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Calgary River Valleys: Riparian Restoration and Education

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Calgary River Valleys (CRV) is a non-profit organization that has operated in Calgary since 1991.

In addition to annual field work projects, CRV works toward ensuring that the cumulative effects of urban development and recreational activities are anticipated and planned so as to protect, and where possible, restore natural processes and habitats. CRV is unique in Calgary in that we are the only organization that tracks large-scale land use and development proposals that impact Calgary's watercourses and wetlands, so as to provide independent input regarding how best to protect our water assets. We consider our organization "the voice of our rivers."

CRV also encourages the participation of volunteers in our field work projects. We organize

an annual Brown Trout Redd Count each November to count and geo-locate the spawning nests of Brown Trout in the Elbow River. This data is one indicator of river ecosystem health and collecting it consistently each year allows analysis of spawning trends over time. We provide the data collected to several levels of government and like-minded organizations. In 2019, the Government of Alberta used CRV's data to help determine suitable sites for the Elbow River Spawning Habitat Restoration Pilot Project.

In 2018 and 2019, CRV completed two phases of a riparian restoration project: "The Elbow River Riverbank Makeover Project." This project was completed with funding from the City of Calgary and other sources, as a demonstration project to show the kinds of techniques that can be used by river-adjacent homeowners to replant their riparian zone and provide flood and drought mitigation, as well as improve river water quality and wildlife habitat.

An important aspect of this project includes educational outreach to other river-adjacent homeowners, river community associations, and the larger Calgary citizenship. We have conducted surveys on people's riparian knowledge, hosted site tours after each "riverbank makeover," and provided educational information to the public via ongoing articles in community newsletters across Calgary.

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In early 2020, CRV received funding under the Government of Alberta's Watershed Resiliency and Restoration Program (WRRP) for riparian restoration and educational work to be conducted until early 2022. While the start of our project was delayed by the onset of Covid-19, we are now preparing to follow hygiene and physical distancing best practices for all three main components of the project: research, education and outreach, and riparian restoration field work. Below is an outline of what our project will entail.

Research

The research component will build on the work we completed in 2018 and 2019 in partnership with the City of Calgary. We can now broaden our survey research of river adjacent landowners and the larger population of Calgary regarding their understanding of the functions and benefits of a healthy riparian zone for flood and drought mitigation, river water quality and wildlife habitat. In the last two years we initiated direct door-to-door engagement with every homeowner whose property is adjacent to the Elbow River, as well as face-to-face surveys of citizens attending the Fish Creek Park Creekfest event. The surveys measure respondents' knowledge and understanding of riparian zones, and help to support the environmental stewardship of these areas. For this WRRP-funded project, we plan to complete additional surveys of landowners along rivers and creeks in Calgary, as well as continue to gather data from the broader Calgary population regarding their knowledge of the importance of maintaining and restoring riparian zones to their full functionality.

We found from our research in 2018 and 2019 that many river-adjacent homeowners in Calgary are still traumatized by the effects and catastrophic damage from both the 2005 and 2013 floods and they are motivated to do what they can to help mitigate the effects of the next flood in Calgary. Unfortunately, we also found that some homeowners believe the best solution for flood protection is to install a retaining wall or large boulders as was done shortly after the flood in many publicly owned areas. However, science shows that while rocks and retaining walls may help to prevent erosion in one area, they just rebound the river's energy so areas further downstream can be eroded or otherwise more negatively affected during flood events. A bio-engineering solution, where the riparian zone is planted with a variety of sedges, rushes, shrubs and trees, can still achieve the desired goal of erosion protection while allowing the riparian zone to function normally and maintain wildlife habitat.

In response to the educational messaging that we deliver over the course of our project, we plan to track changes in people's levels of knowledge of riparian functions and the roles riparian zones play in flood and drought mitigation, as well as improving river water quality.

Education & Outreach

With WRRP grant funding, we intend to build on our successful education and outreach efforts in 2018 and 2019 regarding the Elbow River Riverbank Makeover projects. Information about our project was delivered directly to hundreds of thousands of Calgarians in river-adjacent and

other communities via community newsletters, as well as to multiple media and social media sources, including Global News TV and their website, and MyCalgary.com.

Starting this year, we plan to build on these efforts to provide educational information to river-adjacent landowners and the broader citizenry via media, social media and our website. The new information will include advice about the benefits of re-planting riparian zones with native riparian adapted species:

- To stabilize the riverbank, thereby limiting erosion during flood events, both at the site and downstream;
- To absorb water during high water events (flooding) and release water during drought events;
- To reduce river energy and resulting water damage during flood events;
- To filter contaminants due to land run-off, thereby improving river water quality;
- To trap sediments and improve water quality ; and
- To create habitat for wildlife, including shade for fish.

We also intend to continue our efforts to provide educational information to those involved in the City's planning and development process so as to encourage protection, wherever possible, of Calgary's river valleys, creeks, riparian areas and wetlands.

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Riparian Restoration Field Work

For the final component of this WRRP-funded project, we intend to identify, assess and restore to higher functionality at least two damaged riparian areas within Calgary. We plan to remove non-native and invasive vegetation species from selected riparian zones, and re-plant them with

native adapted vegetation species. We expect to complete a re-planting for at least one site in 2020 and at least one additional site in 2021. Pictures of the restoration site from 2018 and 2019 are below.

The sites for our 2020-2021 project are still to be confirmed. In order to be selected, each site must significantly

benefit from restoration of the riparian zone, and will also require the landowner to allow the restoration and follow-up monitoring for at least two years.

We hope to provide an update after year one of our newest project.



CRV 2018 restoration site in June 2020 along the Elbow River in Calgary. Four planting beds were created by removing Kentucky bluegrass to allow space to plant a variety of water-loving trees and shrubs to reduce bank erosion and improve water quality, and allow for various wildflowers and herbs for aesthetics. Riparian plantings included river birch, Saskatoons, gooseberries, wild rose, red osier dogwood, yellow willow, shining willow, and an entire upstream bed of sandbar willow. All photos: Calgary River Valleys.



CRV 2019 restoration site in June 2020 along the Elbow River in Calgary. A variety of riparian plants were planted in multiple locations on this site to help reduce bank erosion, improve water quality, and provide additional habitat for wildlife. On the upstream property border and near the river's edge, groupings of sandbar willow stakes were planted at an angle to work with the river flow during high water events.



CRV 2019 restoration site in June 2020 along the Elbow River in Calgary. Wild rose and Saskatoon bushes were planted near an existing stand of red osier dogwood shrubs.



CRV 2019 restoration site in June 2020 along the Elbow River in Calgary. Gooseberry bushes and butterfly-friendly wildflowers were planted near an existing patio seating area on the property, several metres back from the river's edge.