

Caring for the Green Zone

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Making a Dam Difference – Learning to Coexist with Beaver

Last year at this time you may recall reading about the beaver ecology and management co-existence work we have been doing, in collaboration with many local groups and our provincial partner, Miistakis Institute. Since then, we have continued to help landowners, land managers, and municipalities better understand the role beavers play in watershed health and resiliency, as part of our *'Living with Beavers'* presentations and workshops. Partnering with rural municipalities and The Fur-Bearers, we have hosted hands-on training on how to build and install beaver co-existence tools.

What have we learned over the past several years? Interest is still growing in how to live with beavers, while minimizing the negative impacts they cause. There is no doubt of the continued frustration facing landowners and municipalities as beavers flood roads and fields, plug culverts, and cut down valued trees. What we have seen changing is that the benefits beavers provide by storing water, improving water quality and supporting riparian and fish habitat are adding weight to decision-making about how to manage these challenging beaver issues.

Recognizing that there are benefits to beavers is a major change in thinking around all-things-beaver, in the face of those dealing with beaver-caused problems, and we have found there is a keen desire to figure out how to keep the beavers, their dams and benefits, while reducing impacts.

Incorporating our understanding of beaver ecology and behaviour, such as the beaver's innate drive to stop the sound of running water, or their strong territoriality, and pairing it with The Fur-Bearers' expertise at installing beaver co-existence tools, we have successfully helped install beaver pond levellers and exclusion fencing in many parts of the province.

These demonstration sites will help us all learn what works, showcasing practical, local examples, and at the same time, developing the skills in local municipal and conservation staff so they can implement these techniques on their own lands. (Continued on page 4)

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Greening our Riverbanks Calgary Takes Action to Improve Riparian Health

by Kathryn Hull, Riparian Specialist

As part of a massive effort to tackle damages resulting from the 2013 flood, more than 100 bank stabilization and riparian restoration projects have been undertaken in Calgary since the flood. This included a strong focus on using bioengineering bank stabilization techniques, where living plant material is incorporated into the stabilization structure.

If you have floated down the Bow or Elbow Rivers in Calgary of late, you will have noticed a changing face to these riverbanks. Although large rock rip-rap has been the medium of choice for most traditional riverbank stabilization projects, in recent years The City of Calgary has promoted a 'greener' approach wherever possible. If successful, bioengineering solutions allow us to naturally reinforce riverbanks, while also retaining important fish and wildlife habitat features and improving aesthetic appeal. But just how well do bioengineering and riparian restoration projects stand up to chinook winds, variable snowpack, ice scour, dry hot summer spells and dam-regulated flows? Are there certain techniques, planting protocols or implementation procedures that work better than others? Does it matter where plant material is sourced, how it is stored or when it is planted? Do certain plant species have more drought resiliency than others? These are just a few pressing questions that Calgary and other provincial proponents of bioengineering are keen to have answered.



There are few scientifically documented studies of bioengineering projects in the Alberta context. As such, Calgary and Alberta Environment and Parks have partnered to implement a *Bioengineering Demonstration & Education Project* between Pearce Estate Park and the Inglewood Bird Sanctuary on the Bow River in Calgary, the first of its kind in the province.

Mallard Point, Trout Unlimited Canada Bioengineering Project, Bow River, Calgary.

Above photo taken in May 2015.

Photo to right taken in September 2015 after one growing season.



Greening our Riverbanks

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This project will closely monitor and compare the effectiveness of various bioengineering techniques for bank stabilization and other ecological functions. It will be monitored as part of a multi-year Riparian Monitoring Program (RMP). The RMP includes evaluating more than 60 bank stabilization projects and more than 30 riparian restoration projects, mostly installed after 2014. The RMP consultant team is led by Kerr Wood Leidal Associates Ltd., including subconsultants Terra Erosion Control Ltd.; The National Research Institute of Science and Technology for Environment and Agriculture based in Grenoble, France (www.irstea.fr); Longview Ecological; and of course, us, Cows and Fish. A key outcome of this work will be to better understand the success and limitations of various existing riparian restoration and bioengineering projects. Results of the RMP will

be shared with relevant practitioners, consultants and regulators to improve the science and practice of bioengineering and riparian restoration in Alberta.

A second goal of the RMP is for Cows and Fish to monitor riparian health trends for over 90 sites on Calgary's rivers and streams, most of which were first assessed ten years ago. Management improvement or restoration is ongoing in many of these sites as part of Calgary's *Riparian Action Program*. This program is aimed at improving and monitoring riparian health, promoting community-based riparian stewardship and education, and strengthening conservation mechanisms for riparian areas. These urban focussed initiatives demonstrate strong investment and leadership on the part of The City of Calgary. Lessons learned from Calgary's demonstration and monitoring projects will help us support improved bioengineering application and riparian management across the province.



Riparian restoration monitoring in action. Alan Dodd (Longview Ecological) and Kristina Wantola (Cows and Fish) assess the survival and vigour of riparian plantings.

Stay tuned for updates and workshop announcements related to this project. Visit www.calgary.ca for more information on these initiatives.



Making a Dam Difference

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In 2016, working with the MD of Foothills, supported by a Watershed Resiliency and Restoration Program grant (from Alberta Environment and Parks), combined with The Calgary Foundation funds, funding that continues today, our collaborative worked with The Fur-Bearers to install a combination pond leveller and exclusion fence on a trouble spot – a culvert under a road that was regularly plugged by beavers. The spot was down a steep roadside embankment and had little room to safely manoeuvre the large equipment used to unplug the culvert, a process that had to be repeated several times a year. Since the installation, municipal staff say it has worked as planned and are very pleased with how it has reduced ongoing expensive and tricky maintenance.



MD of Foothills culvert under road, before installation.



MD of Foothills culvert with modified exclusion fencing and pond leveller pipe. Site challenges: digging and removing large rocks near culvert which resulted in a very narrow exclusion cage to fit the site.

A fall 2018 installation site, in Brazeau County (near Drayton Valley), was planned as a typical pond leveller installation but resulted in some post-installation changes. Normally there is no need to put an exclusion cage on the downstream end of the pipe (coming out of the beaver dam), but at this site, the beavers decided they would plug the downstream end and a cage had to be added after it was installed. These sorts of modifications are not needed on all sites, but like many things in the real world, flexibility and adaptability are needed to make things work. We look forward to continuing to learn from these demo sites and our partners' experiences at them.



Sometimes, busier-than-normal beavers can plug the downstream end of the pond levelling pipe – a situation that is uncommon. We believe it occurred because this pipe flows into another beaver pond immediately downstream, which allowed easy access to the pipe.



After a messy job of clearing out mud and sticks from the pipe, we installed an angled panel "cage" over the outlet of the pipe – after thoroughly covering the sides and front with sticks to prevent the beavers from further accessing the pipe.

Grazing School for Women – About More Than Just Cows!

June 12th, 2018. It was a sight to see – 50 women of all ages, adorned in brightly coloured rain jackets, huddled into groups learning about riparian health assessments along the bank of the Vermilion River. It was pouring rain, the sun having given up from its appearance earlier in the day, but everyone was diligently or attentively listening to how to distinguish a sedge from a grass (sedges have edges!), how to spot a preferred riparian shrub, or how to identify physical impacts along the streambank. No one was letting the rain dampen their spirits. This is the Original Grazing School For Women.

Having just completed its 16th year, the school has had a lot of success as a two day workshop for ranching and farming women. These two days provide an opportunity for women to learn new skills, network with other hard-working ranchers, and make lasting friendships. A classroom component provides an in depth journey into topics as diverse as calving techniques, farm succession planning, creating native pollinator habitat and even exploring mental health issues on the farm. The school also includes a field tour, visiting local ranches, which allows women to learn first-hand from their peers, and experience new techniques and ideas. These field trips have proven to be a highlight of the workshop, even if that does sometimes involve getting soaked in the rain!



The initial popularity of the Original Grazing School spawned the Southern Alberta Grazing School for Women, now in its 15th year, and held, as the name suggests, in the southern part of the province. In 2019 it is scheduled for July in the County of Warner. In 2019, the original grazing school will once again be held in June but moves to Lamont County, and promises to be just as fun and informative as the 2018 edition. If you're interested in attending or learning more, be sure to visit the school's [website](#) or [Facebook page](#) or contact us for information on either school. Each school committee helps find funding for the two schools from dozens of sources, one of which is an Alberta Conservation Association grant, administered by Cows and Fish.

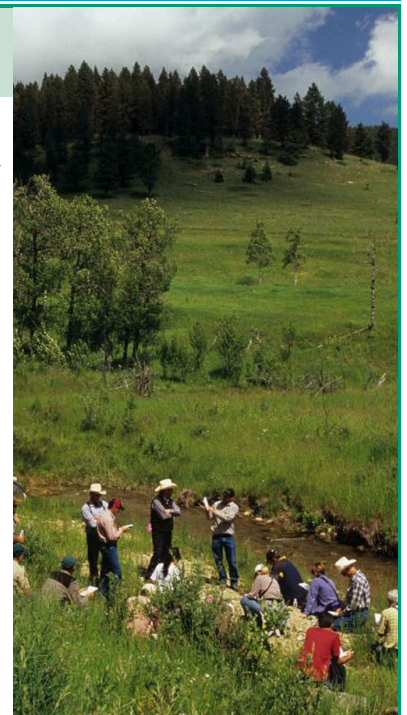
Upcoming Events

Ladies Livestock Lessons. January 19, 2019. Airdrie, AB. [Download the poster to learn more!](#) Join the Red Bow Agricultural Partnership at the beautiful Apple Creek Golf Course, just outside Airdrie, AB, for another year of the annual LLL event. Topics in 2019 include grazing management systems, poisonous pasture plants, hybrid vigor scoring, social media for agriculture, and much more. [Register here.](#) [Follow LLL on Facebook](#) (along with some other women's grazing schools!).

Contact Kelsey Spicer-Rowe at kspicer@cowsandfish.org or (403) 948-8519.

The **PCF Annual General Meeting** will be on January 17, 2019, in the Multi-Purpose Room at the Crescent Point Regional Field House near Aldersyde. Check their website for more information. <http://www.albertapcf.org/>

Looking for an engaging speaker on the key role riparian areas play in your watershed? On lakeshore health or grazing management? Invite us to your event. Check out the many topics we can cover: <http://cowsandfish.org/about/workshops>



Watch for our new redesigned website, coming soon!

Bioengineering on the Bearberry – 10 Years Later

By Kelsey Spicer-Rawe, Riparian Specialist

A quote I have on a sticky note at my desk reads, “hope is a verb with it’s sleeves rolled up”. Soil bioengineering for streambank stabilization and fish habitat improvement involves both hope and some seriously rolled up sleeves. Lucky for us, back in 2007 at the precipice of four bioengineering projects in the Bearberry Creek watershed, we were armed with both. A group of keen and ambitious biologists, ecologists and conservation staff, not shy of sleeves rolled up field work, were fresh with knowledge of soil bioengineering techniques from the guru, Dave Polster. Add to that some willing and hopeful landowners keen to try out some new restoration techniques, which at the time were rarely used on private agricultural lands in Alberta.

The project, coined the *Bearberry Watershed Restoration Project*, was led by the Alberta Conservation Association (ACA) and involved a variety of municipal, agency and conservation organization partners, including Cows and Fish. Beginning in 2007, four streambank soil bioengineering projects were undertaken, along with fisheries assessments, aerial videography to assess stream condition, grazing best management practice implementation, and riparian health inventory. Like all good conservation directed projects, some outreach and education with the residents in the Bearberry Creek watershed, to improve the ecological literacy of the community, was woven in as well.

Fast forward 10 years to 2017. A couple of the original project partners are still working in their field and a realization hits that monitoring of these sites has been sparse. Questions start to form around the long-term success, or failure, of these bioengineering projects: did the willow cuttings set down roots and send out shoots and stabilize the banks? We hatch a plan to revisit the sites, locate and photograph the same streambanks that were once muddied and eroding and planted with live stakes, wattle fences and modified brush layers. On a cold and rainy September day, two biologists from ACA and one of our own Cows and Fish staff head back to the Bearberry Creek watershed, armed with air photos, riparian health data, on-the-ground images, a few GPS points and a whole bunch of *hope*.



October 2007. Barry Creek site. Bioengineering treatment: wattle fence at water’s edge and modified brush layers along the bank slope.



September 2017. Barry Creek site. This site had the best overall woody vegetation growth, with the best willow establishment and regeneration at the wattle fence.



July 2009. Temple Creek site. One year post bioengineering treatment; wattle fences, modified brush layers and live staking. Rooting and shooting of willows from bioengineering structures is occurring.



September 2017. Temple Creek site. Willow has regenerated and revegetated the site. Slumping and erosion have ceased.



August 2006. Bearberry Creek site. Prior to bioengineering treatment. Slumping and eroding bank.



October 2009. Bearberry Creek site. Bioengineering treatment included wattle fences, modified brush layers and live staking.

In the end, the *sleeves rolled up* approach seemed to work as all bioengineering structures remained in place, streambanks were fully vegetated with many preferred species, and slumping and erosion had ceased. Our visual observations and photo monitoring show:

- ◆ Live stakes and bioengineering structures put in to the depth of the water table, or those closer to the water table, performed better;
- ◆ Live stakes and bioengineering structures placed midway or near the top of the bank performed less well, but did remain in place during peak flood events, and likely added some structural stability to the bank;
- ◆ The site that performed poorest of the four sites was constructed in the driest year based on climate and precipitation data; and
- ◆ Sites with livestock exclusion performed better.

The scientists in us are still undecided on how the *hope* of all those involved in the restoration work on these sites may have factored into the success, but in our hearts, we think it helped immensely.

Collaboration for Conservation

Each year Cows and Fish collaborates with individuals and groups to foster riparian stewardship through community-based action. Without these partnerships it would be difficult to get on the ground changes to happen. Since 2012, Cows and Fish has partnered with the Friends of Fish Creek Provincial Park to monitor, promote and restore riparian health in this busy yet vital conservation area in Calgary. This year marked the beginning of a new initiative which involved training park volunteers to conduct riparian health assessments, in hopes of increasing the Friend's capacity to both prioritize sites for restoration and monitor these sites post-restoration. As part of this initiative, we trained 20 volunteers in late July who hit the ground running in order to assess sites for restoration this fall.



We were fortunate enough to join the Friend's at their October restoration day, which saw over 500 native trees and shrubs planted along 200 m of Fish Creek that had been marked a priority for restoration. Over 30 volunteers, equipped with gloves, shovels and excited enthusiasm, came out to enjoy the fall sunshine at this three-day event. This is just one of the many examples of how positive change happens, one willow stem at a time. Thank you to all the continued hard work being done by the Friends' and their family of dedicated community volunteers. To find out more about how you can be involved as a project sponsor or volunteer, please visit <https://friendsoffishcreek.org/>.

Original development of our newsletter was graciously supported by Alberta Ecotrust Foundation, along with our many core funders and supporters: (<http://cowsandfish.org/about/members.html>).

As you may know, we rely upon grants to do much of the work we do, so if you want to suggest an opportunity, collaboration, or make a donation, please do! Please check our website for how you can support us.

[Donate Now](#)

Please sign up for our newsletter if you have not already done so:



We love hearing from you!

Please contact Norine Ambrose nambrose@cowsandfish.org or any Riparian Specialist, to follow up on any items in this newsletter.

For full contact information, visit our website at:

<http://cowsandfish.org/contact.html>

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