



# Contaminants, nutrients and the traditional value of food fishes in Kluane Lake, Yukon Territory

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## Traditional Food Security for Generations

In light of global climate changes and ecological changes on their traditional lands, the Kluane First Nation has developed a food security strategy. Part of this strategy involves understanding the nutritional value, levels of environmental contaminants, and traditional knowledge surrounding important food fish species in Kluane Lake: lake trout (*Salvelinus namaycush*), lake whitefish (*Coregonus clupeaformis*), and burbot (*Lota lota*). This study is the first to investigate environmental contaminants in Kluane Lake food fish species, through a combination of scientific study and traditional knowledge.



Figure 1. Kluane Lake lake trout (left); Round and lake whitefish (right).

## Objectives

- To determine levels of mercury and organochlorine pesticides in selected traditional food fish species, and relate to length, age etc.
- To determine zinc, selenium, and omega fatty acids concentrations in the aforementioned fish species.
- To understand the traditional and social value of fish to Kluane First Nation citizens, and address their concerns regarding environmental contaminants.

## Methodology

- Lake trout and lake whitefish were caught by First Nations fishers & donated by participants in the Kluane Lake Fishing Derby in July & August 2015, using gill nets or rod & reel.
- Burbot will be collected in December 2015 by Kluane First Nations fishers.
- Traditional knowledge interviews were conducted during the Kluane First Nation Harvest Camp August 2015.

## Youth & Community Involvement

- Traditional knowledge interview questions focused on changes in fish abundance, species, and fish quality over the interviewee's lifetime, as well as knowledge and stories passed down from their ancestors.
- Youth from the Kluane First Nation were actively involved in this project, assisting in traditional knowledge interviews, gill netting with an experienced Kluane citizen, and learning both the traditional and the scientific way to process a fish for food and analysis.
- Youth were taught about the origins, behaviour, and fate of environmental contaminants, such as organochlorines and mercury.
- Researchers actively participated with the community, learning traditional methods of food preparation and teaching the scientific approach to contaminant analysis.

## Tissue Mercury Concentrations

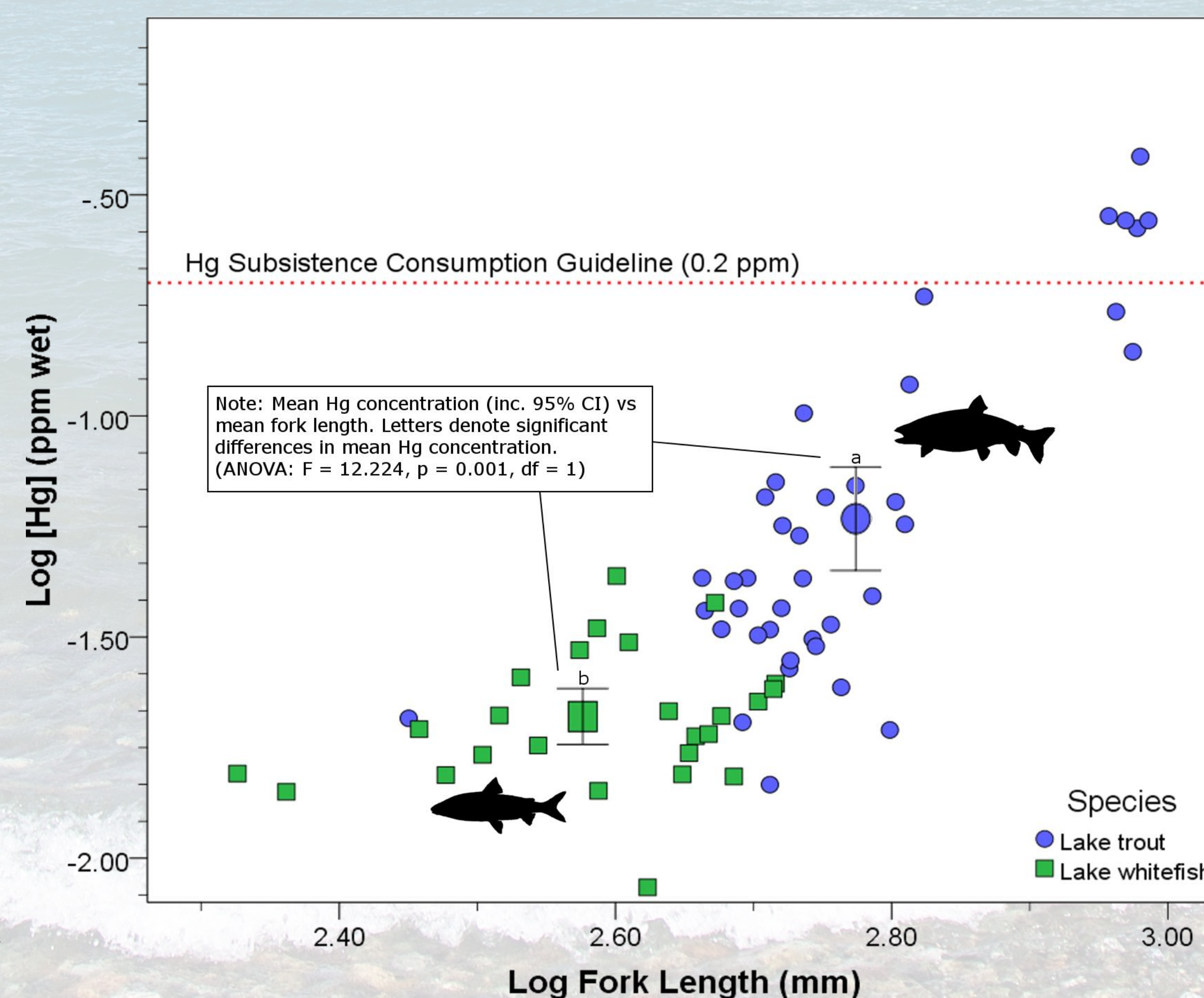


Figure 2. Scatterplot of mercury concentration vs. fork length for lake trout and lake whitefish. Note the Hg subsistence consumption guideline (0.2 ppm).



Figure 3. Lake whitefish sampling at Kluane First Nation's Harvest Camp.

## Preliminary Findings

Lake trout under 900 mm fork length and lake whitefish both have mercury concentrations **below** the subsistence consumption guideline (0.2 ppm). All fish sampled have tissue mercury concentrations **below** the commercial sale guideline (0.5 ppm). Lake trout have a significantly higher mean mercury concentration than lake whitefish (0.086 ppm, 0.022 ppm, respectively).

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Figure 4. Traditional knowledge interview (left); Learning to gill net (right).

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