Restoration of McGowan Meadow ACEC

2011 Annual Report

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Institute for Applied Ecology

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PREFACE

This report 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. Our aim is to provide a service to public and private agencies and individuals by developing and communicating information on ecosystems, species, and effective management strategies and by conducting research, monitoring, and experiments. IAE offers educational opportunities through 3-4 month internships.

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Cover Photo: IAE employee Sarah Stevens marks plants for future seed collection.

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Introduction: McGowan Meadow

McGowan Meadow is located in north central Lane County, Oregon. The site is about 6 acres in size and contains a diverse assemblage of both wet-meadow and upland meadow species (Figure 1). Due to its outstanding display of wildflowers the site was proposed by the BLM as an "Oregon Celebrating Wildflower Public Viewing Site." The northern half of the prairie is bordered by an old-growth Douglas-fir (*Pseudotsuga menziesii*) forest, while a regeneration stand borders the southern half. A seasonal spring and the prairie's location at the base of a rather steep slope result in high levels of soil moisture on the northern half of the prairie. The wetter portions of the prairie support tufted hairgrass (*Deschampsia caespitosa*), white bog-orchid (*Habenaria dilatata*), soft rush (*Juncus effusus*), Oregon geranium (*Geranium oreganum*), yellow monkeyflower (*Mimulus guttatus*), slender cinquefoil (*Potentilla gracilis*), coneflower (*Rudbeckia occidentalis*), small fruited bulrush (*Scirpus microcarpus*), ladies-tresses (*Spiranthes romanzoffiana*), and hellebore (*Veratrum* sp). The paved road and associated ditch that runs through the lower section of the prairie probably reduces the level of moisture in the southern section of the meadow, which holds transitional upland species such as few leaved thistle (*Cirsium remotifolium* var. *odontolepis)*, rose checkermallow (*Sidalcea virgata)*, Oregon sunshine (*Eriophyllum lanatum*), goldenrod (*Solidago Canadensis*), and Hall's aster (*Symphyotrichum hallii).* Late June is probably the best time for wildflower viewing. At that time California compassplant (*Wyethia angustifolia*) and Oregon geranium create a grand spectacle as their yellow and pink flowers saturate the prairie. A comprehensive species list for McGowan Meadow has been compiled by Eugene District, BLM.

Figure 1. Photo of McGowan Meadow in June 2011. Wildflowers responded positively to mowing performed the previous autumn to reduce roses and other woody plants.

Paved Road # 16-2-27 passes through the bottom section of the meadow and allows for relatively easy travel from the Springfield/Eugene area. Consequently, this section of BLM land receives high visitation rates. The BLM has lined the road with boulders following damage sustained by off-road vehicles. Additionally, many of the monitoring plot markers have been vandalized or removed. Despite these challenges, McGowan Meadow remains a significant natural feature due to the unique mixture of species normally found on the valley floor and those typically found in the Cascade Mountains. The geographic location of this prairie on the east side of the Willamette Valley at an elevation of 1960 feet means that these species may have unique adaptations to colder winters and a shorter growing season. Therefore these plants may represent important genetic ecotypes that differ from their valley bottom counterparts.

There are a number of introduced species found at McGowan Meadow that threaten to degrade the site. The species of greatest concern include Scotch broom (*Cytisus scoparius*), velvet grass (*Holcus lanatus*), reed canarygrass (*Phalaris arundinacea*), Canada thistle (*Cirsium arvense*), Himalayan blackberry (*Rubus armeniacus*), teasel (*Dipsacus fullonum*), false-brome (*Brachypodium sylvaticum*), and oxeye daisy (*Leucanthemum vulgare*). Three native species, Douglas-fir, Nootka rose (*Rosa nutkana*), and Oregon ash (*Fraxinus latifolia*) have invaded the prairie, which, if left unchecked, would eventually result in the conversion of this prairie into a forest.

Legal Location
T16S R3W S13

GPS coordinates
10T
0500393
4891264

Elevation: 1960 feet

Figure 2. Camas bloomed profusely in 2011.

Driving Directions

McGowan Meadow is located in the southern end of the Coburg Hills. From I-5 head east on OR-126 towards Springfield and take the 42nd St / Marcola exit. At the end of the off-ramp turn left and drive to the first stop sign. Turn right onto Marcola Rd. and continue for 7.8 miles. Turn left onto Donna Rd and set your odometer to zero (all mileage is referenced from this intersection). After 1 mile turn right onto McGowan Rd. At mile 3.5 bear right onto paved BLM Rd # 16-2-27. At mile 5.1 stay left on Rd. # 16-2-27. The meadow appears mostly on the right-hand side at mile 6.4.

Project History

The Institute for Applied Ecology has been working at McGowan Meadow since 2005. Work at McGowan Meadow has followed three pathways each with its own corresponding report:

1.) Monitoring and augmentation of the BLM sensitive species *Sidalcea campestris* (Blakeley-Smith and Kaye 2005, 2006, 2008, 2010a),
2.) Seed Collection via the Seeds of Success Program (Blakeley-Smith 2010b), and
3.) Habitat restoration (Blakeley-Smith 2008b, 2009 and 2010).

This report covers all of the activities completed during 2011 under the habitat restoration project. For detailed information regarding seed collection or *Sidalcea campestris* monitoring and augmentation at McGowan Meadow, please refer to the appropriate report listed in the reference section of this report. All reports can be downloaded from the IAE website. www.appliedeco.org

Restoration Goal

The main goal for McGowan Meadow is to actively restore regionally rare prairie habitat by controlling priority invasive species, removing encroaching sapling trees and shrubs, and augmenting native plant populations through direct seeding and out-planting of nursery grown plugs.

Restoration Strategy

In 2005 the Native Plant Conservation Program of the Oregon Department of Agriculture developed a prairie habitat assessment with management recommendations for McGowan Meadow (Mitchell et al. 2005). The Institute for Applied Ecology conducted restoration activities in 2008, 2009 and 2010 and followed recommendations put forth in the ODA document. The overall restoration strategy for McGowan Meadow includes sensitive plant species monitoring, brush and invasive species control, seed collection, plug production, plug planting, and seeding.

Figure 3. Mowing McGowan Meadow with a skid steer.

Restoration Activities completed in 2011

Restoration work in 2011 focused on brush removal and invasive species control (see Table 1). Those activities are explained in detail below.

Table 1. Restoration activities at McGowan Meadow during the 2011 field season.

DATE	TASK
6/27/2011	BLM installed "no shooting" signs
6/29/2011	manual removal of false-brome
8/10/2011	mowed reed canarygrass
9/22/2011	manual removal of teasel
10/27/2011	mowed entire site
12/1/2011	BLM felled about 50 Douglas-fir trees

Brush Removal

In 2009 and 2010 IAE cut and removed hundreds of small diameter Douglas-fir and incense cedar trees that had invaded the meadow. In 2011 BLM staff cut all of the remaining invading Douglas-fir trees over 10-inches in diameter. Tree removal greatly increased the area of this high value meadow. A number of mature oaks were released from Douglas-fir trees that had over-topped them. In 2012 the trees will be cut into firewood and hauled off site without the use of heavy equipment.

Figure 4. Douglas-fir trees felled by BLM to expand prairie habitat.

Prior to tree removal, IAE hired a contractor to mow the entire meadow to increase the efficiency of the crews that felled the trees and dragged the branches off site. A secondary objective of mowing was to reduce the dominance of roses and promote wildflower growth. IAE mowed McGowan Meadow in 2008 and 2010 and found that the wildflowers exhibited a dramatic resurgence in vigor after being released from the dense rose bushes. We expect to see an equivalent increase of wildflowers in 2012 following this mowing treatment. To prepare for mowing we marked about 30 rocks with fiberglass poles so that the equipment operator would not damage his machine. The mowing operator used a skid steer to reduce soil compaction and was careful to minimize soil disturbance (Figure 3).

Invasive Species Control

There are a number of introduced plant species at McGowan Meadow that are increasing in density and replacing the native plants at this site. The ODA report suggests that seven introduced species be targeted for control efforts (Mitchell 2005). The species include Scotch broom, reed canarygrass, Canada thistle, Himalayan blackberry, English hawthorn, teasel, and oxeye daisy. In addition, we began to control false-brome in 2008.

- All of the mature Scotch Broom plants were removed in 2009. New seedling plants continue to re-invade the meadow and were removed in 2011.
- Reed canarygrass has the potential to over-run this entire prairie. In 2008, the plants grew in one patch of about 50 square meters on the northern edge of the prairie. The most effective control method for this species is to mow it in June and apply glyphosate to the regrowth in October, but IAE does not have permission to apply herbicides on BLM land yet. In 2011 we mowed the grass while it was flowering to eliminate seed production for the year. The plant has formed a dense monoculture, so an herbicide treatment would cause little collateral damage to non-target vegetation.
- Canada thistle requires similar control methods to reed canarygrass. Manual removal of this species is ineffective since it is capable of continually re-sprouting from a 4-foot deep rhizome. We have never attempted to control Canada thistle at McGowan Meadow. If a controlled burn is

conducted at this site it is likely that Canada thistle will respond positively, so the targeted use of herbicides is strongly recommended. It should be noted that there is a native thistle found throughout McGowan Meadow, but it can be distinguished by its white flower.

Figure 5. A labor crew removed all teasel seed heads from McGowan Meadow in 2010.

- Himalayan blackberry is present in small patches throughout McGowan Meadow. Mechanical removal has proven to be ineffective and causes a large amount of soil disturbance which in-turn supports the spread of additional invasive species. We recommend cutting the blackberry stems in October and immediately applying herbicide to the cut stems. This method is very effective at killing blackberry and has minimal negative impact on the surrounding native vegetation. Mowing in 2011 served to reduce the shading effect on other plants and will suffice as a temporary control measure.
- English hawthorn trees were cut in 2008, 2009, and 2010, but they continue to re-sprout from the stump. An herbicide will need to be painted on the stump in order to completely kill this introduced tree.
- No action was taken to control oxeye daisy. This pervasive species is abundant and completely intermixed with the native vegetation at the site, making control difficult, even with herbicides.
- Teasel seed heads were removed by hand in 2008, 2009, and 2010. In 2011 IAE hired a labor crew to remove every single teasel seed head from the site. The seed heads were bagged and removed from the site. Teasel is a biennial species, so if seed production is stopped and seedling plants are removed, a significant reduction of this species may be possible.

- False-brome (*Brachypodium sylvaticum*), was discovered at McGowan Meadow in 2008. A small roadside outbreak of less than 200 plants has been pulled annually since then. In 2010 a larger outbreak measuring about 100 feet by 30 feet was discovered on the northern edge of the prairie and is spreading from the forest understory. False-brome has devastated countless prairies in our region and its control at this site should be an absolute top priority. In 2010 IAE hired a labor crew to manually remove false-brome from the meadow. Funding was not sufficient to remove the false-brome from the forest adjacent to the meadow. Manual removal of this patch will continue in 2012 and additional funding should be requested to remove the source of the infestation in the forest. Herbicides have proven to be very effective at controlling false-brome. The suggested treatment is to spray the grass with glyphosate in October while native species are dormant. False-brome will quickly return from the seedbank following herbicide application, so we suggest either adding a preemergent herbicide to control next year's seedlings, follow-up herbicide treatments in spring, or multiple years of mowing prior to seed set to exhaust the seedbank.

Figure 6. A labor crew removed all of the false-brome from the meadow in 2011.

- Finally, BLM has been controlling Meadow knapweed (*Centaurea pratensis*)) along the road that passes through the prairie as part of their roadside weed maintenance program. No plants were detected in 2011.

Restoration Activities planned for 2012

Restoration work at McGowan Meadow will continue throughout 2012 and will focus on additional weed removal, brush clearing, and seeding of native species.

Literature Cited

All reports can be downloaded from the IAE website www.appliedeco.org

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