

CORVALLIS PLANT MATERIALS CENTER
NATURAL RESOURCES CONSERVATION SERVICE
CORVALLIS, OREGON
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THE 2007 OLYMPIC NATIONAL PARK ANNUAL REPORT:
Hurricane Ridge Road Revegetation Project

I. Brief Background of Project



Figure 1. Hurricane Ridge, Olympic National Park, August 22, 2007.

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, 100 lbs (PLS) of two upper elevation grasses, and 45 lbs 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 was planned to occur in fall of 2007. Due to funding constraints, the construction has not begun and is scheduled to be complete in the fall of 2009. Seed will be held at the PMC until it is needed by the Park.

Activities in 2007 included collecting seed of four species, cleaning of native seed collected by PMC staff and maintenance and harvest of seed production fields including three grasses and three forbs. Details are provided below.

II. Accessions Involved

NPS staff defined the low elevation collection area to be the roadsides of Hurricane Ridge Rd. from the intersection of Race St. south to the “double parking area”. High elevation collection area included roadsides from the “Switchbacks” trailhead west to the Visitor’s Center parking lot.

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

Species	Common Name	Symbol	Accession Number	2007 Activities ¹
Low elevation				
<i>Elymus glaucus</i>	blue wildrye	ELGL	9079352	sfp
<i>Bromus vulgaris</i>	Columbia brome	BRVU	9079353	sfp, col
<i>Eriophyllum lanatum</i>	common woolly sunflower	ERLA6	9079405	-
<i>Achillea millefolium</i>	common yarrow	ACMI2	9079407	-
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	9079408	-
<i>Heracleum maximum</i>	common cow parsnip	HEMA80	9079414	-
<i>Chamerion angustifolium</i>	fireweed	CHAN9	9079409	-
High elevation				
<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
<i>Lupinus latifolius</i>	broadleaf lupine	LULA4	9079351	sfp, col
<i>Artemisia ludoviciana</i>	Louisiana sage (white sagebrush)	ARLU	9079359	sfp
<i>Achillea millefolium</i>	common yarrow	ACMI2	9079402	-
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	9079403	-
<i>Heracleum maximum</i>	common cow parsnip	HEMA80	9079413	-
<i>Chamerion angustifolium</i>	fireweed	CHAN9	9079404	-

¹ 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 30 hours were recorded as actual collection time. A total of 9 lbs of clean seed of four species was collected in 2007.

Table 2. Native seed collection for the Hurricane Ridge Road Cooperative Agreement in 2007 at the Corvallis Plant Materials Center.

Species	Symbol	Accession number	Collection dates	Amt
High elevation				
<i>Elymus glaucus</i>	ELGL	9079356	8/22-8/25	1 lb
<i>Bromus sitchensis</i>	BRSI	9079357	8/12-8/22	2 lbs
<i>Lupinus latifolius</i>	LULA4	9079351	8/1-8/22	15 g
Low elevation				
<i>Bromus vulgaris</i>	BRVU	9079353	8/10-8/25	1 lb

IV. Field Seed Increase

In the spring, slugs, snails, and cucumber beetles were pests in the *Lupinus latifolius*, and *Artemisia ludoviciana* plantings. “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. Broadleaf herbicides (Bison and Banvel) were applied to grass fields (except *Bromus sitchensis* field) in February and May. Forb fields were weeded entirely by hand multiple times throughout the growing season.

Mortality in the *L. latifolius* plot was higher this winter. Plot remains about 50% full. Existing plants are vigorous and flowered well. Seeds were collected by hand as they matured.



Figure 2. *Artemisia ludoviciana* seed increase plot at the Corvallis Plant Materials Center, July 15, 2006.

A. ludoviciana plants did not flower as much in 2007 as they did in 2006. Plants that had been established by transplants in the spring of 2005 barely flowered, although plants were still vigorous. Seeds were collected by hand in two harvests.

Eriophyllum lanatum field was very vigorous and the stand is full. It is a very nice field and is the best performing forb in this agreement. Field was harvested using the “moon rover” (a self-propelled swather). Material was spread out on tarps to dry. Four weeks after harvest, it was run through a small Winterstieger plot combine. It had to be run through twice to remove all the seeds from the heads.



Figure 3. *Eriophyllum lanatum* seed increase field at the Corvallis Plant Materials Center, June 23, 2007.

The *B. sitchensis* field struggled through the winter and spring. Plants were slow growing in the spring and appeared stressed. Therefore, this field was not sprayed with spring broadleaf herbicides. Flowering was spotty and maturity was incredibly uneven. To maximize the small yield, the field was harvested multiple times by hand. This field was removed in the fall of 2007.

The low ecotype of *Elymus glaucus* has always performed well at the PMC, this year, filled seed was hard to find. The plants were vigorous and the stand was excellent. The field was swathed and combined. While combining, it was noticed that many seeds were empty.

The high elevation ecotype of *E. glaucus* looked even worse this year. The section of the field that was planted in the fall of 2005 barely flowered this year, and the older section didn't perform much better. The stand is thin and the existing plants are struggling. Field was harvested using the "moon rover" and seeds were threshed using a plot thresher. Plot was removed in the fall of 2007.

Table 4. Field production at Corvallis Plant Materials Center in 2007 for the Hurricane Ridge Rd. Project.

Species	Area (ac)	Date(s)	Method	Yield	Comments
ELGL (LO)	0.25	July 6- July 13	swath/ combine	65 lbs	Excellent stand, high vigor
BRSI	0.2	June19- July 3	hand	8 lbs	poor stand, good vigor
ELGL (HI)	0.06	July 25	moon rover	10 lbs	poor stand, low vigor
ARLU	0.1	July 5	hand	2 lbs	Fair stand, high vigor
LULA4	0.1	May30- June30	hand	1 lb	Poor stand, good vigor
ERLA	0.15	August 1	moon rover	13 lbs	Excellent stand, high vigor

After harvest, all grass fields were mowed with a Brady flail-chopper to remove post-harvest residue. Forb fields were not mowed.

Samples from seed lots larger than five pounds were sent to the Oregon State University Seed Laboratory for germination and purity testing. Excess seed was returned by the lab and is also being stored at the Corvallis PMC until delivery is requested. Seed lots that are less than five pounds will bulked with 2006 production and sent in for testing in the fall of 2008.

Table 5. Test results for seed lots produced in 2007 by the Corvallis Plant Materials Center for the Hurricane Ridge Rd. Project.

Species	Purity	Germ	Bulk lbs produced in 2007	PLS lbs produced in 2007
<i>Elymus glaucus (high)</i>	94.74	91	10.25	8.83
<i>Elymus glaucus (low)</i>	98.59	96	65	61
<i>Eriophyllum lanatum</i>	97.85	64	13	8

VII. Delivery of Plant Materials

No deliveries were made in 2007. Current seed in storage is listed below.

Table 6. Current seed inventory for the Hurricane Ridge Rd. Project held by the Corvallis Plant Materials Center

Species (High Elevation)	Accession Number	Bulk Total
<i>Elymus glaucus</i>	9079356	20 lbs
<i>Bromus sitchensis</i>	9079357	13 lbs
<i>Eriophyllum lanatum</i>	9079358	21 lbs
<i>Lupinus latifolius</i>	9079351	11 lbs
<i>Artemisia ludoviciana</i>	9079359	3.5 lbs
<i>Achillea millefolium</i>	9079402	0.5 lbs
<i>Anaphalis margaritacea</i>	9079403	1 lb
<i>Heracleum maximum</i>	9079413	4 lbs
<i>Chamerion angustifolium</i>	9079404	1 lb
Species (Low Elevation)	Accession Number	Total
<i>Elymus glaucus</i>	9079352	184 lbs
<i>Bromus vulgaris</i>	9079353	12 lbs
<i>Eriophyllum lanatum</i>	9079405	10 g
<i>Achillea millefolium</i>	9079407	25 g
<i>Anaphalis margaritacea</i>	9079408	50 g
<i>Heracleum maximum</i>	9079414	4 lbs
<i>Chamerion angustifolium</i>	9079409	40 g