

ORAL PRESENTATION

A SHIFT IN DIATOM SPECIES REGIME DUE TO INCREASED PHOSPHOROUS ASSOCIATED WITH THE THAW OF ALPINE PERMAFROST

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Green Lake 4 is an alpine lake in Rocky Mountain National Park, Colorado. Many alpine lakes similar in productivity and elevation to Green Lake 4, have shown a recent shift in diatom species. Nitrogen has been shown to be increasing in alpine lake systems of the Rocky Mountain Front Range due to atmospheric deposition. Species associated with oligotrophic systems are being replaced with more common species that are tolerant of higher nutrient concentrations. However, little is known about the role phosphorous. The bedrock of the watershed in which Green Lake 4 sits is composed of apatite. When eroded, dissolved, and introduced into alpine lakes by snowmelt, apatite acts as a phosphorus surrogate. With recent warming in the alpine area of Green Lake 4 and the melting of alpine permafrost, a pulse in stream flow has been observed in the fall months of the last twenty years unrelated to any precipitation events and is likely the result of thawing permafrost. In order to understand the effects of this pulse in stream flow and mobilization of available phosphorous, the top 10cm of the sediment core, representing approximately the last 20 years will be analyzed including diatom community abundance and identification reflecting the diatom diversity and abundance, in the water column during this period based on comparisons from previous research in the lake.