

Old Peak Meadow habitat enhancement project: 2022 annual report



February
2023

Report to the City of Corvallis for agreement
#PW 2019-066-250741

Report prepared by Rolando Beorchia and Andrew
Esterson

Institute for Applied Ecology



PREFACE

IAE is a non-profit organization whose mission is the conservation of native ecosystems through restoration, research, and education. IAE provides services to public and private agencies and individuals through development and communication of information on ecosystems, species, and effective management strategies. Restoration of habitats, with a concentration on rare and invasive species, is a primary focus. IAE conducts its work through partnerships with a diverse group of agencies, organizations, and the private sector. IAE aims to link its community with native habitats through education and outreach.



Questions regarding this report or IAE should be directed to:

Thomas Kaye (Executive Director)
Institute for Applied Ecology
4950 SW Hout St.
Corvallis, OR 97333

phone: 541-753-3099
fax: 541-753-3098
email: info@appliedeco.org

ACKNOWLEDGEMENTS

This project was funded by the City of Corvallis, agreement # PW 2019-066-250741. We would like to thank Jeff Hollenbeck from the City of Corvallis for his time and dedication to this project. In addition, we are grateful for volunteer efforts by Ken McCall and the Oregon Hunters Association.

We thank ESRI for their support of our GIS program. Maps were created using ArcGIS® software by Esri. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit www.esri.com.

Cover photograph: Close view of flowering strawberry and woodrush at Old Peak Meadow on May 4, 2022. In south unit facing north.

Photo credits: All photos taken by IAE staff unless otherwise noted

SUGGESTED CITATION

Beorchia, R. and E. Esterson. 2023. Old Peak Meadow habitat enhancement project: 2022 annual report. Unpublished report prepared for the City of Corvallis. Institute for Applied Ecology, Corvallis, OR. 8 pages plus appendices.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	1
2. RESTORATION ACTIVITIES.....	3
North unit.....	4
Central unit.....	7
South unit	7
3. 2023 MANAGEMENT RECOMMENDATIONS	8
4. REFERENCES	8
APPENDIX A. OLD PEAK MANAGEMENT HISTORY (2009-2022)	9
APPENDIX B. 2022 PHOTOPOINTS.....	14
APPENDIX C. PLANT AUGMENTATION MATERIALS SOURCES.....	18

LIST OF TABLES

Table 1. 2022 management actions at Old Peak Meadow	3
Table 2. Bulbs, potted shrubs, and tree seed planted in 2022	5
Table 3. 2022 seed mix and remaining seed inventory	7

LIST OF FIGURES

Figure 1. Old Peak Meadow management units and photo point locations.	2
Figure 2. North unit spring growth of 2021 seed mix at Old Peak Meadow	4
Figure 3. Living fence at Old Peak Meadow after October shrub planting.....	4
Figure 4. Old Peak Meadow bulb and shrub planting locations.....	6
Figure 5. Eastern edge shrub row at Old Peak Meadow, October 2022	8

Old Peak Meadow habitat enhancement project: 2022 annual report

EXECUTIVE SUMMARY

In 2022, the Institute for Applied Ecology (IAE) continued to improve habitat conditions at Old Peak Meadow (Old Peak) through weed abatement and revegetation. To support a targeted restoration approach, Old Peak is divided into three management units: North, Central and South. In the North unit, IAE mowed oxeye daisy (*Leucanthemum vulgare*) before seed set to reduce dispersal, planted bulbs, installed a fence enclosed shrub row, and broadcast native seed. In the Central unit, IAE maintained chemical fallow in preparation for future revegetation and planted native shrub seed within the eastern edge shrub row. In the South unit, IAE selectively targeted invasive weeds while maintaining desirable native plant abundance and planted native bulbs. Throughout all units, IAE treated non-native species including oxeye daisy, Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), rattail fescue (*Vulpia myuros*), dove's-foot geranium (*Geranium molle*), false brome (*Brachypodium sylvaticum*), stinking chamomile (*Anthemis cotula*), and tall oatgrass (*Arrhenatherum elatius*). The Oregon Hunter's Association (OHA) removed the shrub enclosure fence along the eastern edge of the meadow, which resulted in herbivory but without observed shrub mortality. This mix of restoration methods and strategic treatment times between management units should continue to provide positive outcomes for habitat improvement across the meadow.

1. INTRODUCTION

Old Peak Meadow (Old Peak) is a mid-elevation, remnant meadow located in the Corvallis Watershed and owned by the City of Corvallis (City) (Figure 1). Historically, Old Peak was part of a 160-acre homestead with open habitat (Esterson 2018). Due to decades of conifer encroachment, the open habitat was reduced to an approximately one-acre meadow. Between 2009 and 2013, the City removed 100 Douglas-fir (*Pseudotsuga menziesii*) trees, increasing the size of the meadow to approximately three acres. Songbird surveys completed between 2011 and 2013 indicated Old Peak was attracting fewer songbirds than expected, most likely a result of minimal floristic diversity and structure (Vesely 2013). In 2014, the City, along with three other partners including Institute for Applied Ecology (IAE), received a \$43,000 grant from the Coast Range Stewardship Fund to improve wildlife habitat at Old Peak by diversifying plant species composition and vegetation structure of the meadow. Restoration actions by IAE have included:

- Controlling invasive species with herbicide and mowing;
- Increasing native species diversity and abundance via seeding and planting;
- Creating structural diversity within the meadow and along the meadow/forest ecotone by seeding with a variety of native forbs and grasses and planting shrubs on the east edge of the meadow; and
- Conducting plant community surveys.

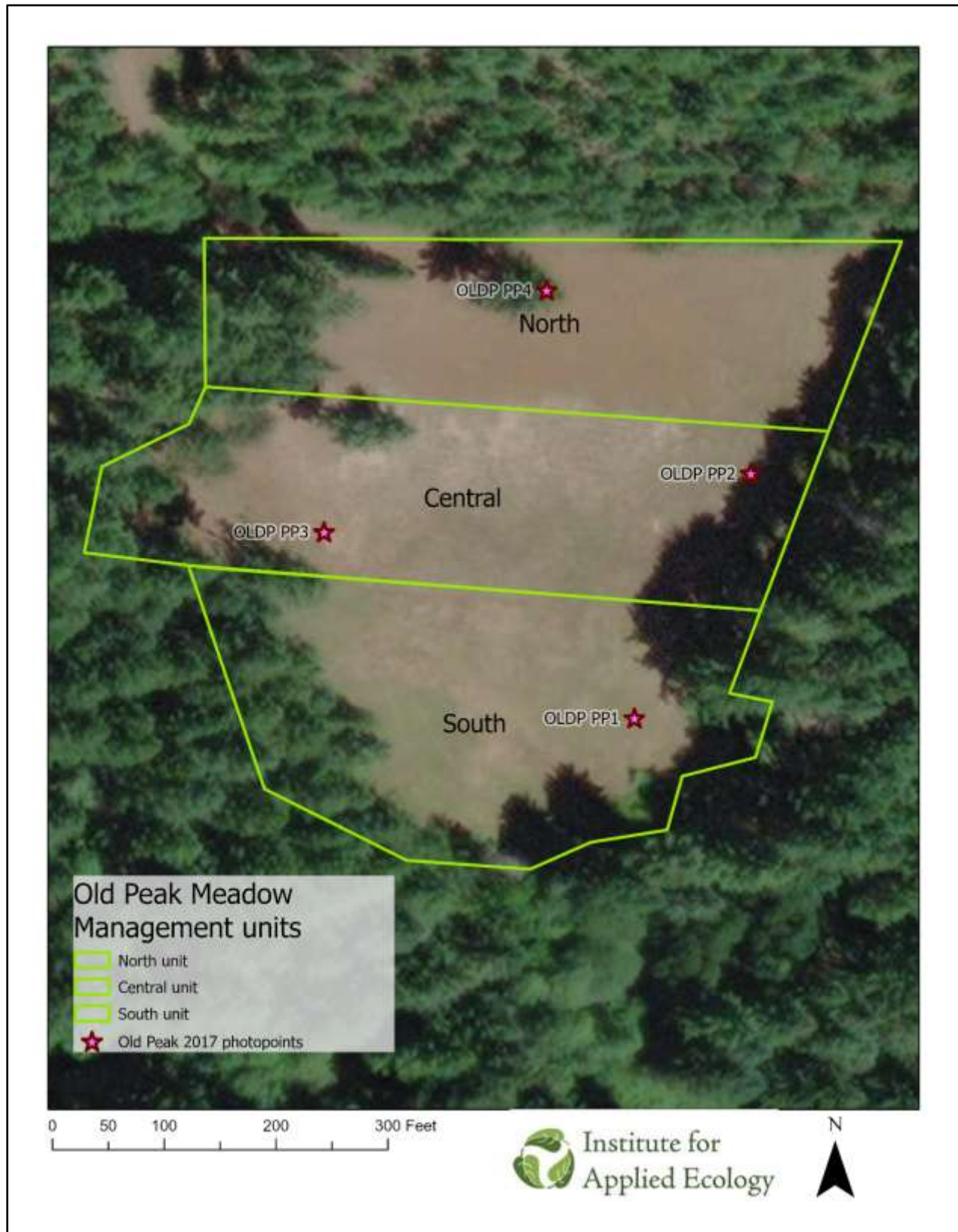


Figure 1. Old Peak Meadow management units and photo point locations.

2. RESTORATION ACTIVITIES

Old Peak is divided into three management units: North, Central and South (Figure 1). Each unit is in a different stage of restoration, and therefore, different treatments are used in each unit. Restoration efforts at Old Peak in 2022 consisted of herbicide applications, string trimmer mowing, and planting native species (Table 1). A summary of management actions from 2009-2022 are in Appendix A and photopoints comparing site conditions between 2017 and 2022 are in Appendix B.

Table 1. 2022 management actions at Old Peak Meadow

Date	Who*	Management Action
7-Mar	IAE	Assessed seedlings growing in North unit from fall 2021 seeding; Observed 19 of the 23 species that were seeded.
11-Mar	IAE	Broadcast Fusilade DX (fluazifop-p-butyl) in South unit; Broadcast Round-Up Custom (glyphosate) in Central unit; Spot sprayed Rodeo (glyphosate) in South unit and meadow edges.
4-May	IAE	Broadcast Fusilade DX in Central and South units. Took photopoints.
1-Jun	IAE	Broadcast Rodeo (glyphosate) in Central unit and upper quarter acre of South unit; Spot sprayed Rodeo in North and South units and meadow edges.
13-Jul	IAE, City	Site assessment and planning; Mowed oxeye daisy (<i>Leucanthemum vulgare</i>) in North and South units
16-Jul	OHA	Removed shrub enclosure fence from eastern edge of meadow.
25-Aug	IAE	Mowed stinking chamomile (<i>Anthemis cotula</i>) in North unit; Hand-pulled oxeye daisy.
9-Sep	IAE	Built enclosure fence along the road in North unit to protect shrubs
17-Oct	IAE	Finished building enclosure fence; planted 200 bare-root wild strawberry (<i>Fragaria virginiana</i>), 10 osoberry (<i>Oemleria cerasiformis</i>), 10 chokecherry (<i>Prunus virginiana</i>), 30 red-flowering currant (<i>Ribes sanguineum</i>), and 4 blue elderberry (<i>Sambucus caerulea</i>) along road; planted 50 narrow leaved onion (<i>Allium amplexans</i>), 100 harvest brodiaea (<i>Brodiaea elegans</i>), 50 Tolmie star-tulip (<i>Calochortus tolmiei</i>), 100 ookow (<i>Dichelostemma congestum</i>), 100 chocolate lily (<i>Fritillaria affinis</i>), 100 tiger lily (<i>Lilium columbianum</i>) bulbs in North unit, and planted 100 common camas (<i>Camassia quamash</i>) in North and South units
16-Nov	IAE	Repaired enclosure fence; Seeded North unit, eastern shrub area, and roadside shrub enclosure with native seed mix; Seeded 1 lb beaked hazelnut (<i>Corylus cornuta</i>) and 2 oz golden chinquapin (<i>Chrysolepis chrysophylla</i>) in eastern shrub area and roadside shrub enclosure
21-Nov	IAE	Planted 100 nodding onion (<i>Allium cernuum</i>), and 100 Henderson's shooting star (<i>Dodecatheon hendersonii</i>) bulbs in the North unit

*Institute for Applied Ecology (IAE); City of Corvallis (City), Oregon Hunter's Association (OHA)

North unit

In the spring, IAE staff observed successful establishment of species seeded in 2021 (Figure 2), with many of them flowering and setting seed. In spring and summer, the North unit was spot sprayed with herbicide treating oxeye daisy (*Leucanthemum vulgare*), stinking chamomile (*Anthemis cotula*), and rattail fescue (*Vulpia myuros*). A new population of annual stinking chamomile was found and was mowed to reduce seed set. A combination of treatment types including glyphosate or clopyralid herbicide applications, hand-pulling and mowing will continue to be used to reduce non-native species abundance in the North unit.

In the fall, a living fence was built along the road using shrubs, small deciduous trees, tenacious grasses and forbs, and salvaged fencing from the eastern edge shrub row. Once fully grown, this living fence will not only provide structural shelter and forage to birds and mammals frequenting the meadow but will help limit the introduction of non-native seed from the gravel road into the meadow. In order to make an effective weed barrier multiple vegetative layers needed to be planted. The upper layer (one to eight feet tall) is composed of a two-meter-wide shrub row containing osoberry (*Oemleria cerasiformis*), chokecherry (*Prunus virginiana*), red-flowering currant (*Ribes sanguineum*), blue elderberry (*Sambucus caerulea*), beaked hazelnut (*Corylus cornuta*), and golden chinquapin (*Chrysolepis chrysophylla*) (Table 2, Figure 3, Figure 4). The ground layer (under one foot tall) was seeded with Roemer's fescue (*Festuca roemerii*), common yarrow (*Achillea millefolium*), wooly sunflower (*Eriophyllum lanatum*), common selfheal (*Prunella vulgaris*), and planted with 200 wild strawberry (*Fragaria virginiana*) (Table 3, Figure 4).

Within the North unit and along the eastern shrub boarder, IAE staff planted 750 bulbs to increase meadow diversity with species selected to add bulb forage for small and medium sized mammals (Table 2, Figure 4). In addition, 16.11 pounds and 9.3 pounds of native seed was broadcast in the North unit and eastern shrub enclosures and the newly created roadside shrub enclosures, respectively (Table 3). To fill the ecological niche once taken up by non-native thistles, seed from native edible thistle (*Cirsium edule*) present on nearby roadsides was collected and added it to the seed mix.



Figure 2. North unit spring growth of 2021 seed mix at Old Peak Meadow



Figure 3. Living fence at Old Peak Meadow after October shrub planting

Table 2. Bulbs, potted shrubs, and tree seed planted in 2022

Species/Variety	Common Name	Bulbs (bareroot)	Rooted shrubs	Estimated tree seed (oz)
<i>Allium amplexans</i>	narrow leaved onion	50		
<i>Allium cernuum</i>	nodding onion	100		
<i>Brodiaea elegans</i>	harvest brodiaea	100		
<i>Calochortus tolmiei</i>	Tolmie star-tulip	50		
<i>Camassia quamash</i>	common camas	100		
<i>Dichelostemma congestum</i>	ookow	100		
<i>Dodecatheon hendersonii</i>	Henderson's shooting star	100		
<i>Fragaria virginiana</i>	wild strawberry	(200)		
<i>Fritillaria affinis</i>	chocolate lily	100		
<i>Lilium columbianum</i>	tiger lily	100		
<i>Oemleria cerasiformis</i>	osoberry		10	
<i>Prunus virginiana</i>	chokecherry		10	
<i>Ribes sanguineum</i>	red-flowering currant		30	
<i>Sambucus caerulea</i>	blue elderberry		4	
<i>Chrysolepis chrysophylla</i>	golden chinquapin			~60 (2 oz)
<i>Corylus cornuta</i>	beaked hazelnut			~200 (16 oz)
	Totals	800 bulbs (200 bareroot)	54 shrubs	~260 seeds

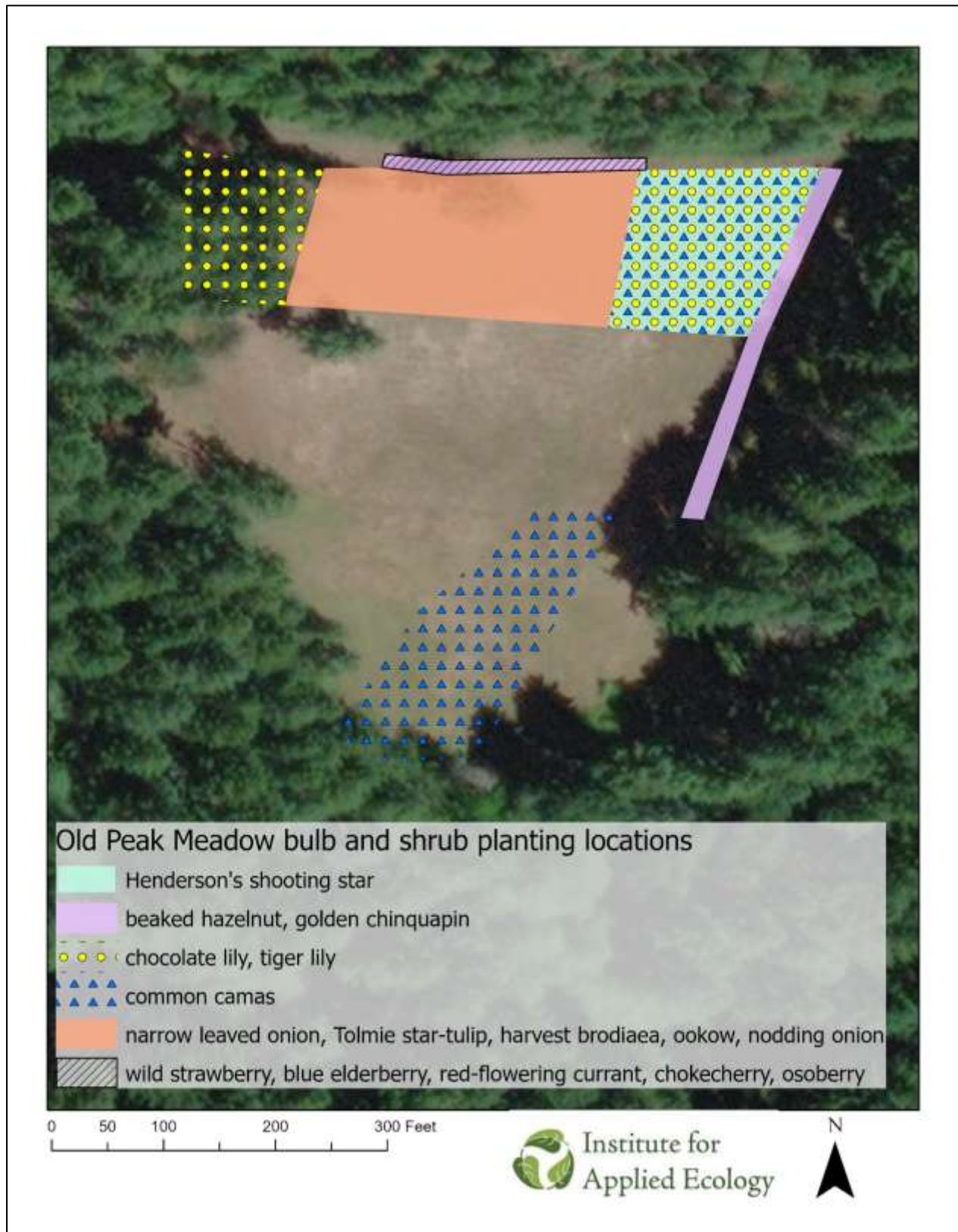


Figure 4. Old Peak Meadow bulb and shrub planting locations

Table 3. 2022 seed mix and remaining seed inventory

Species/Variety	Common Name	Living fence mix (lbs)	North unit mix (lbs)	2023 mix (lbs)
<i>Achillea millefolium</i>	common yarrow	0.51	0.326	1.1
<i>Acmispon americanus</i>	American bird's-foot trefoil		0.44	1.67
<i>Aquilegia formosa</i>	western columbine		1.436	3
<i>Calochortus tolmiei</i>	Tolmie star-tulip		0.32	
<i>Carex pachystachya</i>	chamisso sedge		0.195	
<i>Carex tumulicola</i>	splitawn sedge			0.75
<i>Cirsium edule</i>	edible thistle		0.1	
<i>Clarkia amoena</i> ssp. <i>lindleyi</i>	farewell-to-spring		0.16	
<i>Clarkia purpurea</i>	winecup clarkia		0.7	
<i>Collinsia grandiflora</i>	large-flowered blue-eyed Mary		0.728	
<i>Danthonia californica</i>	California oatgrass		2.52	4.88
<i>Elymus glaucus</i>	blue wildrye		3.03	5.81
<i>Epilobium densiflorum</i>	denseflower willowherb		2.68	2.67
<i>Eriophyllum lanatum</i>	woolly sunflower	0.373		1.14
<i>Festuca roemerii</i>	Roemer's fescue	7.36		
<i>Gilia capitata</i>	bluehead gilia		0.41	1
<i>Iris tenax</i>	toughleaf iris		1.5	
<i>Madia elegans</i>	showy tarweed		0.43	
<i>Plectritis congesta</i>	shortspur seablush		0.56	
<i>Potentilla gracilis</i>	slender cinquefoil		0.81	
<i>Prunella vulgaris</i> var.	common selfheal	0.56		0.65
<i>Ranunculus occidentalis</i>	western buttercup		0.72	0.5
	Total (lbs)	8.8033	17.165	23.17

Central unit

In 2022, the Central unit was in its second year of chemical fallow. To maintain the fallow multiple broadcast glyphosate treatments were applied in the spring and summer.

In November, IAE staff observed abundant oxeye daisy and foxglove (*Digitalis purpurea*) seedlings, indicating that one more year of chemical treatments would be best before revegetating. A large patch of rattail fescue (*Vulpia myuros*) occupied the Central unit and South unit borders and has been receiving treatments with the chemical fallow of the Central unit. Continuing the fallow one more year will also allow further treatment of remaining rattail fescue, reducing the seedbank further.

South unit

The South unit continued to have a matrix of native and non-native species. To minimize impacts to desirable, native species, targeted spot spraying and mowing was used to treat non-native species. Spot spray glyphosate treatments targeted oxeye daisy, Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), rattail fescue, dove's-foot geranium (*Geranium molle*), false brome (*Brachypodium sylvaticum*) and tall oatgrass (*Arrhenatherum elatius*). Oxeye daisy flowers were mowed in early July to reduce seed dispersal.

In July, the Oregon Hunters Association (OHA) removed the shrub enclosure fence along the eastern edge of the meadow. Fence materials were reused in the North unit to enclose planted shrubs. Herbivory was observed within two weeks of removing the fence, but shrub mortality was not observed (Figure 5). Observations will continue in 2023.

In November, fifty common camas (*Camassia quamash*) bulbs were planted in the swale portion of the unit (Figure 4, Table 2).



Figure 5. Eastern edge shrub row at Old Peak Meadow, October 2022

3. 2023 MANAGEMENT RECOMMENDATIONS

The overarching goal of this project is to restore meadow habitat at Old Peak Meadow by controlling priority invasive species and revegetating with native species. To meet project goals the following restoration actions are recommended in 2023:

- Herbicide treatments:
 - Spot spray glyphosate on invasive weeds underneath and around shrubs on the eastern edge and in the North and South units as needed April through October.
 - Spot spray false brome with glyphosate around the edges of the meadow April through October
 - Broadcast glyphosate in the Central unit to maintain chemical fallow. The number of applications will be determined by the efficacy of previous treatments. At a minimum, a spring and fall treatment is recommended.
- Take photopoints in May or early June
- Mowing treatments:
 - Mow South unit in late June or early July to reduce oxeye daisy seed set
 - Mow stinking chamomile patches in North unit in late June or early July to reduce seed set
- Purchase annual forbs and previously seeded perennials which are no longer in the seed inventory
- Broadcast native seed mix in the Central unit in fall 2023.
- Purchase and plant additional bulbs from 2022 species list (Table 2)
- Intermittent City of Corvallis purchases of plant materials to increase meadow diversity could be made using resources listed in Appendix C.

4. REFERENCES

- Esterson, A. 2018. Old Peak Meadow management history and 5-year management plan. Unpublished report prepared for the City of Corvallis. Institute for Applied Ecology, Corvallis, OR.
- Vesely, D. 2013. Monitoring songbird populations at the meadow restoration project, Siuslaw National Forest. Unpublished report for the U.S.D.A Siuslaw National Forest. Oregon Wildlife Institute. Corvallis, OR.

APPENDIX A. OLD PEAK MANAGEMENT HISTORY (2009-2022)

Year	Date	Who*	Management Action
2009-2013	Unknown	City/Contractor	Removed over 100 Douglas-fir (<i>Pseudotsuga menziesii</i>) from meadow
			Removed lower conifers limbs along east edge
			Placed some of the felled Douglas-fir along the eastern edge for wildlife habitat
		City	Mowed meadow to reduce tall oatgrass (<i>Arrhenatherum elatius</i>) seed production
			Spot sprayed false brome (<i>Brachypodium sylvaticum</i>)
			Snag creation around heritage trees in the surrounding conifer stand
			Planted 120 trees and shrubs along eastern edge (2011, 2012)
		IAE	Plastic weed barrier put around planted shrubs (2012)
			Seedlings watered 2-3 times (2012)
		OWI	Songbird surveys completed (2011, 2012, 2013)
2014	Unknown	City	Snag creation
		ODF	Prescribed burn
		IAE	Plant community survey
			Grass-specific herbicide application to control non-native grasses
			Native seeding
			Spot spray glyphosate to control thistles (<i>Cirsium</i> sp.), false brome, rattail fescue (<i>Vulpia</i> sp.) and false dandelion (<i>Hypochaeris radicata</i>)
2015	Unknown	IAE	Planted 500 shrubs and 20 oak trees
			Planted bulbs, runners, and plugs: onion (<i>Allium amplexans</i> and <i>A. acuminatum</i>), strawberry (<i>Fragaria virginiana</i>) and iris (<i>Iris tenax</i>)
			Seeded meadow with native seed mix
			Spot sprayed glyphosate to control thistles, false brome, rattail fescue and false dandelion
		IAE/City	Built enclosures around shrubs

*City of Corvallis (CITY), Institute for Applied Ecology (IAE), Oregon Hunter's Association (OHA), Integrated Resource Management (IRM). Oregon Wildlife Institute (OWI), Trout Mountain (T Mt.)

Year	Date	Who*	Management Action
2016	April	IAE	Spot sprayed Poast to control non-native grasses
	Summer	IAE	Watered planted shrubs
	Unknown	OHA	Spot sprayed glyphosate to control thistles, false brome, rattail fescue and false dandelion
2017	Mar	IAE	Established four photo points; take photo point pictures
	May	IAE	Spot sprayed oxeye daisy (<i>Leucanthemum vulgare</i>) and foxglove (<i>Digitalis purpurea</i>) using clopyralid and glyphosate, respectively
			Took photo point pictures
			Community data survey
			Treated portions of meadow to control oxeye daisy with clopyralid
			Spot sprayed glyphosate to control rattail fescue
	June	OHA	Spot sprayed false brome using glyphosate
		IAE	Watered planted shrubs
			Took photo point pictures
	July	IAE	Watered planted shrubs
		OHA	Mowed entire site
	August	City	Watered planted shrubs
	Oct	OHA	Spot sprayed oxeye daisy with clopyralid
	Dec	IAE	Planted chocolate lily (<i>Fritillaria affinis</i>) bulbs
2018	Mar	IAE	Broadcast Fusilade across entire meadow with a boom sprayer mounted on an ATV
	May	IAE	Broadcast Fusilade across entire meadow using a backpack sprayer mounted on an ATV
			Spot sprayed a 1.5% solution of glyphosate to target oxeye daisy, Canada thistle (<i>Cirsium arvense</i>), foxglove, and dove's foot geranium (<i>Geranium molle</i>)
			Mowed tall oatgrass and oxeye daisy with string trimmer

*City of Corvallis (CITY), Institute for Applied Ecology (IAE), Oregon Hunter's Association (OHA), Integrated Resource Management (IRM). Oregon Wildlife Institute (OWI), Trout Mountain (T Mt.)

Year	Date	Who*	Management Action
2018	Jun	IAE	Mowed tall oxeye daisy with string trimmer
			Spot sprayed a 1.5% solution of glyphosate to target false brome, oxeye daisy and Canada thistle
			Mowed entire site
	Jul	IAE	Mowed around shrub enclosures with string trimmer
	Sep	City	Mowed North unit for imazapyr preparation
	Oct	IAE	Imazapyr broadcast application on North unit
	Nov	IAE	Broadcast Poast over entire site
			Spot sprayed glyphosate to oxeye daisy
2019	Apr	IAE	Fusilade application across entire site with boom sprayer
			Glyphosate application targeting rattail fescue, thistles and oxeye daisy in North unit
	May	IRM	Fusilade application using a boom sprayer mounted on an ATV in Central and South units targeting non-native grasses; Glyphosate spot treatment targeting rattail fescue and thistles
	Jun	IRM	Plant community survey
		IAE, IRM	Mowed meadow
2020	Mar	City	Glyphosate application with ATV wand sprayer in North unit; Treated foxglove, bull thistle (<i>Cirsium vulgare</i>) and oxeye daisy
		IAE	Glyphosate application with ATV wand sprayer in North unit; Treated foxglove, bull thistle and oxeye daisy
	Jun	IAE	Glyphosate and clopyralid spot treatment for bull thistle and oxeye daisy
		IAE	Mowed meadow
	Jul	IAE	Photo points taken
		IAE	Glyphosate spot treatment in North unit targeting false brome along eastern edge; clopyralid spot treated thistles along southern and western edge
		City	Partner site visit
	Oct	IAE	Repair shrub enclosures

*City of Corvallis (CITY), Institute for Applied Ecology (IAE), Oregon Hunter's Association (OHA), Integrated Resource Management (IRM). Oregon Wildlife Institute (OWI), Trout Mountain (T Mt.)

Year	Date	Who*	Management Action
2020	Nov	IAE	Site visit to flag units prior to broadcast spray
	Dec	IAE, City	Imazapyr treatment in North and Central units; triclopyr applied to edges by enclosures and under tree drip lines
2021	Jan	OHA	Project partner site visit and Imazapyr treatment efficacy check
	Apr	IAE	Broadcast glyphosate application to North and Central units. Spot treated with sponge dapper in South unit.
		IRM	Spot sprayed glyphosate on non-native plants in entire meadow.
	May	IAE, City, T Mt.	Spot sprayed perennial weeds in all units. Mowed half of South unit with string trimmer. Bucked and removed one wind fallen oak from the meadow.
	Jun	IAE	Broadcast clopyralid in South unit. Spot sprayed glyphosate in North and Central units and false brome on western edge of meadow.
			Mowed South unit to control oxeye daisy
			Broadcast glyphosate on North and Central units
	Oct	IAE	Broadcast glyphosate to North and Central units
			Seeded 16 lbs of native seed mix in the North unit using a dew drop drill pulled behind an ATV
2022	Mar	IAE	Assessed seedlings growing in North unit from fall 2021 seeding; Identified 19 of 23 species seeded
			Broadcast Fusilade DX (fluazifop-p-butyl) in South unit; Broadcast Round-Up Custom (glyphosate) in Central unit; Spot sprayed Rodeo (glyphosate) in South unit and meadow edges
	May	IAE	Broadcast Fusilade DX in Central and South units. Took photopoints.
	Jun	IAE	Broadcast Rodeo in Central unit and upper quarter acre of South unit; Spot sprayed Rodeo in North and South units and meadow edges
	Jul	IAE, City	Site evaluation and planning; Mowed oxeye daisy (<i>Leucanthemum vulgare</i>) in North and South units
		OHA	Removed shrub enclosure fence from eastern edge of meadow
	Aug	IAE	Mowed stinking chamomile (<i>Anthemis cotula</i>) in North unit; Hand pulled oxeye daisy
	Sep	IAE	Built enclosure fence along the road in North unit to protect shrubs

*City of Corvallis (CITY), Institute for Applied Ecology (IAE), Oregon Hunter's Association (OHA), Integrated Resource Management (IRM). Oregon Wildlife Institute (OWI), Trout Mountain (T Mt.)

Year	Date	Who*	Management Action
2022	Oct	IAE	Finished building enclosure fence; planted 200 bare-root wild strawberry (<i>Fragaria virginiana</i>), 10 osoberry (<i>Oemleria cerasiformis</i>), 10 chokecherry (<i>Prunus virginiana</i>), 30 red-flowering currant (<i>Ribes sanguineum</i>), and 4 blue elderberry (<i>Sambucus caerulea</i>) along road; planted 50 narrow leaved onion (<i>Allium amplexans</i>), 100 harvest brodiaea (<i>Brodiaea elegans</i>), 50 Tolmie star-tulip (<i>Calochortus tolmiei</i>), 100 ookow (<i>Dichelostemma congestum</i>), 100 chocolate lily (<i>Fritillaria affinis</i>), 100 tiger lily (<i>Lilium columbianum</i>), 50 common camas (<i>Camassia quamash</i>) bulbs in North unit, and planted 50 common camas in the South unit.
	Nov	IAE	Repaired enclosure fence; Seeded North unit, eastern shrub area, and roadside shrub enclosure with native seed mix; Seeded 1 lb beaked hazelnut (<i>Corylus cornuta</i>) and 2 oz golden chinquapin (<i>Chrysolepis chrysophylla</i>) in eastern shrub area and roadside shrub enclosure
		IAE	Planted 100 nodding onion (<i>Allium cernuum</i>), and 100 Henderson's shooting star (<i>Dodecatheon hendersonii</i>) bulbs in the North unit

*City of Corvallis (CITY), Institute for Applied Ecology (IAE), Oregon Hunter's Association (OHA), Integrated Resource Management (IRM). Oregon Wildlife Institute (OWI), Trout Mountain (T Mt.)

APPENDIX B. 2022 PHOTOPOINTS

Photo 1	5/10/2017	5/4/2022
1 North		
1 East		
1 South		
1 West		

Photo 2	5/10/2017	5/4/2022
2 North		
2 East		
2 South		
2 West		

Photo 3	5/10/2017	5/4/2022
3 North		
3 East		
3 South		
3 West		

Photo 4	5/10/2017	5/4/2022
4 North		
4 East		
4 South		
4 West		

APPENDIX C. PLANT AUGMENTATION MATERIALS SOURCES

Heritage Seedling and Liners Inc. sells premixed Willamette Valley-sourced seed mixes that could be utilized in future years. We recommend the “Burn-Pile” or “Disturbed Ground” mixes for disturbed areas and the “Diverse Prairie,” “Tough and Tenacious” or one of the three “Upland Prairie” mixes to add diversity to patches of meadow where previous seeding was less successful. Mixes ranged from \$90-\$200 per pound in 2022. Mix lists and prices are available on their website.

Seven Oaks Native Nursery is a wholesaler of native shrubs, bulbs, and other plant materials. Native shrubs could enhance meadow edges at Old Peak, increasing wildlife habitat and forage, while bulb species could add diversity into the meadow. Bulbs range from \$0.40-\$1.50 per bulb in 2022 while shrubs range from \$3-\$25 depending on container size and species. You can sign up through their website to see a full price list.

Jonny Native Seed specializes in wild collecting native species. If there is desire to increase diversity in the meadow and also maintain Coast Range-specific genetics, these collectors could fill that niche and gather seed otherwise not commercially available. 2022 prices varied quite widely between species, about \$60-\$400 per pound, but a periodic inventory and price sheet is sent out through email newsletter that can be subscribed to through the website.