

RESTORATION OF UPPER OAK BASIN AND OAK BASIN TREE FARM: 2015 ANNUAL REPORT



2016

Report to the Bureau of Land Management
Agreement # L14AC00225

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PREFACE

This report is the result agreement number L14AC0025 between the Institute for Applied Ecology (IAE) and the Bureau of Land Management. 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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Cover photograph: Oregon Woods felling a Douglas-fir in Meadow C. *Photo by Ian Silvernail.*

SUGGESTED CITATION

Silvernail, Ian. 2016. Restoration of Upper Oak Basin and Oak Basin Tree Farm: 2015 Annual Report to the Bureau of Land Management. Institute for Applied Ecology, Corvallis, OR. 11 pages.

TABLE OF CONTENTS

PREFACE.....	1
ACKNOWLEDGMENTS.....	2
SUGGESTED CITATION.....	2
TABLE OF CONTENTS.....	3
INTRODUCTION	4
SUMMARY OF ACCOMPLISHMENTS IN 2015	4
2015 ACTIVITIES	4
Mowing.....	8
Planting and Seeding.....	8
BUDGET	9
SUCCESSSES AND CHALLENGES	10

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REPORT TO THE BUREAU OF LAND MANAGEMENT

INTRODUCTION

Upper Oak Basin is a BLM-owned property located in Linn County, approximately six miles southeast of Brownsville. The primary emphasis of the work of the Institute for Applied Ecology at Upper Oak Basin is to manage and enhance the prairie habitat. The open prairies at Upper Oak Basin include populations of several rare species, including Kincaid's lupine (*Lupinus oreganus*) and Fender's blue butterfly (*Plebejus icarioides fenderi*). Management actions at the site are consistent with those necessary to support populations of these rare species.

In 2015, restoration activities also occurred on the adjacent property of Jim and Ed Merzenich, named Oak Basin Tree Farm. The Merzenichs manage their property for a variety of uses, including timber harvest and wildlife habitat. Meadows on their property also host Kincaid's lupine and Fender's blue butterfly, and they have been involved in restoration efforts for these species for many years.

References to both ownerships in this document will use the name Oak Basin.

SUMMARY OF ACCOMPLISHMENTS IN 2015

In 2015, the Institute for Applied Ecology participated in a variety of activities to support restoration and conservation efforts at Upper Oak Basin and Oak Basin Tree Farm. Significant activities included tree felling and girdling, flame weeding, planting and seeding, and hand mowing in and around Kincaid's lupine patches. Restoration actions are detailed in Table 1. See Figure 1 for the location of selected management actions.

2015 ACTIVITIES

Table 1: On-the-ground restoration activities completed at Oak Basin in 2015.

Date	Activity	Who	Notes
2/25	blackberry grubbing	Ian Silvernail, Guy Banner	Meadow B near lupines.
2/25	small diameter conifer removal	Ian Silvernail, Guy Banner	West and North edge of meadow A.

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Date	Activity	Who	Notes
2/25	regirdling	Ian Silvernail, Guy Banner	Trees were girdled in 2013 in meadows A and B but did not die.
4/8, 4/14	flame weeding	Ian Silvernail, Guy Banner, Walama Restoration	Meadows A & B, plots B-3, B-4, and A-3. Objective was to prepare the sites for seeding and planting in October 2016.
5/19	small diameter conifer removal	Ian Silvernail, Kalapuya High School	Around perimeter of Area C.
10/26	tree clearing	Ian Silvernail	Small diameter <i>Abies grandis</i> in SW corner of meadow C.
10/26-10/29	tree clearing	Oregon Woods	Removal and girdling of trees, primarily <i>Pseudotsuga menziesii</i> and <i>Acer macrophyllum</i> , between meadows B and C and at Oak Basin Tree Farm.
11/10	grass plug planting	Ian Silvernail, Kalapuya High School	Planted plugs of <i>Festuca californica</i> , <i>Festuca roemerii</i> , <i>Danthonia californica</i> , and <i>Elymus trachycaulus</i> between meadows B and C in portion of area cleared of trees in late October.
11/18-11/19	plug planting	Ian Silvernail, Andy Neill, AmeriCorps NCCC Silver 5	Planted plugs and bare root divisions of <i>Sidalcea malviflora</i> ssp. <i>virgata</i> , <i>Geranium oregonum</i> , and <i>Iris tenax</i> between Meadows B and C in area cleared of trees in late October. Also planted <i>G. oregonum</i> plugs and <i>S. malviflora</i> ssp. <i>virgata</i> divisions between meadows A and B at Oak Basin Tree Farm.
11/24-11/25	tree clearing	Oregon Woods	Removal and girdling of trees, primarily <i>Pseudotsuga menziesii</i> and <i>Acer macrophyllum</i> , at Oak Basin Tree Farm.
12/2	plug planting	Ian Silvernail, Steve Manthe, Rayna Gleason	Planted <i>G. oregonum</i> and <i>S. malviflora</i> spp. <i>virgata</i> between meadows A and B on Merzenich land.
12/2	seeding	Ian Silvernail	Seeded native species over bare ground in recently cleared area between meadows B and C.
12/2	downed tree cutting and piling	Ian Silvernail	Cut downed logs left by Oregon Woods. Put on burn piles.
12/2	plug planting	Ian Silvernail	Planted 120 plugs of <i>Lomatium dissectum</i> in patches of 10 each across the top of meadow B.
12/3	plug planting	Steve Manthe, Rayna Gleason	Planted <i>G. oregonum</i> and <i>S. malviflora</i> ssp. <i>virgata</i> between meadows A and B at Oak Basin Tree Farm.
12/16	flame weeding	Ian Silvernail, Steve Manthe, Walama Restoration	Meadow B, plots B-3 and B-4. Objective was to prepare the site for seeding and planting in October 2016.

Date	Activity	Who	Notes
12/16	lupine patch mowing	Ian Silvernail	Meadow A, plots 451, 464, 454, 9 (intended to mow 406 but unable to relocate); meadow B plots 4, 6; meadow C plot 432.
12/18	plug planting	Steve Manthe, Walama Restoration	Finished planting <i>Sidalcea malviflora</i> ssp. <i>virgata</i> divisions between meadows A & B at Oak Basin Tree Farm.



Figure 1: Major management actions completed at Oak Basin in 2015. Letters/numbers indicate flame weeding patch identity.

Mowing

On December 16, the area inside several lupine patches was mowed to reduce standing thatch and provide disturbance. The target was to mow approximately 1/3 of the lupine cover in each of the three meadows. Table 2 indicates the patches of Kincaid's lupine that were mowed; Figure 1 displays the locations of these patches. In Meadow A, 12.40 m² of a total of 42.46 m² of lupine cover was mowed, equal to 29.2 %. In Meadow B, 5.34 m² of 20.61 m² of lupine cover was mowed, equal to 25.9%. In Meadow C, 5.07 m² of 11.14 m² of lupine cover was mowed, equal to 45.5%.

Table 2: Kincaid's lupine patches mowed in 2015.

Meadow	Plot	Lupine cover (m ²)
A	9	4.68
A	454	1.76
A	464	5.29
A	451	0.67
B	4	1.73
B	6	3.61
C	432	5.07

Planting and Seeding

Approximately 9650 plugs, divisions, and bareroot plants were planted at Oak Basin in 2015. See Figure 1 and Table 1 for information about location and dates of planting. Table 3 below lists the species planted and provides further information about each. All species were grown from seed collected at mid-elevation prairie sites.

Table 3: Species planted at Oak Basin in 2015.

Species	Quantity	Form	Source
<i>Danthonia californica</i>	280	plugs	Kalapuya High School
<i>Elymus trachycaulus</i>	100	plugs	Kalapuya High School
<i>Festuca californica</i>	150	plugs	Kalapuya High School
<i>Festuca roemerii</i>	200	plugs	Kalapuya High School

Species	Quantity	Form	Source
<i>Geranium oreganum</i>	1000	plugs	Heritage Seedlings
<i>Geranium oreganum</i>	approx. 200	divisions	Trillium Nursery
<i>Iris tenax</i>	approx. 2000	divisions	Trillium Nursery
<i>Lomatium dissectum</i>	120	bareroot	Heritage Seedlings
<i>Sidalcea malviflora</i> spp. <i>virgata</i>	600	plugs	Heritage Seedlings
<i>Sidalcea malviflora</i> spp. <i>virgata</i>	approx.. 5000	divisions	Trillium Nursery

On December 2, a mixture of native grasses and forbs was sown in the corridor between Meadows B and C. Trees were removed and girdled in this area in late October to improve passage for butterflies between meadows. Seed was broadcast with a handheld Earthway seeder. Table 4 below lists the species that were seeded. All seed was grown from seed initially collected from mid-elevation prairie sites.

Table 4: Species and quantities seeded.

Species	Bulk lbs. of seed
<i>Danthonia californica</i>	3.15
<i>Eriophyllum lanatum</i>	1.5
<i>Festuca californica</i>	9.40
<i>Festuca roemerii</i>	6.0
<i>Prunella vulgaris</i> var. <i>lanceolata</i>	3.0
<i>Sidalcea malviflora</i> spp. <i>virgata</i>	3.0

BUDGET

Table 3 below includes a summary of costs for all activities at Upper Oak Basin in 2015. In addition to the costs listed in the table below, volunteers dedicated 441.5 hours of time to the project in 2015. At a value of \$23.07/hour, this equates to a match value of \$10,185. Volunteers groups were

composed of students and teachers from Kalapuya High School in Eugene and the AmeriCorps NCCC Silver 5 team.

Table 3: Cost of activities at Upper Oak Basin in 2015.

Activity	Cost
Project coordination	\$6,025
Weed management (flame weeding, grubbing, mowing, hand weeding)	\$3,575
Planting and seeding	\$1,389
Contracted services (tree felling, flame weeding)	\$11,766
Supplies	\$2,836
Transportation	\$1,561
Admin	\$5,698
Total	\$32,850

SUCCESSSES AND CHALLENGES

Future years will further elucidate the success of blackberry grubbing, mowing, flame weeding, planting, and seeding efforts. However, there were a few lessons learned in 2015 in the months after treatments were performed.

Plots A-3, B-3, and B-4 in Meadows A and B were flame weeded two times in 2015 (plot A-3 received its second flaming in January 2016). The primary target was *Taeniatherum caput-medusae* (medusahead grass). A secondary target was another introduced annual grass species, *Cynosurus echinatus* (hedgehog dogtail grass). Plots were initially treated in the first half of April. The goal was to treat the plots after all germination had occurred for the year and as late as possible but prior to the initiation of fire restrictions in May. Despite the late treatment date, some seed of these grass species did germinate after treatment and produce seed in the summer. It was, however, a small quantity, and the overall seed production in the plot was dramatically reduced as a result of treatment. In 2016 and in future plots, plots should be mowed in early summer prior to seed maturation to eliminate all seed production for the year. Plots were retreated in December 2015 and January 2016. Upon retreatment, the impact of the April treatment was still visible. Plots will be retreated again in April 2016 and one more time prior to planting and seeding in October or November 2016.

Blackberries continued to regrow after a second grubbing effort, necessitating a third year of blackberry root grubbing in the largest blackberry patch in Meadow B. A fourth year of grubbing will likely be necessary.

Several trees in Meadows A and B were regirdled after initial efforts to kill the trees in 2013 were unsuccessful. The girdling technique that had initially been employed involved two cuts around the

perimeter through the cambium, placed approximately four inches apart. When Oregon Woods performed further tree girdling in October and November, they were instructed to slab girdle some trees. They also used the same technique as in 2013 on other trees. In future years, the success of these different girdling techniques will be monitored in order to inform future efforts.