Marys Peak Scenic Botanical Special Interest Area restoration: 2023 annual report

April 2024

Report for U.S. Forest Service, Siuslaw National Forest, Agreements #22-SA-11061200-008 and #22-PA-11061200-009

Report prepared by Rolando Beorchia and Andrew Esterson

Institute for Applied Ecology

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

Marys Peak restoration was funded by the U.S. Forest Service, Siuslaw National Forest, under agreements #22-SA-11061200-008 and #22-PA-11061200-009. We thank Matthew Smith, Botanist for the Siuslaw National Forest, for his commitment to restoration work at this and other sensitive habitats.

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. For more information about Esri® software, please visit www.esri.com.

Cover photographs: Common yarrow (*Achillea millefolium*) flower visited by fritillary butterfly (*Speyeria sp.*) and flower longhorn beetle (*Typocerus sp.*) at Marys Peak, Trek Meadow. Photo by Rolando Beorchia July 15, 2023.

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

SUGGESTED CITATION

Beorchia, Rolando and Andrew Esterson. 2024. Marys Peak Scenic Botanical Special Interest Area restoration: 2023 annual report. Unpublished report for the U.S. Forest Service, Siuslaw National Forest. Institute for Applied Ecology. Corvallis, Oregon. 15 pages plus appendices.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Marys Peak Scenic Botanical Special Interest Area restoration: 2023 Annual Report

EXECUTIVE SUMMARY

Over 900 acres of unique meadows and forest compose the Marys Peak Scenic Botanical Special Interest Area (Marys Peak SBSIA). Co-owners of the area; U.S. Forest Service (FS), Bureau of Land Management (BLM), and City of Corvallis protect and enhance this regionally rare habitat. The Institute for Applied Ecology (IAE) is conducting habitat restoration in partnership with the FS, Siuslaw National Forest, which owns most of the land in the Marys Peak meadow complex.

In 2023, IAE performed a variety of restoration activities which incorporated noble fir (*Abies procera*) sapling removal, invasive weed treatment, native seed collection, native seed dispersal, and managing a common yarrow (*Achillea millefolium*) seed amplification field. Invasive weed herbicide, mowing, steaming, and hand pulling treatments targeted oxeye daisy (*Leucanthemum vulgare*), creeping velvet grass (*Holcus mollis*), foxglove (*Digitalis purpurea*), hairy cat's-ear (*Hypochaeris radicata*) and St. John's wort (*Hypericum perforatum*). Native seed collection of 27 species totaled 4.04 pounds comprised of annual and perennial forbs and graminoids. IAE broadcast 2.26 pounds native seed to disturbed ground in West Point Meadow. A common yarrow seed amplification field was in its second year of growth and produced 1.5 pounds of seed. Future restoration activities will include chemical and mechanical weed treatments, mowing and/or burning to reduce creeping velvet grass thatch, conifer sapling removal to preserve open meadow habitat, demolition of a user-created trail, native seed collection, common yarrow seed amplification, and revegetating disturbed areas with appropriate native plant materials.

1. INTRODUCTION

Marys Peak Scenic Botanical Special Interest Area (Marys Peak SBSIA) is a 924-acre parcel of land mostly owned by the U.S. Forest Service (FS), Siuslaw National Forest, though portions are also owned by the Bureau of Land Management (BLM) and the City of Corvallis. Marys Peak is in the Coast Range on the western edge of the Willamette Valley 15 miles southwest of Corvallis, Oregon. The 130 acres of unique meadow complex on top of Marys Peak arethe highest meadows in the Coast Range, containing a plant community not found elsewhere in the range. Marys Peak SBSIA includes a xeric rock garden, a population of noble fir (*Abies procera*), noble polypore (*Bridgeoporus nobilissimus*), and a riparian area that is the headwaters of Parker Creek. The Institute for Applied Ecology (IAE) has supported restoration efforts at Marys Peak SBSIA since 2014.

The Marys Peak SBSIA meadow complex consists of six designated meadows, although some of these are now contiguous due to tree removal (Figure 1). This report covers restoration actions primarily occurring within Trek, Summit, and West Point Meadows.

Noble fir, Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*) surround the Marys Peak SBSIA meadows and have potential to reduce the acreage of open meadow without active

management. H. Zald's 2009 study of five meadows in the Coast Range determined a 34.7% decrease in grassland acreage at Marys Peak SBSIA between 1948 and 1994 (Zald, 2009). Zald found that the decline in acreage was mainly due to tree encroachment, especially closer to the forest edge (Zald, 2009). While the population of noble fir on Marys Peak is a unique occurrence and is valued as an integral part of the 924 acres of Marys Peak SBSIA, the expansion of this conifer into the meadow threatens to reduce valuable open meadow habitat.

Figure 1. Marys Peak Scenic Botanical Special Interest Area meadow designations.

Summit, Trek, and Appendix Meadows

Active restoration conducted by IAE at Summit, Trek, and Appendix Meadows is funded by the U.S. Forest Service, Siuslaw National Forest, under Stewardship Agreement #22-SA-11061200-008. These three meadows, while nearly contiguous at present, have undergone some distinct changes in the last seven years. In 2016, 2018 and 2020 the FS removed trees to improve meadow connectivity and reduce conifer encroachment into the open grasslands. In 2016, conifer trees were removed from Appendix Meadow (Figure 2, Appendix A) providing connectivity to Trek Meadow. In the same operation, trees were also removed from the eastern edge and interior of Trek Meadow, the campground was thinned, and a couple trees were removed from Middle Meadow. In 2020, FS surveys discovered creeping velvet grass (*Holcus mollis*) in Trek Meadow. Subsequent discussions of treatment options led to the Stewardship Agreement with IAE.

Figure 2. 2016 tree removal in Appendix Meadow, Trek Meadow, and campground (July 2015, August 2016).

Middle and Saddle Meadows

In 2018, the FS removed trees connecting Middle and Saddle Meadows (Figure 3, Appendix A). There is a natural establishment of native meadow species occurring after the 2018 tree removal and is being monitored by the FS. This combined meadow would be a quality candidate for future restoration activities, such as weed abatement and revegetation. Creating a diverse meadow matrix to link the entire meadow complex would improve wildlife habitat and enhance the overall quality of the Marys Peak SBSIA.

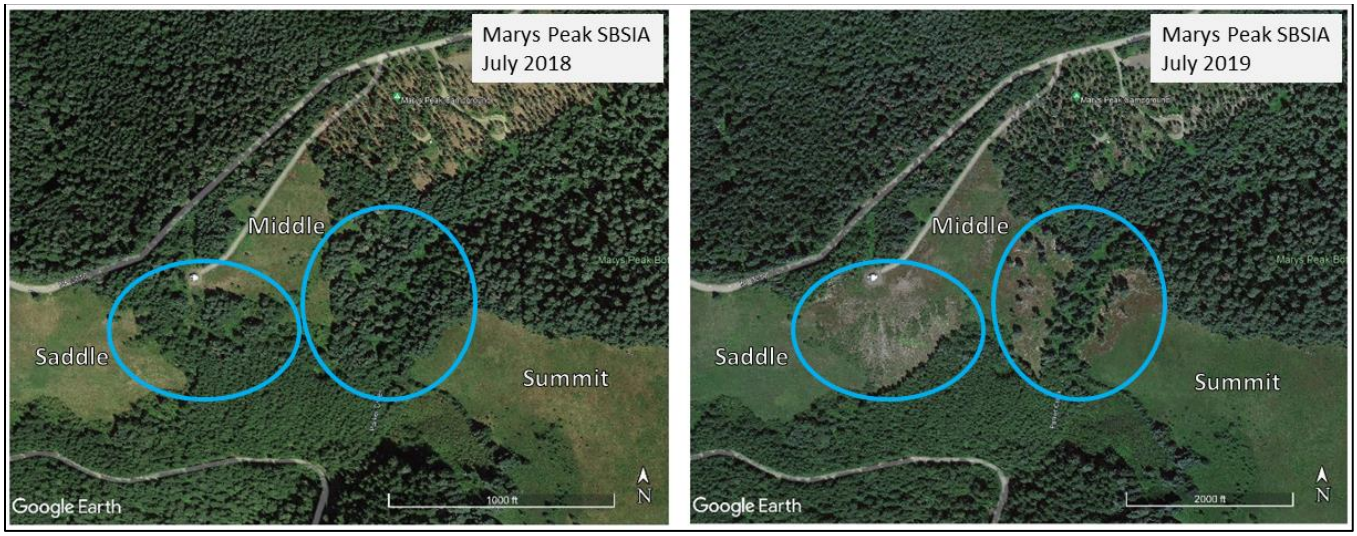


Figure 3. 2018 tree removal between Middle and Saddle Meadows (July 2018 and July 2019).

West Point Meadow

West Point Meadow comprises 12.5-acres west of the Marys Peak summit and is collectively owned by the City of Corvallis and FS. IAE restoration activities at West Point are funded by the FS, Siuslaw National Forest, under Agreement #22-PA-11061200-009 and an agreement with the Alliance for Recreation and Natural Areas (AFRANA). IAE has been involved in restoration at West Point Meadow since 2019, when IAE assisted Trout Mountain Forestry, a private land management contractor, in the restoration of areas disturbed by tree removal and improvements to a transmission tower access road in 2019 and 2020 (Figure 4, Appendix A). IAE's primary activities included invasive species treatments, native seed collection, plant propagation, and revegetation through seeding and plug planting. Although IAE was not directly funded by FS for the work at West Point, FS staff provided input on weed control and seed collection that was used to perform restoration.

Oxeye daisy (*Leucanthemum vulgare*) occurs along the gravel access road and around the transmission towers in West Point Meadow. Treatments that occurred from 2019-2020 were effective at reducing the abundance and spread of oxeye daisy before and after tree removal. Each year less roadside oxeye has been observed and no evidence of the population spreading to newly opened areas has been reported.

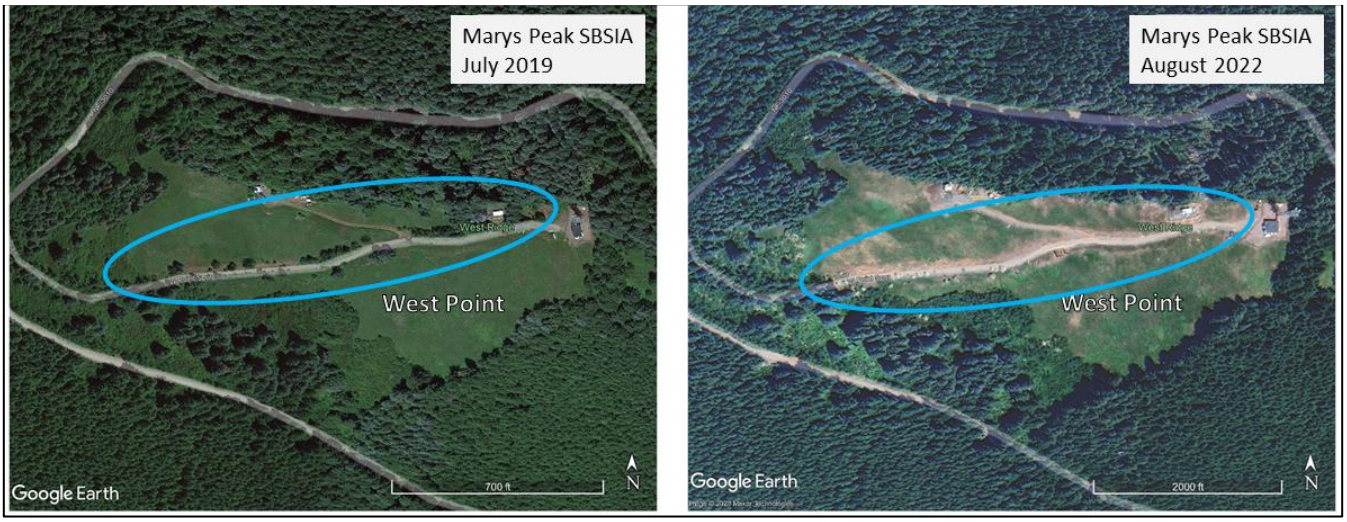


Figure 4. 2020 Tree removal in West Point Meadow (July 2019, August 2022).

2. GOALS AND OBJECTIVES

The goal of this project is to rehabilitate unique meadow habitat at Marys Peak SBSIA and reduce effects of disturbance from infrastructure maintenance, visitor traffic, and invasive weeds. There are three primary objectives of this project:

1. Reduce abundance of invasive grasses and forbs in the meadows.
2. Reduce meadow encroachment through conifer seedling removal.
3. Increase native plant abundance and diversity in disturbed areas.

3. 2023 RESTORATION ACTIVITIES

In 2023, restoration activities at Marys Peak SBSIA focused on treating invasive weeds and reducing noble fir encroachment. Restoration occurred within Trek, Summit, Appendix, and West Point Meadows and no actions were carried out by IAE in Middle Meadow or Saddle Meadow. The FS performed invasive species treatments in 2023, but those activities are not covered in this report.

Seed collection and amplification

Revegetating disturbed areas with native plants requires a large quantity of native seed. In 2023, IAE wild collected seed from 27 meadow species (Table 1) across multiple meadows within Marys Peak SBSIA. IAE also continued seed amplification of common yarrow (*Achillea millefolium*) using seed previously collected in 2020 from the Marys Peak SBSIA. The common yarrow production field was in its second year of growth and produced 1.5 pounds of seed in 2023. Additionally, three production fields were funded by The Alliance for Recreation and Natural Areas (AFRANA) to grow Oregon sunshine (*Eriophyllum lanatum*), slender phlox (*Microsteris gracilis*), and small flowered blue-eyed Mary (*Collinsia parviflora*). Seed harvested from the amplification fields will be used to revegetate disturbed areas at Marys Peak SBSIA.

Volunteer photo-point project

In August 2023, IAE initiated a monthly photo-point project with assistance from AFRANA and community volunteers. Eleven points were designated for photo points within Trek, Middle, and WestPoint meadows and photos were taken in the four cardinal directions once a month (Appendix B). Multiple volunteers are participating, resulting in some months having more than one set of photos. These photos will serve as a visual comparison throughout the seasons to document changes resulting from restoration efforts.

Furthermore, one volunteer, Zachary Foster, has taken on the task of creating 360° images at each point and processing them for use with viewing software. These images will be provided to the FS before the agreement ends. In 2023, photo-points were taken by volunteers on August 8th and 19th, September 7th, October 1st and 13th, November 3rd and 8th, and December 1st.

Table 1. 2023 Marys Peak seed inventory.

Scientific Name	Common Name	Collected 2023 (lb):	Seeded 2023*	Total in Inventory
Anaphalis margaritacea	western pearly everlasting	0.01	0.03	**0.01**
Aquilegia formosa	red columbine	0.01		**0.01**
Achillea millefolium	common yarrow	0.01	0.03	**0.394**
Bromus carinatus	California brome	0.4796		**0.4796**
Carex californica	California sedge	0.0256	0.0256	**0.0963**
Carex mertensii	Merten's sedge	0.546	.546	**0.0338**
Carex pachystachya	Chamisso sedge	0.525	0.5	**0.0298**
Carex subfusca	pale broom sedge	0.00245		**0.00245**
Castilleja hispida	harsh paintbrush			**0.0163**
Cerastium arvense	field mouse-ear chickweed	0.00235		**0.00235**
Chamaenerion angustifolium	fireweed	0.0198	0.7	**0.0198**
Collinsia parviflora	small flowered blue-eyed Mary	0.0079		**0.0168**
Danthonia californica	California oatgrass	0.4415		**0.5004**
Elymus glaucus	blue wildrye			**0.8411**
Eriogonum nudum var. nudum	barestem buckwheat	0.078		**0.078**
Eriophyllum lanatum	woolly sunflower		0.35	**0.0311**
Erythronium grandiflorum; E. oreganum	glacier-lily; Oregon fawn-lily	0.3008	0.03	**0.2708**
Fragaria virginiana	mountain strawberry	0.007		**0.007**
Holodiscus discolor	oceanspray		0.01	**0**
Iris tenax	toughleaf iris	1.24835		**1.29535**
Lilium columbianum	tiger lily	0.184	0.019	**0.225**
Luzula comosa	woodrush	0.013	0.013	**0**
Maianthemum stellatum	stary false Solomon's seal			**0.019**
Melica bulbosa	oniongrass	0.001		**0.001**
Microsteris gracilis	slender phlox	0.0003		**0.0035**
Penstemon cardwellii	Cardwell's penstemon	0.01		**.0624**
Phacelia heterophylla	varileaf phacelia	0.0075		**0.0075**
Phacelia nemoralis	bristly phacelia	0.021	0.01	**0.02**
Phleum alpinum	alpine Timothy			**0.0234**
Ranunculus occidentalis	western buttercup	0.0054		**0.0054**
Scrophularia californica	California bee plant	0.02955		**0.02955**
Senecio triangularis	arrowleaf groundsel	0.055		**0.055**
Turritis glabra	tower mustard	0.0015		**0.0015**
	Total (lb.)	**4.0426**	**2.2636**	**4.5882**

*All seed broadcast in 2023 was to disturbed ground in West Point meadow.

Table 2. 2023 management actions at Marys Peak Scenic Botanical Special Interest Area.

Date	Location	Management Action
16-May	Trek	Confirmed accessibility for May 20 volunteer event.
20-May		Pulled noble fir (*Abies procera*) saplings with volunteers for Benton County Soil and Water Conservation District annual spring event.
25-May		Used FS weed steamer with Matt Smith, Siuslaw N.F. Botanist, targeting dandelion (*Taraxacum officinale*), hairy cat's-ear (*Hypochaeris radicata*), oxeye daisy (*Leucanthemum vulgare*), and creeping velvet grass (*Holcus mollis*) around the parking lot.
30-May		Applied Poast (sethoxydim) herbicide to creeping velvet grass.
10-Jun		Pulled noble fir saplings and oxeye daisy with volunteers.
21-Jun		Applied Poast (sethoxydim) herbicide to creeping velvet grass. Pulled oxeye daisy and hairy cat's-ear.
	Middle	Applied Poast (sethoxydim) herbicide to small creeping velvet grass patch.
	Middle, Saddle, West Point	Assessed need for weed treatments and plant phenology for seed collection.
8-Jul	Trek	Pulled oxeye daisy with volunteers.
15-Jul	Trek, Summit	Pulled oxeye daisy with volunteers.
17-Jul	West Point	Pulled foxglove (*Digitalis purpurea*), oxeye daisy, St. John's wort (*Hypericum perforatum*).
21-Jul	Trek	Mowed, raked, bagged, and removed creeping velvet grass thatch.
24-Jul	West Point	Pulled foxglove, oxeye daisy, and St. John's wort from West Point meadow
26-Jul	Trek	Mowed, raked, bagged, and removed creeping velvet grass thatch.
1-Aug	Appendix, Middle, Trek	Collected native seed from multiple species.
	Middle	Pulled oxeye daisy, hairy cat's-ear, and reed canary grass (*Phalaris arundinacea*) from Middle meadow gate.
2-Aug	West Point	Pulled foxglove, oxeye daisy, and St. John's wort from along the road.
10-Aug	Trek	Used FS weed steamer with Matt Smith, Siuslaw NF Botanist. Targeted creeping velvet grass along the summit road.
8-Sep	Trek	Pulled oxeye daisy and hairy cat's-ear from road edges.
	Trek, Appendix	Collected native seed from multiple species
2-Oct	West Point	Seeded native seed to disturbed areas.
3-Nov	Summit	Pulled and cut noble fir saplings with NCCC.
7-Nov		
10-Nov	Trek, Summit,	Pulled and cut noble fir saplings with NCCC.
20-Nov	Trek	Mapped newly proposed trail.
29-Nov		Pulled oxeye daisy with NCCC. Used FS weed steamer targeting creeping velvet grass.
30-Nov		Used FS weed steamer targeting creeping velvet grass.
8-Dec	West Point	Pulled foxglove with NCCC.
11-Dec	Appendix, Trek	Pulled conifer saplings from Appendix meadow, and hairy cat's ear, and oxeye daisy along roadsides with NCCC. Used FS weed steamer targeting creeping velvet grass.
12-Dec	Trek	Used FS weed steamer targeting creeping velvet grass.
*U.S. Forest Service (FS), AmeriCorps National Civilian Community Corps (NCCC)		

Trek, Summit, and Appendix Meadows

The focus of work at Trek and Summit Meadows includes invasive weed treatment, meadow edge conifer removal, user-created trail demolition, and post disturbance revegetation. IAE and FS are planning to demolish the user-created trail in 2024 and post disturbance revegetation will begin with seeding in 2024, followed by plug planting in 2025.

Siuslaw National Forest staff discovered creeping velvet grass in Trek Meadow in 2020, and additional surveys and initial treatments occurred in the following years. This rhizomatous species forms thick mats of dense thatch that physically inhibits growth of native meadow species. IAE staff discovered a new patch in 2023 east of the pit toilets, so we enlarged the treatment zone. The seven treatment areas of creeping velvet grass total 2.8 acres, with the largest 2.35-acre area inhabiting space on both sides of the road near the parking lot. In 2023, IAE continued implementing a diversified treatment plan for this species, including applying herbicide, mowing, and weed steaming. On May 30th and again on June 21st, IAE applied grass-specific herbicide Poast (sethoxydim) targeting areas slightly larger than the observed population size to capture the rhizomatous growth at the edges and avoid potential escape. To reduce thatch, IAE mowed an estimated thirty percent of the large grass patch using handheld trimmers with metal "blackberry blades". Thatch was raked, bagged tightly shut to eliminate potential roadside spread, and hauled off site for disposal (Table 2, Figure 5, Figure 6).

Figure 5. (**A** and **B**) Creeping velvet grass (*Holcus mollis*) thatch removal by IAE Restoration Technician, Aynesley Wilson, and community volunteer Althea Bocys, on July 26, 2023. (**C**) Four-inch-thick thatch mowed with blackberry blade for removal.

Figure 6. Creeping velvet grass (*Holcus mollis*) treatments (left) and manual treatments at Trek, Summit, and Appendix Meadows (right).

In 2023, a FS owned weed steamer proved effective at treating creeping velvet grass. In late May, small areas were treated and later observed to have died, so larger scale fall and winter treatments were planned. In August, IAE staff and FS Botanist, Matt Smith, weed steamed all the patches along the summit road and the one northeast of the parking lot. IAE staff returned multiple times in late November through early December to complete a second steam treatment of those areas and expanded treatment to the largest meadow patch. Due to its size and the slow process of steaming, focus was placed on containing the northern, southern, and eastern edges first. Afterwards, treatment of the interior began in the north working towards the south. By the time heavy snow covered the meadow in mid-December, an estimated forty percent of the large patch and all the smaller areas were steam treated. Another steam treatment is anticipated for the spring of 2024.

Figure 7. Forest Service weed steamer (**A**) being utilized with Versitech Open Head. (**B**)Targeting oxeye daisy (*Leucanthemum vulgare*; May 25, 2023). Creeping velvet grass (*Holcus mollis*) (**C**) four weeks (June 21, 2023) and (**D**) seven weeks (July 15, 2023) after steam treatment. (**E**) Forest Service weed steamer trailer. Dead or injured (**F**) dandelion (*Taraxacum vulgare*), (**G**) hairy cat's-ear (*Hypochaeris radicata*), and (**H**) oxeye daisy five days after steam treatment, May 30, 2023.

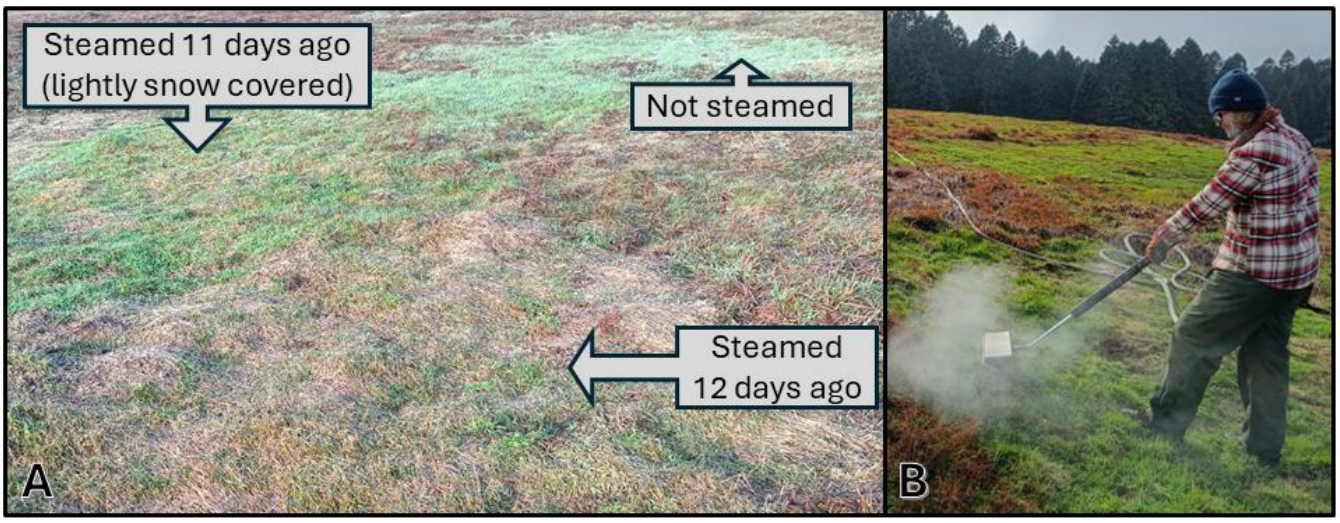


Figure 8. (**A**) Results of weed steaming creeping velvet grass (*Holcus mollis*). Treatments labeled relative to December 11, 2023 and (**B**) active steaming using Versitech Cover Head.

Controlling the spread of oxeye daisy (*Leucanthemum vulgare*) and other invasive plants before they spread throughout the Summit Meadow rock garden is a priority to ensure the unique diversity of that habitat. In 2023, IAE with the help of the FS, AFRANA, community volunteers, and AmeriCorps National Civilian Community Corps (NCCC) performed multiple treatments to reduce weed abundance. The first treatment in 2023 utilized the Siuslaw NF weed steamer in late May (Figure 7). Steam treatments around the parking lot edges targeted dandelion (*Taraxacum officinale*), hairy cat's-ear (*Hypochaeris radicata*), and oxeye daisy. In general, these treatments proved to be effective, but were less than lethal on dandelions established in sidewalk or asphalt cracks where the water did not easily penetrate.

In June and July, IAE staff and community volunteers hand-pulled oxeye daisy along the entire gravel road from the summit down to the parking lot, and along the paved road to the western forest edge of Trek Meadow (Table 2, Figure 6). IAE and FS staff also hand pulled oxeye daisy within the locked communication tower fence. The plants were pulled and left on the trail edge to desiccate before flower pollination and potential for seed ripening occurred. Throughout the summer and fall IAE staff regularly hand treated weeds as found. In December, IAE staff and NCCC treated roadside hairy cats'-ear using soil knives to cut rosettes out of the ground (Table 2). No herbicide applications occurred in 2023 targeting non-native forbs.

The noble fir population bordering Trek and Summit Meadows has potential to reduce the acreage of meadow within the Marys Peak SBSIA. In 2023, IAE and many community volunteers hand-pulled and cut noble fir saplings to reduce forest encroachment in the meadows (Table 2, Figure 6, Figure 9). Noble fir saplings were pulled on the southern, western, and eastern edges of Trek Meadow, the northern and western edges of Summit Meadow, and throughout Appendix Meadow (Figure 6). Continued sapling removal along the forest edge and in the meadow interior will be necessary to maintain open meadow habitat.

Figure 9. (**A**) Conifer sapling removal at Trek Meadow with community volunteers (May 20, 2023) and (**B**) in Summit Meadow with AmeriCorps National Civilian Community Corps (November 7, 2023).

West Point Meadow

2023 restoration activities at West Point Meadow primarily focused on reduction of non-native oxeye daisy, foxglove (*Digitalis purpurea*), and St. John's wort (*Hypericum perforatum*), collecting native seed for future revegetation effort, and broadcasting native seed to disturbed areas. No herbicide applications occurred in 2023 targeting non-native forbs.

Foxglove remains present in West Point meadow, though its abundance is decreasing due to manual treatments. In July and August, IAE hand pulled foxglove throughout the meadow before it set seed (Figure 11). In December, with assistance from NCCC, IAE manually treated foxglove once again. This treatment involved the use of shovels after snow had accumulated, so many plants likely went undetected (Figure 10). Regular hand pulling and/or herbicide treatments will be necessary for many years to decrease the abundance of foxglove and deplete the seed bank.

Figure 10. Foxglove removal in the snow with AmeriCorps National Civilian Community Corps, December 8, 2023.

Oxeye daisy occurs in decreasing abundance along the entire gravel road and around the tower buildings in West Point Meadow due to annual treatments. In July and August 2023, IAE hand pulled roadside oxeye daisy and St. John's wort before it set seed (Figure 11). Other non-native weeds of lower priority, such as common groundsel (*Senecio vulgaris*) are present in small number and were also hand pulled when identified. Hand pulling these species has proven to be an effective strategy and treatments are scheduled for 2024.

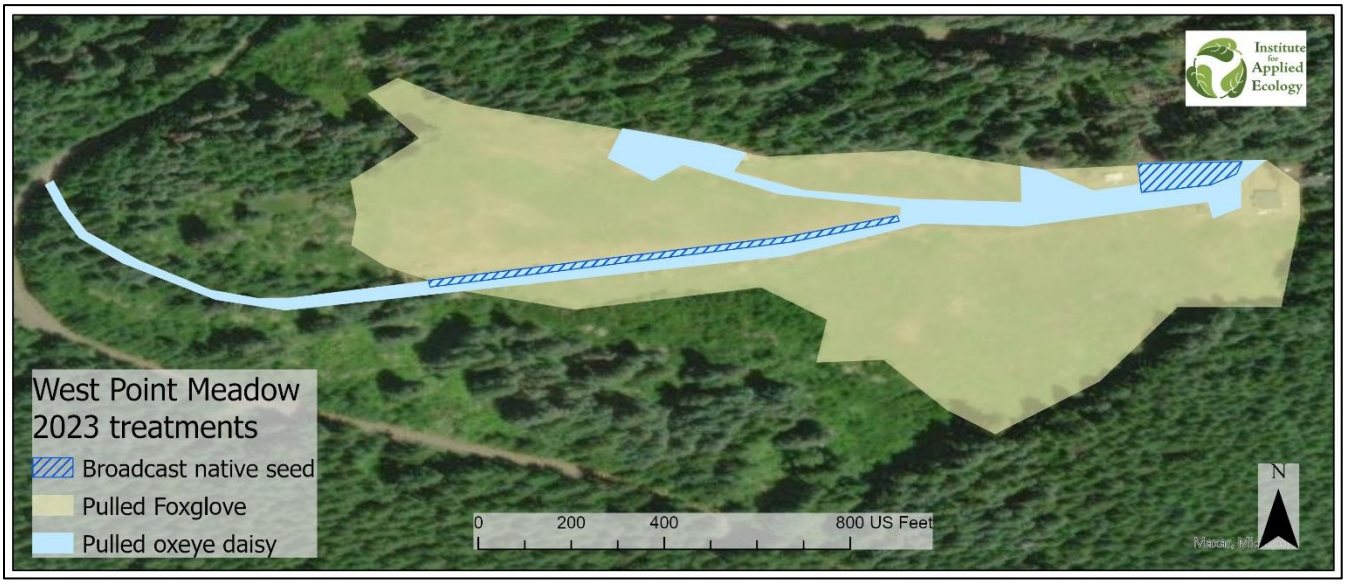


Figure 11. 2023 Treatments at West Point Meadow.

In 2023, IAE dispersed 2.26 pounds of native seed to revegetate areas disturbed by conifer removal in 2020. Twelve species of seed were scattered across the roadcut and in the eastern tree removal zone (Table 1, Figure 11). Seed was collected from Marys Peak meadows and disturbance-loving native species were prioritized since they will likely thrive in the steep south facing road cut. Oregon sunshine (*Eriophyllum lanatum*), common yarrow (*Achillea millefolium*), pearly everlasting (*Anaphalis margaritacea*), fireweed (*Chamaenerion angustifolium*), edible thistle (*Cirsium edule*), and varileaf phacelia (*Phacelia nemoralis*) all play key roles in revegetating high disturbance areas in the SBSIA, and it is crucial to collect and scatter seed for these species into those habitats. More disturbance-loving species present in Marys Peak SBSIA should be gathered and redistributed to bare ground within West Point Meadow.

4. MANAGEMENT RECOMMENDATIONS

The overarching goal of this project is to restore regionally rare high elevation habitat at Marys Peak SBSIA by controlling priority invasive species and managing coniferous encroachment. We recommend the following management actions for 2024-2026.

- Seed collection in 2024 should include collecting and scouting for pearly everlasting, California brome (*Bromus carinatus*), Tolmie's star-tulip (*Calochortus tolmiei*), Merten's sedge (*Carex mertensii*), Chamisso sedge (*Carex pachystachya*), harsh paintbrush (*Castilleja hispida*), field chickweed (*Cerastium arvense*), edible thistle, blue eyed Mary, California oatgrass (*Danthonia californica*), barestem buckwheat (*Eriogonum nudum*), Oregon sunshine, western wallflower (*Erysimum capitatum*), glacier lily (*Erythronium grandiflorum*), Oregon fawn-lily (*Erythronium oreganum*), strawberry (*Fragaria virginiana*), Oregon iris (*Iris tenax*), prairie June-grass (*Koeleria macrantha*), Columbia tiger lily (*Lilium columbianum*), slender phlox, Cardwell's penstemon (*Penstemon cardwellii*), varileaf phacelia, alpine timothy (*Phleum alpinum*), western buttercup (*Ranunculus occidentalis*), tall western groundsel (*Senecio integerrimus*), arrow-leaf groundsel (*Senecio triangularis*).
- Continue seed amplification field for common yarrow.

Trek and Summit Meadows

- Hand pull oxeye daisy in spring before flowering. Once in full flower, pull and bag to remove seed if pedals have fallen off the inflorescence. If pulling labor is not available, treat it with glyphosate or triclopyr.
- Steam in spring at earliest access after the snow melts. Treat creeping velvet grass with sethoxydim once in June and again in July. Mow, rake, rake and remove thatch in summer and fall. Steaming again in the summer or late fall is advised to ensure rhizome death.
- Revegetate creeping velvet grass treatment areas with broadcast seeding and plug planting in 2025, 2026, and 2027.
- Demolish user-created trail using a rototiller to level the existing rut on hilltop. Heavily seed trail in 2024 and plant plugs in 2025 to revegetate. Additional and larger signage at both ends of the trail would be very helpful in deterring foot traffic, reducing overall cost in labor and plant materials, and increasing success rate for revegetating of the area.
- Continue photopoints project for ongoing monitoring.

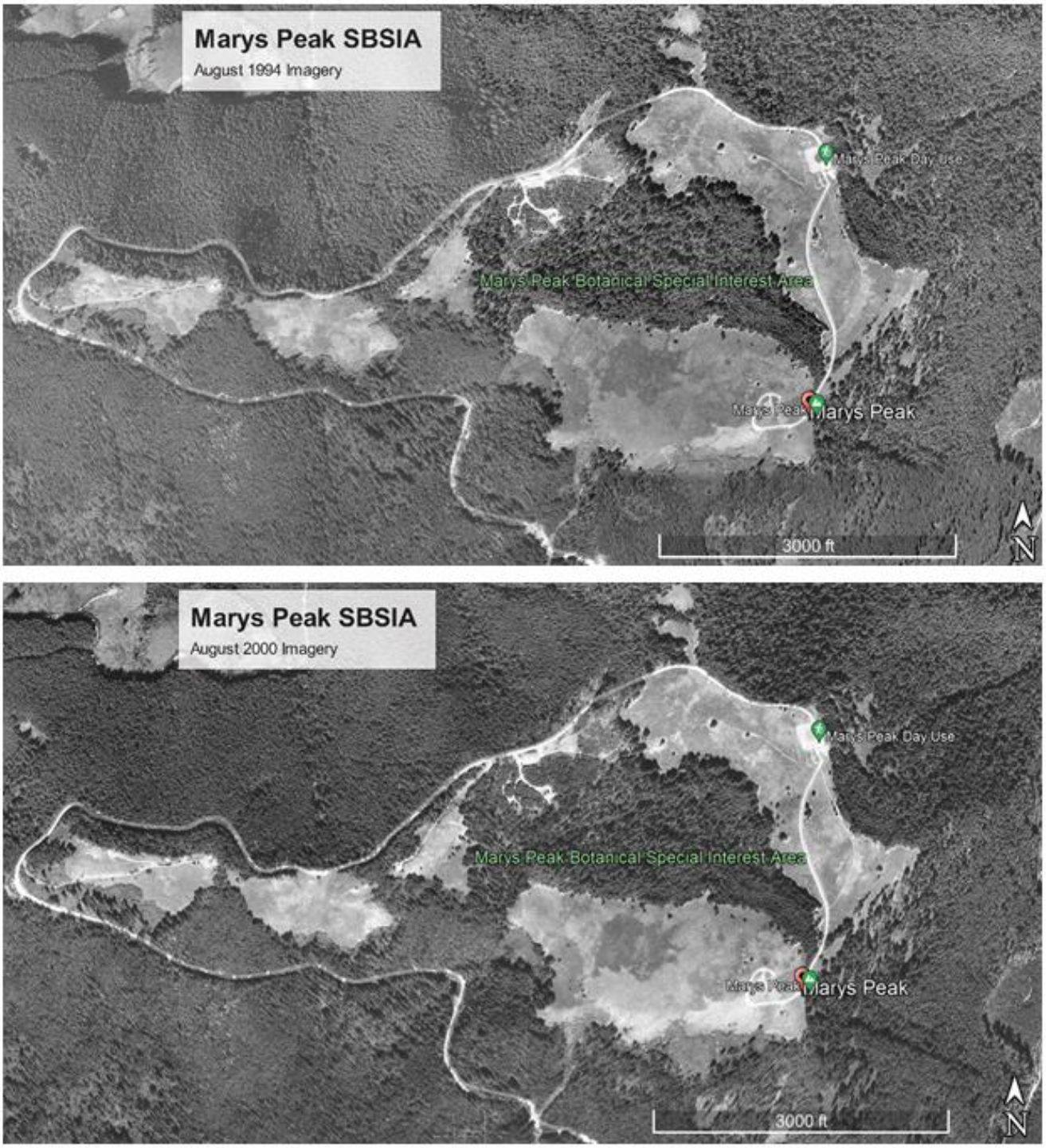
West Point

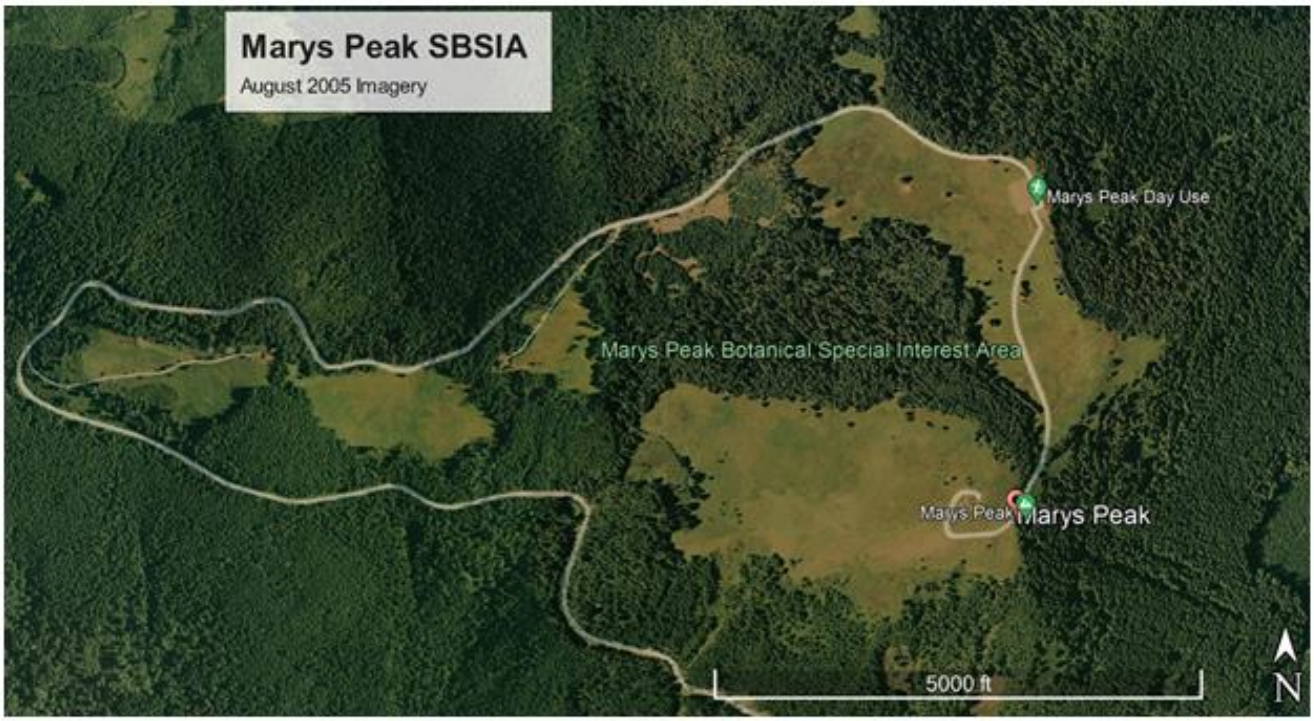
- Hand pull oxeye daisy in spring before flowering. Once in full flower, pull and bag to remove seed if pedals have fallen off the inflorescence. If pulling labor is not available, treat it with glyphosate or triclopyr.
- Treat foxglove manually with shovels and hand pulling in spring and early summer. If pulling labor is not available and plants are still in rosettes, spot spraying with Rodeo (glyphosate). If seed pods have developed, bag the inflorescence to reduce the seed bank.
- Collect and sow disturbance loving species along south facing road cut to hold bare ground.
    - Gather seed from edible thistle, common yarrow, fireweed, varileaf phacelia, barestem buckwheat, and pearly everlasting to redistribute on nearby bare ground.
- Continue photopoints project for ongoing monitoring.

5. REFERENCES

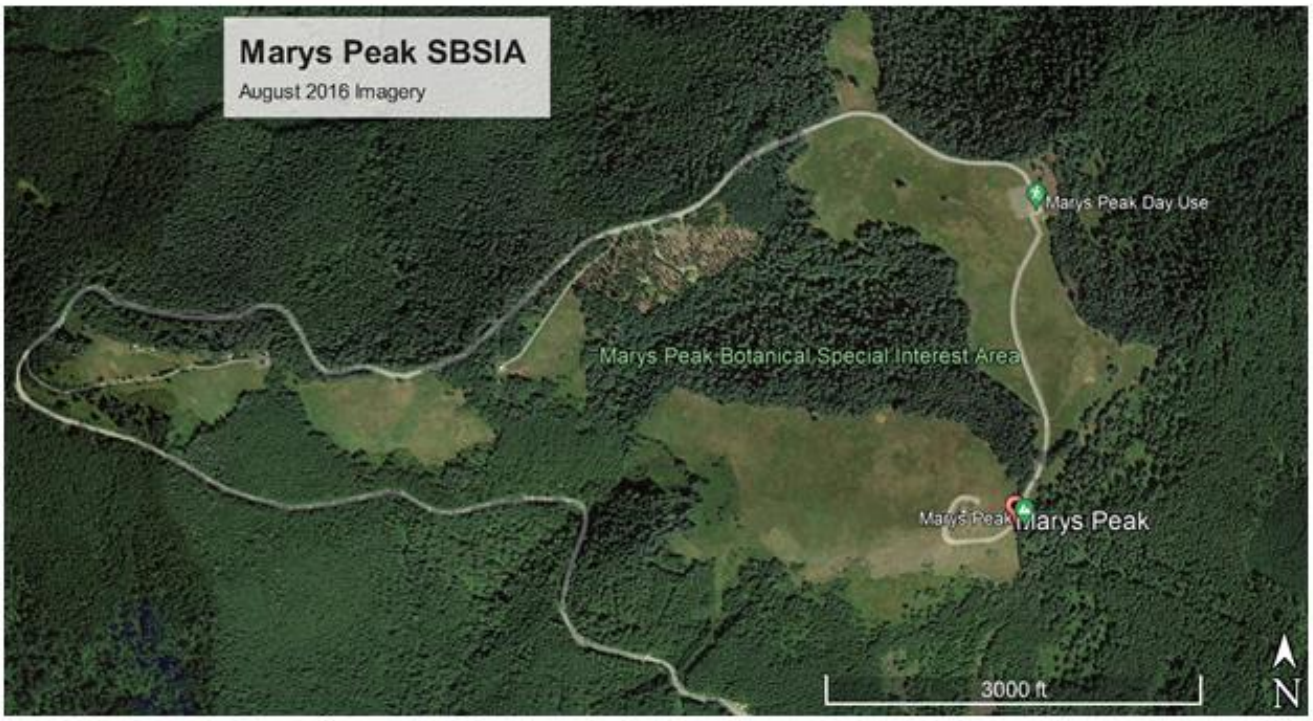
Zald H. 2009. Extent and spatial patterns of grass bald land cover change (1948-2000), Oregon Coast Range, USA. Plant Ecol. 201:517-529.

APPENDIX A. MARYS PEAK SBSIA AERIAL IMAGERY 1994-2022




Marys Peak SBSIA
August 2005 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
Marys Peak
5000 ft
N


Marys Peak SBSIA
July 2015 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
5000 ft
N

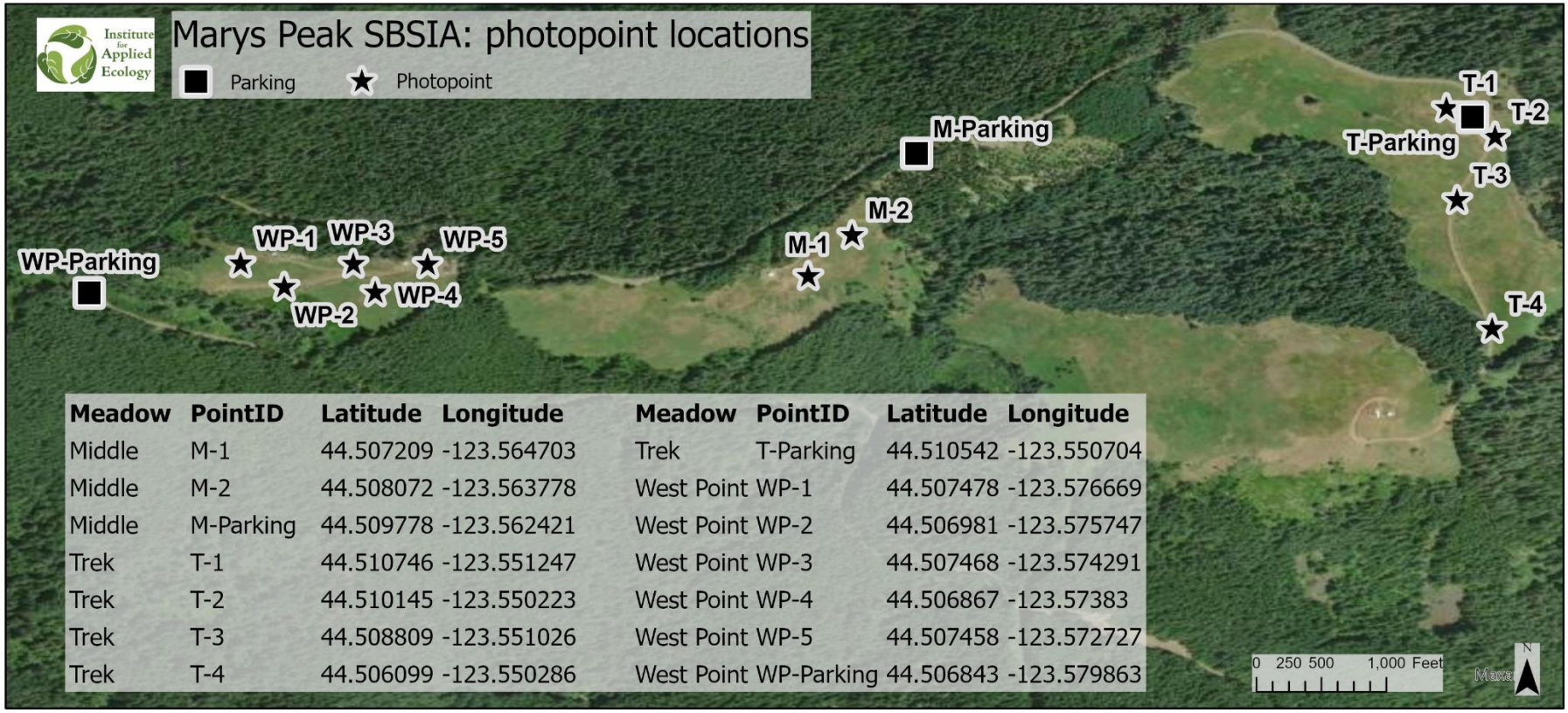

Marys Peak SBSIA
August 2016 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
Marys Peak
3000 ft
N


Marys Peak SBSIA
July 2018 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
Marys Peak
3000 ft
N


Marys Peak SBSIA
July 2019 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
5000 ft
N


Marys Peak SBSIA
August 2022 Imagery
Marys Peak Day Use
Marys Peak Botanical Special Interest Area
Marys Peak
3000 ft
N

APPENDIX B. PHOTOPOINT LOCATIONS



Meadow	PointID	Latitude	Longitude	Meadow	PointID	Latitude	Longitude
Middle	M-1	44.507209	-123.564703	Trek	T-Parking	44.510542	-123.550704
Middle	M-2	44.508072	-123.563778	West Point	WP-1	44.507478	-123.576669
Middle	M-Parking	44.509778	-123.562421	West Point	WP-2	44.506981	-123.575747
Trek	T-1	44.510746	-123.551247	West Point	WP-3	44.507468	-123.574291
Trek	T-2	44.510145	-123.550223	West Point	WP-4	44.506867	-123.57383
Trek	T-3	44.508809	-123.551026	West Point	WP-5	44.507458	-123.572727
Trek	T-4	44.506099	-123.550286	West Point	WP-Parking	44.506843	-123.579863