Cycling of mercury in southwest Nova Scotia: Kejimkujik National Park

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The loons in Kejimkujik National Park have the highest amount of mercury (Hg) of any loon population tested in North America. Determining a source for the Hg is critical for the health and reproduction success of this vulnerable bird. Over the past few years, research scientists involved in the Toxic Substance Research Initiative Mercury Project have been investigating possible Hg sources and processes in the park. Preliminary results suggest that no single source can account for the amount of Hg found in the loons. This study investigates the contribution of natural geological sources to the Hg budget.

This study tests two potential geologic sources for Hg: (1) shear zones located in and around the park, in particular the East Kemptville Shear Zone (EKSZ) and Tobeatic Shear Zone (TSZ) and (2) bedrock, in particular the mafic rocks which are thought to contain more Hg than the felsic rocks. This study also investigates various combinations of published Hg data sets using a Geographic Information System (GIS).

The preliminary results show a strong spatial relationship between the inferred trace of the TSZ and anomalous Hg concentrations. There are no anomalous Hg values along the inferred trace of the EKSZ. The lack of response may be a function of sample distribution, not an absence of Hg in the shear zone. Results for the amount of Hg in the mafic and felsic rocks are pending. The combined GIS data show that Hg levels are the highest in the western part of the park. The western part of the park is underlain by muscovite-biotite monzogranite and has a high percentage of wetlands.