Heron Glen Wetland Buffer Enhancement Project

Final Report

June 2006

Summary of Activity Since Last Report (November 2005)

Weed Control

Virtually all Scots broom (*Cytisus scoparius*) plants are gone; those few seedlings that were found were removed before flowering. Himalayan blackberry (*Rubus discolor*) continues to be the greatest problem on site, especially in edge areas that are not too shady or too dry. Most of the site resists invasion, either through competition for light (tree canopy) or for water (grassland areas). The strategy of cutting the canes and spraying the cut end with glyphosate has proved relatively effective in killing the root crown of these plants. If shoots from cut and treated canes reappear, they are continuously removed to starve root systems (Figure 1). Large plants have been easily eliminated. The most difficult aspect of blackberry removal is finding the small plants, which are generally hidden by vegetation throughout the spring and summer. Our removal strategy has shifted to a fall/winter regime, when grasses and other herbaceous plants have died back to expose the blackberry. Weed materials will continue to be composted on site away from the wetland proper (Figure 2), thus eliminating the need for disposal off site.

Figure 1

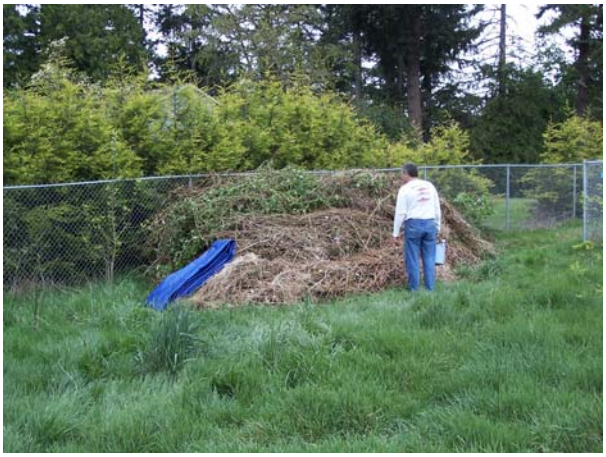


Figure 2

Tree Survey

We have performed a final census of the tree species, both planted and volunteer, as promised in last year's report:

Cottonwood (*Populus* spp.), red tags: 49 originally planted, **37** tallied
Douglas fir (*Pseudotsuga menziesii*), not tagged (near Monitoring Site #1): all volunteers, **5** tallied
Elderberry (*Sambucus racemosa*), not tagged: all volunteers, **2** tallied
Mountain ash (*Sorbus scopulina*), not tagged: all volunteers, **2** tallied
Oregon ash (*Fraxinus latifolia*), green tags (2 unmarked): 187 originally planted, **182** tallied
Oregon oak (*Quercus garryana*), orange tags: many acorns scattered, 10 planted seedlings, 13 volunteers, **23** tallied
Pacific willow (*Salix lasiandra*), white/yellow tags: 25 originally planted, **22** tallied
Red alder (*Alnus rubra*), blue tags: 161 originally planted, **142** tallied

Original Phase I planting: **422** trees

Current tree population: **415** trees (including volunteers)

Percent living trees based on original planting density: **98%**

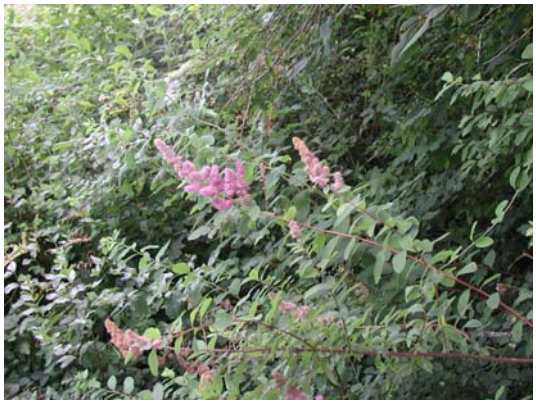

Volunteer *Sambucus*

Of course, the current tree population includes volunteers that were not planted by us; but regardless of where the trees came from we still count them towards percent survival. If nothing else, this demonstrates that the methodology behind this restoration is highly successful and sustainable. We suggest that our strategy be considered seriously for inclusion in BMP specs for future restorations.

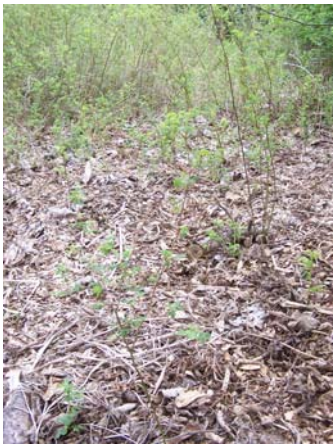
Most of the site immediately adjacent to the wetland now has a closed canopy; the only exceptions are the northwest (monitoring site #2) and northeast corners furthest away from the wetland. These are drier sites that do have established trees (primarily *Fraxinus*), but they are more slowly growing due to the lack of summer water. Bracken fern (*Pteridium aquilinum*) is widespread throughout these drier parts of site, helping reduce weed establishment.

Within the closed canopy, which we estimate at 80% of the entire site, are a number of native shrub species, all volunteers. This year we identified the following species:

Hardhack (*Spirea douglasii*): two large clonal populations
Hawthorn (*Crataegus douglasii*): 2 tallied
Indian plum (*Oemlaria cerasiformis*): many noted, not tallied
Nookta rose (*Rosa nutkana*): extensive colonies throughout site
Snowberry (*Symphoricarpos alba*): many large clonal populations throughout site
Twinberry (*Lonicera involucrata*): several clonal populations near wetland
Unidentified *Prunus* spp. 3 tallied
Viburnum spp.: large thicket near wetland in SE area
Vine maple (*Acer circinatum)*: two large clonal populations near Monitoring Site #1
Western trumpet honeysuckle (*Lonicera ciliosa*): a few specimens noted but not tallied

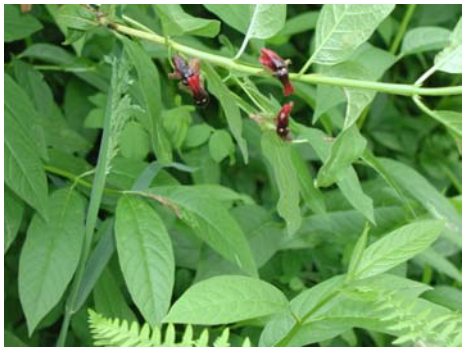


Volunteer *Spirea douglasii*



Colonizing *Rosa nutkana*

Colonizing *Symphoricarpos*



Volunteer *Lonicera involucrata*

Future Activities and Recommendations

1. Continued removal of weedy species. In the fall of each year we will remove blackberry as before. We will remove any Scots broom seedlings we find well before flowering and seed set. Blackberry will continue to be cut and the root crown hand-sprayed with glyphosate to keep these weeds below grass level.
2. Continued seeding of oak trees. We will continue to spread locally grown acorns into the closed canopy area of the site, though the squirrels apparently do a better job of this than we do.
3. We do not recommend any further installation of tree or shrub species. The density of trees currently on site seems sustainable; if more are added we will expect greater competition and resultant mortality, especially in the drier parts of the site. Natural succession appears to be working well, and the original installation of the arborist chip much has proven to be beneficial to the establishment of both installed and volunteer plants. Further soil disturbance for installing additional plants will bring more weed seeds to the surface and stress the root systems of the existing trees.
4. We recommend that this be considered the final report to the county for this project. Tree establishment and survival has exceeded requirements and even our own predictions. Re-establishment of subcanopy species is occurring naturally and is not something upon which we could improve. We consider this to be a successful restoration project.

Photographs of the project area from the 2006 site visit are included as attachment 1.

Respectfully submitted,

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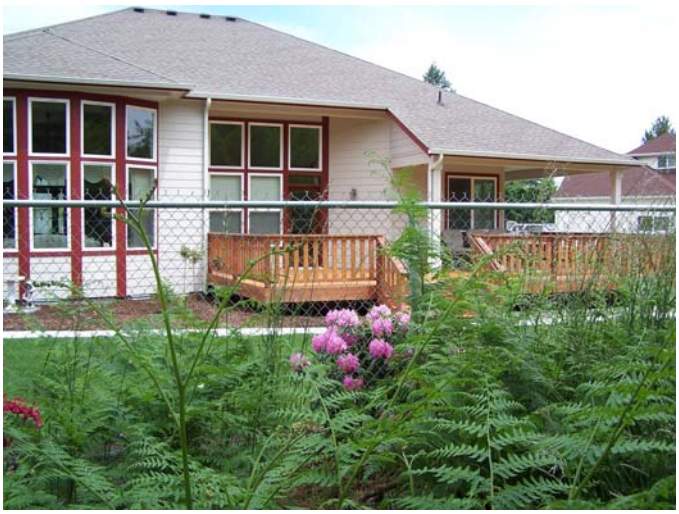
Attachment 1

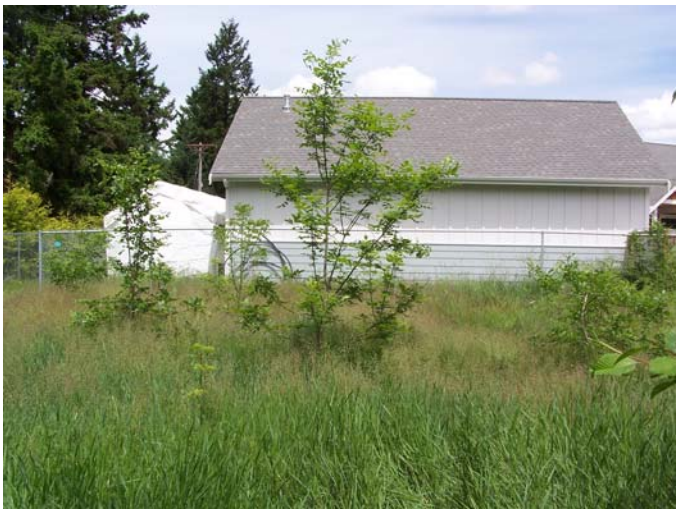


Monitoring Site 1. Facing North into subdivision area.

Monitoring Site 1. Facing East.

Monitoring Site 1. Facing South into wetland area.

Monitoring Site 1. Facing West.



Monitoring Site 2. Facing North into subdivision area.

Monitoring Site 2. Facing East into subdivision area.

Monitoring Site 2. Facing South toward wetland.

Monitoring Site 2. Facing west into neighboring property.

Monitoring Site 3. Facing North (toward Monitoring Site 2).

Monitoring Site 3. Facing East.

Monitoring Site 3. Facing South into wetland.

Monitoring Site 3. Facing West into adjacent property.

Monitoring Site 4. Facing North toward subdivision area.

Monitoring Site 4. Facing East.

Monitoring Site 4. Facing South into wetland area.

Monitoring Site 4. Facing West.

Monitoring Site 5. Facing North toward the subdivision area.

Monitoring Site 5. Facing West.

Monitoring Site 5. Facing South into the wetland area.

Monitoring Site 5. Facing East