

CORVALLIS PLANT MATERIALS CENTER  
NATURAL RESOURCES CONSERVATION SERVICE  
CORVALLIS, OREGON  
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**THE 2007 US FISH AND WILDLIFE ANNUAL REPORT:**  
*Oregon Silverspot Butterfly Seed Increase Project*

**I. Brief Background of Project**

The Corvallis Plant Materials Center (PMC) entered into a new agreement with US Fish and Wildlife (USFW) in 2005 to increase seed of early blue violet (*Viola adunca*) for use in recovery efforts for the Oregon silverspot butterfly (*Speyeria zerene hippolyta*). In 2007, the Siuslaw District of the United States Forest Service (USFS) became a new partner in the agreement with USFW. The butterfly has become threatened due to the degradation and loss of its coastal meadow habitat. The early blue violet is the obligate host to the silverspot caterpillars and has also been negatively impacted in its coastal meadow ranges by the encroachment of tall, spreading exotic plants. Coastal red fescue, (recently renamed sand fescue, *Festuca ammobia*) is included in this agreement as a matrix species in the coastal meadows. All other forbs included in this project are nectar sources for the adult butterflies.



Figure 1. Oregon silverspot butterfly after release, September 21, 2007.



Figure 2. Coastal meadows in the critical habitat area of the Oregon silverspot butterfly, September 21, 2007.

Activities in 2007 included expanding, maintaining, and harvesting three seed increase plots, wild seed collection of nectar species, and cleaning wild collected seed.

**II. Accessions Involved**

The following table lists the accessions involved in this project. These accessions are also being used in the Rock Creek Bridge Replacement project with Oregon

Department of Transportation/Federal Highways Administration.

Table 1. Accessions in the USFW Oregon Silverspot seed increase project.

Species	Common name	Symbol	Accession	Activity in 2007 <sup>1</sup>
<i>Achillea millefolium</i>	common yarrow	ACMI2	9079448	sfp
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	9079451	col
<i>Aster chiliensis</i>	Pacific aster	ASCH2	9079449	col
<i>Solidago canadensis</i>	goldenrod	SOCA6	9079497	col
<i>Festuca ammobia</i>	sand fescue	FEAM	9079450	col, sfp
<i>Viola adunca</i>	early blue violet	VIAD	9079406	sfp, pxn, dlv
<i>Tanacetum camphoratum</i>	camphore tansy	TACA2	9079559	col
<i>Artemisia suksdorfii</i>	coastal wormwood	ARSU4	9079560	col
<i>Solidago simplex</i> ssp. <i>simplex</i> var. <i>spatulata</i>	dune goldenrod	SOSIS4	9079561	col

<sup>1</sup>- sfp= seed increase, col= wild seed collection, pxn=plant production, dlv=delivered plant materials

### III. Seed Increase



Figure 3. Seed increase plot of *Viola adunca* at the Corvallis Plant Materials Center, April 15, 2007.

A small seed increase plot of *V. adunca* was established using plants that were collected

from the Rock Creek area in 2004. A sheet of weed fabric was stapled down over the field, then holes were cut in the fabric and plants were transplanted into the ground through the holes. As the violet plants grew, they spread out onto the weed fabric. When they flowered and seed pods matured, the pods released the seed onto the weed fabric. The seeds were then vacuumed up using battery-powered, handheld vacuums. Pods were collected also, by hand when feasible. Violet pods turn upright when they are mature, which makes determining seed ripeness simple. This plot was expanded in 2007 using plants grown from the seed that was harvested in 2006.

Table 2. Yields in 2007 for the USFW Oregon Silverspot seed increase project.

Species	Harvest dates	Method	Field size	Yield
<i>Achillea millefolium</i>	August 14, August 20	moon rover	0.010 ac	15 lbs
<i>Viola adunca</i>	May 5- July 8	hand, and vacuuming on weed fabric	0.001 ac	454 g

The *Achillea millefolium* field was hand weeded many times throughout the winter and



Figure 4. Harvesting *Achillea millefolium* with the “moon rover” at the Corvallis Plant Materials Center, August 20, 2007.

spring of 2007. The field flowered profusely but ripening was somewhat uneven across the field. To maximize yields, the field was hand harvested on August 14, 2007. About 10% of the flower heads were mature and harvested at that time. The rest of the field was harvested using the “moon rover” on August 20, 2007. This technique was very efficient. The moon rover cuts all the plant material which lands on a conveyor belt that feeds the material into large bags. The bags were emptied onto tarps in a shed to dry.

*F. ammobia* seed collected by USFS in the summer of 2007 was used to sow a large seed increase field. Heavy rain in September and October limited the amount of land that the PMC could prepare for fall sowing. Not all of the seed was sown. The rest of the seed will be used to expand the field in the spring. This will also provide a comparison between fall and spring planting.

Table 3. Establishment of seed increase fields at the Corvallis Plant Materials Center for the USFW Oregon Silverspot seed increase project.

<b>Species</b>	<b>Code</b>	<b>Date sown</b>	<b>Seeding rate (bulk)</b>	<b>Germination</b>	<b>Field size</b>
<i>Festuca ammobia</i>	FEAM	27-Sep	4 lbs/ac	90%	0.36 ac

#### IV. Container Plant Production.

On January 15, 2007 16g of *V. adunca* seed were sown into 4410 Ray Leach “stubby” cone-tainers filled with moistened media (Sunshine #1, a special peat-based soil-less mix)



and lightly covered with fine vermiculite. Seeded flats of violets were placed in polyethylene bags and moved into a walk-in cooler (36-38° F) for four months. After stratification, they were moved outside to a lathhouse. In early August, all plants were moved to a shadehouse to harden them off and prepare them for fall delivery.

Figure 5. *Viola adunca* plant production at the Corvallis Plant Material Center, September 25, 2007.

## V. Native Seed Collection

Staff members from the PMC, USFW and USFS were able to collect seed in fall of 2007. Collections were made from the southern edge of the Tillamook National Forest south to Florence. This seed will be used to establish seed increase fields in the spring of 2008 for future restoration projects by NRCS, USFW, or USFS in the Critical Habitat area.

Table 2. Seed collected in 2007 for the USFW Oregon Silverspot seed increase project.

Species	Accession	Amount of cleaned seed	Seeds/lb
<i>Festuca ammobia</i>	9079450	2 lbs	380,000
<i>Achillea millefolium</i>	9079448	Not available	6,000,000
<i>Anaphalis margaritacea</i>	9079451	50 g	14,000,000
<i>Aster chiliensis</i>	9079449	111 g	1,300,000
<i>Soildago canadensis</i>	9079497	98 g	4,600,000
<i>Tanacetum camphoratum</i>	9079559	14 g	850,000
<i>Artemisia suksdorfii</i>	9079560	14 g	2,300,000
<i>Solidago spathulata</i>	9079561	3 g	2,000,000

## VI. Delivery of Materials

PMC staff delivered 2100 plants to USFW on October 3, 2007. The remaining 2000 plants were picked up by USFW on October 5, 2007. All seed will remain in PMC seed storage facilities until requested.



Figure 6. Oregon silverspot caterpillar munching on a violet plant (photo by Anne Walker, USFW).