

# Habitat Restoration of McGowan Meadow



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## Annual Report

Report prepared by Andy Neill  
*Institute for Applied Ecology*



## PREFACE

This report is the result of agreement L13AC00098-0031 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.



Questions regarding this report or IAE should be directed to:

Andy Neill (Restoration Ecologist)

Institute for Applied Ecology

563 SW Jefferson Ave

Corvallis, Oregon 97333

phone: 541-753-3099 ext. 503

fax: 541-753-3098

email: [andy@appliedeco.org](mailto:andy@appliedeco.org)

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**Cover photographs:** McGowan Meadow. *Photos by Matt Blakeley-Smith, 20 April 2011.*

## SUGGESTED CITATION

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

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# Habitat Restoration of McGowan Meadow

REPORT SUBMITTED TO BUREAU OF LAND MANAGEMENT

## 1. PROJECT HISTORY

In 2005 the Native Plant Conservation Program of the Oregon Department of Agriculture developed a prairie habitat assessment with management recommendations for McGowan Meadow Area of Critical Environmental Concern (ACEC) (Mitchell et al. 2005). The Institute for Applied Ecology (IAE) began working at McGowan Meadow in 2008 as a Cooperative Challenge Cost Share project funded jointly by USDI Bureau of Land Management (BLM) and IAE. This report covers activities funded under BLM agreement #L13AC00098-0031 for 2015. Restoration efforts continue to 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 to increase species diversity at McGowan Meadow on the Eugene District BLM. The main objective of the work at McGowan Meadow is to actively restore regionally rare prairie habitat by controlling these priority invasive species: teasel (*Dipsacus fullonum*), false brome (*Brachypodium sylvaticum*), bull thistle (*Cirsium vulgare*), and reed canarygrass (*Phalaris arundinacea*). Annual maintenance and biennial mowing of the meadow reinforces past meadow restoration efforts. This meadow has undergone extensive restoration work and is valuable meadow habitat within the Eugene District BLM. This site may be important for long term prairie conservation in response to climate change in the Willamette Valley ecoregion. The meadow's position at mid-elevation allows for immigration of lower elevation populations upward in response to a changing environment. This site contains a large population of meadow checkermallow (*Sidalcea campestris*) that greatly benefits from restoration activities.

## 3. 2015 ACTIVITIES

Restoration activities in 2015 focused on manual removal of teasel and false brome from the open areas and forest edges of McGowan Meadow (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 by hand from within the meadow and piled in the conifer forest surrounding the meadow (Figure 1). Shade cloth put in place in summer 2014 to inhibit growth of reed canarygrass was repaired after wind had partially detached the shade cloth from stakes that secure it to the ground.

**Table 1.** Restoration activities at McGowan Meadow during 2015.

Date	Task	Labor (hrs)
2/24/2015	Shade cloth repair	8
6/4/2015	Site orientation and shade cloth repair	4
6/5/2015	Shade cloth repair and manual removal of teasel and false brome	8
6/18/2015	Manual removal of teasel and site monitoring	8
8/3/2015	Manual removal of teasel and site monitoring	9
8/4/2015	Manual removal of teasel and site monitoring	9.5

**Table 2.** Budget breakdown of restoration activities at McGowan Meadow during 2015.

Budget Item	Cost
Contracted Services	\$0.00
Supplies	\$41.88
Travel	\$415.25
Labor	\$1,350.75
Admin	\$375.89
<b>Total</b>	<b>\$2,183.77</b>

#### 4. DISCUSSION

Manual removal of teasel at McGowan Meadow continues to be successful after 7 years of hand pulling (Figure 1). It is likely that continued annual removal will be required until the teasel seed bank has been depleted. With continued success, the resources required to complete these activities should diminish over time.



**Figure 1.** Teasel removal at McGowan Meadow (before and after Aug. 8, 2015, Photos: A. Neill).

Shade cloth treatments appear to be suppressing growth of the majority of the reed canarygrass patch within the meadow. However, reed canarygrass is growing along the edges of the shade cloth and in areas where segments of shade cloth did not sufficiently overlap. It appears that the reed canarygrass may be slowly expanding from these edges outward and will likely re-invade the site when the shade cloth is removed. Complete coverage of the reed canarygrass has been difficult and without the use of

herbicides, manual efforts that include mowing, brush cutting, pulling, and digging up of root systems should be applied.

Efforts to control false brome at McGowan Meadow continue to be effective. Hand pulling of false brome are preventing false brome encroachment from forest edges into the meadow. However, ultimate success depends on continued monitoring and removal of false brome and expansion of removal efforts into the surrounding forest matrix.

## 5. STEPS FORWARD

The overarching goal for McGowan Meadow continues to be to actively restore regionally rare upland meadow habitat by controlling priority invasive species and managing woody species encroachment. Without the use of herbicides or additional resources to target priority weeds, hand pulling remains as the most effective tool to remove and prevent their spread within and surrounding the meadow. Multiple site visits each year to pull weeds should continue in 2016 and for years to come. Biennial mowing treatments appear to be preventing woody species encroachment in the meadow and should be continued. The removal of trees within and surrounding the meadow should be explored as future management options. If aggressive weed species are controlled, McGowan Meadow will be a strong candidate site for rare species introduction. Maintaining the current biennial mowing regime or conducting periodic burns of the site in 2016 and beyond is necessary to achieve this goal.

Shade cloth has been effective at reducing the size of the reed canarygrass patches but does not eliminate this problem species. Annual brush cutting to remove flowering heads will slow the spread of reed canarygrass by seed, but a significant effort to remove the plants would be difficult without the use of herbicides. Increased efforts to remove remaining reed canarygrass should become a priority to prevent further expansion and re-colonization following the potential shade cloth removal in 2017. Aggressive seeding and planting should occur on the bare soil exposed after the shade cloth is removed.

Monitoring of false brome and pulling of plants as they are observed within the meadow should continue to be a priority. As the abundance of false brome in the meadow continue to decline, efforts should begin to focus on false brome removal at the forest edge and into the forest matrix.

Plant community augmentation efforts appear to be successful and expansion of native populations and diversity will only be possible with reductions in invasive species. Continued removal of invasive species will release native vegetation and may continue to allow re-emergence or re-colonization by native species. In addition to the priority weed species, Tall oatgrass (*Arrhenatherum elatius*), Queen Anne's lace (*Daucus carota*), oxeye daisy (*Leucanthemum vulgare*), and Canada thistle (*Cirsium arvense*) also persist on the site. Mowing has likely reduced the negative effect of non-native plant species and encroaching woody plants on native plant populations and should be continued as an effective management tool. Ultimately, control of reed canarygrass, tall oatgrass, Queen Anne's lace, Canada thistle, and oxeye daisy will be extremely difficult without the use of herbicides. In particular, the deep, rhizomatous roots of Canada thistle make manual removal nearly impossible and the use of herbicides is likely the most effective method of reducing the abundance of this plant at McGowan Meadow.

IAE will continue to track and remove false brome, teasel, bull thistle, and reed canarygrass as annual tasks. As effective control of these weeds in the main meadow becomes apparent by hand pulling and mowing in 2016, the focus on weed removal can shift to the edges of the meadow where it transitions to Douglas-fir forest. Reed canarygrass will require continuing efforts with mechanical removal or expansion of area covered with shade cloth. Similarly, teasel seed remain viable in the soil seed bank for many years which will require pulling for years to come as the seeds germinate and plants grow.

## APPENDIX A

### AERIAL PHOTO OF MCGOWAN MEADOW AND PLANTINGS IN 2013



McGowan Meadow Plantings 2013

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## APPENDIX B

### ACTIVITIES CONDUCTED AT MCGOWAN MEADOW ACEC

#### 2008

- Site inspection and partner coordination.
- Monitoring of meadow checkermallow (*Sidalcea campestris*).
- Seed collection of meadow checkermallow and mule's ear (*Wyethia angustifolia*).
- Brush cut Nootka rose (*Rosa nutkana*) and shrubs.
- Mowed 4 acres with front-loaded skid-steer with tracks.
- Felled and removed over 50 trees of various size including Douglas-fir (*Pseudotsuga menziesii*), Oregon ash (*Fraxinus latifolia*), incense cedar (*Calocedrus decurrens*), and English hawthorn (*Crataegus monogyna*).
- Hand pulled teasel (*Dipsacus fullonum*), false brome (*Brachypodium sylvaticum*), Scotch broom (*Cytisus scoparius*), and Himalayan blackberry (*Rubus armeniacus*).
- Mowed reed canarygrass (*Phalaris arundinacea*).
- Trillium Gardens in Eugene, OR began production of ~500 plugs each of meadow checkermallow, western yarrow (*Achillea millefolium*), Hall's aster (*Symphotrichum hallii*), tufted hairgrass (*Deschampsia caespitosa*), splitawn sedge (*Carex tumulicola*), aspen fleabane (*Erigeron speciosus*), barestem biscuitroot (*Lomatium nudicaule*), and goldenrod (*Solidago canadensis*).

#### 2009

- Site inspection, partner coordination and public outreach with members of the Native Plant Society of Oregon and meeting attendees of meeting with NW Ecology Group and Central Cascades Adaptive Management Partnership.
- Continued production of ~500 plugs for each of 8 species that began in 2008.
- Hand pulled teasel, false brome, Scotch broom, Himalayan blackberry.
- Mowed reed canarygrass.
- Cutting and removal of Douglas-fir, incense cedar, and English hawthorn saplings and limbs of larger trees.
- Cut stems of English hawthorn re-sprouting from stumps cut in 2008 and 2009.
- A total of 3,388 plugs were planted with dibbles. Species included meadow checkermallow, western yarrow, Hall's aster, tufted hairgrass, splitawn sedge, aspen fleabane, mule's ear, slender cinquefoil (*Potentilla gracilis*), slough sedge (*Carex obnupta*), common rush (*Juncus effusus*), lance selfheal (*Prunella vulgaris* v. *lanceolata*), dwarf checkermallow (*Sidalcea malviflora*), and goldenrod.

#### 2010

- Site inspection and partner coordination.
  - Cutting and removal of Douglas-fir and incense cedar saplings and limbs of larger trees.
  - Hand pulled teasel, Scotch broom, and meadow knapweed (*Centaurea pratensis*).
  - IAE hired a labor crew to pull false brome.
-

- Mowed reed canarygrass prior to seed-set.
- Cut stems of English hawthorn re-sprouting from stumps cut in 2008, 2009, and 2010.
- A total of 3,388 plugs were planted with dibbles. Species included meadow checkermallow, western yarrow, Hall's aster, tufted hairgrass, splitawn sedge, aspen fleabane, mule's ear, slender cinquefoil (*Potentilla gracilis*), slough sedge (*Carex obnupta*), common rush (*Juncus effusus*), lance selfheal (*Prunella vulgaris* v. *lanceolata*), dwarf checkermallow (*Sidalcea malviflora*), and goldenrod.

#### 2011

- Site inspection, partner coordination and installation of "No Shooting" signs by BLM.
- Hand pulled false brome.
- IAE hired a labor crew to remove all teasel seed heads.
- Mowed entire meadow with front-loaded skid-steer with tracks.
- To release Oregon white oak (*Quercus garryana*) BLM felled ~50 Douglas-fir trees over 10-inches in diameter. Wood was cut into firewood to be removed from the site in 2012.

#### 2012

- Site inspection and partner coordination.
- Bucked downed trees and removed wood and piled slash in the forest matrix.
- Seeded disturbed area with native species including western yarrow, Alaska brome (*Bromus sitchensis*), Columbia brome (*Bromus vulgaris*), California oatgrass (*Danthonia californica*), tufted hairgrass, blue wildrye (*Elymus glaucus*), Oregon sunshine (*Eriophyllum lanatum*), California fescue (*Festuca californica*), toughleaf iris (*Iris tenax*), slender cinquefoil, lance selfheal, western buttercup (*Ranunculus occidentalis*), and mule's ear.
- Hand pulled Scotch broom, teasel, and meadow knapweed.
- Mowed large forested patch of false brome during flowering.

#### 2013

- Site inspection and partner coordination.
- Planted slender cinquefoil, western coneflower (*Rudbeckia occidentalis*), and dwarf checkermallow.
- Hand pulled false brome, teasel, and Scotch broom.
- Mowed false brome with a brush cutter.

#### 2014

- Site inspection and partner coordination.
- Hand pulling of false brome, teasel, and bull thistle.
- Mowed entire meadow with IAE brush mower.
- Placed shade cloth over majority of reed canarygrass patch.

#### 2015

- Site inspection and partner coordination.
- Repaired shade cloth covering reed canarygrass patch.

- Hand pulled false brome, teasel, and bull thistle.

2016 (planned)

- Site inspection and partner coordination.
- Shade cloth monitoring and repair as necessary.
- Hand removal of false brome, teasel, and bull thistle.
- Contract mow of meadow using a skid-steer in late summer.

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