
Alsek River Watershed - Lakes

- **Titl'at M̄n (Dezadeash Lake)**
- **Kloo Lake**
- **Łu Gha M̄n (Klukshu Lake)**
- **Pine Lake 2**

Dezadeash Lake

Titl'at Mān

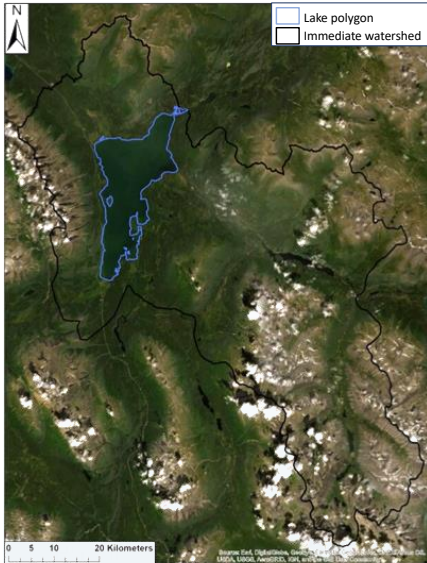


Figure 1. Dezadeash Lake (Titl'at Mān) and immediate watershed delineated in black. From Fradette, 2021.

Lake and watershed information

LAKE SURFACE AREA	WATERSHED AREA
79.18 km ²	1061.53 km ²
SAMPLING DEPTH	POPULATION
6 m	7
AVERAGE DEPTH	ELEVATION
24.3 m	623 m
SAMPLING DATE	AREA FOREST FIRES 2014-2019
2019-07-26	0 km ²

Location

Dezadeash Lake is located in Southwestern Yukon, approximately 43 km south of Haines Junction, on the Haines Highway.

Land Use

91.7% of Dezadeash Lake's 1061.53 km² watershed is natural. 8.2% is composed of water (including the lake itself). The remaining 0.1% of the watershed is comprised of urban and forest loss and mines (Figure 3).

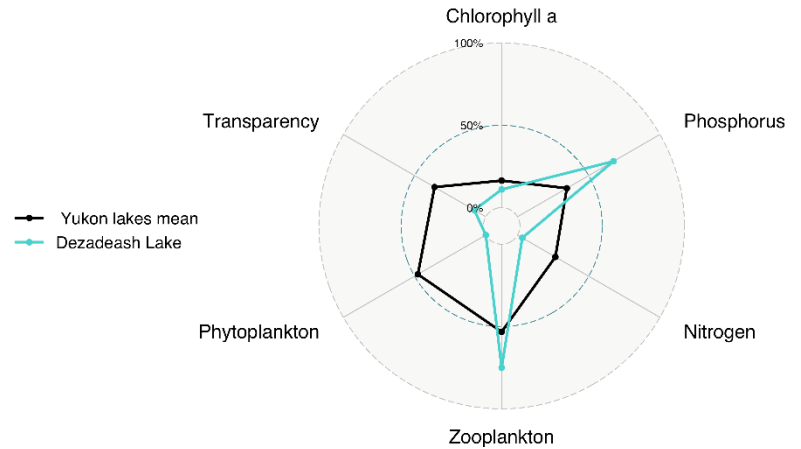


Figure 2. Relative values (rescaled from 0% to 100%) of water quality variables from the mean of all Yukon lakes that were sampled (shown in black) in comparison with Dezadeash Lake (shown in blue).

The results in this report should be interpreted with caution as they represent data collected during a single sampling event. This means that all water quality variables were measured only once during the summer of 2019, and at a single location, for each lake (with the exception of bacteria). For more information on methods please refer to the summary report.

Aquatic ecosystem health

Water color and transparency

Secchi disk depth was measured at 2.1m the day of the sampling. The color value was of 2.21 mg/L Pt. Dissolved organic carbon had a value of 2.11 mg/L.

Chlorophyll a, nutrients and trophic status

Total phosphorus (21.19 µg/L) and total nitrogen (0.05 mg/L) values in Dezadeash Lake were both slightly below the Yukon mean (Figure 2). Chlorophyll a (1.48 µg/L) was also below average. According to the Canadian water quality guidelines for the protection of aquatic life, Dezadeash Lake is meso-eutrophic.

Food chain health

Five zooplankton species were identified in Dezadeash Lake, which is above Yukon's average. However, seven phytoplankton species were identified, which is the lowest diversity of all Yukon lakes (Figure 2). Cyanobacteria concentration indicated a low risk exposure to cyanotoxins but one potential bloom former/toxin producer species of the cyanobacteria group was identified.

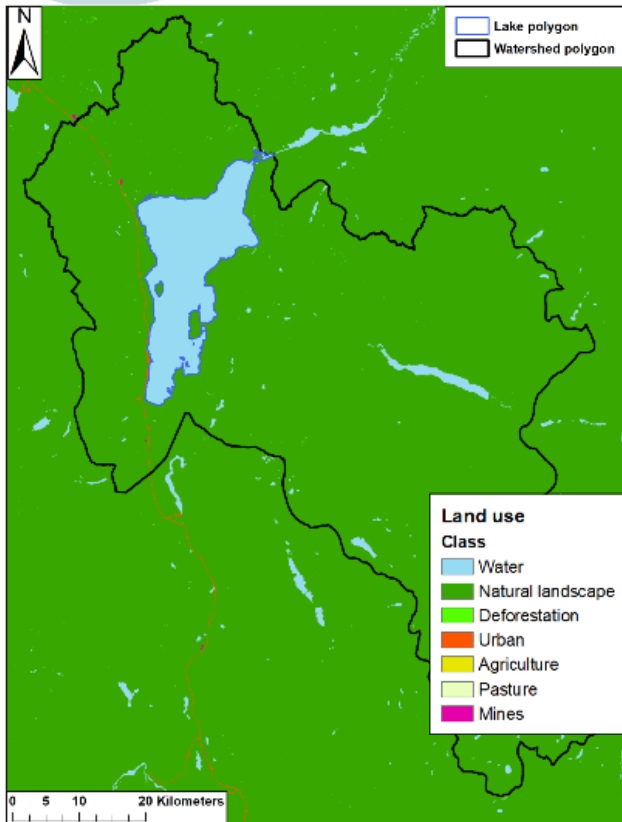


Figure 3. Immediate watershed and land use around Dezadeash Lake. Figure from Fradette, 2021.

Did we find contaminants?

Pesticides

No pesticides, insecticides or herbicides were found in Dezadeash Lake.

Pharmaceuticals

No pharmaceutical products were reported in Dezadeash Lake.

Industrial chemicals

3 ng/L of Tris(2-chloroethyl) Phosphate(TCEP), a flame retardant were detected in Dezadeash Lake.

Fecal coliforms

No fecal coliforms, including *E. coli* bacteria were detected in Dezadeash Lake, either from the littoral sampling site on the southern point of the lake or from the index site near the deepest point of the lake.

Change over time

Sediment cores were retrieved from Dezadeash Lake, but have not yet been analyzed for total metal, diatoms or zooplankton temporal changes. The longest core was 22 cm and was dated to 1973.



Figure 4. The longest sediment core retrieved from Dezadeash Lake.

Temperature & dissolved oxygen

The temperature profile in Dezadeash Lake stops at 2m depth, so it is not possible to examine lake stratification. The surface temperature was 14.9°C on the day of sampling (Figure 5). Dissolved oxygen data was not available due to instrumentation malfunction.

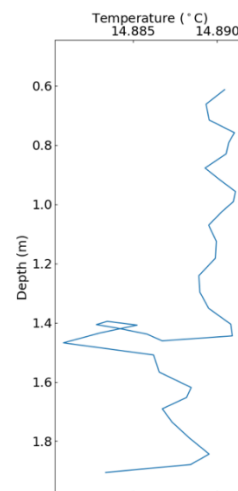


Figure 5. Temperature (°C) profile as measured in Dezadeash Lake. Figures from Fradette, 2021.

Kloo Lake

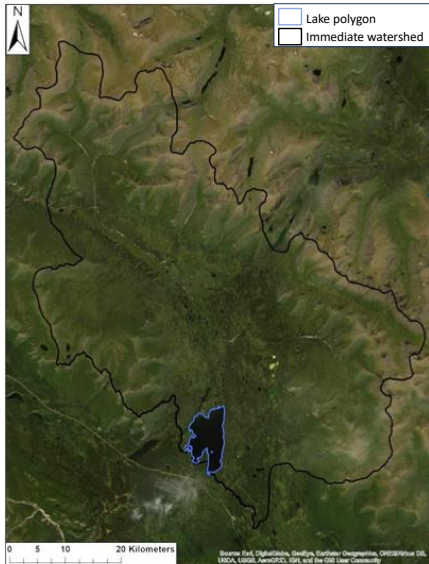


Figure 1. Kloo Lake and immediate watershed delineated in black. Adapted from Fradette, 2021.

Lake and watershed information

LAKE SURFACE AREA	WATERSHED AREA
11.61 km ²	686.64 km ²
SAMPLING DEPTH	POPULATION
10 m	8
AVERAGE DEPTH	ELEVATION
13 m	837 m
SAMPLING DATE	AREA FOREST FIRES 2014-2019
2019-07-24	0 km ²

Location

Kloo Lake is located in Southwestern Yukon, about 30 km northwest of Haines Junction. It lies on the north side of the Alaska Highway.

Land Use

97.29% of Kloo Lake's 0.77 km² watershed is natural. 3.70% is composed of water (including the lake itself). The remaining <0.01% of the watershed is composed of urbanized land of forest loss (Figure 3).

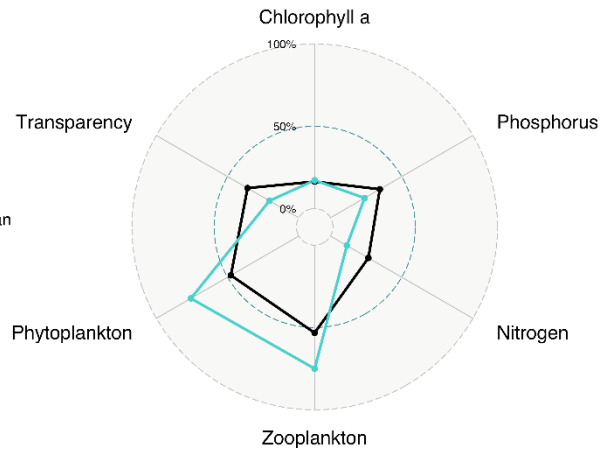


Figure 2. Relative values (rescaled from 0% to 100%) of water quality variables from the mean of all Yukon lakes that were sampled (shown in black) in comparison with Kloo Lake (shown in blue).

The results in this report should be interpreted with caution as they represent data collected during a single sampling event. This means that all water quality variables were measured only once during the summer of 2019, and at a single location, for each lake (with the exception of bacteria). For more information on methods please refer to the summary report.

Aquatic ecosystem health

Water color and transparency

Secchi disk depth was measured at 3.8m. The color value was of 15.23 mg/L Pt. Dissolved organic carbon had a value of 5.36 mg/L.

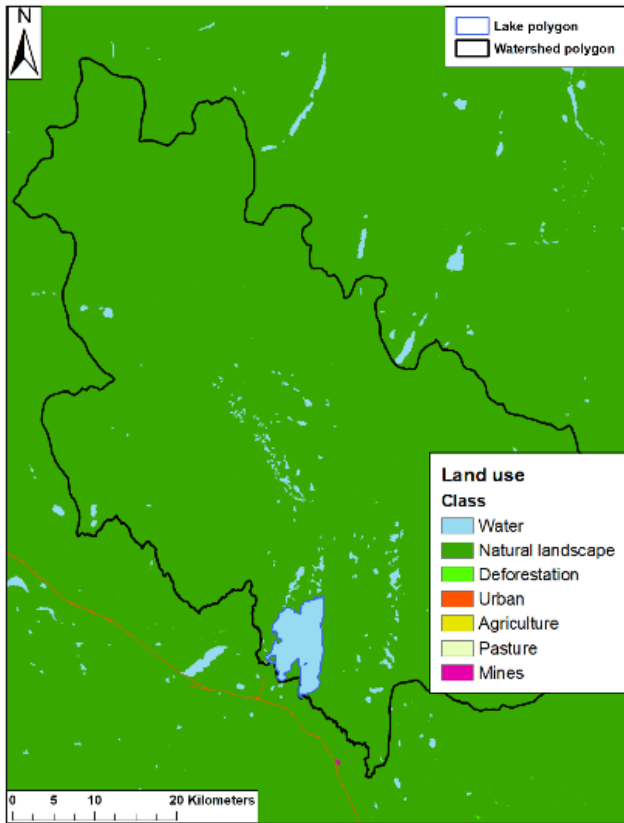
Chlorophyll a, nutrients and trophic status

Total phosphorus (11.44 µg/L) and total nitrogen (0.12 mg/L) values in Kloo Lake were below the Yukon mean (Figure 2). Chlorophyll a (2.07 µg/L) was also below the Yukon average. According to the Canadian water quality guidelines for the protection of aquatic life, Kloo Lake is mesotrophic.

Food chain health

Five zooplankton species and 32 phytoplankton species were identified in Kloo Lake, which is above the average of sampled Yukon lakes (Figure 2). Cyanobacteria concentration indicated a low risk of cyanotoxin exposure. Two potential bloom formers / toxin producer species of the cyanobacteria group were identified.

Figure 3. Immediate watershed and land use around Kloo Lake. Figure from Fradette, 2021.



Did we find contaminants?

Pesticides

Kloo Lake was not analyzed for pesticides.

Pharmaceuticals

Kloo Lake was not analyzed for pharmaceuticals.

Industrial chemicals

Kloo Lake was not analyzed for industrial chemicals.

Fecal coliforms

Fecal coliforms were detected in Kloo Lake, from the littoral sampling site located on the south-western side of the lake. However, the fecal bacteria detected were not of the *E. coli* species and no fecal coliforms were found from the sampling site near the deepest point of the lake.

Change over time

Sediment cores were retrieved from Kloo Lake, but have not yet been analyzed for total metals, diatoms or zooplankton temporal changes. The longest core was 61 cm.



Figure 4. The longest sediment core from Kloo Lake.

Temperature & dissolved oxygen

The temperature profile shows a thermocline at 5.2 m and a hypolimnion at 5.4 m on the sampling day (Figure 5a). Dissolved oxygen was elevated throughout the profile, with minimal values around 90% of oxygen in the hypolimnion (Figure 5b).

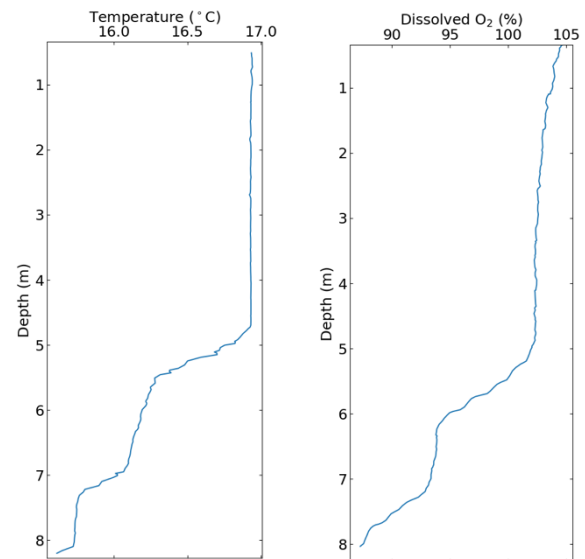


Figure 5. a) Temperature (°C) and b) Dissolved oxygen (%) as measured in Kloo Lake. Figures from Fradette, 2021.

Klukshu Lake

Łu Gha Mǎn



Figure 1. Klukshu Lake (Łu Gha Mǎn) and immediate watershed delineated in black. Adapted from Fradette, 2021.

Lake and watershed information

LAKE SURFACE AREA	WATERSHED AREA
1.29 km ²	79.88 km ²
MAXIMUM DEPTH	POPULATION
31 m	1
AVERAGE DEPTH	ELEVATION
21.5 m	706 m
SAMPLING DATE	AREA FOREST FIRES 2014-2019
2019-07-28	0 km ²

Location

Klukshu Lake is located in Southwestern Yukon, within the Klukshu community, about 63km south of Haines Junction.

Land Use

97.8% of Klukshu Lake's 79.88 km² watershed is natural. 2% is composed of water (including the lake itself). The remaining 0.2% of the watershed is comprised of urbanized land or forest losses (Figure 3).

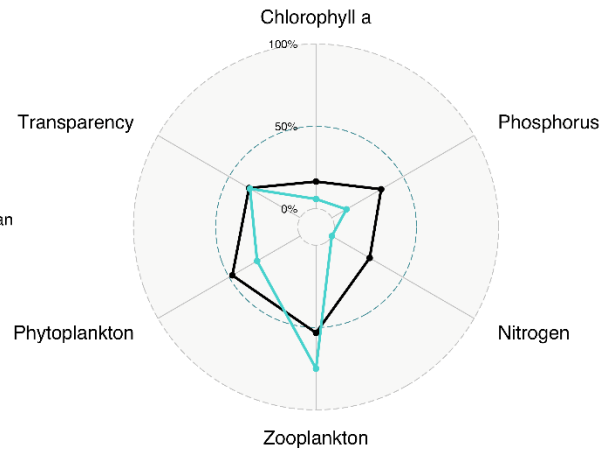


Figure 2. Relative values (rescaled from 0% to 100%) of water quality variables from the mean of all Yukon lakes that were sampled (shown in black) in comparison with Klukshu Lake (shown in blue).

The results in this report should be interpreted with caution as they represent data collected during a single sampling event. This means that all water quality variables were measured only once during the summer of 2019, and at a single location, for each lake (with the exception of bacteria). For more information on methods please refer to the summary report.

Aquatic ecosystem health

Water color and transparency

Secchi disk depth was measured at 5.8 m. The color value was of 2.81 mg/L Pt. Dissolved organic carbon had a value of 5.75 mg/L.

Chlorophyll a, nutrients and trophic status

Total phosphorus (8.37 µg/L) and total nitrogen (0.03 mg/L) values in Klukshu Lake were below the Yukon mean (Figure 2). Chlorophyll a (0.98 µg/L) was also below mean. According to the Canadian water quality guidelines for the protection of aquatic life, Klukshu Lake is oligotrophic.

Food chain health

Five zooplankton species were identified in Klukshu Lake, which is above the Yukon average. However, phytoplankton diversity was below the Yukon average, with 17 species identified (Figure 2). Cyanobacteria concentration indicated a low risk exposure to cyanotoxins and no potential bloom former / toxin producer species of the cyanobacteria group were identified.

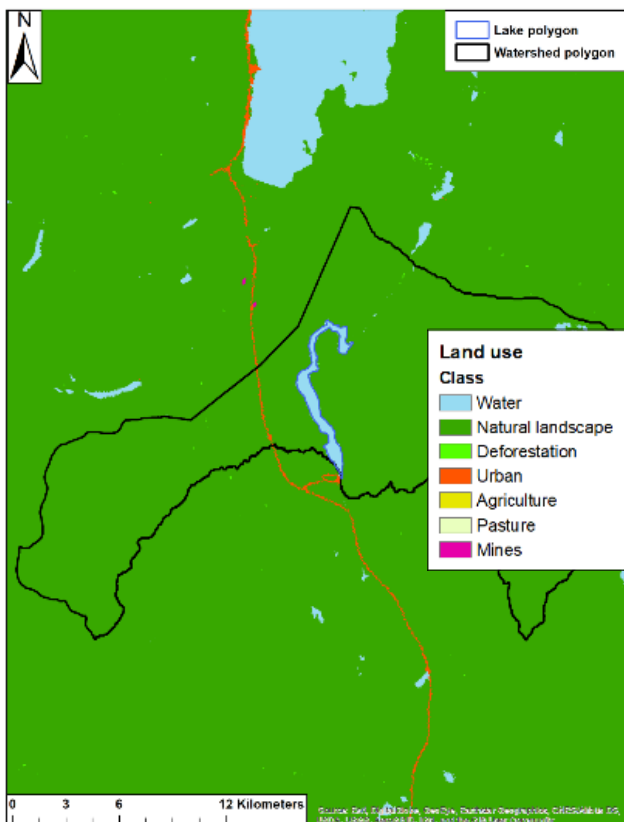


Figure 3. Immediate watershed and land use around Klukshu Lake. Figure from Fradette, 2021.

Did we find contaminants?

Pesticides

Klukshu Lake was not analyzed for pesticides.

Pharmaceuticals

Klukshu Lake was not analyzed for pharmaceuticals.

Industrial chemicals

Klukshu Lake was not analyzed for industrial chemicals.

Fecal coliforms

No fecal coliforms, including *E. coli* bacteria were detected in Klukshu Lake, either from the littoral sampling site on the southern point of the lake or from the index site near the deepest point of the lake.

Change over time

Sediment cores were retrieved from Klukshu Lake, but the water-sediment interface of these cores was poorly defined. As such, cores were not analyzed. The longest core was 40 cm.

Temperature & dissolved oxygen

The temperature profile shows a thermocline at 10.3m and a hypolimnion at 11.1m on the sampling day (Figure 3). The dissolved oxygen sensor was broken on the day of sampling and thus no oxygen data is available for this lake.

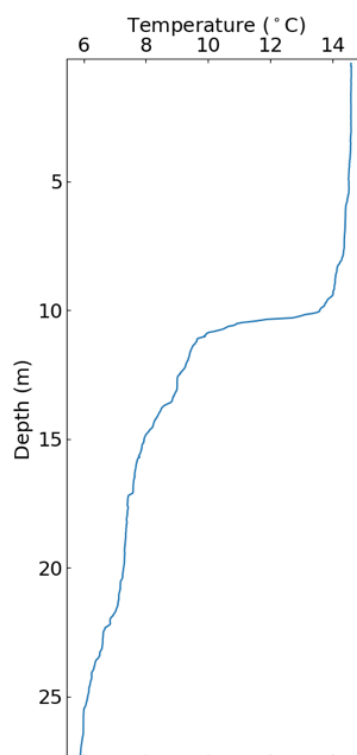


Figure 4. Temperature (°C) profile as measured in Klukshu Lake. Figures from Fradette, 2021.

Pine Lake 2



Figure 1. Pine Lake 2 and immediate watershed delineated in black. Adapted from Fradette, 2021.

Lake and watershed information

LAKE SURFACE AREA	WATERSHED AREA
5.85 km ²	110.52 km ²
MAXIMUM DEPTH	POPULATION
26 m	7
AVERAGE DEPTH	ELEVATION
11.8 m	650 m
SAMPLING DATE	AREA FOREST FIRES 2014-2019
2019-07-25	0.02 km ²

Location

Pine Lake 2 is located in Southwestern Yukon, about 6 km north of Haines Junction, on the north side of the Alaska Highway.

Land Use

94.2% of Pine's Lake 2's 1061.53 km² watershed is natural. 5.4% is composed of water (including the lake itself). The remaining 0.4% of the watershed is comprised of urban, forest loss and mines (Figure 3).

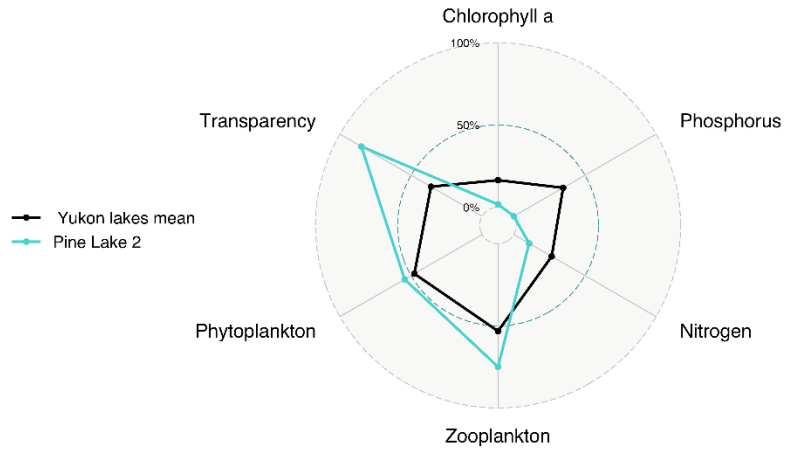


Figure 2. Relative values (rescaled from 0% to 100%) of water quality variables from the mean of all Yukon lakes that were sampled (shown in black) in comparison with Pine Lake 2 (shown in blue).

The results in this report should be interpreted with caution as they represent data collected during a single sampling event. This means that all water quality variables were measured only once during the summer of 2019, and at a single location, for each lake (with the exception of bacteria). For more information on methods please refer to the summary report.

Aquatic ecosystem health

Water color and transparency

Secchi disk depth was measured at 12.5m. The color value was of 2.45 mg/L Pt. Dissolved organic carbon had a value of 3.62 mg/L.

Chlorophyll a, nutrients and trophic status

Total phosphorus (6.07 µg/L) and total nitrogen (0.11 mg/L) values in Pine Lake 2 were among the lowest observed across sampled Yukon lakes (Figure 2). Chlorophyll a (0.58 µg/L) was also below the Yukon average. According to the Canadian water quality guidelines for the protection of aquatic life, Pine Lake 2 is oligotrophic.

Food chain health

Five zooplankton species and 25 phytoplankton species were identified in Pine Lake 2, which is above the Yukon average (Figure 2). Cyanobacteria concentration indicated a low risk of exposure to cyanotoxins but one potential bloom former / toxin producer species of the cyanobacteria group was identified.



Figure 3. Immediate watershed and land use around Pine Lake 2. Figure from Fradette, 2021.

Did we find contaminants?

Pesticides

No pesticides, insecticides or herbicides were found in Pine Lake 2.

Pharmaceuticals

No pharmaceutical products were reported in Pine Lake 2.

Industrial chemicals

No industrial chemicals were detected in this Pine Lake 2.

Fecal coliforms

Fecal coliforms were detected in Pine Lake 2, both from the littoral sampling site in Pine Lake Campground and from the index site near the deepest point of the lake. However, the fecal bacteria detected were not of the *E. coli* species.

Change over time

Sediment cores were retrieved from Pine Lake 2, but have not yet been analysed for total metal, diatoms or zooplankton cladoceran temporal changes.



Figure 4. The longest sediment core retrieved from Pine Lake 2 was 21 cm long.

Temperature & dissolved oxygen

The temperature profile shows a thermocline at 7.5 m, and a hypolimnion at 13.1 m on the sampling day (Figure 5). Dissolved oxygen data was not available for this lake.

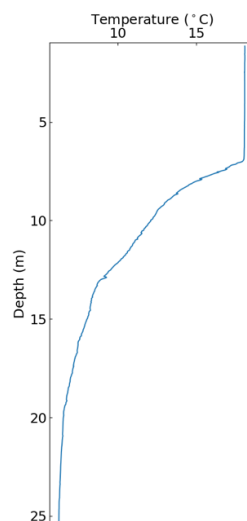


Figure 5. Temperature (°C) profile as measured in Pine Lake 2. Figures from Fradette, 2021