



Above: Beaver dam  
All Images from Emily Fairfax

## Smokey the Beaver Comes to the City

By Tim Beatley

I have always loved beavers and have fond recollections of watching them as a child. A favorite object that I have carried with me from house to house over the years is a three-foot long segment of a tree chewed nearly, but not quite, in half. It is what beaver biologists call a chew-stick (perhaps chew-log in this case), and it has always amazed me.

Beavers are experiencing renewed interest among ecologists and land managers, but also among the general public, as we begin to understand

(or rediscover) the many positive ways that they influence the landscape. When Europeans arrived, there were an estimated 100 to 400 million beavers in North America. Largely because of demands for furs and resultant trapping during the first half of the 19th century, beaver populations reached a shockingly low number, around 100,000, and came close to extinction. Today, beaver numbers have rebounded and estimates put them in the 10 to 40 million range, though this is still only 10% of pre-trapping levels.

Emily Fairfax, who teaches at Cal State Channel Islands, is one of those scientists whose work has been helping to change our perception of beavers, especially through her documentation of the role that these natural engineers play in mitigating drought, flooding, and especially wildfire. In 2020, she published with colleague Andrew Whittle the wonderfully titled article "[Smokey the Beaver](#)," which is an apt moniker to describe their findings: that beaver dams and the flooded watery environs that they create provide remarkable protection against wildfires.

I recently discussed these findings with Fairfax who explained that, while others had observed this phenomenon, no one had really studied it or documented it in any scientific or systematic way. She was quite surprised by what they found and the extent of fire protection afforded by beaver ponds and wetlands: "I was expecting to see more burning," she told me. "Like the fire pushing into these zones and then maybe petering out a little bit more." What she found was a greater ability to stop or redirect the fire, and she found it consistently across her sample. "As soon as the fire got to the edge of these complexes it was like night and day, like it stopped." The result: "huge patches of landscape were intact," an encouraging finding, she told me; "a nice bit of hope,"

in otherwise discouraging times.

Cleverly, Fairfax has communicated the essence of her findings in a wonderful [homemade animation](#). She tells me the inspiration for this grew from her time on the job hunt, where she was constantly being asked to give her elevator speech. She'd usually want to search for some photos or pull out a book, but came to the animation idea as a more effective answer. She found a stop-motion app and made the short, animated film herself.

Land managers are taking notice of this work, she tells me, and the tide seems to be turning in favor of beavers. For example, California has just funded a major new beaver conservation and restoration program. The

beaver solution is a relatively cheap and easy one; something she's now seeing "a ton of enthusiasm for." It is cheap and doesn't need humans to do very much at all. "In fact, the biggest effort is leaving the beavers alone so they can do their job."

Especially important is that these beaver-created riparian oases will provide important refugia for many other species, including birds and small mammals that are already incredibly stressed by climate change. "These ribbons of fire-resistant riparian corridor may be particularly important for species that are unable to physically escape fire," she and her co-author write in the conclusions to their "Smokey the Beaver" article.

Beaver engineering is also

Below: Screenshot from "Beavers and Wildfire" animation by Emily Fairfax  
[Link to Animation](#)



important in addressing conditions of drought and in managing flooding by creating deep ponds and expansive wetlands that retain stormwater and help to recharge groundwater. There is some evidence that beaver ponds do an especially effective job of controlling and treating toxic runoff, a result in part of the unique microbial conditions found there. Fairfax specifically mentioned the positive role of beaver ponds in capturing the ash left from wildfires and moderating the water contamination that typically occurs as the ash runs downstream.

I asked Fairfax about the role of beavers in cities. There has been a history of seeing them as a nuisance when in close proximity to people and development, where dams can lead to flooded roads and the loss of trees. Coexistence, Fairfax tells me, is possible and there are now more tools and coexistence best practices to draw upon. Pond levelers (that go by trademarked names like “beaver deceiver”) are one tool that permit land managers to reduce the height of dam ponds to avoid inundation of roads and development, and there are tried and true ways to protect trees, including through the use of wire guards. Fairfax tells me about how favorite trees of beavers to fell and chew, such as Cottonwoods and Willows, have developed defenses against the beavers. For example, once a tree such as a Willow is felled its shoots are bitter to the taste and beavers will avoid eating them. Trees like Willows and

Aspens, moreover, are species that clone, so that when beavers use their sticks or branches they are essentially planting the next generation of these trees. In these ways, beavers and trees have coexisted for 20 million years, she tells me.

Cities like Denver and Seattle are now actively making room for beavers and having considerable success at coexistence. Seattle can now boast the largest urban population of beavers in North America. Coexistence there means thinking ahead: protecting trees proactively. “The result is that the city is full of beavers,” says Fairfax and “nobody thinks it’s weird to see beavers swimming down the canals.”

Relocation of beavers is possible, though increasingly seen as a last resort. Much can be done to ensure successful relocation where justified, including relocation of entire beaver families. Efforts also include creating beaver dam analogues, which are human-made structures that mimic beaver dams and give the beavers a head-start. One of the most intriguing historical examples of an oddly successful relocation effort occurred in the late 1940’s when Idaho and California beavers were placed in boxes and air-dropped by parachute into backcountry locations. No one today is suggesting a return to that technique, but there is growing recognition that many landscapes would benefit from the reintroduction of beavers.

There is also growing evidence about the extent to which urban

residents enjoy the presence of beavers and actively seek them out. Fairfax mentions many examples, like a town in the UK where recreational beaver watching has become an economic engine. Or the [story of beavers near Logan, Utah](#), where every night families show up to watch the beavers. Fairfax herself enjoys leading nature walks to see beavers and is pleased to see the ways in which people look forward to a beaver sighting. “It’s so much suspense,” she says, as people enjoy reading the landscape, looking for clues such as chew-sticks, until they finally see a beaver. “People get so into it...Everyone’s cheering for the beaver to come out.”

Some of the strongest supporters of returning beavers to their rightful place in the ecological community are Native Americans. The Yurok, Tule River, and Maidu tribes of northern California, especially, but also the Yakima and Cowlitz tribes of Oregon and the Tulalip of Washington, are all working to restore beaver populations, which is also seen as an important step towards restoring salmon as well. Beavers have a special significance to these tribes, as Frankie Myers of the Yurok tribe speaks about in a wonderful recent episode from the [How to Save a Planet podcast](#) (that Emily Fairfax participated in and alerted me to). Beavers have always been seen as members of the community, Myers notes, and humans and beavers have coexisted together for thousands of years. I like this more expansive idea of a community that includes beavers, an idea well-suited for the times and for

the urban era where citizenship in cities must extend well beyond humans.

Fairfax’s current research focuses on developing a model that will help better understand (how many and where) beavers can maximize fire protection, as well as understanding through historical records what stream ecology looked like prior to European trapping. Her hunch is that pre-European landscapes, with a very dense population of beavers, looked quite different from today (likely much more verdant and biodiverse).

Cities would be wise to enlist beavers in helping restore our damaged urban ecosystems. They will help deliver a needed dose of wonder and fascination as well. For this “beaver believer”,

I am going to go looking for my chew-log, and place it in a prominent spot, in the hopes that it will remind me of the time spent watching these endearing critters.

#### Resources:

Fairfax, Emily. 2019. “Beavers and Wildlife: a stop-motion story.” YouTube video. <https://youtu.be/IAM94B73bzE>.

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Wuthrich, Aubri. 2022. “Family of beavers is the latest attraction in Logan Canyon.” KSLNewsRadio. <https://kslnnewsradio.com/1974377/logan-canyon-beavers-making-a-splash-by-just-being-beavers>.

