

Literature Review

Baker Lake is a receptacle of seven immense watersheds and is very sensitive to change in hydrological and microbial conditions at a very large scale. There are growing concerns relating to water quality, including impacts from climate changes, industrial development, and pollution from daily community activities⁵.

Attributes	Examples of Environmental Changes and Observations
Sea ice	<ul style="list-style-type: none"> Ice is becoming thinner and taking longer to freeze leading to more rough and broken ice. For community members, this makes travelling very dangerous².
Glacier melt	<ul style="list-style-type: none"> The glacier on the north side of Schultz Lake is diminishing⁶. A reconstruction model describing temperature changes has inferred a 2°C increase in mid-summer surface water temperature over the last 60 years⁹.
Snow	<ul style="list-style-type: none"> There is less snow now making it very difficult to build ice housing. Summers are also a lot hotter now due to the lack of snow on the ice².
Seasonal events	<ul style="list-style-type: none"> Winter is coming later, there are fewer blizzards, and the weather is warmer overall². Prevailing winds are also no longer strictly from the north, and when blizzards arrive, the wind is immediately stronger⁸.
Weather	<ul style="list-style-type: none"> Winter weather and ice conditions are harder to predict. As such there is a greater degree of perceived and real risk to hunters and travelers on the ice⁸.
Freshwater levels	<ul style="list-style-type: none"> Water level is dropping in all three major heritage rivers that flow into Baker Lake. The community has been monitoring these levels since August 2018, as other lakes are also drying up⁶. Lower Thelon river levels in the autumn now limit accessibility to small aluminum boats. Wayfinding remains possible only because boat drivers stay within deep water channels⁷.
Sea levels	<ul style="list-style-type: none"> Sea-level projections to monitor the uplift of bedrock indicate that sea level will continue to fall throughout this century, resulting in a shallowing of the approaches to the Baker Lake outflow⁹.

Attributes	Examples of Ecosystem Changes and Observations
Whales	<ul style="list-style-type: none"> Appears to be an increase in beluga whales in the area, which maybe because the whales follow the sealift barges as the come into the area².
Fisheries	<ul style="list-style-type: none"> Some community members have also reported seeing and/or finding new fish not observed before².
Birds	<ul style="list-style-type: none"> Concern about the potential of birds like ptarmigan bringing diseases to the area². An increase in bald eagles, which are seen nesting and feeding on char². The presence of new ducks in the area, and fewer geese, although they used to nest there before².
Invertebrates	<ul style="list-style-type: none"> An increase in small planktonic <i>Cyclotellataxa</i> over the past 60 years, with the largest increase within the last 5 years. These changes may suggest a warmer climate and longer ice-free periods⁵.

Based on the Current Gaps in the Literature, Research Needs Include:

- Monitoring and testing:** Water near the mine sites seems contaminated and community members had seen oil and gas spills. Concern about the impact that this would have on the animals in the area. For example, prior to the mine opening, fish had small heads and large bodies, now it is the opposite⁵.
- Fisheries development studies:** North of Baker Lake, and in the rivers to the east there are large char that community members feel could be harvested commercially⁵.
- Remediation of contaminated sites:** Contaminated soil designated as the old MOT/NCPC has been an ongoing problem for the last 30 years. The current remediation ditch does not prevent contaminated soils leeching into Baker Lake. There is a need to develop a land farm for the reclamation of soil, and the storage or contaminated materials².

Selected References

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