

**A CHARACTERIZATION OF THE BIOLOGY AND
NUTRIENT CYCLING OF TWO GLACIAL LAKES IN
ISFJORD RADIO, SVALBARD**

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ABSTRACT

Due to the fact that lakes in the high arctic are only exposed for two to three months out of the year, very little is known about the microbiology and nutrient cycling that occur in this region. Of greatest interest in these high arctic regions are the primary producers that control the majority of the biogeochemical cycling and carbon dioxide sequestration of the region. Therefore, it is important to understand how industrialization of the 20th and 21st centuries is affecting these delicate and vital ecosystems. This study explores two glacial lakes in the high arctic region of Svalbard. In order to gain insight on the nitrate and phosphate supply ratios driving primary production in the region, a series of nutrient enrichment experiments (mesocosms) on eleven locations throughout Isfjord Radio, Svalbard were performed. The results of these experiments reveal that the primary producers of this region are highly responsive to the increased nitrogen deposition from the burning of fossil fuels in North America and Europe. In particular, this study shows that, the past decade alone, diatom diversity within these two lakes has significantly decreased in response to the increased nitrogen loading of these freshwater systems.

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