

The ecology of Arctic lakes and ponds in the Kivalliq Region

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Nunavut Research Institute Application 2007

Non-technical summary

It is anticipated that recent climate warming will strongly impact the ponds, lakes and rivers of Canada's Arctic. These anticipated impacts include changes in aquatic insect populations, which are important food sources for fish and migratory birds, and changes in the flow and chemistry of freshwaters due to increased melting of permafrost. Relatively little research on aquatic insect changes, due to climate change, has been conducted in Kivalliq compared to the Northwest Territories, Kitikmeot, Qikiqtaaluk and High Arctic regions. During the summer of 2007, we propose to sample ponds, lakes, and surrounding vegetative communities, inland of the community of Rankin Inlet, Arviat, and Baker Lake in the Kivalliq region. We hope our research in the area will provide valuable new information on recent changes in water flow, pond chemistry and status of aquatic insect populations.

We will collect water quality data, moss samples, and aquatic insect samples during approximately 40 days (June – August, 2007) from ponds and lakes within several hours' overland travel of Rankin Inlet and Arviat (via ATV access along established trails, or short portage from waterways accessed via boat). Moss and soil cores will also be taken from the surrounding areas in order to determine how plant facilitation interactions occur within the changing landscape. Baker Lake will also be sampled, and a set of chained thermistors will be installed and left in Baker Lake for the period of one year to monitor water temperature changes during the year. We will be based in Rankin Inlet and Arviat, with sampling trips consisting of day trips out of the communities. We will remove a small sample of water (~1 L) from each sampling site, as well as a small volume of mud (~ several cm³) for analysis of indicators of environmental change. Mid-lake sampling areas will be accessed via collapsible canoe and boat. **We do not collect any fish or disturb any wildlife.** No sampling will take place within areas of cultural importance or protected status. Data collected will be analyzed by a Ph.D. at York University, and will be published both in graduate student theses and peer-reviewed science journals. If the opportunity arises, we anticipate communicating our research efforts and results via media such as CBC Radio North.