

# Habitat Restoration of Dorena Prairie



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## Annual Report

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## PREFACE

This report is the result of agreement L13AC00098-0030 between USDI Bureau of Land Management, Eugene 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 Matt Blakeley-Smith, 22 May 2011.*

## SUGGESTED CITATION

Neill, A. 2015. Habitat Restoration of Dorena Prairie ACEC. Institute for Applied Ecology, Corvallis, Oregon and USDI Bureau of Land Management, Eugene District.

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# Habitat Restoration of Dorena Prairie

## REPORT SUBMITTED TO BUREAU OF LAND MANAGEMENT

### 1. SUMMARY OF ACCOMPLISHMENTS

The Institute for Applied Ecology (IAE) began working at Dorena Prairie Area of Critical Environmental Concern (ACEC) in 2010. IAE has worked on two projects that occur on this same BLM parcel. This report only covers activities funded under restoration agreement #L13AC00098-0030 for 2015 and a summary of previous work conducted by IAE. Restoration efforts focus on prevention of woody plant encroachment into the meadow by removing trees and biennial mowing of the meadow, weed reduction, and native plant augmentation (see References and Appendices).

### 2. PURPOSE, OBJECTIVES, AND RELEVANCE

The purpose of this project is to continue habitat restoration for species diversity at Dorena Prairie on the Eugene District BLM. The objective of this project is to maintain quality prairie habitat by removal of non-native plants and augmentation of the native plant community. This prairie has undergone extensive restoration work and is valuable prairie habitat within the Eugene District BLM. This site 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 sign is being designed to be placed on site help inform the public about the work that is completed and in progress on the prairie.

### 3. ACTIVITIES

Restoration activities in 2015 focused on manual removal of Scotch broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus armeniacus*) from the open areas of Dorena Prairie (Table 1). The budget largely went to labor costs associated with weed pulling activities by the IAE Habitat Restoration Technician (Table 2). Target weeds were pulled within the prairie by hand and piled under trees surrounding the prairie. Some clipping of Himalayan blackberry was done to gain access to the forest, but edge and forest patches of this species were not targeted for removal in 2015.

**Table 1.** Restoration activities conducted by IAE at Dorena Prairie during 2015.

Date	Task	Labor (hrs)
6/4/2015	Site orientation, plant monitoring, and weed assessment of Dorena and Garoutte Prairies	4
8/25/2015	Removed Himalayan blackberry and Scotch broom from prairie	6.5
8/31/2015	Removed Himalayan blackberry and Scotch broom from prairie	8
9/14/2015	Removed Himalayan blackberry and Scotch broom from prairie	7
9/16/2015	Removed Himalayan blackberry and Scotch broom from prairie	8

**Table 2.** Budget breakdown of restoration activities at Dorena Prairie during 2015.

Budget Item	Cost
Contracted Services	\$0.00
Supplies	\$0.00
Travel	\$338.73
Labor	\$1,464.55
Admin	\$396.72
Total	\$2,200.00

#### 4. DISCUSSION

In 2014 IAE staff augmented existing populations of western columbine (*Aquilegia formosa*), Oregon geranium (*Geranium oregonum*), riverbank lupine (*Lupinus rivularis*), and prairie violet (*Viola praemorsa*). Several plants of each species were observed flowering in June, 2015. However, several riverbank lupine plants appear to have been infected and killed by a pathogen at the northeast end of the prairie. 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. Annual mid- to late summer mowing of the prairie by Army Corps of Engineers to reduce cover and thatch of non-native grasses did not occur in 2015. This lack of mowing may inhibit growth and reproduction of native plant populations in the prairie. A mowing regime or similar alternative, such as annual burning, should be planned for 2016 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 (Figure 1). No teasel (*Dipsacus fullonum*) was observed in Dorena Prairie in 2015 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. There has been little effort to control these patches and they will continue to be a source of propagules into the main prairie. These areas should be targeted for weed removal in 2016 if weed abundances within the prairie appear to be under control.



**Figure 1.** Himalayan Blackberry removal at Dorena Prairie (before and after, Photos: A. Neill).

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 reintroduced as a management tool in 2016.

## 5. STEPS FORWARD

The overarching goal for Dorena Prairie continues to be 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. Re-establishment of a mowing regime or periodic burning of the site in 2016 and beyond is necessary to achieve this goal.

The Garoutte Prairie annex area offers an excellent opportunity to conserve and increase high quality upland prairie habitat. IAE staff anticipate moving forward with Garoutte Prairie and creating a management plan in partnership with the Eugene District BLM. Upland prairie habitat at Garoutte Prairie can be improved with continued clearing of successional invasive species and augmentation of existing native plant diversity.

Pending approval of herbicide use on Eugene District BLM lands, we suggest using an herbicide wiper mounted on an ATV. 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, it is very well suited for this treatment.

IAE will continue to track and remove Scotch broom, teasel, and Himalayan blackberry as an annual task. As effective control of these weeds in the main prairie becomes apparent, focus on weed removal can shift to the edges of the prairie where it transitions to Douglas-fir forest. 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. Efforts will be made to reduce seed set on Canada thistle, but preventing this species from expanding on the site will require the use of herbicide.

Presence of Bald Mountain milkvetch (*Astragalus umbraticus*) at Dorena Prairie has been reported to the BLM from anecdotal sightings, but it has not yet been located on the site. 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.

APPENDIX A

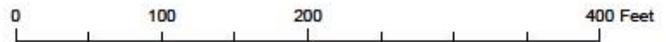
AERIAL PHOTO OF DORENA PRAIRIE AND PLANTING MAP

**Dorena Planting Jan 2014**



**IAE Plug and Bareroot Species Planting at Dorena Prairie Jan 2014**

- |   |   |
|---|---|
|  672 LUPRIV Dorena planting 2013 |  357 AQUFOR Dorena planting 2013 |
|  334 VIOPRA Dorena planting 2013 |  880 GERORE Dorena planting 2013 |



## APPENDIX B

### ACTIVITIES CONDUCTED AT DORENA PRAIRIE ACEC

#### 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 *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 *Danthonia californica*, 216 *Potentilla gracilis*, 648 *Juncus effuses*, 144 *Carex densa*, and 648 *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 *Geranium oreganum* and plugs of *Lupinus ruvarialis*, *Aquilegia formosa*, and *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 (planned)

- Site inspection and partner coordination.
- Removal of Scotch broom and Himalayan blackberry by hand.
- Contract mowing of the prairie.

## REFERENCES

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