QUANTIFYING CONTAMINANTS IN SUBSISTENCE FISH FROM TRADITIONAL TERRITORY OF WAHNAPITAE FIRST NATION

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Wahnapitae First Nation (WFN) is a small Anishinaabe Community in Ontario, Canada, that regularly harvests fish for subsistence. Thus, like many Indigenous Communities, the quality and health of the fish from their Traditional Territory is of great concern. The goal of this project is to better understand contaminant levels in subsistence fish in lakes from WFN's Traditional Territory, which has been heavily impacted by mining activity. As a community science project, we represent a collaboration between academic and community researchers, and we relied on community input to inform our study design and sampling. We specifically focused on five species of freshwater fish from two lakes, which are relied on as a food source by the community. We sampled three tissues commonly eaten by community members (i.e., muscle, liver, and pyloric ceca), with a total of 346 samples. Approximately half of our samples have been analyzed for total arsenic, selenium, cadmium, and copper, as well as total and methyl mercury, at an accredited lab; the remaining half are currently being analyzed for the same endpoints. Preliminary results show that mercury, arsenic, and selenium are the contaminants of most concern in these fish. However, there is a wide range in elemental concentrations between the two lakes. Furthermore, the initial data also suggest significant differences in elemental concentrations between the three tissues, within the same fish. Future analyses will focus on quantifying these differences and investigating the driving factors thereof. We will also look at the ratios of the various elements, given that selenium can have a protective effect on the accumulation of mercury and arsenic. In addition to improving our understanding of contaminant distributions amongst tissues in key subsistence fish species, this project will provide WFN with the resources for more informed fish consumption and guide future monitoring efforts.

PRESENTER BIO: Taylor Nicholls is an Indigenous M.Sc. candidate at Laurentian University from WFN. She grew up in her community and remains an active member, often participating in traditional and educational events. With a passion for aquatic science and learning her culture, she was a perfect fit for this community-based project.