Report to the Hunters of the Qamanirjuaq Caribou – May 2020

With the help of local hunters, we have been taking kidney, liver and muscle samples of Qamanirjuaq caribou since 2006. We collect these samples to study changes in the levels of contaminants in kidneys and livers of caribou. These contaminants may be carried to the Arctic by wind. Since 2015, these samples are also being tested every year for 'new' contaminants (like stain repellents and flame retardants).

Photo Credit: Peter Mather

We use this information to:

- Provide information to Northerners so that they may be better able to make informed choices about food consumption and
- Help guide policies that limit contamination of the environment.

WHERE IS THIS STUDY BEING DONE?

Samples for this study are collected from Arviat. Although we could sample the herd anywhere within its range, we can be most effective by working with hunters from one community so that the hunters become very familiar with the samples we need.

ACTIVITIES IN 2019/20

- Samples from 20 caribou cows were collected from Arviat in the fall of 2019.
  - Kidneys are being tested for a range of contaminants including mercury, cadmium, copper, arsenic, selenium and lead as they are every year.
  - Livers are being tested for new contaminants like flame retardants and stain guards.
  - We choose kidneys and livers for analysis because that is where the contaminants tend to build up.
- We received and analyzed results from the 2018 collection.

HOW OUR RESEARCH IS HELPING THE WORLD

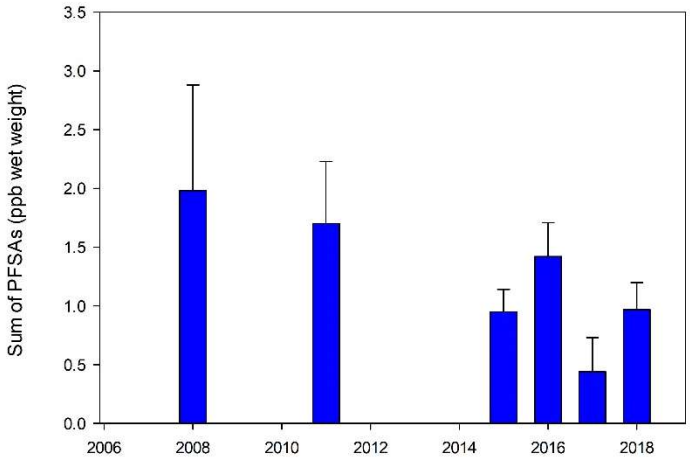
Our monitoring program provided evidence for national and international agreements to limit the amount of mercury being deposited into the environment. The Minimata Convention on Mercury came into force on August 16, 2017 and will help ensure that Arctic caribou are not exposed to increasing levels of mercury.

Continued monitoring will make sure that laws controlling pollution are effective enough to protect Arctic wildlife.

WHAT WE HAVE LEARNED NEW THIS YEAR

Overall, mercury, selenium and zinc are still increasing in the Qamanirjuaq caribou, although increases are slight and may be better described by a cyclic pattern, similar to that seen in the Porcupine caribou.

- Lead levels in Qamanijuaq kidneys have declined since 2006.
- PBDEs (polybrominated diphenyl ethers) are environmentally abundant chemicals used in flame retardants. Levels in the Qamanirjuaq caribou are very low and have not changed significantly from 2016 through 2018.



- 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 (eg. polyfluorinated sulfonic acids) are declining over time in Qamanirjuaq caribou, likely due to legislation banning their use.

WHAT WE HAVE LEARNED FROM 'CONTAMINANTS IN ARCTIC CARIBOU'

- 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. Some mercury may also come from forest fires or volcanoes.
- Caribou muscle (meat), marrow and brain have very low levels of contaminants.
- Mushrooms may provide a pulse of mercury in the fall, because mushrooms build up large amounts of mercury and are a preferred food when they are available.
- Seaweed does not provide a significant amount of mercury to the Qamanirjuaq caribou.

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

THIS PROJECT IS SUPPORTED BY THE NORTHERN CONTAMINANTS PROGRAM

For more information please contact Mary Gamberg, Gamberg Consulting
Phone: 867-334-3360 mary.gamberg@gmail.com