

Nelson's checkermallow Recovery Project – 2017 Post- implementation Status Report



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Report for Oregon Watershed Enhancement
Board, Agreement # 208-3082

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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.



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Cover photograph: Nelson's checkermallow at Deer Creek, June 2017, Peter Moore, IAE.

SUGGESTED CITATION

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1. INTRODUCTION

Between 2008 and 2012, the Institute for Applied Ecology (IAE) received grants from the Oregon Watershed Enhancement Board (OWEB; Grant # 208-3082) and the United States Fish and Wildlife Service (USFWS; Grant # 13420-8-J813) to work toward the recovery of Nelson's checkermallow (*Sidalcea nelsoniana*). This project was an implementation of the Recovery Plan for the Prairie Species of Western Oregon and Southwestern Washington (USFWS 2010) by working to recover Nelson's checkermallow in two of the largest recovery zones, Corvallis West and Salem West. The objectives of the project were to: 1) provide quality plant materials of Nelson's checkermallow through large scale seed collection and agricultural production, 2) increase and enhance habitat for Nelson's checkermallow at key introduction sites through weed control, site preparation, and seeding with diverse native species, 3) meet recovery objectives by introducing at least 40,000 checkermallow plants to protected sites, and 4) provide a model for recovery of other listed species. The project constituted Phase I of Nelson's checkermallow recovery and was completed in 2012 (IAE 2012). Phase I primarily focused on the development of plant materials for recovery, baseline monitoring at introduction sites, and preliminary site preparation. The project continued with Phase II, which was also funded by OWEB (Grant # 210-3054) and USFWS (Grant # 13420AJ035) and continued site enhancement activities as well as planting and maintenance until December 2014 (Moore & Gray (2015)). Phase III (OWEB Grant # 217-3010) is working towards recovery of Nelson's checkermallow at the Portland and Coast Range recovery zones.

This report summarizes post-implementation activities associated with Phase I of the Nelson's checkermallow recovery project that have occurred since October 2015. Previous status reports were produced in 2013 (Moore & Gisler 2013) and 2015 (Moore 2015).

2. ASSESSMENT OF PROJECT'S CONTINUED SUCCESS

The continued success under the four principal objectives is outlined below.

2.1. Plant Material Development

Two 0.25 acre production blocks at the Natural Resources Conservation Service's (NRCS) Corvallis Plant Materials Center (PMC) were extremely productive, yielding 744 pounds of seed over the course of five years (2009-2013), which was much more than required for the project. Seed was utilized for restoration, with 311 pounds used for direct sowing at ten project sites and further seed used to produce

23,236 plugs and 16,860 rhizomes for Phase I (Table 1) and Phase II restoration sites (Moore & Gray 2015).

IAE currently holds the remainder of the seed to make it available for future projects. For example, in fall of 2015, 7.5 pounds of Nelson's checkermallow seed was sown in wet prairie habitat at Herbert Farm and Natural Area, a backup site for the Phase II project. The City of Corvallis is planning to sow 25 pounds of Nelson's checkermallow seed and a native prairie seed mix at Marys River Natural Area in fall 2017 to rehabilitate an area impacted by construction of a boardwalk.

Table 1. Summary of Nelson's checkermallow (*Sidalcea nelsoniana*) population estimates and the amount of seed, plugs and rhizomes that were introduced to 11 sites in 2010-14.

Site Name	Recovery Zone	Baseline Natural Population (# plants) ^a	Augmented Plant Materials			Most Recent Population estimate ^b
			Seed (lbs)	Plugs (#)	Rhizomes (#)	
Deer Creek Park	Salem West	0	23	1397	0	NS
Dhooghe	Salem West	30	20	294	500	25,062
E4 Ranch	Corvallis West	1	20	1000	1500	36,220
EE Wilson Wildlife Area	Corvallis West	377	66	1031	625	NS
Marys River Natural Area	Corvallis West	0	30	1000	2000	16,947
Mud Slough	Salem West	2,000	50	1794	1500	22,116
Sheldon-Holt	Salem West	0	30	1000	1500	66,054
Spring Valley Creek	Salem West	0	12	2019	0	5649
Tyee Nature Reserve	Salem West	55	0	590	505	594
Tyee	Corvallis West	15	30	1000	2625	4,985 ^c
Winter Creek	Corvallis West	1,200	20	1000	1500	24,073
Subtotals	Salem West	2,085	135	7,094	4,005	>119,475
	Corvallis West	1,593	166	5,031	8,250	>82,225
Total		3,678	301	12,125	12,255	>201,700

^a Recent counts in 2000s made before re-introductions occurred (compiled from IAE survey in 2008, and earlier reports).

^b Except where noted below, population estimates occurred after the Nelson's checkermallow was planted. 2012 surveys reported in Silvernail (2012); 2013-14 surveys (Silvernail et al. 2016).

^c 625 rhizomes were planted after the census in 2013.

NS: The population has not been surveyed since the project started.

2.2. Habitat Enhancement of Introduction Sites

Most of the 11 project sites (Table 1) have continued to be restored or maintained by landowners and partner organizations, although the level of maintenance has been variable between sites (Table 2).

Several sites continue to have invasive species challenges (e.g., teasel (*Dipsacus fullonum*) and velvet grass (*Holcus lanatus*) at Deer Creek, reed canarygrass (*Phalaris arundinacea*) at Sheldon-Holt, velvet grass at Spring Valley, and reed canarygrass at Tyee). Sites that have had little or no maintenance in recent years, such as Dhooghe, Marys River Natural Area and Tyee Nature Reserve have an increased prevalence of invasive weed species and encroachment of trees and shrubs. Sites that have had more active management by land managers since project completion (Table 2) show continued success. For example, control of false dandelion (*Hypochaeris radicata*) at E4 and tansy ragwort (*Jacobaea vulgaris*) at Spring Valley has successfully reduced the prevalence of those species.

2.3. Nelson's checkermallow introduction

A primary objective of the project was to introduce at least 20,000 Nelson's checkermallow plants at protected sites in each of the Salem West and Corvallis West Recovery Zones. Population estimates made during, or subsequent to, the plantings exceeded these targets (Table 1; Silvernail 2012, Silvernail et al. 2016).

A secondary aim was to establish at least four populations in each recovery zone. This goal was exceeded during Phase I of the recovery project, with Nelson's checkermallow was established at seven sites in Salem West and six sites in Corvallis West. The populations continued to be present at all 11 project sites in 2017 and plants were observed flowering and setting seed. The most recent introduction of Nelson's checkermallow occurred at Deer Creek in 2014 when the 13 acre prairie was sown with 23 pounds of seed (Table 1). In 2017 Nelson's checkermallow plants were widespread, abundant and flowering at this site.

2.4. Recovery model

The Nelson's checkermallow Phase I recovery project provides a model for recovery implementation for the species in other parts of its range, and may be useful to guide recovery of other prairie species. The success of Phases I and II supported development of Phase III of the project in the Portland and Coast Range recovery zones (OWEB Grant # 217-3010).

3. MAINTENANCE OR MODIFICATIONS SINCE LAST REPORT

Ongoing maintenance by partner agencies and landowners occurred at several of the project sites between October 2015 and August 2017 (Table 2).

Table 2. Nelson's checkermallow Recovery Project Site Maintenance and Enhancements in Oct 2015-Aug 2017 and plans for fall 2017.

Site Name	Mowing	Hand weeding	Herbicide	Prescribed burn	Planting
Deer Creek Park	Yamhill County Parks mowed the area occupied by Kincaid's lupine, but not in the adjacent restoration field where Nelson's checkermallow was planted. They are planning to mow in Oct. 2017.	Hand pulling and digging of teasel by work crews and volunteers in May 2017.	Spot spraying by Yamhill County Parks in the area occupied by Kincaid's lupine. No spot spraying in the main restoration field.		
Dhooghe	No maintenance occurred, although NRCS is planning to meet with the landowner and discuss future plans.				
E4 Ranch	Annual mowing in fall by USFWS.		Grass-specific herbicide (Fusilade) and clopyralid in spring 2016 and 2017 was applied by USFWS to targeting invasive grasses and false dandelion to reduce competition for Nelson's checkermallow.	USFWS is planning a prescribed burn in fall 2017.	USFWS is planning on seeding grasses in fall 2017 following the prescribed burn.
EE Wilson Wildlife Area	Pipit field was mowed in 2016 by ODFW to reduce thatch. No plan to mow in 2017.	Volunteers hand weeded patches prior to planting.	Small amount of spot spraying of teasel and blackberry (<i>Rubus armeniacus</i>).		3000 forb plugs & bulbs, including camas (<i>Camassia</i> sp.) and yarrow (<i>Achillea millefolium</i>), planted in diversity patches in winter 2015/16.
Marys River Natural Area	City of Corvallis mowed firebreaks around perimeter of prairie in 2015 and 2016. They also mowed the replacement boardwalk and trail area, prior to an archaeological survey and boardwalk construction in 2017. No mowing of the main prairie for several years.	Hand pulling of Scotch broom (<i>Cytisus scoparius</i>) with volunteer crew.	Spot spraying for Scotch broom and blackberry by City of Corvallis.		The City of Corvallis will seed the boardwalk construction area with Nelson's checkermallow and native forbs in September 2017.
Mud Slough	No mowing in recent years.		Occasional spot spraying by the		

Site Name	Mowing	Hand weeding	Herbicide	Prescribed burn	Planting
			landowner targeted reed canarygrass, blackberry, thistles (<i>Cirsium sp.</i>) and tansy ragwort.		
Sheldon-Holt	USFWS mowed in late 2015 and in fall 2016.		USFWS conducted limited control of reed canarygrass around periphery and spot spraying of broadleaf weeds. Planning for post-burn control of reed canarygrass before planting.	USFWS is planning on a burn in Fall 2017.	USFWS is planning on seeding and planting bulbs and plugs after the burn.
Spring Valley Creek	USFWS mowed in fall 2016 and mowed the periphery in late June 2017. The current inter-agency agreement with NRCS ends in 2017.		USFWS spot sprayed blackberry, thistles, tansy ragwort in 2015 and 2016.	Prescribed burn occurred in fall 2015.	Approx. 500 camas and cinquefoil planted in winter 2016.
Tyee	USFWS did some spot mowing in fall 2015 but no actions in 2016 due to the inter-agency agreement with NRCS ending. The landowner plans to mow in fall 2017.		USFWS spot sprayed reed canarygrass in fall 2015.		
Tyee Nature Reserve	CTGR mowed in fall 2015.				
Winter Creek	Spot mowing by NRCS contractor in 2016.		Spot spraying by NRCS contractor 2016.		

Acronyms: USFWS: US Fish & Wildlife Service; CTGR: Confederated Tribes of Grand Ronde; NRCS: Natural Resources Conservation Service.

4. PHOTOPPOINTS

Photographs were repeated at standard photopoints at the 11 project sites in June 2017 and are shown in Appendix 1 for comparison with pre-treatment and project completion photographs.

5. COST ACCOUNTING ASSOCIATED WITH MAINTENANCE OR REPORTING

Post-Implementation Status Reporting was not budgeted for in the Phase I grant due to the continuation of the project with Phase II.

6. PUBLIC AWARENESS OR EDUCATION

No new public awareness activities occurred during the reporting period.

7. LESSONS LEARNED

- This project provides a model for recovery implementation for Nelson's checkermallow in other parts of its range and may guide recovery efforts with other threatened prairie species.
- Invasive and non-native species re-invading project sites remains a challenge. This reinforces the need for sufficient ongoing maintenance at all sites, so that they continue to contribute to recovery of Nelson's checkermallow in the long term. Lasting recovery depends on the control of invasive and non-native species before and after, at-risk species are introduced. Fortunately, most partners and landowners have continued maintenance activities since completion of the recovery project in 2014.

8. REFERENCES

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APPENDIX 1: PHOTOPOINTS OF NELSON'S CHECKERMALLOW PROJECT SITES

Confederated Tribes of Grande Ronde Tye Nature Reserve, Polk Co., Salem West

Photopoint 1A Pretreatment
2010



Photopoint 1A Project completion
2012



Photopoint 1A Post-project status
2017



Photopoint 1B Pretreatment
2010



Photopoint 1B Project completion
2012



Photopoint 1B Post-project status
2017



Deer Creek Park, Polk Co., Salem West

Photopoint 1C Pre-treatment
2008



Photopoint 1C Project completion
2012



Photopoint 1C Post-project status
2017



Photopoint 1A Pre-treatment
early 2010



Photopoint 1A Project completion
2012



Photopoint 1A Post-project status
2017



Dhooghe WRP, Polk Co., Salem West

Photopoint 1C Pre-treatment during earlier restoration, 2007



Photopoint 1C After disking 2008



Photopoint 1C Pre-treatment current restoration, 2010



Photopoint 1C After mowing 2010



Photopoint 1C Project completion 2012



Photopoint 1C Post-project status 2017



E4 WRP, Benton Co., Corvallis West

Monitoring near photopoint 1A
Pre-treatment 2008



Photopoint 1A Project completion
2012



Photopoint 1A Post-project status
2017



Monitoring near photopoint 2A
Pre-treatment 2008



Photopoint 2A Project completion
2012



Photopoint 2A Post-project status
2017



EE Wilson Wildlife Area, Benton Co., Corvallis West

Photopoint 1A After herbicide
2010



Photopoint 1A Project completion
2012



Photopoint 1A Post-project status
2017



Photopoint 1B After herbicide
2010



Photopoint 1B Project completion
2012



Photopoint 1B Post-project status
2017



Marys River Natural Area WRP, Benton Co., Corvallis West

Photopoint 1 During treatments previous project 2008



Photopoint 1 Project completion 2012



Photopoint 1 Post-project status 2017



Mud Slough WRP, Polk Co., Salem West

Photopoint A1a Pre-treatment
2009



Photopoint A1a Project
completion 2012



Photopoint A1a Post-project status
2017



Photopoint 1B During restoration
2011



Photopoint 1B Project completion
2012



Photopoint 1B Post-project status
2017



Sheldon Holt WRP, Polk Co., Salem West

Photopoint 1A Pre-treatment
2008



Photopoint 1A During treatment
2010



Photopoint 1A After mowing
2011



Photopoint 1A Project Completion
2012



Photopoint 1A Post-project status
2017



Spring Valley WRP, Polk Co., Salem West

Photopoint 1A Spring photo showing native grass establishment, May 2010



Photopoint 1A Project completion 2012



Photopoint 1A Post-project status 2017



Photopoint 1B Spring photo showing native grass establishment, May 2010



Photopoint 1B Project completion 2012



Photopoint 1B Post-project status 2017



Tyee WRP, Benton Co., Corvallis West

Photopoint 1B Pretreatment

2009 – native species seeded during previous restoration of WRP site



Photopoint 1B Project completion

2012



Photopoint 1B Post-project status

2017



Photopoint 1C Pretreatment

2009 - native species seeded during previous restoration of WRP site



Photopoint 1C Project completion

2012



Photopoint 1C Post-project status

2017



Winter Creek WRP, Polk Co.

Photopoint 1C Pre-treatment
2009



Photopoint 1C Project completion
2012



Photopoint 1C Post-project status
2017

