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Avalanche Lake Physical & Chemical Survey (#521004)

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Avalanche Lake was found to be fishless in 2020, (#520075) despite the 2019 discovery of a self-sustaining brook trout population in nearby Lake Colden (#519087), due to the lake recently recovering from poor acid-base water chemistry. The Avalanche Lake survey was performed to see if the values of different chemical metrics throughout the water column of the lake could be related to fish survival, particularly during the spring snowmelt pulse of acidity.

Water samples were collected at various location that were analyzed for pH, ANC, BCS, BC/ROOs and ALIM (inorganic monomeric “toxic” aluminum). Enclosed cages containing brook trout were hung at various depths in the water column to investigate their survival. Water samples were also collected at the cage location. Brook trout are known to avoid lethally acidic shallow water by moving to greater depths during acidic episodes (Van Offelen, 1994).

Unfortunately, ice and trail conditions prevented staff from checking the live cages in this remote water in time to gain any useful information. The spring chemistry metrics did show that there was a slight gradient in the water column at some sample sites with improving acid-base chemistry at greater depths. In general, very few of the 2021 values for “toxic” aluminum were above the threshold for brook trout survival of 2 μML^{-1}. Likely, the improvements in water chemistry were due to the vagaries of weather, snowpack, etc.

Van Offelen H.K., C.C. Krueger, Schofield C.L. and Keleher C. 1994. Survival, Distribution, and ion composition in two strains of brook trout (Salvelinus fontinalis) Fry after exposure to episodic pH depressions in an Adirondack Lake. Can. J. Aquatic Sci. 51:792-799.

SPORT FISH RESTORATION