

Conservation

How Floods Benefit Freestones/By Michael Hamilton



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On June 18, 2013, thunderstorms roiled over British Columbia's Elk River Valley and it began to rain. On the 19th, a steady downpour beat on the tin roofs of houses and mountain cabins. The regulars at Mugshots Café in Fernie exchanged nervous looks. Local chatter recalled the 50-year flood in 1995. On the 20th, townspeople awakened to an unrecognizable raging torrent of mud and debris. The Elk River was on a rampage, fed by three days of heavy rain, swollen tributaries, and rapidly melting mountain snow. It was the perfect storm for imminent disaster.

Locals quickly rallied together and built sandbag levees. Luckily the dikes held. The rain stopped. The town was saved. No lives were lost. But what was the fate of thousands of native westslope cutthroat and bull trout, and a rich menagerie of insect life, all dwelling unseen beneath the surging flood waters of the Elk? Would they all adapt and survive?

Free-flowing freestone streams like the Elk River emit a kind of magic for fly fishers because no dams control their flows. Fed by springs, snowmelt, and rain, freestone streambeds fill with gravel, rocks, and debris. Over time, erosion shapes the rocks into rounded stones that move freely along the streambeds, literally making them "free stones." The same way a pestle and mortar grind spices, tumbling rocks pulverize fallen trees and their leaves into micronutrients that feed aquatic invertebrate populations that in turn nourish native fish.

In the case of the Elk, when the floodwaters finally receded, the banks were littered with piles of mud and debris. Logs and trees were stacked up like cordwood at the top of islands. To many, the aftermath looked devastating. But a closer look, states Sherri McPherson, a Canadian senior aquatic biologist and water quality expert, revealed an altogether different picture. "By definition, a freestone requires flooding for its very existence. Just like fires regenerate forests, freestones need occasional floods to remain healthy," she explains.

In 2016, McPherson was part of a provincial team assigned to create a future flood mitigation plan for the Elk. She says her research revealed many examples of how the Elk River valley's 100-year flood greatly benefited the river's aquatic environment. "Black cottonwoods that grow along the Elk's banks rely on high-water events to spread their newly released seeds throughout the riparian environment," she notes. "They also provide a smorgasbord of terrestrial insects to help trout survive and grow."

Additionally, according to McPherson, the flooding activated side channels, expanded wetland and riparian habitat, and redistributed sediments and fertile soils that contribute critical nutrients to the overall biodiversity.

As traumatic as the June 2013 flood was for people, Paul Samyicia, longtime owner of Elk River Guiding Company in Fernie, says you won't be able to tell that a flood ever raged when you sample the Elk's trout populations: "The size and sheer number of our native westslope cutthroat and bull trout is the best I've seen in over a decade. I have to keep reminding myself that these fish are incredible at adapting to the hydrologic conditions in which they live."

Samyicia, who holds a B.A. in zoology, adds, "They have learned to make it through major floods for millennia by hiding behind new woody debris, boulders, logjams, and undercut banks. It's in their DNA."

Based on the Elk's quick recovery from the potentially catastrophic event, the evidence is clear that floods in freestones are a positive rather than a negative, because the high flows recharge the water table, contribute critical nutrients, scour out pools, disperse invertebrates, rejuvenate riparian vegetation, clean algae off rocks, redistribute sediments, and create new channels and floodplains. Taking these benefits together reminds us that freestone streams are precious gems worth celebrating and protecting.