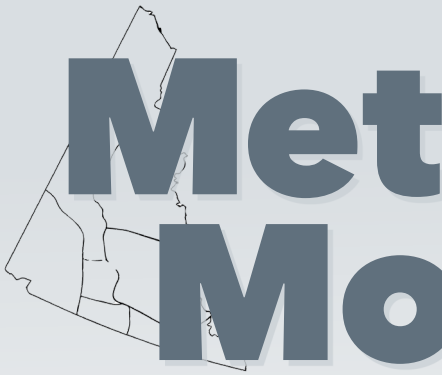
2022-2023



Metal Uptake Monitoring Program

8 days in August 2022 | 8 days in September 2023

What is metal uptake and why are we vegetation sampling?

Metal uptake is when plants take in metals from soil, dust or water through their roots and leaves. Certain metals may build up in plant tissues. Kaska Elders are concerned that plants around the Faro Mine may be taking up metals through dust, soil, and water contamination. There is a worry that animals and people may be harmed by eating contaminated vegetation.

Mushroom sample collected in the field, labelled with date and location.

Where were the plants collected?

Plants were collected around Kaska Territory: Along the South Canol Road, North Canol Road, Ketza River Mine Road, the Faro Mine Complex, and Blind Creek Road.

How did we collect samples?

All plant tissue samples were collected while wearing nitrile gloves and placed into labelled Ziploc bags to minimize possible cross contamination. These were then stored in the freezer until they could be transported to the Analytical Chemistry Laboratory in Victoria, BC, for analysis along with the soil and insect samples.

Justin Straker (Integral Ecology Group) digging a soil pit to examine soil conditions (September 2023). Photos courtesy of Cassia Jakesta.

What trace metals were the plants analyzed for?

Aluminum
Antimony
Arsenic
Barium
Beryllium
Bismuth
Boron
Cadmium
Calcium
Cesium
Chromium
Cobalt
Copper
Iron
Lead
Lithium
Magnesium
Manganese
Mercury
Molybdenum
Nickel
Phosphorus
Potassium
Rubidium
Silver
Sodium
Strontium
Tellurium
Thallium
Tin
Uranium
Vanadium
Zinc
Zirconium

What non-metals were the plants analyzed for? Selenium

What's the purpose of soil sampling?

Soil sampling helps to understand the relationship between the concentrations of various elements in plants and soil, i.e., when we see plants with high concentrations of an element, do we also observe that in the soil (suggesting that the plant may be taking that element up from the soil), or do we observe it only in the plant (suggesting maybe dust deposition). Soil sampling also supports updates to the Human Health and Ecological Risk Assessment that is being completed for the Faro Mine Remediation Project, as this work needs information on metal concentrations in both plants and soil.

**The analysis of plants, soils, and insects are still under review. The results, key findings, and final report will be provided to Ross River Dena Council once it is completed.*

Employment (2022-2023)

- Three Kaska youth and ten Elders (2022)
- Seven Kaska youth and six Elders (2023)

Workplace personnel age range:

- 18 to 85 years old
- 100% Kaska hired (work guided by Ross River youth, Elders and Ross River Lands Department).

What species did we collect and sample for metals?

- Ts'úk'ayhdă (Red-fruit Bearberry)
- Dzídze eslōne (Stoneberry)
- Dzídz est'ędze (Blackberry/crowberry)
- Dech'ue dzídzé' (Red raspberry)
- Esgoshe or Dzidze ashgoshe (Soapberry)
- Dahba or Nénesdza (Alpine blueberry)
- Itl'et (Low bush cranberry)
- Nón cho' or Tl'otsan (Yarrow)
- Altai Fescue
- Creeping Red Fescue
- Tsas (Bear-root/Alpine Sweet vetch)
- Black Currant
- Red Currant
- Kehsese or Ti Mēsge' (Labrador Tea/ Hudson's Bay Tea)
- Prickly Rose
- Gula (Willow)
- High Bush Cranberry
- Ts'ustse (Balsam Fir)
- Shoba or T'is (Balsam Poplar)
- Snow Lichen
- Eju' (Caribou Lichen)
- Caribou Horn
- Mushrooms

***These species were chosen in consultation with Elders and the Ross River Dena Council Lands Department.**

What's the purpose of insect sampling?

Insect sampling was performed to provide information on how elements that we see in soils and vegetation may or may not be transferred into animals. At the Faro Mine site, insects were collected in plastic containers (right).

Community support and training in partnership with Integral Ecology Group, Crown-Indigenous Relations and Northern Affairs Canada.

IEG Integral Ecology Group
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