

Twin Prairie – 2016 Annual Report- Web Version



2017

Report to the Bureau of Land Management
Agreement #L13AC00098-0001

Report prepared by Matt Schultz
Institute for Applied Ecology
February 1, 2017



PREFACE

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.



Questions regarding this report or IAE should be directed to:

Tom Kaye, Executive Director
Institute for Applied Ecology
563 SW Jefferson Ave
Corvallis, Oregon 97333

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

ACKNOWLEDGMENTS

Funding for this project was provided by the Bureau of Land Management (BLM). We thank Cheshire Mayrsohn of the BLM for the opportunity for involvement, her guidance, and sharing her knowledge of the site. We are also grateful for the assistance of Eugene volunteers in removing Scotch broom and other weeds from the site.

Special Note:

This report has been modified from its original format by removing maps and/or appendices that include information on the location of rare and sensitive species.

Cover photograph: Twin Prairie, southeast of Cottage Grove, Oregon. *Photo by Jenny Getty.*

SUGGESTED CITATION

Schultz, M. 2017. Twin Prairie Restoration: 2016 Annual Report. Institute for Applied Ecology, Corvallis, Oregon and USDI Bureau of Land Management, Eugene District. 9 p.

TABLE OF CONTENTS

PREFACE.....	II
ACKNOWLEDGMENTS.....	III
SUGGESTED CITATION.....	III
TABLE OF CONTENTS.....	IV
INTRODUCTION	1
SUMMARY OF ACCOMPLISHMENTS.....	1
Highlights:.....	1
Shaggy Horkelia Monitoring and Management.....	2
SUCSESSESS & LESSONS LEARNED	5
NEXT STEPS	7
2016 BUDGET	8
REFERENCES	8

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REPORT TO THE BUREAU OF LAND MANAGEMENT

INTRODUCTION

Twin Prairie is a site owned and managed by the Bureau of Land Management (BLM) and is located in southern Lane County, Oregon, not far from Cottage Grove. The site is an outstanding example of a mid-elevation meadow, especially noteworthy for its large population of shaggy horkelia (*Horkelia congesta* ssp. *congesta*), a rare species endemic to Oregon. Shaggy horkelia is considered a “Bureau Sensitive” species by the Bureau of Land Management, Eugene District. It is listed as a “State Candidate” by the State of Oregon Fish and Wildlife. The Oregon Natural Heritage Information Center designates shaggy horkelia as a “List 1” species that “contains taxa which are endangered or threatened throughout their range or which are presumed extinct” (ORBIC 2016). Management of shaggy horkelia is necessary to prevent the listing of the species under the Endangered Species Act.

SUMMARY OF ACCOMPLISHMENTS

Highlights: (See Table 1 for a complete list of restoration activities conducted at Twin Prairie in 2016)

- The population of shaggy horkelia was monitored, censused, and mapped, expanding on data collected in 2013-2015. After a decline in 2015, the number of reproductive plants increased in 2016. The number of flowering stems also increased compared to 2015, but the proportion of browsed stems was substantially higher compared to both 2014 and 2015. Shaggy horkelia seedlings were noted at the site for the first time.
- Monitoring of shaggy horkelia that were outplanted in fall 2015 found a survival rate of 33% for the lower plot and 50% for the upper plot.
- The weedy species Himalayan blackberry (*Rubus armeniacus*) and Scotch broom (*Cytisus scoparius*) were removed from the edges of the meadow.
- Shrubs and lower tree branches encroaching on the shaggy horkelia population were trimmed back from the edge of the meadow and some smaller trees were girdled or removed.
- On October 25 the areas disturbed by weed control were seeded with a bulk mix of blue wildrye (*Elymus glaucus*) (1lb), Roemer’s fescue (*Festuca roemerii*) (2 lbs), Oregon sunshine (*Eriophyllum lanatum*) (1lb) and California oatgrass (*Danthonia californica*) (2 lbs). This seed was

grown in partnership with the BLM and the Nature Conservancy, and as a result was provided for restoration use at no cost to the project.

Table 1. Restoration activities at Twin Prairie in 2016.

Date	Task	Personnel
4/12	Scotch broom removal	IAE + 3 Volunteers
6/10	Horkelia monitoring	IAE
6/15	Horkelia monitoring	IAE
6/28	Horkelia monitoring	IAE
9/27	Shrub and tree trimming	IAE
10/5, 10/11, 10/19, 10/28	Blackberry removal	IAE
10/25	Seeding disturbed areas; blackberry and Scotch broom removal	IAE

Shaggy Horkelia Monitoring and Management

The shaggy horkelia population at Twin Prairie has been monitored annually from 2013 to 2016. In 2013, the number of flowering stems was the only datum collected (Table 2). From 2014-2016, additional data was collected, including the total number of plants, the reproductive status (rosette or flowering) of each plant, and the number of browsed stems (Table 3). Individual plants were defined as basal rosettes not obviously connected to a single crown, usually a minimum of 1-2 inches apart (Alverson 2013).

Data suggests that small subpopulations may regularly establish and disappear from year to year. For example, in 2014 additional plants were found in the vicinity of plot 7 and designated as plot 7A. In 2015, no plants could be found at plot 7A or plot 10, but additional plants were found next to plots 8, 10 and 12 (designated 8A, 10A, and 12A, respectively; see map in Appendix 1). No new subpopulations were found in 2016, but seedlings were found at plots 12, 16, 18, and 19. In general, this pattern suggests that population of shaggy horkelia are dynamic, and demonstrates that recruitment is active and plants can be short-lived.

Table 2. Flowering stems (browsed) of shaggy horkelia at Twin Prairie, 2013-2016.

Plot	2013	2014	2015	2016	Notes
1	12	12 (24)	27	6	
2	13	10 (6)	8 (3)	1 (1)	
4	489	212 (315)	325 (168)	88 (409)	Plots 3-5 considered all part of plot 4
6	27	5 (25)	20	11 (17)	
7	77	51 (63)	51 (11)	30 (38)	
7a	0	2	0	0	No plants found this year
8	61	39 (54)	24	44 (39)	
8a	0	0	2	0	
9	3	3 (1)	2	2	
10	9	6	0	0	No plants found this year
10a	0	0	1	1	
11	2	8	6 (16)	1 (9)	
12	17	113 (79)	54 (23)	33 (86)	
12a	0	0	5	6 (2)	
13	19	2 (12)	11	2 (9)	
14	6	3 (4)	1 (2)	3	
15	4	43 (56)	43 (27)	42 (38)	
16	229	205 (287)	111 (98)	83 (185)	
17	4	2	2	0	No plants found this year
18	102	66 (68)	48 (4)	10 (85)	
19	7	8 (29)	35	3 (17)	
TOTAL Unbrowsed + (browsed)	N/A	790 + (1023)	776 + (352)	359 + (935)	
TOTAL Combined	1081	1813	1128	1294	
Proportion of browsed stems	N/A	56%	31%	72%	

Table 3. Shaggy horkelia abundance (total and reproductive individuals) from 2014-2016.

Plot	# of total plants + (seedlings)			# of reproductive plants			Notes
	2014	2015	2016	2014	2015	2016	
1	12	11	17	12	9	5	
2	7	5	1	7	5	1	
4	407	406	503	235	216	263	Plots 3-5 considered all part of plot 4
6	20	16	18	10	9	13	
7	62	35	42	50	30	30	
7a	1	0	0	1	0	0	No plants found this year
8	68	12	58	35	12	37	
8a	0	1		0	1	0	No plants found this year
9	3	1	1	3	1	1	
10	1	0		1	0	0	No plants found this year
10a	0	1	1	0	1	1	
11	5	9	11	4	8	6	
12	104	67	112 + (5)	64	37	56	
12a	0	2	2	0	2	2	
13	3	6	7	3	5	5	
14	1	1	2	1	1	2	
15	92	80	99	45	37	43	
16	355	216	222 + (81)	184	116	125	
17	2	2	0	2	2	0	No plants found this year
18	76	44	44 + (60)	46	24	36	
19	15	14	9 + (50)	10	11	7	
Total	1242	929	1149 + (196)	713	527	633	

Shrubs, lower branches of Douglas-fir (*Pseudotsuga menziesii*) trees, and smaller Douglas-fir trees continue to encroach into the prairie, crowding out and negatively impacting the shaggy horkelia population. Lower branches of large fir trees were removed and a smaller fir tree was removed in the vicinity of plot 7 (Figure 1). Trimming work was conducted elsewhere along the northern part of the prairie meadow, concentrating on areas that were not treated in 2015.

There is some evidence to suggest that removing encroaching vegetation has led to a rebound in shaggy horkelia populations. In 2015, a substantial amount of vegetation was removed from the eastern part of the upper meadow (plots 1-6, see site map in Appendix 1). In 2016, the number of shaggy horkelia rosettes and reproductive plants counted in these plots increased, exceeding even the previous high mark recorded in 2014.



Figure 1. Left photo shows encroachment in the vicinity of plot 7. Right photo shows Anna Ramthun completing removal of encroaching limbs and girdling a small tree.

SUCSESSESS & LESSONS LEARNED

Weedy Brush Management: In 2016, 5 people spent 1 day removing Scotch broom from the site. A tree had fallen across the access road, which necessitated a long walk in to the site and a reduction in time spent on site. However, due to a smaller area of Scotch broom, it was possible to comb the entire site for Scotch broom, and all broom that was located was removed. Removing Scotch broom in the future should be easier due to three years of diligent work.

Himalayan blackberry is much more widespread at the site than Scotch broom. In 2016, blackberry removal efforts were concentrated in areas that were treated in 2014 and 2015. There are still dense patches of blackberry, especially in the lower meadow in the south-central and south-eastern portions of the site. Patches of blackberry that were treated in 2015 did resprout, but were reduced in vigor compared to untreated patches. This suggests that our treatment methods (hand-pulling, root grubbing, and weed-wrenching) are effective, but still must be repeated for several years to be effective. The steep slope of this site makes invasive plant removal more time-consuming and therefore more expensive than a site with less slope.

Encroaching Vegetation Management: Trimming back encroaching vegetation, mainly the lower branches of Douglas-fir trees and manzanita, was an important task continued in 2016. Trimming was done along the northern extent of the meadow where shaggy horkelia was present (e.g., from plots 1-11 and 13-19; see Appendix 1). It will be important to monitor the extent of resprouting shrubs and further trim, entirely remove, or girdle selected shrubs and trees in the future. It will also be interesting to monitor whether horkelia expands into areas where shrub removal and tree trimming took place.

Shaggy horkelia: We learned more about shaggy horkelia demography at the site, including documentation of seedlings in plots 12, 16, 18, and 19. Seedlings were dense in places and tended to be found where thick patches of moss were also present (Figure 2).



Figure 2. Photo on left is a horkelia seedling. Photo on right is a more typical distribution showing many seedlings clustered together. Seedlings tended to be found in mossy areas.

In fall 2015, two 10 m x 10 m plots were established and planted with 110 shaggy horkelia plugs with 1 m spacing (Figure 3, also see the map in Appendix 1 for the location on site). Monitoring showed a survival rate of 50% for the upper plot and 33% for the lower plot. All plants found were very small. The low survival could be due to low vigor of the outplanted plugs, harsh site conditions, or pressure from weedy species. Anecdotally, the area downslope from a rock tended to be a location where outplanted plugs did relatively well. Considering that seedlings found near established populations tended to be found in mossy areas, experimenting with outplantings, or even scattering seed, in mossy areas may be worth pursuing.



Figure 3. Horkelia rosette outplanted in October 2015, found during monitoring June 28th, 2016.

Tracking population abundance is critical to monitor overall population trends. The baseline information recorded in 2013-2016 will inform any changes in subsequent years.

NEXT STEPS

Weedy Brush Management: Restoration efforts at Twin Prairie should continue to insure that the identified invasive plant populations do not expand. The method of blackberry treatment at this site requires several years of treatment to be effective, and restoration efforts should continue annually to ensure improved blackberry control. Most of the remaining large populations of blackberry are in wooded areas and future removal will be more challenging. Almost all of the Scotch broom population has been removed, and additional treatments in 2017 would hinder its reestablishment.

Shaggy Horkelia Monitoring: Shaggy horkelia monitoring should continue in 2017 to determine if this population is expanding, contracting or remaining stable. Continued monitoring of the plugs planted in 2015 will allow for an evaluation of the success of shaggy horkelia introductions.

Removal of Encroaching Vegetation: Encroaching Douglas-fir trees should continue to be cleared back from the prairie edge. Removing firs will also improve the longevity of surrounding Oregon white oaks (*Quercus garryana*).

2016 BUDGET

Activity	Cost
Project coordination	\$ 908
Restoration Activities (grubbing, trimming, hand weeding, scattering seed in disturbed areas)	\$ 1833
Horkelia Monitoring	\$ 1400
Supplies	\$ 261
Transportation	\$ 696
Administrative Fees	\$ 1116
Total	\$ 6214

REFERENCES

Alverson, Ed. R. 2013. Lomatium Prairie *Horkelia congesta* 2013 Monitoring. Report to Long Tom Watershed Council. 22pp.

Oregon Biodiversity Information Center. 2016. Rare, Threatened and Endangered Species of Oregon. Institute for Natural Resources, Portland State University, Portland, Oregon. 130 pp.