



REDFISH CREEK

Sample Date: October 8, 2021

General Location: Tributary into the West Arm of Kootenay Lake in the Balfour area of the north shore

Sampling location: Just past Harrop Ferry Road near pump house on south side of Highway 3A (latitude = 49.6135556, longitude = -117.0464167)

Stream Order: 3

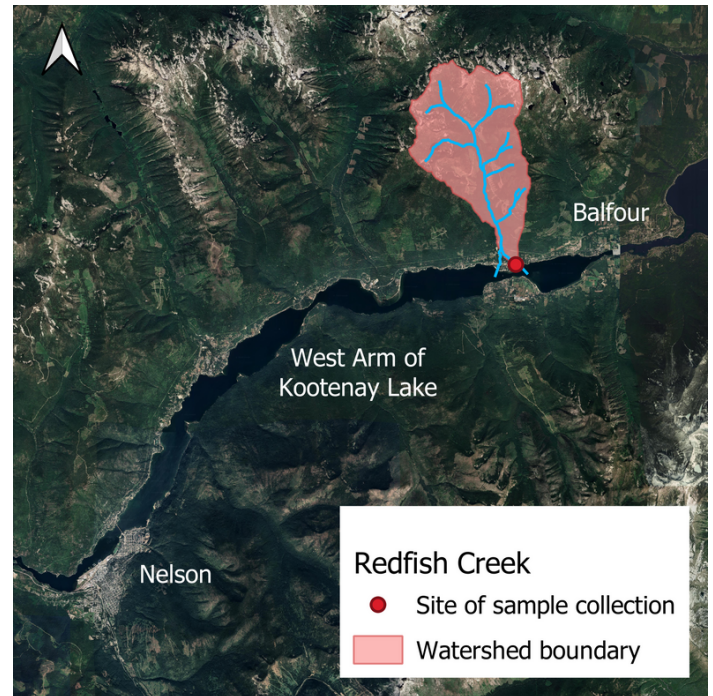
Introduction and Methods

This area has served as an important ferry connection for the communities on opposing shores of Kootenay Lake.

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

Healthy, 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 = **1.09** in 2021, indicating that the site was in excellent 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

- Most metrics point to a stream that is as healthy or healthier than the median reference (healthy) stream in the Columbia Basin

The three exceptions were:

- % *EPT Individuals* was lower in Redfish Creek than the median reference (healthy) stream
- *No. EPT individuals/Chironomids+EPT Individuals* was lower in Redfish Creek than the median reference (healthy) stream
- *Tolerant individuals (%)* was higher in Redfish Creek than in the median reference (healthy) stream

3. Bray-Curtis Dissimilarity

- Value = **0.31**, indicating a low level of dissimilarity between Redfish Creek and the median reference (healthy) stream (values close to 0 indicate identical communities; values close to 1 indicate completely different communities)
- This low dissimilarity value suggests that Redfish Creek is healthy relative to the median reference (healthy) stream

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 three metrics that did not indicate a healthy stream could be due to the impacts of logging in the area, as well as the address and water license points and nearby roads. Further studies need to be conducted in order to determine the specific causes of impairment. Overall, this stream has mixed/impaired results compared to the median reference (healthy) stream in the Columbia Basin.

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

Thank you to our funders:

