Wetland hero helps Kootenay scientists mitigate climate change

Submitted

Submitted by Kootenay Conservation Program

Here's a question. What well-known animal is quickly becoming a true climate change celebrity?

Think roly-poly body, wee squat legs, yellowy buckteeth, that pear-shaped profile on the Canadian nickel. Indeed, the lowly beaver may often be disregarded and in some circles despised. But for a landscape facing wildfire, drought or floods, *Castor canadensis* is a downright superhero—one that scientists and community groups in the Kootenays are turning to for answers.

The Kootenay Connect Priority Places project is following the science. Funded by Environment and Climate Change Canada and managed by the Kootenay Conservation Program (KCP), this seven-year project now has a number of partners working to enhance habitat for species at risk and build resiliency into local landscapes in seven areas in the Kootenays.

One partner is Brenda Herbison, a biologist from Argenta who knows just how big a role beavers play in contributing to an area's ecological resilience. "They've been shown to completely transform the landscape," she says, "they're the best engineers."

Herbison has seen the legacy beavers leave, even long after they've vacated a site. She's now working on a project to enrich beaver habitat in the lower

Duncan River valley bottom, an area that has seen a significant drop in beavers over the last decade. "We saw places that once had beaver colonies," continues Herbison. "Now, no beavers."

So, what makes beavers so special? Why are those-in-the-know giving beavers nicknames like 'ecosystem engineers,' 'environmental Swiss Army knives' and 'Smokey the Beaver'? Why do beaver enthusiasts, a group of self-proclaimed Beaver Believers, want to see more of the rodent's handiwork? It's all about the water.

"When it comes to water, beavers slow it, spread it, and store it," writes Dr. Emily Fairfax in a paper on how beaver-dammed areas stay green during wildfires. Fairfax, an ecohydrologist at the California State University Channel Islands, not only has data to prove the benefits of beavers on landscapes, she's also found creative ways to share her findings. In a stop-motion video now clocking 39K views, Fairfax shows how one busy little beaver can build climate resiliency.

The beaver dams a creek. Creek water slows and is stored in the pond. New channels are built, spreading water throughout the riparian area and floodplain. Birds, amphibians and fish return: the wetland thrives. When a disturbance like wildfire hits, the beaver's boost of well-dispersed water provides refuge for other wildlife and helps to keep things green.

Green is exactly the colour the Columbia Wetlands Stewardship Partners (CWSP), a Kootenay Connect partner, want to see. Despite being designated a wetland of international significance, the Columbia Wetlands face many threats, one of which is water loss due to climate change. Could beavers play a role with helping the region adapt? Dr. Suzanne Bayley, President of the CWSP, thinks so.

As a wetland ecologist, she's seen the transformation beavers can make to

wetlands, and respects their work ethic. “I’ll tell you one thing, I’m not as good as a beaver,” she laughs, “they’re out there every night, repairing their dam, not me.”

Bayley has a history with beavers. Her earlier academic work studied how beavers could mitigate the effects of climate in boreal wetlands that experience drought. Her study, published in the journal *Biological Conservation*, found that sites with beavers had *nine times* more open water than sites without, and suggested that “the removal of beaver from aquatic systems should be recognized as a wetland disturbance equivalent to in-filling, groundwater withdrawal, and other commonly cited wetland disturbances.” In brief, want to keep a wetland wet? Bring in a beaver.

It’s not always so simple. Not everyone loves the industrious beaver as a neighbour, especially if pastures are being flooded, roadways knocked out, or beneficial trees toppled. But there are solutions. Products such as a device cleverly called the Beaver Deceiver, among other techniques, are being used to encourage landowners to keep beavers within the ecosystem while directing their dam-building attention elsewhere. “The benefit of a beaver often outweighs the impacts,” Bayley says. “More wildlife habitat, increased biodiversity, climate change mitigation, turning something so simple into something complex— these are huge benefits.”

With this in mind, the Columbia Wetlands Stewardship Partners are currently researching the impacts of beaver dams in the Columbia Wetlands complex. Not only are they studying existing dam and lodge sites, they are also creating artificial beaver dams and protecting critical cottonwood stands from beavers using wire mesh.

A few valleys west of the Columbia Wetlands lies the Bonanza Biodiversity Corridor, a 15-km stretch of Inland Temperate Rainforest that connects the

Valhalla Range with the Selkirk Mountains. Here, the Slocan Lake Stewardship Society (SLSS), another Kootenay Connect partner, is working to conserve the biodiversity of this small yet ecologically-essential wildlife corridor.

Abundant with cottonwood, moistened by swamps, marshes and fens, the meandering floodplain is ideal for beavers. But according to SLSS, there could be more. After completing a three-year habitat assessment, they estimated 45 animals inhabit an area that could support double the number.

“The thing to remember about beavers,” said ecologist Ryan Durand, “if food or water is scarce, they’ll move along. At this point, given what we know about our climate, we need more, not less, beavers.”

On land, beavers have been called ‘giant chicken McNuggets,’ highly vulnerable to predators like wolves or coyotes. Once in water, they are rather elegant. They can stay underwater for 15 minutes, buoyant and blubbery, torpedoing around their semi-aquatic kingdom. The beaver’s need for water is based on their own survival. However, the service they provide to the entire ecosystem is exactly why projects across the Kootenays are underway, with support of Kootenay Connect.

“Learning how to coexist with beavers is a win-win situation,” said Marcy Mahr, KCP’s Kootenay Connect Manager, “they’re a nature-based solution, and they don’t send an invoice.” Kootenay Connect works across landscapes, with diverse partners including both private and public landowners, which makes these three beaver projects a perfect fit.

Once upon a time beavers tended to almost every creek on the continent. Roughly 200 million maintained North America’s verdant riparian areas. During the fur trade the beaver population dropped to an estimated 10,000 to 100,000 individuals. Now their numbers have risen to the low millions, with

hope for more.

They may be an unlikely hero, but the unique contribution beavers offer climate change adaptation has rightly given them well-deserved kudos, especially in places expecting more floods, wildfire and drought. With that in mind, who's a Beaver Believer now?

Lead image: For a landscape facing wildlife, drought or floods, the beaver Castor canadensis is a downright superhero that scientists and community groups in the Kootenays are turning to for answers. ***Photo submitted by Kootenay Conservation Program***

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