CORVALLIS PLANT MATERIALS CENTER
NATURAL RESOURCES CONSERVATION SERVICE
CORVALLIS, OREGON
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THE 2008 OLYMPIC NATIONAL PARK ANNUAL REPORT:
Elwha River Ecosystem and Fisheries Restoration

Figure 1. *Eriophyllum lanatum* seedlings growing in the Corvallis PMC greenhouse, February 15, 2009.

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 the ecological restoration of Lake Mills and Lake Aldwell following the removal of two high head dams on the Elwha River. It was agreed that the PMC would propagate a minimum of 4000 lbs of grass and forb seed. A more detailed production list will be determined by PMC and NPS staffs as restoration plans are finalized. Current plans estimate that the dams might be removed in 2012. Most of the fields that were in production would not survive until 2012 and the seed that is produced from the existing fields (and from previous years) will not be viable in 2012. Possible exceptions are the sedges and legumes. These plants and seeds are long-

lived. Seed production on these species will continue in 2009 and future years. Production on all other species will be halted until dam removal plans have been finalized and demolition has begun.

Activities in 2008 included collecting wild seed of *Bromus carinatus, Elymus glaucus and Eriophyllum lanatum*, germination trials on one legume, and establishment and maintenance of seed production fields including two forbs and two sedges. Details are provided below.

II. Accessions Involved

Table1. Accessions involved and activities performed in 2008 for Elwha River Ecosystem and Fisheries Restoration Cooperative Agreement at the Corvallis Plant Materials Center.

Species	Common name	Symbol	Accession number	2008 Activity[1]
Artemisia suksdorfii	coastal wormwood	ARSU4	9079400	Sfp
Carex deweyana	dewey sedge	CADE9	9079330	Sfp, pxn
Carex pachystachya	thick-headed sedge	CAPA14	9079329	Sfp
Eriophyllum lanatum	wooly sunflower	ERLA	9079441	Pxn, col
Elymus glaucus	blue wildrye	ELGL	9079334	Col
Bromus complex	Brome complex	BR sp	9079332	Col
Lathryus polyphyllus	leafy peavine	LAPO	9079517	Trl

1- sfp= seed increase, trl= production research trial, pxn= plant production, col= collected plant materials from park,

III. Native Seed and Plant Collections

Two trips were made to the Elwha River this year. *Bromus* seed was collected on July 16-18th and *E. glaucus* seed was collected on August 6-8th. NPS staff collected *E. lanatum* seed on August 30th and mailed it to the PMC. The grass seed will remain in storage until dam removal is finalized and seed production is set to begin. The *E. lanatum* seed will be used to establish a seed increase field in spring of 2009.

IV. Experimental Propagation

NPS staff collected seeds of *Lathyrus polyphyllus* in 2007. Informal germination tests were set up for this species since it had never been propagated at the Corvallis PMC. Nine sets of 100 seeds were counted, weighed and placed in plastic germination boxes on moistened germination paper and stored in a growth chamber set at 8°(C) days and 4°(C) nights with 8 hours of light. After stratification, boxes were moved to a tabletop near a sunny window and were exposed to natural room temperatures (average 21° (C) days and 13° (C) nights). Treatments include 45 or 90 days cold-moist stratification or no cold-moist stratification (warm). Each treatment contained three replications per species.

Table 2. Results of *Lathryus polyphyllus* germination trials at the Corvallis PMC.

Treatment	Average germination
Warm	15%
45-day cold-moist stratification	65%
90-day cold-moist stratification	68%

V. Cutting Block Maintenance

The cutting blocks were removed in 2008 due to pests and project changes. Willows were severely damaged in 2007 by a stem borer, and only a few plants survived.

VI. Field Production Activities

All seed increase fields were removed except the *Carex pachystachya*, *Carex deweyana*, and *Artemisia suksdorfii* fields. The carexes have long lived seeds that will still be viable when the seed is needed for restoration and the fields have been created using transplants. These fields have been time consuming to create and will be continued. The *A. suksdorfii* field is large and harvest techniques are still being experimented with.

Figure 1. A lab-sized gravity table was added to the PMC's seed cleaning facilities this year.

Weed seeds are often a problem when farming native plants. Some weeds cannot easily be removed from the field or be avoided during harvest. Some of these weed seeds can be removed with seed cleaning machines. In 2008, the PMC acquired a gravity table. This machine is able to separate weeds seeds such as *Poa annua* from the sedge seed lots.

Field Production Notes for 2008:
Weed control in sedge and sage fields was primarily performed by hand (mainly to remove exotic perennial grasses) and by spot-spraying with glyphosate. Borders were tilled. Broadleaf herbicides (Bison and Banvel) were applied to

sedge fields in February and May.

Harvest Notes for 2008:

The "moon rover" was used this year on the *C. pachystachya* field. The field is entering its peak production years. The plants were very vigorous in 2008. The "moon rover" swathed the material, then it was moved to an open shed on tarps to dry. Once dry, material was run through a stationary Winterstieger plot combine. Although labor intensive, this method produced 58 lbs of seed.

C. deweyana plants flowered this year, but these plants are still young and have not reached full maturity. Seeds were hand harvested, which was very labor intensive. The moon rover would be a good choice for this field as the plants get larger. When the field is at least 0.25 acres, swathing and combining will be an efficient harvest method. This field will be retained and expanded.

Fall rain started later than usual in 2008 and this seemed to assist in the seed maturation of the *A. suksdorfii* field. The plants are large and healthy and this year they were covered with blooms in late August. The seed stripper was used to harvest a small section of the field in mid Septmeber. It stripped the seeds from the plants without removing too much plant material. It seemed to be a good choice of harvest method.

Table 3. Seed harvest in 2008 for the Elwha River Ecosystem and Fisheries Restoration Cooperative Agreement at the Corvallis PMC.

Species	Field size (ac)	Date(s)	Method	Yield	Comments
Carex deweyana	0.02	June 24	hand	2 lbs	small stand, high vigor
Carex pachystachya	0.22	June 29	moon rover	58 lbs	good stand, medium vigor
Artemisia suksdorfii	0.01	Sept 17	seed stripper	1 lb	good stand, high vigor

VII. Container Plant Production

A small amount of *E. lanatum* seed was collected in 2008 and sown into 2450 containers filled with moistened media (Sunshine #1, a peat-based soil-less media) amended with micronutrients (MicroMax) and a balanced slow-release fertilizer. Trays were placed in a walk-in cooler and were removed late December. Plants will be transplanted into a field in spring of 2009.

VIII. Delivery of Plant Materials

No seed deliveries were made in 2008. All seed is being held at the PMC in cold storage until requested.

Table 4. Seed in storage at the Corvallis PMC, December 5, 2008.

Scientific name	Common name	Amount in storage
Forbs		
Achillea millefolium	yarrow	120 lbs
Anaphalis margaritacea	pearly everlasting	0.5 lbs
Artemisia suksdorfii	coastal wormwood	2 lbs
Epilobium ciliatum	fringed willowherb	26 lbs
Epilobium angustifolium	tall fireweed	0.5 lbs
Aruncus dioceous	goastbeard	0.5 lbs
Grasses, sedge, and rushes		
Agrostis exerata	spiked bentgrass	18 lbs
Bromus complex	brome species	309 lbs
Bromus vulgaris	Columbia brome	10 lbs
Carex deweyana	Dewey's sedge	8 lbs
Carex hendersonii	Henderson's sedge	0.1 lbs
Carex pachystachya	thick-headed sedge	80.4
Deschampsia elongata	slender hairgrass	192 lbs
Elymus glaucus	blue wildrye	214.5 lbs
Juncus bolanderi	Bolander's rush	0.2 lbs
Luzula parviflora	Many-flowered woodrush	0.1 lbs
Luzula comosa	common woodrush	0.2 lbs