Restoration Highlights

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Restoration of Richmond Beach Saltwater Park, Shoreline, WA

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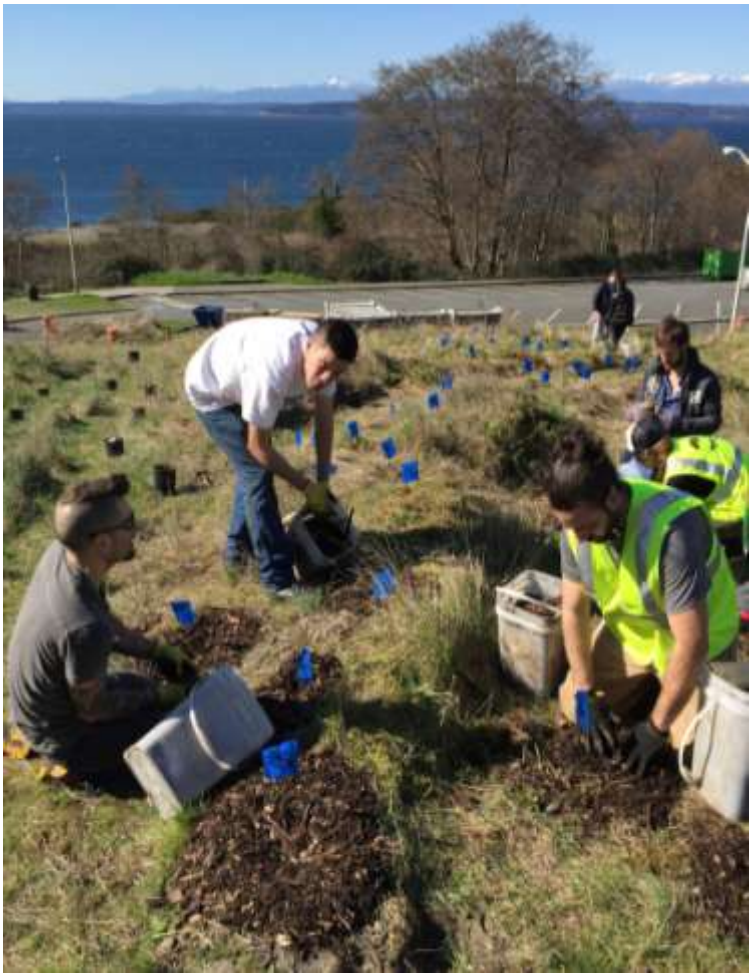


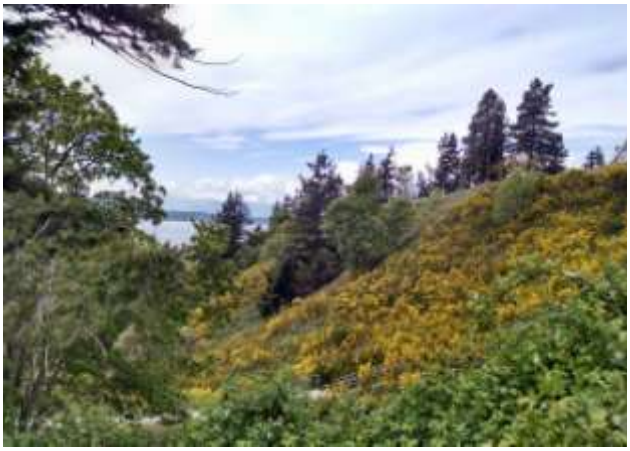
The Richmond Beach Saltwater Park restoration project is a collaborative effort between the University of Washington Restoration Ecology Network () and City of Shoreline, WA. Since 2006, the City of Shoreline and UW-REN have worked together to bring the former sand quarry back to a restored native coastal dune/bluff system. This past fall (2014) seven students from the UW-REN took on a portion of the park as a yearlong restoration. The UW-REN program is a collaboration with community partners and the University of Washington which allows students to get hands-on restoration experience from site assessment through the restoration process and on to future maintenance and monitoring.

The 40-acre park is located within the City of Shoreline and is part of the Central Puget Sound Watershed within the Puget Lowland region. The area surrounding the park is predominantly developed as a residential area; some of the most frequent park users live in these neighborhoods within short walking distance of the park. Saltwater Park includes steep and highly eroded slopes enclosed by various parking lots, a small building with restrooms/storage/water supply, a play area for children, and a paved walkway for pedestrian traffic. The park also provides easy access to the shoreline via an arched walkway that directs visitors over the railroad tracks to a scenic beach. Close proximity to the cities of Shoreline and Seattle, and the high recreational value of the park all contribute to drawing a large number of visitors each year.

Richmond Beach Saltwater Park was opened as a public park in the early 1960's. The land was previously utilized as a sand and gravel quarry, making soil disturbance an everyday occurrence. Because the site is a recovering sand quarry, the entire site is considered "disturbed". Prior to the installation of a gutter system in 2008-2009, water runoff from 20th Avenue NW led to severe erosion, creating the mounds and ditches that now dominate the topography of the site. Erosion and slope stability are concerns within site boundaries, as the soils are largely undeveloped and are predominantly being stabilized by invasive cover.

Saltwater Park provides several challenges which are unique in Western Washington. As mentioned above, the site is a former

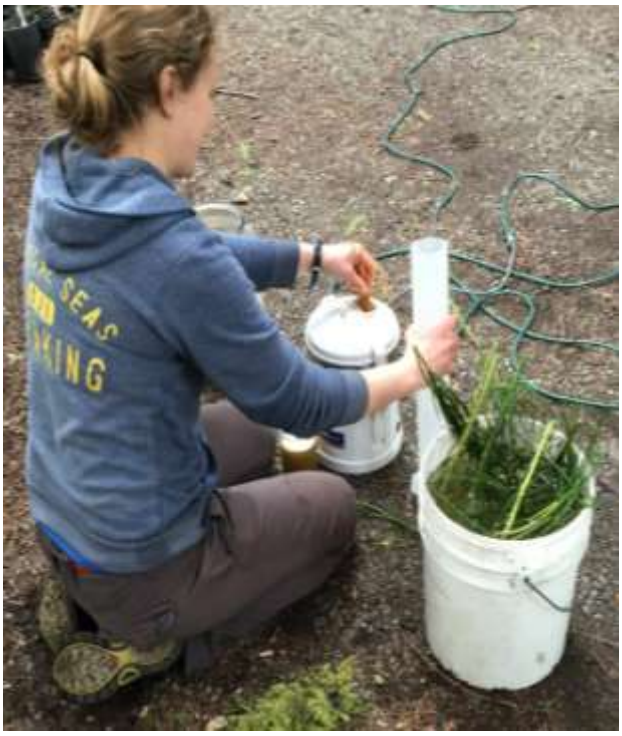
sand quarry. The sandy soils combined with the full sun, high winds, and little shade that the site receives throughout the year, create extreme drought conditions every summer. Another major challenge is stabilization of the steep slopes on site. In addition to the harsh conditions on site and the threat of erosion, the entire park has been populated by a thick forest of mature Scotch broom (*Cytisus scoparius*) and thick patches of Himalayan blackberry (*Rubus armeniacus*). In the photo of the perimeter of the park we see the extent of invasive species that is present; thick Himalayan blackberry in the foreground and the hillside of yellow flowers is all scotch broom. This is what the entire park looked like prior to the restoration efforts which started in 2006. The picture below also shows the bowl-shape of the park and the suburban development that borders it.



The main goals of the UW-REN team were to: 1) *Ecosystem Establishment*: Transform the existing landscape into that which will mature into a coastal dune/bluff hybrid ecosystem through the removal and containment of dominant invasive plant species and installation of native plant species representative of a coastal dune/bluff hybrid ecosystem. 2) *Ecosystem Strengthening*: Promote stabilization and function of a coastal dune/bluff hybrid ecosystem through the planting of several native grasses, shrubs, trees, and groundcovers and using pre-planting and aftercare techniques to maximize survival of installed native plants, through endophyte inoculations and constant watering. 3) *Partnership*: Develop a lasting stewardship ethic in the local community and see to the continued maintenance of the site.

To assist in combating the severe conditions on site, this year's UW-REN team has tried an experiment with an innovative technique called endophyte inoculations. Endophytes, beneficial bacteria that reside within the tissues of every plant, were hypothesized to contribute to scotch broom's ability to thrive in the dry, sunny, nutrient poor conditions on-site. The endophytes were extracted from *C. scoparius* that are thriving on site because

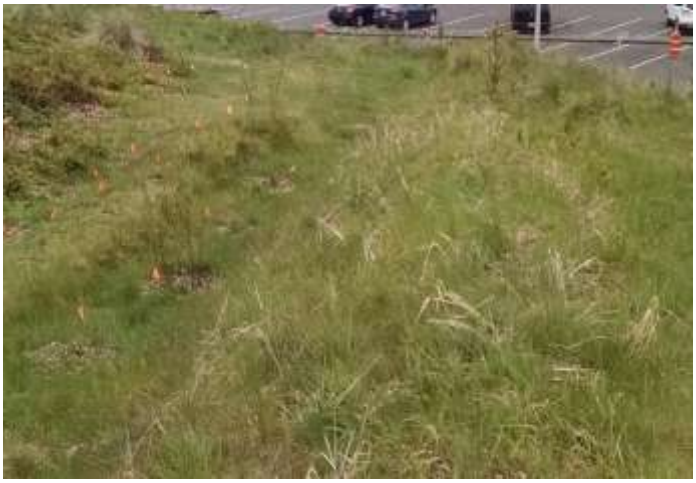
they are likely to contain a consortium of endophytes that would be beneficial to the native plants installed on site. These endophytes were isolated using low-tech (cheap and repeatable) methods, and used to inoculate snowberry (*Symphoricarpos albus*) and oceanspray (*Holodiscus discolor*), two native species. A duplicate group was inoculated with their own endophytes as a control. Plants were then labeled and planted at the site. Baseline monitoring of plant survival, size, leaf area, and chlorophyll content was conducted this spring by students in an introductory environmental sciences class from nearby King's High School, and will be repeated this fall. If a positive difference is detected in the survival or vigor of treated plants, these protocols may be used to enhance future restoration efforts at the park.



Here, Kelly Broadlick is breaking down Scotch broom (in the bucket) in a food processor to create the endophyte "smoothie." Afterward, the green mixture is poured into the pots of native shrubs which will soak up the "smoothie" and be planted on site after two weeks.

So far this year, the weather across the region has proven to be unusually dry and warm. Given that Saltwater Park already experiences extreme drought conditions in a normal year, the UW-REN team has had to adjust to the new challenge by establishing a rigorous watering regime. In addition to watering the newly planted plants on a

regular basis, it was a goal of the restoration team to get all the native plants in the ground as soon as possible. Work parties were conducted throughout the winter with community volunteers to remove invasives, transplant American dunegrass (*Leymus (Elymus) mollis*) from other portions of the park, and plant various native plants which are known to thrive in a native coastal/dune bluff ecosystem of Western Washington. Community volunteers are the backbone of all the work parties at the park, and the 2014-15 UW-REN team has partnered with local high schools and utilized social media to reach eager volunteers. This year alone has seen over 100 volunteers participate in 5 work parties at the park! Due to the close relationship developed with the local high schools, students have been tasked with much of the monitoring of the site for the next couple years. The efforts of community volunteers help to make a project like this possible, share the responsibility of caring for the park with the community, and create a connection between the local community and the restoration efforts.



This photo shows the dunegrass transplants that were planted along the upper portions of the mounds. In the depression to the left are orange flags that mark different shrubs and groundcovers which were planted by the UW-REN team. This photo was taken facing west and down the hill is the lower parking lot. It is difficult to see in this photo but the mounds run parallel down slope toward the parking lot. This entire portion of the site was once covered by a thick scotch broom forest reaching up to 10 feet high.