highly drought tolerant as a mature plant, drought often reduces stand during the establishment year. 'Discovery' may expand the use of this grass, commonly used as a surrogate for bluebunch wheatgrass in rangeland seedings. Primary beneficiaries are land management agencies, especially the USDI Bureau of Land Management, the ranching industry, and the seed industry.

### ANTICIPATED AREA OF ADAPTATION

Plant materials used to develop 'Discovery' originated in southeastern Washington and central Idaho. In the Intermountain Region, it has been tested only in northern Utah. The natural distribution of Snake River wheatgrass is limited to eastern Oregon, eastern Washington, and central and northern Idaho, but it is widely used for restoration, reclamation, and rehabilitation of rangelands in the Columbia Plateau (#10), Northern Basin and Range (#80), Central Basin and Range (#13), and Snake River Plain (#12) Level III ecoregions (Environmental Protection Agency 2007), which encompass large portions of eastern Washington, eastern Oregon, southern Idaho, Nevada, and western Utah.

### AVAILABILITY OF PLANT MATERIALS

Breeder seeds will be maintained by the USDA-ARS Forage and Range Research Laboratory, Logan, Utah. It will be made available to commercial growers for production of foundation, registered, and certified seed generations by the Utah Crop Improvement Association. Small quantities of seeds will be provided to researchers on request to the corresponding author. Appropriate recognition should be made if this material contributes to the development of a new breeding line or cultivar.

### ACKNOWLEDGMENTS

The financial support of the USDI Bureau of Land Management Great Basin Native Plant Selection and Increase Project and the USDA Forest Service Rocky Mountain Research Station that contributed to the development and seed increase of this plant material is gratefully acknowledged.

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