

Cultus Lake Aquatic Stewardship Strategy

Media Release

BC's Cultus Lake at Risk from Nutrient Loading

New research shows that high levels of phosphorus and nitrogen are entering the lake from the air as well from waterways — threatening water quality and fish habitat

(Chilliwack: January 22, 2015) New research has found high levels of nitrogen and phosphorus are degrading the water quality in Cultus Lake in the Fraser Valley. The study finds these nutrients are deposited into the popular British Columbia lake from the atmosphere in rain, snow and dust, as well as from rivers and streams in the watershed, bird droppings and septic leaching.

The research* indicates that excess nutrients from human activity and a seasonally resident population of gulls is changing the lake ecosystem, with potential threats to fish and future recreational enjoyment of the lake.

Dr. Daniel Selbie, a limnologist who is an adjunct professor at Simon Fraser University's School of Resource and Environmental Management, and head of the Lakes Research Program for Fisheries and Oceans Canada's Science Branch, co-supervised the master's research study.

"We have strong evidence that Cultus Lake water quality has changed significantly over the past several decades, and with Annika Putt's master's research, for the first time we know the main factors driving this change," Selbie said.

"Increased delivery of nutrients to Cultus Lake has initiated a process called cultural eutrophication, which is characterized by elevated growth of algae and potentially other aquatic plants, such as invasive Eurasian watermilfoil. If left unchecked, excess algal growth depletes oxygen for fish in the deep water of the lake, reduces water clarity, creates taste and odour problems, threatens fish habitat, and makes a lake less attractive for swimming, fishing, boating and other recreation."

Eutrophication can impact freshwater food webs for native fish, altering the availability and quality of zooplankton, the tiny animals relied upon by juvenile Cultus Lake sockeye salmon and for the coast range sculpin (*Cultus pygmy sculpin*). The Cultus Lake sockeye is a genetically distinct population that is listed as endangered by the Committee on the Status of Endangered Wildlife in Canada, while the Cultus Lake sculpin is listed as a threatened species under the Species at Risk Act.

Putt's research tracked nutrient sources in the watershed and created a nutrient loading model that shows the bulk of the nutrients are carried into Cultus Lake each year by rivers, streams and groundwater, and originate from agricultural fertilizers, soil erosion and other watershed sources.

An unexpected finding was that a significant portion of the nutrients are delivered from the atmosphere in rain, snow and dust, and likely arise from airborne mobilization of agricultural fertilizers and vehicle and industrial emissions in the Fraser Valley. Other important sources of nutrients to the lake are septic system leaching and droppings from migratory gulls.

Since high levels of nutrients from atmospheric sources have been found in the Cultus watershed and in other parts of the Lower Mainland, it is possible that urban and agricultural emissions that are transported in precipitation and dust are impacting aquatic ecosystems throughout the region. The study highlights that sound integrated watershed and airshed management is critical for the sustainable use and enjoyment of Cultus Lake in the future.

The Cultus Lake watershed is home to more 1,000 residents and is a popular recreation and tourist destination that draws between an estimated two to three million visits each year.

Dr. Daniel Selbie will make a presentation on this research on January 22 from 7 to 9 pm at the Cultus Lake Community School. This is a free event hosted by participants in the Cultus Lake Aquatic Stewardship Strategy. Everyone is welcome to attend.

Public Presentation: January 22 at 7pm at the Cultus Lake Community School. 71 Sunnyside Ave. Chilliwack, BC

***About the Study**

"*Spatiotemporal nutrient loading to Cultus Lake: Context for Eutrophication and Implications for Integrated Watershed-Lake Management*" is a 2014 Master of Resource Management research study by Annika Elsie Putt, available on the Simon Fraser University website: <https://theses.lib.sfu.ca/thesis/etd8600>. Limnologist and SFU Adjunct Professor Dr. Daniel Selbie was one of the research supervisors.

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About the Cultus Lake Aquatic Stewardship Strategy (CLASS)

CLASS is a network of more than 60 organizations and individuals, all interested in the future of Cultus Lake that have come together to identify key issues, gather information and support research on the lake. Participants include the Cultus Lake Community Association, Lindell Beach Ratepayers, BC Parks, Fisheries and Oceans Canada, Cultus Lake Park Board, Soowahlie First Nation, Chihlkwayuhk Tribal Society, Sto:lo Tribal Council, Fraser Valley Regional District, Fraser River Salmon Table Society, Fraser Valley Watersheds Coalition, Sport Fishing Advisory Board, Fraser Salmon Fishers Society and participants from business, industry, education and other sectors.

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