Green Scene: Dealing with the Deluge

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[Title in Tri-City News: Can streams deal with the deluge?]

After a long, dry autumn, the rainy season has arrived with a vengeance. Scientists tell us this weather pattern of shifting extremes is what we should now expect. Global warming is predicted to extend our summer drought into the autumn followed by heavier than normal rainstorms throughout the winter. Are we prepared for this regime shift?

Where nature is allowed to run its course, rivers cope with larger than normal flows by temporarily expanding into their side channels and spilling into what geologists appropriately call the floodplain. Rivers are dynamic entities and, as such, require room to "flex their muscles" and naturally readjust their courses from time to time. The Coquitlam River once flowed out of the mountains onto a floodplain of braided and shifting, intermeshing channels. So did Hyde Creek which tumbled down from Burke Mountain across a network of channels on the east side of Mary Hill and into the Pitt River close to Douglas Island.

Early settlers thought these broad, flat floodplains would make an ideal rail yard and town centre. One by one, the floodplain channels were filled and Hyde Creek was diverted east to DeBoville Slough. Now, only a narrow main stem of the Coquitlam River still carries water to the Fraser; a few oxbows remain as wetlands or backwater areas. When damaging floods occurred in years past, the solutions devised were never to restore lost river channels but, instead, to confine the river between higher and higher dikes. While we might now, perhaps, recognize these decisions to be neither sensible nor sustainable, still our cities grow and development continues to be allowed too close to river banks.

A river robbed of side channels and jailed between dikes becomes a crippled entity. As such, it cannot be nearly as productive of salmon as a river that runs wild and free. Dikes are kept tree-free because roots promote water penetration. Thus, a diked river, lacking trees, receives less shade, less life-sustaining leaf litter and less of the falling branches that create salmon habitat. Because there are no longer any side channels to absorb excess water, stormwater surges in erosive flows down the main stem of the river. Salmon seek areas of refuge from these forceful flows but, with backwater channels filled, safe havens have mostly vanished.

Over the past century, our smaller streams slowly met a similar fate as development crept up the hillsides. Initially, these streams were buried and culverted because their true value was not recognized. As we gained some insight into salmon habitat, the main stems of smaller creeks were kept open but their side channels were not. As a consequence during heavy rainstorms, streams such as Noons Creek in Port Moody, become little more than rock-lined chutes as they deliver explosive water flows downstream. In Noons Creek, the only place where salmon can now find sanctuary from the storms are the channels hand-dug by volunteers close to the hatchery.

Winter rainstorms deliver flows of such force that boulders in riverbeds are pushed downstream and stream banks erode. During the storm earlier this week, flows in the Coquitlam River surged with almost a ten-fold increase during a twelve-hour period – and this, with a dam upstream to dampen the torrent from the upper parts of the watershed. As global warming brings more of these extreme rainfall events, well-treed riparian areas will be needed to protect stream banks and side channels will be essential to provide refuge for salmon. The impact of past development on our streams is often referred to as “death by a thousand cuts”. With some critical elements of their ecosystem already missing, will our streams be resilient enough to survive the coming deluge?