

Final Progress Report
Powell Butte Wildlife Habitat Enhancement

For the period
Ending
30 August 2006

City of Portland
Portland Parks & Recreation
Natural Resource Program
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November 2006

Agreement Number

1448-13420-03-J336

Summary

The primary and initial habitat improvement activity was the planting of trees and shrubs and the removal of invasive non native shrubs. Seven locations were planted. These were wetlands and riparian ravines, north and south slopes, and a ridge line. There was a strong volunteer support for the plantings. Eight volunteer events were undertaken with the Friends of Trees, the Johnson Creek Watershed Council, the Oregon Hunters Association, and the St. Francis Academy. Volunteer hours for the project totaled 3,943 hours. The plantings consisted of 7,934 trees, shrubs, and forbs. The planting area was slightly over seven and a half acres. There was a strong invasive removal component. English Hawthorn was removed from approximately forty acres of the restoration area along with minor amounts of Himalayan Blackberry.

Three independent fauna inventories were undertaken. This data will provide a base line inventory for determining future habitat conditions.

Planning efforts to manage the entire butte environment were started. Park staff completed a current vegetation survey. Following Portland Parks & Recreation's adopted Ecosystem Management process a vegetative Desired Future Condition statement was developed. A fire management plan is underdevelopment. This undertaking was started in the spring of 2006. The planning exercise is expected to develop a controlled burn program as a tool to manage the grassland area.

The matching contribution from Portland Parks & Recreation and community volunteers exceeded the required 1:1 match. The grant funds were critically valuable in that the funding was generate institutional support that has moved forward the stewardship of Powell Butte.

Project Description

The Powell Butte Wildlife Enhancement Project is a vegetation management program to benefit the wildlife in the Powell Butte Nature Park. It is located in the designated grassland and wildlife sanctuary areas of the park. The project goals are to provide enhanced wildlife supporting structures in key locations. That includes the establishment of vegetation to provide food and shelter. Limited areas are to receive tree and shrub structures. An increase in species diversity is being undertaken.

Work Tasks

Two major work tasks were started, the removal of non-native invasive shrubs and the planting of native trees and shrubs. The restoration plantings were undertaken in locations lacking significant non-native invasives. The removal activities were started adjacent to the restoration locations in areas with low levels of invasives. The weed eradication is required in advance of restoration.

Inventories of the avian, mammalian, and lepidoptera fauna have been started. Eleven species of butterflies and moths have been identified. Initial work has been completed to undertake a gap analysis of the mammalian species that could be introduced into the grassland area.

Project Staff and Partners

St. Francis Academy

The St. Francis Academy a local Montessori school undertook a planting on 21 December 2004.

Oregon Hunters Association

The Oregon Hunters Association volunteered on one Hawthorn removal project on 22 January 2005.

The Friends of Trees

The Friends of Trees organized the volunteer planting on three dates: 14 February and 13 March 2004. The Friends of trees were supported by a payment using Greenspaces Grant funds. The organizational effort by the Friends of Trees was repaid by an exceptional volunteer turnout on two planting events.

Bureau of Environmental Services

The BES Revegetation Team is providing invasive control in areas outside the current grant project area.

Mount Hood Community College

The international student program and the Integrated Environmental Studies Program contributed to the restoration by conducting two student investigations. One team concentrated on identifying the resident mammal species high priority restoration sites. The other team undertook a wildlife survey of the grassland area.

Portland State University

Two thesis projects are currently underway by students from the Biology Department at Portland State University. One study of Hantaviruses in *Peromyscus maniculatus* has provided additional species inventory data on the woodland mammals. A second study is

currently underway on *Sciurus griseus*. This study is expected to provide information on the population numbers for this species.

An independent study is being conducted by a local individual to develop an inventory of the lepidoptera of Powell Butte.

Project Area

Seven locations were planted in the winters of 2005 and 2006. These locations are identified on the attached aerial photograph. These are numbered 76 through 81. Upland locations were planted with *Quercus garryana*, *Holodiscus discolor*, *Berberis aquifolium*, and *Symphoricarpos albus*. Wetland areas were planted with *Fraxinus latifolia*, *Spiraea douglasii*, *Crataegus douglasii*, and *Cornus sericea*. These locations are wetland meadows and intermittent stream-way. The riparian plantings were a mixture of riparian trees and shrubs.

Methods

All plantings consisted of bare root one to two year old stock. The planting site was stripped of the grass sod. The planting was installed deeply covering both the root and the stem crown. All plantings were dressed with a bucket of wood chips or mulch. Trees were covered with browse nets and staked. Shrubs were not protected from browsing.

Removal efforts targeted *Crataegus monogyna* and *Rubus discolor*. *Crataegus monogyna* was cut and the stump was treated with a dilution of Garlon 3A. *Rubus discolor* was sprayed with a 2% dilution of Garlon 3A. The eradication treatment of *Crataegus monogyna* was undertaken with a hydroax then the stumps were sprayed with 2% Garlon. In the reporting period 40 acres were treated. *Rubus discolor* and *Crataegus monogyna* seedlings were treated with 2% Garlon.

Inventories of flora and fauna were undertaken by Portland Parks & Recreation and individuals volunteers and students from Mt. Hood Community College. The Mt. Hood students undertook studies to document the mammalian inventory associated with the grassland area. A local lepidopterist inventoried the butterfly species in both grassland and woodland areas and identified the flora being used.

Ongoing Needs

There is a considerable back log of habitat restoration need on Powell Butte. The current grant only addresses a small area of the total six hundred acre park. The highest need area is the three hundred acre grassland around the top of the butte. This area is rapidly degrading due to the impacts of invasive non-native trees and shrubs. An estimated thirty acres of blackberry and one hundred acres of hawthorn canopy are present.

The 2003 fire provided the opportunity to undertake a new restoration project. This fire burned through a ravine west of the current project area. In this area the burn was quite hot and killed Hawthorn and Alder. A tangle of Himalayan Blackberries was also consumed. The fire opened an area that received a restoration treatment.

Status of Plantings

Survival rates continue to be low. Additional plants may be present and counted. Surveys in the third and fourth years generally show a higher survival rate than the first and second year counts. A count of the 2004 plantings was undertaken on 31 May 2005. A total of 506 plants of the 1600 were found and counted. This is a 30% survival rate and is below the projected survival.

There was a near complete failure with the *Fraxinus latifolia* planting of the 200 planted only 4 were found alive. The *Alnus rubra* planting was not expected to be successful of the 200 planted 85 were alive and 70 were found dead. Past experience has demonstrated that *Fraxinus latifolia* to be a generally very good survivor and that *Alnus rubra* has a low survival rate. This planting consisted of undersized plants. The Alder may be more survivable when planted small. There appears to be a very poor survival of both the *Spiraea douglasii* and the *Rosa pisocarpa*. These two species have been quite tenacious in most plantings. The small size of the plants may be the primary issue. It may also require additional growth to count the species.

All of the trees were impacted by deer browsing. Powell Butte supports an estimated 35 five *Odocoileus hemionus*. These animals have had a significant impact on the plantings. The *Alnus rubra* plantings were installed in tubes and the *Fraxinus latifolia* plantings were not. All of the *Alnus rubra* have been heavily browsed. These plants have survived as a result of the protection of the mesh cages. All of the *Prunus emarginata* was lost after heavy brows. The *Quercus garryana* is browsed to the ground but is surviving.

Plantings of herbaceous species has produced mixed results. Considerable effort was made to establish *Camassia quamash*. There appears to have been poor over winter survival of the bulbs. Flowers were present the following spring after plantings. These disappeared very quickly. Stems and leaves were found to be grazed to the ground.

Sidalcea campestris was in flower the spring following plantings. This species appears to be a good candidate for additional plantings. *Lupinus polyphyllus* was planted as both seed and plugs. Plug survival appears to be good. Test plots of *Lupinus polyphyllus* seed were successful and persisting. This species is also now flowering elsewhere on the

butte. There is an issue with the seed source. There is a recessive gene for pink in the population.

Impacts to Wildlife

There are two species that appear to have benefited from the work on Powell Butte. *Tachycineta thalassina* the Violet-green Swallow and *Odocoileus hemionus* the Mule Deer have been observed using the area were *Crataegus monogyna* removal has occurred. The open grass canopy appears to be essential for the swallows to forage. Negative impacts are suggested to *Calaptes auratus* the northern flicker and to *Turdus migratorius* the American Robin. Both of these species feed heavily on the fruit of *Crataegus monogyna* during December and January. These birds will lose this important source of winter support as hawthorn removal continues.

Summary of Expenditures

Grant Charges

Payment to the Friends of Trees Contract weed eradication	\$10,000.00
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PP&R Match

Planting Cost 7,934 plugs and bare root plants at \$1.05 each	\$ 8,330.70
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Volunteer Match

3,943 total volunteer hours Volunteer labor total is \$9,113.00 based on a \$6.50 rate.	\$ 25,629.50
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Match Total	\$33,960.20
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Total Project	\$43,960.20
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Summary and Conclusions

The habitat restoration project within the scope of the work undertaken went very well. More was accomplished than was planned. A higher number of plants were installed. The major structural issue is the installation of plants without benefit of an extended pretreatment effort. The current plantings were undertaken in locations free of invasives. The current removal effort will prepare additional area for restoration treatment.

Although the planting was undertaken in a largely weed-free area, weed eradication was necessary. Removal of *Crataegus monogyna* was undertaken in the project area and near adjacent area. Future habitat modification, the conversion of non-native species to a savanna, will require an extended eradication effort. Severely infected areas may require a three-year pretreatment regime before restoration plantings should commence.

Vegetative restoration projects had variable success. Plantings of trees and shrubs were below expectation and will require additional plantings to achieve the stated goals. Successful introductions of grassland species occurred. This included both trees and forbs. Additional trials are planned as well as plantings of the successful forbs.

The low survival rates require additional installations. These restoration plantings will continue until functional ecological structures are established. Restoration and stewardship work on Powell Butte is continuing. The City of Portland is currently working on a budget process that will allow for achieving the Desired Future Condition on Powell Butte.