

# Habitat Restoration of Dorena Prairie ACEC: 2016 Annual Report



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## PREFACE

This report is the result of agreement L13AC00098-0038 between United States Department of the Interior Bureau of Land Management (BLM), Northwest District and Institute for Applied Ecology (IAE), Corvallis, Oregon. IAE is a non-profit organization whose mission is 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.



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## ACKNOWLEDGMENTS

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**Cover photographs:** Dorena Prairie. *Photo by Andy Neill, November 21, 2016.*

## SUGGESTED CITATION

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REPORT SUBMITTED TO BUREAU OF LAND MANAGEMENT

## 1. EXECUTIVE SUMMARY

In 2016, the Institute for Applied Ecology (IAE) worked with Bureau of Land Management Northwest Oregon District (BLM) staff to continue implementing habitat restoration activities at Dorena Prairie. Restoration efforts this year focused on prevention of woody plant encroachment into the prairie by mowing the prairie, weed reduction, and native plant augmentation. Manual removal of target weeds has been successful at maintaining current conditions at the site. Biennial mowing has prevented encroachment of woody species into the prairie habitat. 97 of the 200 plugs of BLM Species of Concern thin-leaved peavine (*Lathyrus holochlorus*) survived initial transplanting. Slightly under 200 plugs of showy milkweed (*Aesclepias speciosa*) were introduced in the fall of 2016.

## 2. INTRODUCTION

IAE began working with the BLM's Northwest Oregon District staff to restore and maintain habitat at Dorena Prairie in 2010 (cover photo). This prairie has undergone extensive restoration work since then, and continues to be an important example of valuable prairie habitat within the Northwest Oregon District of the BLM. This site has the potential for future introduction of rare and/or federally listed Willamette Valley prairie species and is located in the southern portion of the Willamette Valley, Oregon (Figure 1). In addition, it is situated next to Schwartz Park, and provides an opportunity to engage the public in the process of restoration and display the value of natural areas. An educational

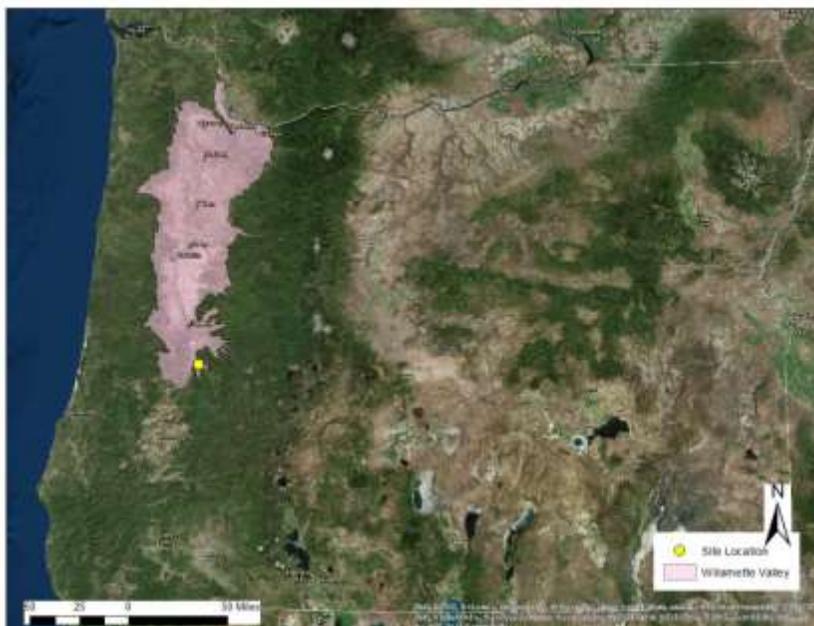


Figure 1. Location of Dorena Prairie.

sign was installed on the site in early 2017 to help inform the public about the work that is completed and in progress on the prairie.

This report covers 2016 activities funded under restoration agreement #L13AC00098-0038. Restoration efforts continue to focus on prevention of woody plant encroachment by biennial mowing of the meadow; weed reduction, and native plant augmentation (see Appendices A and B).

### 3. PURPOSE AND OBJECTIVES

The purpose of this project is to assist the BLM in the restoration and maintenance of rare prairie habitat and species diversity at Dorena Prairie. The three primary objectives of this project are to:

1. Maintain quality prairie habitat by removing non-native invasive plants
2. Prevent encroachment of woody species into the prairie
3. Increase diversity and abundance of the native plant community

### 4. 2016 RESTORATION ACTIVITIES

See Appendix B for a summary of restoration activities conducted by IAE from 2011-2016.

#### Weed and woody species removal

Restoration activities in 2016 focused on manual removal of Scotch broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus bifrons*) from the open areas of Dorena Prairie (Table 1). Table 2 summarizes the breakdown of 2016 costs by budget line item. Because the BLM does not have the ability to use herbicides at this site, weed treatments consisted of manual and mechanical weed removal activities. Target weeds were pulled within the prairie by hand and piled under trees surrounding the prairie. Some clipping of Himalayan blackberry and pulling of Scotch broom occurred around forest edge, but weed removal in the main prairie remained the focus in 2016. The entire prairie was mowed by a contractor using a skid steer in November of 2016 (Figure 2).

**Table 1.** 2016 restoration activities conducted by Institute for Applied Ecology at Dorena Prairie.

Date	Task	Labor (hrs)
03/14/2016	Planted 200 thin-leaved peavine plants	8
03/24/2016	Site assessment and weed pulling	2
05/04/2016	Hand removal of Himalayan blackberry and Scotch broom	8
06/08/2016	Monitored survivorship of thin-leaved peavine	8
11/21/2016	Contract mowing of Dorena Prairie (Habitat Restoration, LLC)	4
12/13/2016	Hand-pulled Scotch broom	1
12/13/2016	Outplanted 198 showy milkweed plants	1

**Table 2.** Budget breakdown of 2016 restoration activities at Dorena Prairie.

Budget Item	Cost
Contracted Services	\$730.00
Supplies	\$0.00
Travel	\$90.72
Labor	\$660.00
Admin	\$163.44
<b>Total</b>	<b>\$1,644.16</b>



**Figure 2.** Dorena Prairie before 2016 mowing (left) and after mowing (right). (Photos: A. Neill)

### Native species augmentation

In March of 2016, 200 plugs of thin-leaved peavine (*Lathyrus holochlorus*), a BLM Species of Concern and Washington State-listed endangered species, were planted (Figure 3). The introduced plugs were monitored for survival in early June.



**Figure 3.** Thin-leaved peavine planting area at Dorena Prairie. (Photo: I. Silvernail)

In December of 2016, 198 showy milkweed (*Asclepias speciosa*) plugs were planted with the help of an AmeriCorps volunteer crew. A map of these and past augmentation plantings is available in Appendix A.

## 5. MONITORING

### Thin-leaved peavine survival

There were 97 thin-leaved peavine plants that survived transplanting and were still alive in June 2016.

### Native forb introductions

In 2014 IAE staff augmented existing populations of western columbine (*Aquilegia formosa*), Oregon geranium (*Geranium oreganum*), riverbank lupine (*Lupinus rivularis*), and prairie violet (*Viola praemorsa*). IAE did a qualitative assessment of native forb introduction survival in June of 2015, and observed several plants of each species flowering at that time. However, several riverbank lupine plants appeared to have been infected and killed by a pathogen at the northeast end of the prairie.

## 6. DISCUSSION

Riverbank lupine infected with the pathogen at Dorena Prairie and other sites should be monitored to evaluate persistence and distribution in the prairie plant community. Mowing of the prairie in the fall will help to promote growth of natives by reducing abundance of non-native grasses, thatch, and blackberry cover. Mowing or prescribed burning should be part of a yearly regimen, continuing in 2017 and subsequent years.

The small stature and sparse distribution of Himalayan blackberry and Scotch broom within the prairie indicate past weed removal activities to be successful. No teasel (*Dipsacus fullonum*) was observed in Dorena Prairie in 2016, although a large patch of Canada thistle (*Cirsium arvense*) remains in the northeast section of the prairie and will continue to spread if not treated. Edges of the prairie bordering Douglas fir forest continue to be dominated by Himalayan blackberry and contain a few large Scotch broom plants. Efforts to remove these plants have begun; however, a large patch of Himalayan blackberry in the southwest corner of prairie kept forest weeds from being a top priority. These areas should be targeted for weed removal in 2017 if top priority weed species within the prairie itself appear to be under control.

Augmentation efforts have been successful, yet expansion of native populations and diversity will only be possible with further reduction and control of invasive species. Continued removal of invasive species will release native vegetation and may continue to allow re-emergence or re-colonization by native species. Tall oatgrass (*Arrhenatherum elatius*) and Canada thistle persist on the site. They will be very difficult to control without the use of herbicides. Similarly, regular mowing has likely reduced the negative effects of non-native grasses on the native plant community at Dorena Prairie, and mowing or burning should be continued as a management tool in 2017. Low limbs of Douglas-fir within the prairie are allowing a small patch of shiny geranium (*Geranium lucidum*) to persist. Removal of these limbs will likely allow enough sunlight to ground vegetation to reduce, if not eliminate, the shiny geranium underneath.

## 7. RECOMMENDATIONS

The overarching goal for Dorena Prairie is to actively restore regionally rare upland prairie habitat by controlling priority invasive species and augmenting native plant populations through outplanting of nursery grown plugs. If aggressive non-native grasses are controlled, Dorena Prairie will be a strong candidate site for rare species introduction. In order to achieve this goal, we recommend the following habitat restoration actions:

- Continue biennial mowing regime or periodic burning of the site
- Pending approval of herbicide use on Northwest Oregon District BLM lands, use an herbicide wiper mounted on an ATV to treat target invasive species such as tall oatgrass. This method allows direct herbicide application to tall-statured vegetation while leaving shorter, more desirable species unharmed. Since tall oatgrass bolts earlier than most species in the spring and is very tall, this method is very well suited for treating this species.
- Continue to annually track and manually remove Scotch broom, teasel, and Himalayan blackberry in the main prairie. Himalayan blackberry will require continuing efforts with mechanical removal as the existing individuals have extensive underground root systems. Similarly, Scotch broom seed remain viable in the seedbank for many years which will require pulling for years to come as the seeds germinate and plants grow.
- Control Canada thistle expansion by removing flowers in order to limit seed set, but effective reduction of this species at the site will require the use of herbicide or aggressive mechanical removal.
- As control of target weeds is achieved in the main prairie, focus control efforts more on the prairie edges where open habitat transitions to Douglas fir forest.
- Remove overhanging Douglas fir limbs from prairie edges that harbor patches of shining geranium. Manually weed shining geranium patches that remain.
- Remove Douglas fir plants encroaching into the prairie.
- When herbicides are approved for use at this site, aggressively treat non-native rhizomatous grasses and follow up by heavily seeding treated areas with native forbs and grasses.
- Update species list for Dorena Prairie.
- Presence of Bald Mountain milkvetch (*Astragalus umbraticus*) at Dorena Prairie has been reported to the BLM from anecdotal sightings, but its presence has not been confirmed by IAE or BLM staff. It is possible that it may appear with restoration, and continued monitoring for its presence is encouraged. This will be included in efforts to update the species list for the site.
- Annually monitor survival and reproduction of introduced thin-leaved peavine (planted in spring 2016).

## 8. APPENDICES

### **Appendix A: Dorena Prairie planting map**

Sensitive species location information has been removed from website versions of IAE reports. Please contact the report author for more information.

## Appendix B: Restoration Activities at Dorena Prairie (2010-2017)

### 2010

- Project was in initial phase of planning, coordinating with partners, mapping the location of priority invasive species, and surveying the native vegetation.
- Removal of approximately 300 Scotch broom plants and 25 Himalayan blackberry plants.
- USACE mowing of the entire prairie in mid-summer to reduce dominance by tall oatgrass and woody species to enhance the habitat for herbaceous species.

### 2011

- Site inspection and partner coordination.
- Scotch broom and Himalayan blackberry removal.
- Survey of Bald Mountain milkvetch (*Astragalus umbraticus*).
- USACE mowing of the entire prairie in mid-summer.

### 2012

- Site inspection and partner coordination.
- Scotch broom removal followed by seeding with native upland prairie mix.
- Site mapping and updating of species list.
- Grew and planted pugs from seed collected for SOS native seed collections.
- Weed-wacked thistle and teasel.
- USACE mowing of the entire prairie in mid-summer.

### 2013

- Site inspection and partner coordination.
- Planted 1224 California oatgrass (*Danthonia californica*), 216 slender cinquefoil (*Potentilla gracilis*), 648 common rush (*Juncus effuses*), 144 dense sedge (*Carex densa*), and 648 slough sedge (*Carex obnupta*).
- Scotch broom, Himalayan blackberry, teasel, and bull thistle removal by hand. Focus on Scotch broom and teasel removal in SE corner of prairie and Himalayan blackberry surrounding blue elderberry in SE corner
- Garoutte Prairie: Scotch broom and Himalayan blackberry removal.
- Removal of seed heads of teasel.
- Weed-wacked thistle and teasel.
- USACE mowing of the entire prairie in mid-summer.

### 2014

- Site inspection and partner coordination.
- Planted bare root Oregon geranium (*Geranium oregonum*) and plugs of river lupine (*Lupinus rivularis*), western columbine (*Aquilegia formosa*), and prairie violet (*viola praemorsa*).
- Removal of Scotch broom and teasel by hand and weed-wacked Himalayan blackberry and weed trees.
- Garoutte Prairie: Scotch broom, Himalayan blackberry, and fruit tree removal.

- USACE mowing of the entire prairie in mid-summer.

2015

- Site inspection and partner coordination.
- Removal of Scotch broom and Himalayan blackberry by hand.

2016

- Site inspection and partner coordination.
- Planted 200 thin-leaved peavine (*Lathyrus holochlorus*) and 198 showy milkweed (*Asclepias speciose*).
- Removal of Scotch broom and Himalayan blackberry by hand.
- Contract mowing of the prairie.

2017 (Planned)

- Site inspection and partner coordination.
- Removal of Scotch broom and Himalayan blackberry by hand.
- Douglas-fir limb removal.
- Manual Canada thistle control.