

CORVALLIS PLANT MATERIALS CENTER  
NATURAL RESOURCES CONSERVATION SERVICE  
CORVALLIS, OREGON  
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December 30, 2005

**THE 2005 OLYMPIC NATIONAL PARK ANNUAL REPORT:**  
*Hurricane Ridge Road Revegetation Project*

**I. Brief Background of Project**

The Corvallis Plant Materials Center (PMC) entered into a new agreement with Olympic National Park in 2004 to provide native plant materials for revegetation of Hurricane Ridge Road. It was agreed that the PMC would produce a minimum of 255 lbs (PLS) of two lower elevation grasses, 100lbs (PLS) of two upper elevation grasses, and 45lbs of three upper elevation forbs. The PMC is also responsible for collecting a minimum of 3.5 lbs of seed of four native forbs. Delivery is expected in 2007.

Activities in 2005 included collecting seed of ten species (16 accessions), cleaning of native seed collected by PMC staff; expansion, maintenance, and harvest of seed production fields including three grasses, and three forbs; and containerized stock production. Details are provided below.



Figure 1 (left).  
*Artemisia ludoviciana*  
seed increase field at  
the Corvallis PMC,  
September 15, 2005

**II. Accessions Involved**

Low elevation collection area was defined by the park as the roadsides of Hurricane Ridge Rd from the intersection of Race Rd north to the “double parking area”. High

elevation collection area included roadsides from the “Switchbacks” trailhead north to the Visitor’s center parking lot.

Table 1. Accessions involved for Hurricane Ridge Cooperative Agreement at the Corvallis Plant Materials Center.

Species	Common Name	Symbol	Accession Number	2005 Activities <sup>1</sup>
<b>Low elevation</b>				
<i>Elymus glaucus</i>	blue wildrye	ELGL	9079352	sfp, col
<i>Bromus vulgaris</i>	Columbia brome	BRVU	9079353	sfp, col
<i>Eriophyllum lanatum</i>	common woolly sunflower	ERLA6	9079405	col
<i>Achillea millefolium</i>	common yarrow	ACMI2	9079407	col
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	9079408	col
<i>Heracleum maximum</i>	common cow parsnip	HEMA80	9079414	col
<i>Chamerion angustifolium</i>	fireweed	CHAN9	9079409	col
<b>High elevation</b>				
<i>Elymus glaucus</i>	blue wildrye	ELGL	9079356	sfp, col
<i>Bromus sitchensis</i>	Alaska Brome	BRSI	9079357	sfp, col
<i>Eriophyllum lanatum</i>	common woolly sunflower	ERLA6	9079358	sfp, col
<i>Lupinus latifolius</i>	broadleaf lupine	LULA4	9079351	sfp, col
<i>Artemisia ludoviciana</i>	Louisiana sage (white sagebrush)	ARLU	9079359	sfp, col
<i>Achillea millefolium</i>	common yarrow	ACMI2	9079402	col
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	9079403	col
<i>Heracleum maximum</i>	common cow parsnip	HEMA80	9079413	col
<i>Chamerion angustifolium</i>	fireweed	CHAN9	9079404	col

<sup>1</sup> Activity codes: col= collected at Park (by PMC staff); sfp= seed produced at PMC.

### III. Native Seed and Plant Collections



PMC staff was responsible for native seed collections. They were performed primarily along the roadsides of Hurricane Ridge Road. Approximately 184 hours were recorded as actual collection time. A total of 27 lbs of clean seed of ten species was collected in 2005.

Figure 1. PMC staff and volunteers at Hurricane Ridge Visitor's Center, August 1, 2005

Table 2. Native Seed and Plant Collection for the Hurricane Ridge Road Cooperative Agreement in 2005 for at the Corvallis Plant Materials Center.

<b>Species</b>	<b>Symbol</b>	<b>Accession Number</b>	<b>Collection dates</b>	<b>Amt</b>
<b>High elevation</b>				
<i>Elymus glaucus</i>	ELGL	9079356	8/22-8/25	550 g
<i>Bromus sitchensis</i>	BRSI	9079357	8/12-8/22	1016 g
<i>Eriophyllum lanatum</i>	ERLA6	9079358	8/22-9/6	324 g
<i>Lupinus latifolius</i>	LULA4	9079351	8/1-8/22	3500 g
<i>Artemisia ludoviciana</i>	ARLU	9079359	9/6-9/8	481g
<i>Achillea millefolium</i>	ACMI2	9079402	9/6-9/8	107 g
<i>Anaphalis margaritacea</i>	ANMA	9079403	9/6-9/8	248 g
<i>Heracleum maximum</i>	HEMA80	9079413	8/22-9/6	1700 g
<i>Chamerion angustifolium</i>	CHAN9	9079404	9/6-9/8	85 g
<b>Low elevation</b>				
<i>Elymus glaucus</i>	ELGL	9079352	8/10-8/25	937g
<i>Bromus vulgaris</i>	BRVU	9079353	8/10-8/25	1423g
<i>Eriophyllum lanatum</i>	ERLA6	9079405	9/6-9/8	15 g
<i>Achillea millefolium</i>	ACMI2	9079407	9/6-9/8	100 g
<i>Anaphalis margaritacea</i>	ANMA	9079408	9/6-9/8	150 g
<i>Heracleum maximum</i>	HEMA80	9079414	8/10-8/25	1450 g
<i>Chamerion angustifolium</i>	CHAN9	9079409	9/6-9/8	125 g

### III. Field Seed Increase

ARLU field was created using containers grown from fall of 2004. Plants were transplanted into fields in the spring on 1'X1' spacing. Five 130ft rows were planted. Plants grew vigorously and suppressed any possible weed growth. No flowering occurred in 2005.

In March of 2005, LULA transplants were used to fill in gaps in the rows that were seeded in the fall. Fall seeding was moderately successful. Slugs, snails, and cucumber beetles were all pests in the LULA planting. These pests reduced the number of surviving seedlings. "Slug-go" was sprinkled over the plot to control slugs and snails, "Bio-neem"

oil & soap was applied as a foliar spray on plants to prevent predation from cucumber beetles. Sulfur dust was applied to plants that exhibited powdery mildew. Weed control in the fields was performed by hand.

All seed collected in 2005 was cleaned and informal germination tests were performed on most of the seed lots prior to planting. Grasses, ERLA and ARLU were seeded into fields on October 21, 2005 using a six-row Planet Jr. seeder. All fields were carbon banded while sowing, then sprayed with Diuron. Fall rains began the day after both seeding and spraying were completed so no fall irrigation was needed. Most seedlings emerged within 2-3 weeks after planting, and stand establishment and vigor was rated high for all species, except ARLU, no plants emerged. BRSI and ERLA will be evaluated in the spring, these seed exhibit a physiological dormancy and will not germinate until February. Diuron provided fair weed control. Banvel was applied in November to grass fields to control broadleaves. Glyphosate was applied over ERLA fields in November to control all weeds.

Table 3. Establishment information for new seed increase fields for the Hurricane Ridge Cooperative Agreement at the Corvallis PMC in 2004.

<b>Species</b>	<b>Amount seeded</b>	<b>Germ</b>	<b>Approximate seeding rate</b>	<b>Seeds/lb</b>
<b>ELGL (LO)</b> 0.18 acres or 60 130' rows 12" btwn rows	846g	94%	10.4lbs/acre(bulk) 9.8lbs/acre (PLS) 28PLS/ft-row	122,000
<b>BRVU</b> 0.25 acres or 84 130' rows 12" btwn rows	1073g	82%	9.5lbs/acre (bulk) 7.8 lbs/acre (PLS) 19 PLS/ft-row	106,000
<b>BRSI</b> 0.20 acres or 66 130' rows 12" btwn rows	945g	55%	10.4lbs/acre(bulk) 5.7lbs/acre (PLS) 9 PLS/ft-row	65,000
<b>ELGL (HI)</b> 0.10 acres or 18 240' rows 12" btwn rows	283g	82%	6lbs/acre (bulk) 5lbs/acre (PLS) 12 PLS/ft-row	99,000
<b>ARLU</b> 0.08 acres or 24 137' rows 24" btwn rows	50g	25%	1.4lbs/acre (bulk) .35lbs/acre (PLS) 20 PLS/ft-row	2,470,000
<b>ERLA</b> 0.10 acres or 30 133' rows 12" btwn rows	261g	35%	6lbs/acre (bulk) 2.1lbs/acre (PLS) 36 PLS/ft-row	720,000

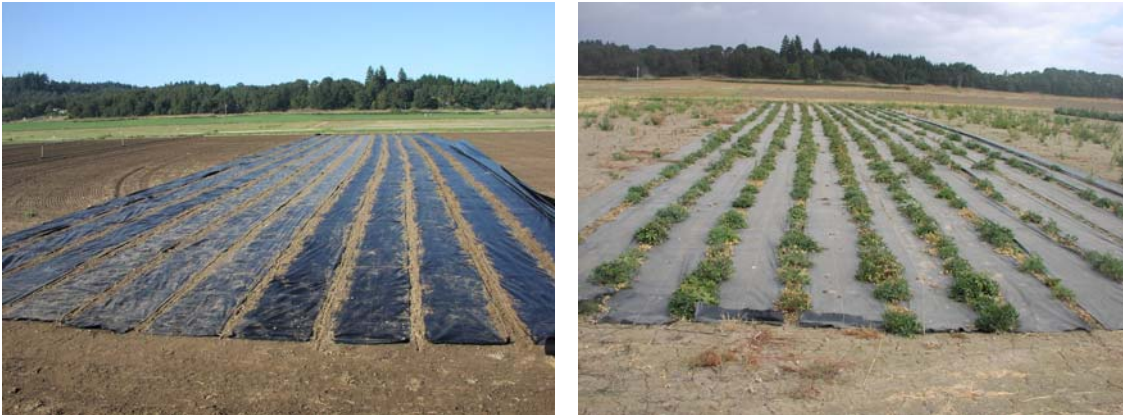


Figure 3. LULA4 field after sowing September 25, 2004 (left) and one year later, September 30, 2005 (right).

#### IV. Field Production Activities

Weed control was primarily performed by hand (mainly to remove exotic perennial grasses) and spraying borders and spot-spraying with glyphosate. Broadleaf herbicides (Bison and Banvel) were applied to grass fields in February and May.

Seed was harvested from established stands of *Bromus vulgaris*, *Bromus sitchensis*, both high and low ecotypes of *Elymus glaucus* and *Eriophyllum lanatum*. The *Lupinus latifolia* and *Artemisia ludoviciana* fields did not flower in 2005.

Table 4. Field Production at Corvallis Plant Material Center in 2005 for the Hurricane Ridge Rd project.

Species	Area Harvested	Date(s)	Method	Yield	Comments
ELGL (LO)	0.11 acres	July 11	swath/ combine	10.5lbs	Excellent stand, high vigor
BRVU	0.13 acres	July 11	swath/ combine	7lbs	Good stand, fair vigor
BRSI	0.033 acres	7/15-30	hand	333g	Poor stand, good vigor
ELGL (HI)	0.06 acres	8/12	hand	363g	Poor stand, low vigor
ERLA	0.046 acres	9/15	hand	107g	Fair stand, good vigor

After harvest, residue was removed from grass fields using a Brady flail chopper. It mows and vacuums, spitting all material up into a large tow-behind trailer. Cutting height was set at three inches.





Figure 4. Brady flail chopper removing residue from seed increase fields.

Lots larger than five pounds were sampled and sent to the Oregon State University Seed Laboratory for germination and purity testing. Excess seed was returned by the lab and is being stored at the Corvallis PMC until delivery is requested. Seed lots that are less than five pounds will be bulked with 2006 production and sent in for testing in the fall of 2006.

Table 5. Test Results for Seed Lots Produced in 2005 by the Corvallis Plant Materials Center for the Hurricane Ridge Rd project.

<b>Species</b>	<b>% Germination</b>	<b>% Purity</b>	<b>Bulk Amt</b>	<b>PLS Amt</b>
ELGL (LO)	91	97.97	10.51bs	9.36bs
BRVU	71	88.49	7	4.4lbs
BRSI <sup>1</sup>	59	N/A	333g	N/A
ELGL (HI) <sup>1</sup>	98	N/A	363g	N/A
ERLA <sup>1</sup>	N/A	N/A	107g	N/A

<sup>1</sup>-seed lot is less than five pound and was not tested at OSU seed lab germ tests were informal ones performed at PMC.

## **VII. Delivery of Plant Materials**

No deliveries were made in 2004.