



KOKANEE CREEK

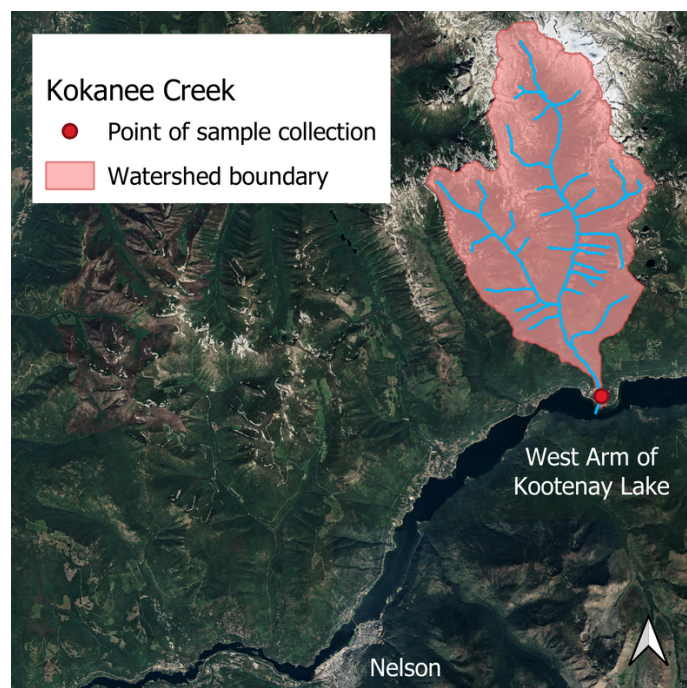


Sample Date: August 12, 2021

General Location: Tributary into the West Arm of Kootenay Lake, between Nelson and Balfour, on the north shore

Sampling location: Right after Kokanee Creek bridge on the south side of Highway 3A (latitude = 49.6042778, longitude = -117.1259722)

Stream Order: 4



Introduction and Methods

Historically, the Kokanee Creek watershed was explored and developed for mineral exploration and mining. A large portion of the watershed is part of Kokanee Glacier Provincial Park.

We used a nationally standardized protocol for measuring freshwater ecosystem health called the Canadian Aquatic Biomonitoring Network (CABIN) protocol (find the full protocol [here](#)). It focuses on benthic macroinvertebrates, which are aquatic animals without backbones that live on the bottom of waterbodies and are visible to the naked eye. Counts of benthic macroinvertebrates are indicators of water quality and overall stream health in part because these organisms are sensitive to disturbance (more about the science of aquatic biomonitoring [here](#)).

We assessed stream health by summarizing the macroinvertebrate communities of sampled streams. We calculated the following standard measures of stream health and compared them to the values we should observe in healthy streams in the Columbia Basin (based on the [Columbia Basin Reference Model](#))

- 1. RIVPACS O:E Ratio** – River Invertebrate Prediction and Classification System ratio of observed taxa to expected taxa
- 2. Metrics** – Various richness measures, numbers of individual taxa, compositional measures, and functional measures
- 3. Bray-Curtis Dissimilarity** – Community structure similarity between test stream and healthy Columbia Basin streams

Results

Summary of Findings

Impaired, relative to the median reference (healthy) stream in the Columbia Basin. *Median definition: Denoting the middle value of a series arranged in order of magnitude.*

Detailed Findings

1. RIVPACS

- Value = **0.93**, indicating that the site was in good condition. Generally, sites with O:E ratios close to 1 are in good condition, sites with O:E ratios above 1 indicate enriched communities, and sites with low O:E ratios are in poor condition.

2. Metrics

- 9 out of 10 values point to a stream that is less healthy than the median reference (healthy) stream in the Columbia Basin.

The one exception was:

- Total No. of Taxa* was similar in Kokanee Creek compared to the median reference (healthy) stream

3. Bray-Curtis Dissimilarity

- Value = **0.58**, indicating an intermediate level of dissimilarity between Kokanee Creek and the median reference (healthy) stream (values close to 0 indicate identical communities; values close to 1 indicate completely different communities)
- Given that the RIVPACS and Metrics findings above indicate an impaired stream, this intermediate dissimilarity value suggests that the stream community is different in a "bad" way

Discussion

The information gathered serves as a baseline to compare future stream health assessments to, to assess the impact of climate change and other future impacts to the watershed.

The data indicating an impaired stream could be due to the impacts of mining and logging in the area, as well as the impacts of nearby access points and nearby roads. Further studies need to be conducted in order to determine the specific causes of impairment. Overall, this is an impaired stream, relative to the median reference (healthy) stream in the Columbia Basin.

Data and results are available on our [website](#).

Thank you to our funders:

