

**Assessment of seasonal water flow in the Millstone River fish side channel
(Nanaimo, BC) with respect to spawning and migration of coho salmon
(*Oncorhynchus kisutch*)**

By: Daniel O'Rourke

VIU Faculty Advisor: Dr. Erick Groot

In man-made habitats it is important to maintain conditions suitable for the populations that inhabit them, especially if those populations are of economic and recreational importance. The primary goal of this study was to examine the hydrometric and water quality conditions in the Millstone River side channel located in Bowen Park, Nanaimo, BC to determine if it was meeting the habitat requirements for coho salmon (*Oncorhynchus kisutch*). The secondary goal of this study was to estimate the hydrometric characteristics of past spawning periods based on the discharge in the Millstone River which feeds the side channel. The side channel was monitored weekly for discharge, turbidity, dissolved oxygen and temperature for a period beginning August 8, 2016 and continued until December 26, 2015 through a coho salmon spawning period. Results indicated that all the hydrometric and water quality requirements were met during the spawning period. However, during the drier months (summer and early fall) the habitat requirements, specifically for temperature, were not being met for the juveniles still inhabiting the channel from previous spawning events. The correlation between the discharge in the channel and mainstem ($r = 0.963$) suggested that certain conditions in the side channel can be estimated based on readily attainable discharge information for the mainstem. This study fills an information deficiency regarding the specific hydrometric characteristics of the fish side channel while setting the groundwork for future studies on this important salmon population.