

**Native Plant Revegetation at Butterfly Meadows (Benton County),
Habitat for the Endangered Fender's Blue Butterfly
Report to the Native Plant Society of Oregon**

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Introduction

Native prairies, which once dominated the landscape of the Willamette Valley, are considered among the rarest of Oregon's ecosystems and are in critical need of conservation. One of the largest remaining parcels of native upland prairie, Butterfly Meadows (Benton County), is being invaded by *Brachypodium sylvaticum* (false brome). This site is one of three most important remaining habitats for the Fender's blue butterfly and Kincaid's lupine, federally listed as Endangered and Threatened respectively. Most of Butterfly Meadows is owned by Starker Forests (Corvallis) with a small portion owned by Oregon State University.

A partnership was formed in 2002 of people and organizations interested in protecting and restoring Butterfly Meadows:

- Fred Pfund (Starker Forests)
- Matt Blakeley-Smith (Institute for Applied Ecology)
- Deborah Clark (Oregon State University, Biology Program)
- Paul Hammond (Entomologist, Private consultant)
- Debbie Johnson (Oregon State University, College Forests)
- Tom Kaye (Institute for Applied Ecology)
- Bruce Kelpsas (Helena Chemical Company)

In fall 2002, the partnership submitted a proposal (Control of *Brachypodium sylvaticum* and Restoration of Rare Native Upland Prairie Habitat at Butterfly Meadows, Benton County) and received funding from the Oregon Department of Agriculture.

The project goal was and is to protect and restore rare Willamette Valley upland prairie habitat at Butterfly Meadows (Benton County) from invasion by the noxious weed *Brachypodium sylvaticum* (false brome).

Since receiving funding in 2002, the partnership has developed and implemented herbicide treatments, beginning with small scale experiments, which control *Brachypodium sylvaticum* without harming native prairie vegetation or the Fender's blue butterfly. We used the results of these small-scale experiments to develop strategies for restoration of larger areas of the Butterfly Meadows, which Starker Forests has implemented at its own expense. These strategies have been relatively successful in controlling false brome, but we are now at a time where we need to revegetate these areas where false brome has been controlled. These areas are too large to quickly revegetate with existing native herbaceous species, so we need to augment the site with additional seed. Transplanting greenhouse grown plants is also an option but is much more costly. We hope to apply for additional funding elsewhere for these transplants.

Objective

Our objective was to revegetate areas at Butterfly Meadows in which *Brachypodium sylvaticum* (false brome) has been removed with a diversity of native herbaceous plants, specifically by sowing a mixture of herbaceous native species.

Methods

Seeds We purchased seven pounds of a native seed mixture from Heritage Seedlings (www.heritageseedlings.com) that was recommended for our site by Lynda Boyer, Heritage Seedlings. This mixture of 12 forb species “Disturbed Ground Mix” is designed for a late season sowing on disturbed upland prairie sites (Table 1). In addition 3 pounds of *Festuca roemerii* was purchased.

Sowing We sowed seeds December 9, 2008 in two areas at Butterfly Meadows where we had been successful in controlling false brome. The seeds were broadcast because the site is too steep to use seed drilling equipment.

Data collection The abundance of each of the sowed species was measured as cover data in each of 12 sampling plots (1 meter x 1 meter) on June 1, 2009.

Results and Discussion

Cover of individual species was less than 1% in each of the sampling plots with the primary exception of *Eriophyllum lanatum*. Although the cover was very low (which is not unexpected given the species were sowed only five months earlier), the frequency of the number of plots in which the species were found was encouraging. Half of the twelve forbs species were found at a frequency of 67% or greater (Table 1). Two species, *Eriophyllum lanatum* and *Madia gracilis* had a frequency of 100%. The single grass sowed *Festuca roemerii* was not found in any of the sampling plots. However, *Festuca roemerii* was observed in June 2012 when plots re-visited (no data were collected at this time).

There was not a close relationship between the frequency at which a species established and the percentage it constituted in the seed sowing mix. The largest components were *Achillea millefolium* (42% frequency), *Eriophyllum lanatum* (100% frequency), and *Prunella vulgaris* var. *laneolata* (67% frequency), each of which constituted 14% of the mix. But *Madia gracilis* and *Lotus unifoliolatus* with an establishment frequency of 100% and 83% respectively, each constituted only three percent of the seed mix.

Acknowledgments

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Table 1. Percentage of species present in the sowed forb seed mix used for broadcast sowing at Butterfly Meadows, Benton County, OR, in December 2008 and the frequency (percent) which a sowed species was present in the 12 sampling plots at Butterfly Meadows, Benton County, OR in June 2009.

Species	Percentage of species in the forb seed sowing mix	Frequency (%)
Forbs		
<i>Eriophyllum lanatum</i>	14	100
<i>Madia gracilis</i>	3	100
<i>Lotus unifoliolatus</i>	3	83
<i>Lomatium nudicaule</i>	13	75
<i>Lupinus rivularis</i>	11	85
<i>Prunella vulgaris</i> var. <i>laneolata</i>	14	67
<i>Achillea millefolium</i>	14	42
<i>Solidago canadensis</i>	12	42
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	5	33
<i>Collinsia grandiflora</i>	4	25
<i>Collomia grandiflora</i>	4	25
<i>Gilia capitata</i>	3	0
Grass		
<i>Festuca roemerii</i>	Not applicable	0