Pass Creek Riparian Planting Project

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Introduction

Pass (Norns) Creek is the first major tributary of the Columbia River below Hugh Keenleyside Dam and provides important spawning habitat for resident Rainbow Trout (*Oncorynchus mykiss*) and Kokanee (*Oncorynchus nerka*). Since 2012, the Okanagan Nation Alliance (ONA) has spearheaded a number of projects aimed at repairing and enhancing habitat within Pass Creek and the surrounding area. The objective of the Pass Creek Riparian Planting project was to establish a riparian area adjacent to Pass Creek in an exposed area between the Pass Creek Regional Exhibition Grounds and the Creek itself. The ONA also planned to restore an area that was damaged due to machine access required during the bank stabilization project in 2015; in total, the proposed area for riparian establishment/restoration was approximately 200 m^2.

During the last week of March 2016, the ONA partnered with the Castlegar and District Wildlife Association, the Castlegar Parks and Trails Society, the Regional District of the Central Kootenay, Selkirk College and three local elementary schools (Kinnaird, Robson and Twin Rivers Elementary) to partake in a "Work and Learn" week at Pass Creek Park. Among other activities, students assisted in site preparation, planting and installing browse guards under the supervision of the Okanagan Nation Alliance and a number of volunteers and teachers. Approximately 90 elementary students, 26 Selkirk College students and 10 volunteers (teachers/parents) assisted with the activities, making the "Work and Learn" week a huge success. The event was also highlighted in the Castlegar News and on the Okanagan Nation Alliance social media pages.

The establishment of a riparian area bordering the exposed section of creek adjacent to the Exhibition Grounds was recommended in the Pass Creek Regional Park Management Plan to protect the streamside area. The Plan recommended restoring disturbed areas within 30 m of Pass Creek, with a focus on the first 15 m from the creek (Olson-Russello and Anderton 2015). The planting works completed in 2016 were the first step in restoring the riparian zone bordering Pass Creek, and the Okanagan Nation Alliance recommends planting the rest of the 15 m zone in the spring of 2017. As evident from the 2016 planting project, regular watering and weeding, as well as the option to fertilize, will be an asset to future restoration efforts in this location due to high sun exposure and nutrient deficient soils.

Location

Pass Creek is bordered by the Pass Creek Regional Exhibition Grounds and Pass Creek Recreational Campground just north of the town of Castlegar, BC. The area is owned by the Regional District of the Central Kootenay is an important area for recreation and public use. It is the first major tributary to the Columbia River below Hugh Keenleyside Dam, and can be accessed off of Broadwater Road in the area of Raspberry. Pass Creek has 2.2 km of area accessible to fish and provides important spawning habitat for local sport fish (Thorley and Baxter 2012). Figure 1 shows the treatment area for riparian planting in 2016.

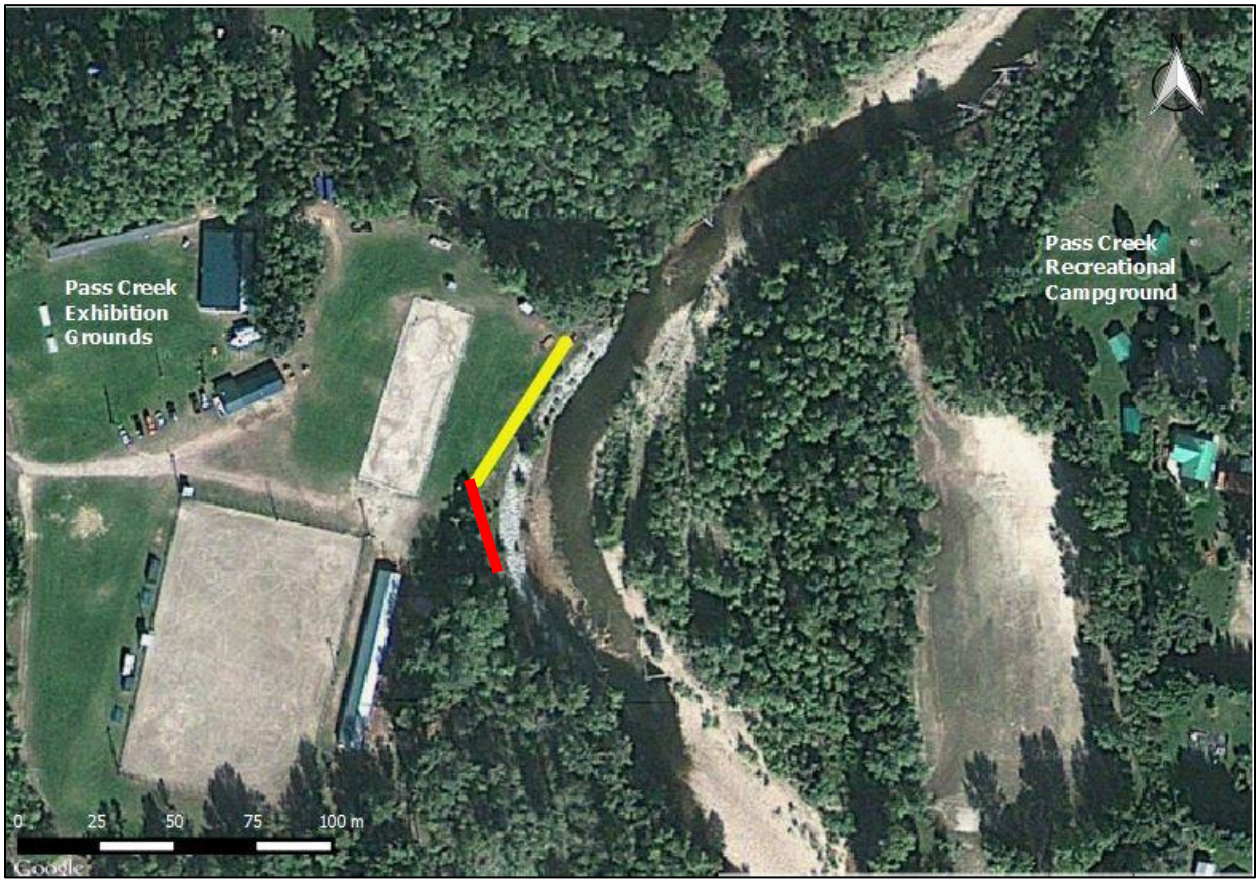

Figure 1: Location of riparian planting at Pass Creek. The yellow line indicates the exposed area adjacent to the Regional Exhibition Grounds, and the red area indicates the area damaged by machine access during the rip rap repair. Riparian planting took place in both sections in spring 2016.

Methods

The site was prepped by the Selkirk College students by roughing up the area (i.e., turning the soil). In total, 300 plants of various species were planted in the 200 m^2 area bordering Pass Creek. Planted species included: Trembling Aspen (*Populus tremuloides*), Black Cottonwood (*Populus balsamifera ssp. trichocarpa*), Douglas Maple (*Acer glabrum*), Ponderosa Pine (*Pinus ponderosa*), Douglas fir (*Psuedotsuga menziesii var. glauca*) and Lodgepole Pine (*Pinus contorta*). Plants were acquired from Tipi Mountain Native Plants and were planted based on a recommended prescription 3 offset rows of 1.5 m spacing between plants, with 1 m spacing between Douglas Maples. Exclusion fencing was placed around the plants using either 0.5 m or 1 m heights to protect the plants from ungulate and small mammal browsing.

Results

The efforts to establish a riparian zone along the exposed / damaged areas bordering Pass Creek near the Exhibition Grounds were a success (Figure 2). We planted within a 3-4 m band bordering Pass Creek covering an area of approximately 200 m^2. Exclusion fencing was placed around each plant to protect from ungulate and small mammal browsing (Figure 2). The plant survival rate as of Sept 14, 2016 was 90%. Regular visits to water the plants have been made by the Okanagan Nation Alliance, RDCK staff and other volunteers.

Figure 2: Riparian zone planted looking south downstream Pass Creek (left), and example of exclusion fencing placed around each plant for protection (right), April 1 2016.

In total, approximately 90 elementary school students from Robson, Kinnaird and Twin Rivers Elementary Schools took part in the "Work and Learn" activities organized by the Castlegar and District Wildlife Association in partnership with the Okanagan Nation Alliance and the Regional District of the Central Kootenay (Figures 3). As well, 26 students from the Recreation, Fish and Wildlife Program at Selkirk College assisted in site preparation as part of their Spring Field School program. Approximately 10 volunteers including teachers and parents also assisted with the planting efforts and other activities for the students.

In addition, the RDCK summer students and Okanagan Nation Alliance employees put in effort removing weeds from the site in June and September 2016, removing 18 bags total of weeds (Figure 5). The primary weed moved was Tufted Vetch (*Vica cracca*), a plant from the pea family that was commonly seen growing up the exclusion fencing used to protect the plants (Figure 6).

Figure 3: Okanagan Nation Alliance technicians Evan Smith and Autumn Solomon and volunteer Eleanor Duifhauss assisting local elementary school students on planting and protecting plants in the riparian zone along Pass Creek, Mar 30 2016.

Figure 4: Tufted vetch weeds removed from Pass Creek Riparian Planting treatment area, June 16 2016.


Figure 5: Bags of weeds removed from Pass Creek Riparian Planting treatment area, June 20 2016.

Recommendations

Based on the high survival rate, we recommend completing planting within the recommended 15 m riparian zone along Pass Creek. The establishment of a 15 m riparian area consisting of native vegetation will contribute to enhancing habitat for both aquatic and terrestrial species. We recommend planting a diversity of the species used in the existing prescription, and also include more resources for weekly watering and monthly weeding visits. Fertilization should also be considered to provide essential nutrients that may be limiting in the soils due to existing compaction and damage on the site. Completing the enhancement of this area will provide future habitat for listed species found within this area such as Lewis's Woodpecker (*Melanerpes lewis*), Great Blue Heron (*Ardea herodias*), Western skink (*Plestiodon skiltonianus*) and the Western Screech-Owl (*Otus kennicottii macfarlanei*), among others.

Literature Cited

Thorley, J.L. and J.T.A. Baxter. 2012. WLR Monitoring Study No. CLBMON-46 (Year 4), Lower Columbia River Rainbow Trout Spawning Assessment, Study Period: January to July 2011. Prepared for BC Hydro. Castlegar, BC.

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