

# 2012



Hypocrita jacobea larva from [http://en.wikipedia.org/wiki/File:Hypocrita\\_jacobea\\_larva\\_beentree.jpg](http://en.wikipedia.org/wiki/File:Hypocrita_jacobea_larva_beentree.jpg)

Excerpted in part from Tilley, 2011.

The USDA NRCS Plant Materials Program, in collaboration with the Aberdeen NRCS Plant Materials Center (IDPMC) in Idaho and Upper Colorado Environmental Plant Center (UCEPC), identified several species of groundsel as having potential for Intermountain and Rocky Mountain rangeland plantings and high elevation revegetation projects. *Senecio* species are also known to be used as food plants by the larvae of some Lepidoptera species demonstrating additional values for pollinators.

Groundsels and ragworts are biennial or perennial herbs of the composite family (Asteraceae), traditionally in the genus *Senecio*. With over 1,500 species of *Senecio* worldwide, *Senecio* is the largest genera within the Asteraceae. Harrington noted 42 species of *Senecio* as occurring in Colorado.

Initial plantings conducted by the IDPMC and UCEPC indicated that these species are relatively easy to establish with positive seed production attributes. Species of interest included *S. multilobatus*, *S. integerrimus*, *S. biglovii* and *S. atratus*.

A literature search conducted as part of the study plan development revealed potential toxicity associated with these species as impacting their further development and broad application on private lands. Therefore, 26 samples of several species of groundsel were sent to the Poisonous Plant Laboratory in Logan Utah for analysis. Analysis showed pyrrolizidine alkaloid presence in varying concentrations in all of the samples submitted.

As a result of potential risks noted by the World Health Organization for seed contamination and adverse impacts to domesticated livestock, further development of these species were discontinued.

## New Publications

A number of new or revised publications were completed during the past year – a few are mentioned below:

[Plant Suitability and Seeding Rates for Conservation Plantings in Colorado \(revised September 2011\)](#). (PDF; 736K) Sharkoff, Jim and Christine Taliga. 2011.

[Standard and Preferred Forage and Reclamation Plants for Use in Montana and Wyoming](#). (PDF; 83K) R. Hybner, J. Scianna, D. Ogle, L. St. John, D. Tober, W. Duckwitz, S. Parr, K. Clause. 2011.

[Rangeland Drill Calibration](#). (PDF; 60K) Taliga, Christine E. 2011.

[Seedbed Preparation for Conservation Plantings](#). (PDF; 227K) Taliga, Christine E. 2011.

[Clay-loving wild buckwheat \(\*Eriogonum pelinophilum\*\) Plant Guide](#). (PDF; 216K) Taliga, Christine E. and Gina Glenne. 2011.

[Kremmling Milkvetch, \(\*Astragalus osterhoutii\*\) Plant Guide](#). (PDF; 190K) Taliga, Christine. 2011

[Mancos Milkvetch \(\*Astragalus humillimus\*\) Plant Guide](#). (PDF; 265K) Taliga, Christine E. 2011.

[Penland's eutrema \(\*Eutrema penlandii\*\) Plant Guide](#). (PDF; 312K) Taliga, Christine E and Gina Glenne. 2011.

[Plant Guide for Tufted Hairgrass](#). (PDF; 242K) St. John, L., Ogle, D.G., Parr, S., Darris, D. 2011. Aberdeen

## CURRENT STUDIES

### **Inter- Center Bottlebrush Squirreltail Strain Trials**

Excerpted, in part, from Briggs et al. 2011.

Bottlebrush squirreltail (*Elymus elymoides* ssp. *elymoides*, ssp. *brevifolius* and ssp. *californicus* and big squirreltail *Elymus multisetus*) are short-lived, drought tolerant, cool season native bunchgrasses, adapted to a wide variety of soils including saline soils in the 8-18 inch precipitation zones (Barkworth 2009). Several cultivars of bottlebrush squirreltail have been developed by ARS and NRCS to provide early successional cover in order to compete with cheatgrass (*Bromus tectorum*) or medusahead (*Taeniatherum caput-medusae*) and for Critical Area Seeding (342) where quick establishment of vegetation is required.

Five Plant Materials Centers including centers located in Aberdeen, ID, Meeker, CO, Los Lunas, NM, Bridger, MT, and Great Basin, NV are participating in an inter-center study comparing bottlebrush squirreltail releases and materials under development across the western United States .

The purpose of this study is to document performance differences of the selections in common gardens located at sites representing diverse western habitats. Five releases including Toe Jam Selected Germplasm (*E. elymoides* ssp. *californicus*), Fish Creek Selected Germplasm (*E. elymoides* ssp. *elymoides*), Sand Hollow (*E. elymoides*), Tusas Germplasm (*E. elymoides* ssp. *brevifolius*), Wapiti Germplasm (*E. elymoides* ssp. *brevifolius*), and one experimental accession from Colorado 9092275 which has been initially identified as *E. elymoides* ssp. *brevifolius*, were included in the project. Additionally, Pueblo Germplasm (*E. elymoides* ssp. *brevifolius*) and one other experimental, 9092296 from southwest Wyoming, were included in the trial



From left to right, bottlebrush squirreltail in June and July at the Upper Colorado Environmental Plant Center, right photo courtesy UCEPC.

at UCEPC. Each PMC will evaluate performance in different habitats described by Major Land Resource Areas (MLRA) and EPA eco-regions. This trial is scheduled to continue through 2014.

### **Development of Indian Ricegrass selections adapted to Silty-Clay-Loam Sites within the Southern Rocky Mountain Region.**

The purpose of this study is to develop Indian ricegrass selections best adapted to Silty-Clay-Loam Sites of the Southern Rocky Mountain Region by collecting and evaluating native accessions from sites with 35% or greater clay content.

Indian Ricegrass, (*Achnatherum hymenoides*), is a native cool-season, mostly self-pollinating, short-lived, perennial bunchgrass (Jones, 1998). Indian Ricegrass is adapted to a wide variety of soils; it tends to be a dominant grass species on shallow dry, sandy and gravelly soils but is also found to occur on silty, loam, clayey, and shaley sites. The available cultivars such as 'Nezpar', 'Paloma', 'Rimrock', appropriate for use in Colorado and across the Intermountain West are best adapted to loamy sands, sandy loams, and gravelly soils.

Twelve entries, comprised of nine experimental accessions, and three cultivars ('Rimrock', 'Nezpar' and 'Paloma'), used as standards for comparison have been planted and evaluated at the UCEPC.

Evaluation and analysis has indicated several promising entries performing better on clayey soils when compared to the released standards. Some entries outperforming the released standards were originally collected in 1988 from southern Colorado, including the areas of Durango, and Pagosa Springs. As a final verification for better adaptability to clayey soils the UCEPC will conduct a greenhouse study to analyze germination in a controlled environment across various soil media. At the conclusion of the greenhouse study we will have enough data for a final determination whether or not a release will follow.



Photo courtesy UCEPC, depicting one of four promising accessions.

### ***ALMANAC Inter-Center Project***

Eight western PMCs (Arizona, California, Washington, Idaho, Montana, Colorado, Nevada, and New Mexico) are working with Agricultural Research Service scientists in Reno and Texas to measure plant growth data which will be used to populate the ALMANAC (Agricultural Land Management Alternative with Numerical Assessment Criteria) model.

The ALMANAC model will be used in evaluation of conservation practice effects on grazing lands as part of the CEAP (Conservation Effects Assessment

Project). The field scale ALMANAC model may also prove useful to NRCS field office staff, by providing improved estimates of forage availability, potential wildfire fuel loads, and wildlife habitat suitability, as well as erosion potential on ecological sites.

The data provided for use in the ALMANAC model is expected to be of value in additional modeling efforts such as SWAT (Soil and Water Assessment Tool), WEPS (Wind Erosion Prediction System) along with other assessment efforts such as those required in the Soil and Water Resources Conservation Act (RCA) of 1977.

Plant communities represented by functional plant groups (short grass, tall grass, shrub, etc.) and their biophysical outputs (canopy cover, plant height, standing biomass, root distribution and mass, ground cover, etc.) are the major drivers of the ALMANAC model and are key to accurate predictions of effects and ultimately better up-front conservation planning. The biophysical component requires attribute data over the many ecological zones found throughout the United States, at the Ecological Site Descriptions (ESD) scale.

To date 12 species have been evaluated for the ALMANAC model including, Arizona fescue, western wheatgrass, Utah sweetvetch and rocky mountain penstemon evaluated by the UCEPC. Data collected included biomass production, nutrient content, leaf area and light interception measurements using a specialized ceptometer.

The work related ALMANAC model is expected to continue over the next several years and will focus on documenting growth parameters of major western plant species.

## PLANT DEVELOPMENT

### Silver buffaloberry



Silver buffaloberry, *Shepherdia argentea*  
photo courtesy UCEPC

Silver buffaloberry is a native Colorado shrub that has been evaluated and studied at the UCEPC since 1977. This thorny, thicket-forming shrub to small tree grows 6 to 20 feet in height and is adapted to elevations below 7,500 feet and requires 13 to 21 inches of precipitation.

This shrub may also offer wildlife habitat improvement, windbreak potential, landscaping, riparian enhancement, and erosion control. The male and female flowers are found on separate plants. In early spring (late April), the yellow-colored male flowers are quite noticeable, while the female flowers remain inconspicuous. This species is insect pollinated, most commonly by honey bees and bumble bees.

Silver buffaloberry can be found growing along streams, in coulees and on exposed, moist hillsides. The plants are winter hardy and alkaline tolerant. Silver buffaloberry is capable of fixing nitrogen in root nodules that contain bacteria. NRCS is in the final stages of assessing the applicability and marketability of this shrub as a potential release to address re-vegetation efforts along riparian corridors post Tamarisk removal. Plans are

underway to conduct a comparative study with the released materials already available with the experimental accession at the UCEPC. The study will evaluate establishment, growth rate vigor, disease problems, and hardiness. The decision to proceed with a release will be based on the results of this study and a market analysis assessing the demand from nurseries and seed industry for this material.

## TECHNOLOGY TRANSFER

### Native Plant Network

The Native Plant Network is an organization that provides technical and practical information on the growing and planting of North American (Canada, Mexico, and US) native plants for restoration, conservation, reforestation, landscaping, and roadsides.

The Native Plant Network is devoted to the sharing of information on how to propagate native plants of North America (Canada, Mexico, and US). The UCEPC has posted several new native plant propagation protocols in 2011. To access the information go to:

<http://www.nativeplantnetwork.org/Network/>

< Search continental US, Hawaii, Canada, Mexico, and US Virgin Islands  
< Fill in any one or all of the categories (name, providence, product type, organization, etc.)

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