

Maxfield Meadows

Oak Savanna Restoration Plan 2015



Plan developed for the Bureau of Land Management, Salem District

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Preface

This plan is the result of a cooperative Challenge Cost Share project between the Institute for Applied Ecology (IAE) and a federal agency. 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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Introduction

This document establishes a plan for continued oak savanna restoration at Maxfield Meadows. The plan builds on efforts set forth in IAE's 2008 Progress Report and Restoration Plan and subsequent documents. With this document as a guide, adaptive management should be employed when proceeding with restoration.

Restoration Plan Overview

The savanna management area includes all of the upland grassland habitats in the restoration unit, as well as previously forested areas that are being converted back to oak savanna. These areas were logged in 2013 and slash piles were created, burned, and seeded in 2014. Savanna is generally defined as grassland with 3 to 5 trees/acre. However, portions of the savanna area have existing patches with a much higher tree density. These trees will not be removed under the current plan, but the patches can be augmented. Currently, restoration of the herbaceous layer to more native species is the primary concern at Maxfield Meadows. Seed mixes have been established for the site, and have demonstrated their ability to successfully establish. The two most crucial factors that will impact this restoration will be seed to soil contact and weed pressure.

Seed contact with soil is essential for seed germination and survival. Both site preparation and seeding method will contribute to improving soil contact. Ensuring that the seeds have a direct path to the ground free of obstructions such as woody debris, standing vegetation, and thatch will be accomplished through burning. A well conducted prescribed fire with high fuel load consumption is the most effective way to ensure that sown seed will have direct contact with the soil, improving germination rates and seedling survival. Without the reduction of the barriers to soil contact created by a burn, native seed establishment will be much less successful, and much higher volumes of seed will need to be used.

Seeding method is also integral to seeding success. The topography and microtopography of the site limit options for sowing seed to broadcasting. Care must still be taken when operating broadcast seeders on slopes to ensure even seed dispersal. For example, seeders tend to seed more heavily on the uphill side of the seeder. This can be mitigated using seeding paths that run up and down the slope instead of across it.

Weed control will be vital to both the short and long term success on the site. Care should be taken to ensure that aggressive weeds are under control on site before large scale seeding is initiated. Areas undergoing restoration should be inspected frequently to guarantee that weeds are accurately assessed. It is equally important that identified weed issues are resolved before they grow in scope and severity. Early detection and rapid response to invasive weed issues is a much less costly and more effective way of controlling weed control.

In order to enhance the native prairie and savanna habitat found at Maxfield Meadows, the following restoration goals have been identified:

1. Reduce non-native and invasive species cover
2. Increase diversity and abundance of native grass and forb species
3. Establish appropriate oak savanna woody structure

Restoration Goals, Objectives and Tasks

Goal 1: Reduce non-native and invasive species cover

Objective 1.1: Eliminate false brome (*Brachypodium sylvaticum*) from restoration areas.

Task 1.1.1: Resurvey areas treated for false brome and control if found (June 2015)

- Hand pull or spray remaining or resprouted patches of false brome.

Task 1.1.2: Survey annually for new infestations of false brome (Spring) and treat if located.

Objective 1.2: Control shining geranium (*Geranium lucidum*).

Task 1.2.1: Resurvey area treated for shining geranium and control if found (June 2015)

- Hand pull or spray as appropriate or allowed.

Task 1.2.2: Conduct annual surveys of area where shining geranium has been found and treat if located (Spring).

Objective 1.3: Reduce other aggressive noxious weeds.

Task 1.3.1: Control other noxious weeds as appropriate (June 2015, ongoing thereafter)

- Early summer treatment to prevent seedbank recruitment of invasive species.
- Treatments should occur, and be confirmed successful, prior to seeding.

Objective 1.4: Prevent re-establishment or incursion of aggressive noxious weeds.

Task 1.4.1: Establish weed thresholds for species of concern Scotch broom (*Cytisus scoparius*) and non-native blackberry (*Rubus discolor* and *R. lancinatus*) following initial restoration efforts (Summer 2015)

- e.g. Maintain less than 5% absolute cover of Scotch Broom
- e.g. Maintain more than 80% native cover

Task 1.4.2: Monitor for weed problems focusing on early detection of weed species with a rapid response to high priority weeds (ongoing).

- Monitor at least twice yearly.

Task 1.4.3: Treat target species located during surveys (ongoing).

Goal 2: Increase diversity and abundance of native grass and forb species

Objective 2.1: Complete a prescribed burn (Bx) to prepare for seeding.

Task 2.1.1: Conduct prescribed burn (October 2015)

- Completing a burn is essential site preparation. It will ensure proper seed to soil contact which is critical for seed germination.

Objective 2.2: Establish native herbaceous species.

Task 2.2.1: Survey for weeds after allowing time for resprouting post-burn

Task 2.2.2: Broadcast seeding following weed control and prescribed burn (November 2015).

- Proceed if levels of weedy species will not threaten native establishment beyond acceptable levels.
- Broadcast seed.

Task 2.2.3: Plant plug, bulbs and bare root stock of species that are slow to establish from seed.

Objective 2.3: Maintain native cover.

Task 2.3.1: Monitor success of planting qualitatively (April 2016).

- Assess success of native seedling establishment.
 - Should be of sufficient density of natives to shade competition at maturity.
 - Observe individual species establishment, note approximate relative cover of each species. Compare relative cover to intended species composition.
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 - Compare relative cover to the intended species composition.

Task 2.3.2: Monitor Kincaid's lupine (*Lupinus oreganus*) plots (May 2016)

- Monitor areas outplanted with Kincaid's lupine for survival and cover (m² of foliar cover)

Task 2.3.3: As needed: Use areas of poor establishment to enhance diversity (ongoing).

- Areas where initial seeding is unsuccessful can be used to introduce species that were not included in the original seed mix.
 - Identify areas that have poor seedling establishment.
 - Select appropriate species for site conditions.
 - Broadcast at high rate to ensure establishment
- Technique can be applied to areas that have been treated with broad spectrum herbicide to control priority weeds.

Goal 3: Establish appropriate oak savanna woody structure.

Objective 3.1: Increase abundance of oak trees to level consistent with oak savanna conditions.

Task 3.1.1: After herbaceous layer is established (variable timing), stock oaks at appropriate savanna spacing and density.

- Plant seedling/saplings in clumps of 3 to 5 trees and thin when their canopies begin to compete.

Objective 3.2: Improve native woody understory diversity and structure.

Task 3.2.1. Once the native herbaceous vegetation layer is established, plant native shrubs within clumps of established trees (variable timing). Shrubs will diversify structure and food availability for wildlife

Restoration Schedule

Table 1. Schedule of Actions

Task #	Task	Month	Year	Notes
1.1.1	Resurvey and treat false brome patches	June	2015	Before seed set
1.2.1	Resurvey and treat shining geranium area	June	2015	As soon as possible
1.3.1	Treat other noxious weeds	June	2015	Treat target noxious weeds before they set seed
1.4.1	Establish weed thresholds for species of concern	Summer	2015	
2.1.1	Broadcast burn	October	2015	
2.2.1 and 1.4.2	Weed surveys	November	2015	Allow for weed resprout and germination following prescribed burn. This will determine viability of planting this year.
2.2.2	Seed burn areas	November	2015	Only if burn and weed treatments have been successful. Backup plan: seed in September 2016.
2.2.3	Plant native plugs and bulbs of slow-to-establish species	November	2015	Only if burn and weed treatments have been successful. Backup plan: plant in September 2016.
1.1.2, 1.2.2, 1.4.2	Seeding and weed surveys	April	2016	Assess germination of seed and need for weed treatments.
2.3.2	Monitor Kincaid's lupine plots	May	2016	Assess ongoing survival
1.4.3	Noxious weed treatment	May - November	2016	Weeds found in surveys should be tightly controlled while the seeded natives become established.
1.4.2	Seeding and weed surveys	June	2016	
1.4.2	Weed surveys	October	2016	
	Noxious weed treatments	November	2016	
2.2.2	Seed burn areas (if not done in 2015)	November	2016	
2.2.3	Plant native plugs and bulbs (if not done in 2015)	November	2016	

Table 1. Schedule of Actions, continued

Task #	Task	Month	Year	Notes
2.3.3	Re-seed areas that did not establish well in 2015	November	2016	
3.1.1	Plant oak seedlings	February	2017	Planting of seedlings should only proceed if the native community is stabilizing and plantings will not interfere with weed treatments.
3.2.2	Plant native shrub understory layer	February	2018	Or when herbaceous layer and oak saplings have established
multiple	Seed, monitor, noxious weed control	At least twice yearly	ongoing	Early detection and rapid response protocols should be followed.