

Report to the Hunters of the Porcupine Caribou – February 2019

With the help of local hunters, we have been taking samples of the Porcupine caribou since 1991. We collect these samples to study changes in the level of contaminants kidneys and livers of caribou. Since 2015, these samples are also being tested every year for ‘new’ contaminants (like stain repellents and flame retardants). One of the things we look for are contaminants carried to the Arctic by wind.



Photo credit: Peter Mather

ACTIVITIES IN 2018/19

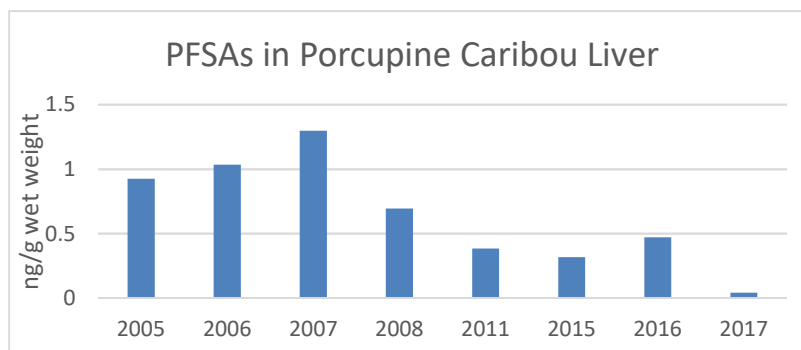
- No samples were collected in the fall of 2018 since the caribou did not come through Old Crow.
- We received and analyzed results from the 2017 collection.

WHERE IS THIS STUDY BEING DONE?

Samples for this study are collected from Old Crow, Yukon.

WHAT WE HAVE LEARNED NEW THIS YEAR

- Toxic elements (mercury, cadmium, arsenic, lead) are very low in marrow from Porcupine caribou (much lower than levels in kidneys).
- PBDEs (polybrominated diphenyl ethers) are environmental abundant chemicals used in flame retardants. Levels in the Porcupine caribou are very low and have not changed significantly from 2015 through 2017.
- Per- and polyfluorinated alkyl substances (PFASs) are man-made chemicals that are used in things like water repellants, stain guards and fire-fighting foams. Levels in caribou liver are low and some groups are declining over time in caribou, likely due to legislation banning their use.



WHAT WE HAVE LEARNED FROM THIS WHOLE PROJECT

- Porcupine caribou are largely free from contamination and are healthy to eat.
- Some caribou have mercury and cadmium in their organs. Some of the cadmium and mercury occurs naturally in the land, but some is brought here by wind from industry down south.
- Cadmium and mercury in caribou organs fluctuate over time but over the long term are remaining stable.
- The Porcupine caribou do not show high levels of radioactivity due to the nuclear accident at Fukushima, Japan in 2011.
- In the fall, mercury concentrations are higher in cows than in bulls, because cows are smaller and eat proportionally more food, therefore more mercury.
- In the spring, mercury may be lower in cows than in bulls, because some of the mercury is lost to the fetus and through milk production.
- Mercury is generally higher in the spring than the fall, because the caribou eat lichens through the winter which are higher in mercury than their summer foods of grasses and flowering plants.
- Mushrooms may provide a pulse of mercury in the fall, because some mushrooms can accumulate large amounts of mercury and are a preferred food when they are available.
- Mercury in the Porcupine caribou may be affected by rain, snow, wind, temperature, migration patterns, time of green-up and forage quality as well as mercury emissions coming from industry, forest fires and volcanoes.

We are continuing to monitor contaminants in the Porcupine Caribou to keep track of the levels of contaminants in their organs, and to try to better understand how and why they accumulate in caribou the way they do.

HOW OUR RESEARCH IS HELPING THE WORLD

More than two decades of contaminant data from the Porcupine caribou were part of the evidence that led the United Nations Environmental Program to create the Minamata Convention on Mercury. This is a global agreement that will limit mercury emissions to the environment and ultimately reduce the mercury in Arctic caribou. 92 countries (including Canada and the United States) have ratified the Convention that came into force on August 16, 2017.

THIS PROJECT IS SUPPORTED BY THE NORTHERN CONTAMINANTS PROGRAM

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