

West Eugene Wetlands Augmentation of Threatened & Endangered Plant Species (WEBSITE VERSION)



2015

Annual Report to the Bureau of Land
Management Agreement # L14AC00314-
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PREFACE

IAE is a non-profit organization whose mission is the conservation of native ecosystems through restoration, research and education. Our aim is to provide a service to public and private agencies and individuals by developing and communicating information on ecosystems, species, and effective management strategies and by conducting research, monitoring, and experiments. IAE offers educational opportunities through 3-4 month internships.



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SPECIAL NOTE

This report has been modified from its original format by removing maps and/or appendices that include information on the location of rare and sensitive species.

ACKNOWLEDGMENTS

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Cover photograph: Willamette daisy plugs arranged for outplanting at Balboa in 2015. *Photo by Matt Schultz.*

SUGGESTED CITATION

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REPORT TO THE BUREAU OF LAND MANAGEMENT

SUMMARY OF ACCOMPLISHMENTS

In 2015, IAE outplanted 1112 Kincaid's lupine plugs at Hansen and Turtle Swale, and 1807 Willamette daisy plugs at Balboa (see Appendix A for site maps). Macroplots at Balboa, Hansen, Isabelle and Turtle Swale from 2012-2015 were maintained, weeded, and monitored for survival. Seed production for four rare plant species continued.

2015 ACTIVITIES

2015 activities on the WEW Augmentation project were primarily seed and plug production, outplanting, plot maintenance, and monitoring. This multi-year project will continue through 2016 and beyond.

In fall 2014, Bradshaw's lomatium and shaggy horkelia were added to the production and outplanting schedule, and these species continue to grow well at the Plant Materials Center (PMC) in Corvallis. The first harvest of shaggy horkelia occurred in fall 2015 with 1.5 pounds collected. Bradshaw's lomatium is not expected to produce an appreciable harvest until fall 2017.

Seed and Plug Production

KINCAID'S LUPINE

In 2015, Heritage Seedlings, Inc. informed IAE that they did not have the staffing resources to continue managing their Kincaid's lupine field. Heritage supplied a harvest of only 22 grams of seed, as once again the field failed to thrive. In December 2015, mature Kincaid's lupine plants were dug up from the field at Heritage and transplanted to the PMC. We do not expect a large harvest from the newly transplanted Kincaid's lupine field at the PMC in 2016, as the plants will be recovering from transplant shock, but we do expect a harvest in 2017.

Wild-collected Eugene West seed from IAE's seed archives was used to supplement lupine seed from Heritage for plug production for spring 2016, as neither the Army Corps of Engineers nursery near Fern Ridge Reservoir nor The Nature Conservancy Eugene office had seed to share.

In 2016 we will need to collect wild lupine seed from Fir Butte in order to supply seed for plug production in spring 2017.

WILLAMETTE DAISY

Willamette daisy is in production at the PMC. The 0.02 acre field was planted in 2011 with seed collected from the Eugene West Recovery Zone. Since sowing Willamette daisy seed is generally not successful on a large scale, all seed from this field will be used for growing plugs. In late 2013, the first harvest of 29 grams of seed was received by IAE, enough for over 50,000 plugs. Willamette daisy seed is harvested late in the year and cleaned over the winter, and the 2015 harvest was used to start plugs for outplanting in spring 2016. The 2015 harvest was 1.85 #s, a very successful crop.

SHAGGY HORKELIA

A shaggy horkelia production field was established at the PMC in fall 2014. It has done well and a modest harvest of 1.5 #s was collected in fall 2015.

BRADSHAW'S LOMATIUM

A Bradshaw's lomatium field was also established at the PMC in fall 2014. The field is doing well, but the first substantial harvest is not expected until fall 2017.

Seed Collection and Seeding

A substantial amount of Willamette daisy seed was collected from Vinci. Seed collection was done in August, after the seed had blown but was still lying in heaps at the shade cloth at the planting site (Figure 1). Seven grams of seed was collected directly from inflorescences, and 2.7 lbs was swept up from the shade cloth.

A substantial amount of Willamette Daisy seed (389 g) was sown in a 5 x 5 m test plot at Greenhill to determine whether seeding could be an option for this species.



Figure 1. Willamette daisy seed at Vinci.

Outplanting

Plugs of Kincaid’s lupine and Willamette daisy were outplanted in the spring (Table 1). At Hansen and Turtle Swale, previously laid geotextile cloth was left in place as site preparation. A monitoring grid was established and a propane torch used to burn holes in the fabric for planting. At Balboa, no geotextile fabric was used, and half of the introduction area was burned with a propane torch. Later in the spring, holes where previously planted lupine plugs had died were plugged with shade cloth patches at Hansen and Turtle Swale.

TABLE 1. T&E AUGMENTATION IN WEST EUGENE WETLANDS IN 2015.

Species	Site	# plugs
Kincaid’s lupine	Hansen	952
Kincaid’s lupine	Turtle Swale	160
Willamette daisy	Balboa	1807

Monitoring



Each planting grid is monitored annually. In 2015, plots from 2012, 2013, and 2014 were monitored for survival along with new plots from 2015, which were monitored for transplanting survival. See monitoring data in Appendix B.

Figure 2. Tiny lupine after weeding at Turtle Swale in December 2015.

TABLE 2. RESTORATION ACTIVITIES IN AUGMENTATION SITES IN WEST EUGENE WETLANDS IN 2015.

Date	Site	Activity
4/7/15- 4/9/15	Balboa	Outplanted 1807 Willamette daisy plugs
3/31-4/2/15	Hansen	Outplanted 952 Kincaid's lupine plugs (in monitoring grid)
4/3/15	Turtle Swale	Outplanted 160 Kincaid's lupine plugs (in monitoring grid)
4/8/15, 7/15/15	Hansen	Weeded lupine plots
6/16/15	Isabelle	Mowed around edges of lupine plots, weeded plots, mowed tall oatgrass
8/12/15	Isabelle, Turtle Swale, Vinci	Weeded lupine plots, weeded daisy plot at Vinci
8/13/15	Vinci	Collected Willamette daisy seed
6/16/15, 12/17/15	Turtle Swale	Mowed around edges of lupine plots, weeded plots
12/16/15- 12/17/15	Hansen	Weeded plot, fixed shade cloth which had pulled loose

12/17/15	Isabelle	Weeded plot
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SUCSESSES & LESSONS LEARNED

In 2015 all of the lupine plugs were planted in geotextile cloth, which was left in place, to be removed when the plants are established. This use of geotextile fabric has introduced another level of maintenance to this project. The cloth needs to be monitored and repaired during the winter and the planting holes should be weeded a few times during the growing season. The geotextile fabric is a temporary measure that we used to prepare the site while we are waiting for herbicides to be approved for use. More planning needs to be done to decide the best way to move forward with the removal of the fabric, considering what weed treatments and seeding should be applied to the spaces created between the plants. The geotextile fabric is good for killing the living plants, but the seed bank in the soil remains intact. Another factor to consider is the treatment of the areas where the geotextile fabric has been applied. One of the negative factors of using this fabric in natural areas is that the fabric tends to funnel large quantities of seed into the few openings in the fabric. One way to help mitigate against seed invasion is to keep the border of weeds along the edge from maturing by mowing during the growing season to create a buffer.

Survival of the 2015 lupine plugs at Hansen was better than 2014, but still lower than desired. The transplanted plugs appeared to be stressed from the unseasonably hot and dry spring. In 2016, we are planning a few changes to improve survival. The first change is to attempt to plant the plugs earlier, possibly in mid-March. The second change would be to monitor the survival more intensively to better understand when the mortality occurs. Currently plugs are monitored once annually, generally in mid-May. We plan to monitor the plots monthly through the summer. Finally, if 2016 proves again to be a hot, dry spring we plan to water the plugs at Hansen to determine if watering increases survival.

Willamette daisy at Balboa continues to do well and survival of the large cohort (1800 plants) was about 50%, which is lower than the survival rate in 2014, but still satisfactory.

The Isabelle lupine plot is located directly to the south of a large population of tall oatgrass. This population is very dense but also small enough that it could be eradicated. In June 2015, the oatgrass was mowed to prevent it from producing seed. Mowing will continue in 2016 and if herbicide use is approved the patch may be treated with glyphosate.

NEXT STEPS

Outplanting for 2016 will be completed in March-April 2016. Up to 1500 plugs of Kincaid's lupine and approximately 1500 plugs of Willamette daisy are being grown at the Plant Materials Center to be outplanted at Hansen, Turtle Swale, Isabelle, and Greenhill. Kincaid's lupine plants will continue to be planted into shade cloth. A prescribed burn was conducted in fall 2015 at Greenhill, and that will serve

as the site preparation for the Willamette daisy plugs planted there. Monitoring will occur in the late spring, and continue monthly at Hansen.

Site preparation activities in the fall of 2016 are expected to include herbicide applications. If herbicide use is not allowed, shade cloth will continue to be used as a site preparation technique. Additionally, in 2016, a prescribed burn is planned at Balboa, which would serve as site prep for plugs of shaggy horkelia to be planted in spring 2017

Golden paintbrush (*Castilleja levisecta*) has been considered for introduction at Oak Hill, but the site needs years of site preparation which can only begin after herbicide use is permitted in the West Eugene Wetlands.

APPENDIX A. MONITORING RESULTS FOR WEW AUGMENTATION 2012-2015

WEW Augmentation Summary 2012-2015					Monitoring year							
					2012		2013		2014		2015	
Site	Planting year	Species	Total # planted	# Planted in macroplot	# Survivors	% Survival	# Survivors	% Survival	# Survivors	% Survival	# Survivors	% Survival
Balboa	2013	ERDE	1100	550			521	94.7%	334	60.7%	268	48.7%
Balboa	2014	ERDE	1644	529					351	66.4%	181	34.2%
Balboa	2015	ERDE	1807	1807							892	49.4%
Vinci	2014	ERDE	1398	1398					1304	93.3%	1197	85.6%
Hansen	2012	LUOR	724	496	301	60.7%	24	4.8%	13	2.6%	N/A	N/A
Hansen	2013	LUOR	600	544			297	54.6%	3	0.6%	N/A	N/A
Hansen	2014	LUOR	599	599					134	22.4%	39	6.5%
Hansen	2015	LUOR	952	952							341	35.8%
Isabelle	2014	LUOR	200	200					62	31.0%	27	13.5%
Turtle Swale	2012	LUOR	500	500	322	64.4%	158	31.6%	125	25.0%	108	21.6%
Turtle Swale	2013	LUOR	190	190			156	82.1%	57	30.0%	41	21.6%
Turtle Swale	2014	LUOR	70	70					0	0.0%		
Turtle Swale	2015	LUOR	160	160							44	27.5%

