

# Outcomes from Community-Based Monitoring Programs:

## Assessing Severe Incisor Abnormalities in Muskoxen from the Kitikmeot and Inuvialuit Regions



Erica Suitor, PhD student:  
erica.suitor@ucalgary.ca

### WHAT ARE WE DOING?

Through partnerships with the communities of Ulukhaktok, NWT Kugluktuk, and Cambridge Bay, NU, **264 lower jaws** from muskoxen have been **collected between 2011 and 2021**. In Calgary, Alberta I fully examine each jaw taking measurements and noting abnormalities. While examining the jaws we **noticed many incisor abnormalities**. We did **X-rays on 135 of these incisor bars** to further describe the abnormalities.

Healthy teeth are critical for an animal's survival to obtain enough nutrients to survive and reproduce. To begin understanding why these abnormalities are occurring, we have been exploring the patterns in relation to location, age, and sex of the muskoxen.

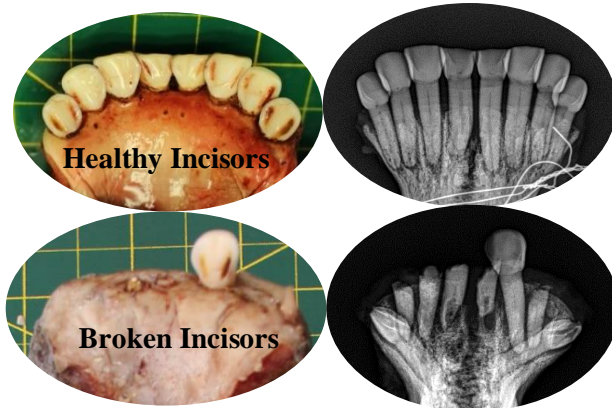


### WHAT ARE WE FINDING?

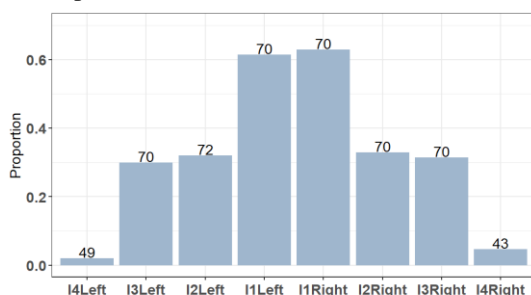
**Muskoxen from Victoria Island have more broken, rotated, crowded, and missing incisors** than those from the adjacent mainland. Muskoxen on the mainland have a much higher occurrence of anterior wear.

### BREAKAGE:

Figure 1 shows the difference in incisor breakage between Victoria Island and the adjacent mainland. Victoria Island has a over 60% of incisor 1s (I1s) broken while the mainland has 18% with broken I1s.



Proportion of Broken Incisors- **Victoria Island**



Proportion of Broken Incisors- **Mainland**

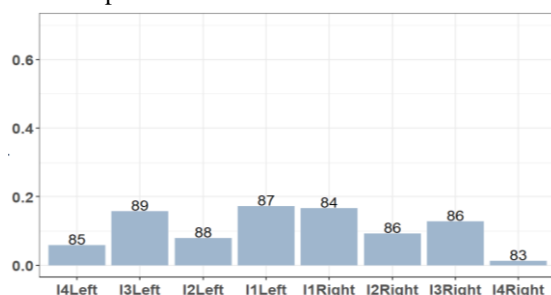


Figure 1. Proportion of broken incisors from Victoria Island and the Adjacent Mainland. Number over bars indicate sample size.

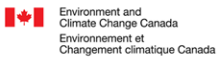


### Partners





### Funders

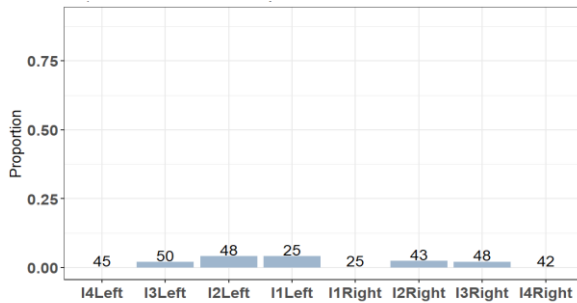


## ANTERIOR WEAR:

Muskoxen from the **mainland have more anterior wear than those from Victoria Island** (Figure 2). This is a newly documented behavior since the 1990s. It is mainly present in the four most forward facing teeth that have the most contact with the environment and seems they must be scraping their teeth on a hard surface.



Proportion with Anterior Wear- **Victoria Island**



Proportion with Anterior Wear- **Mainland**

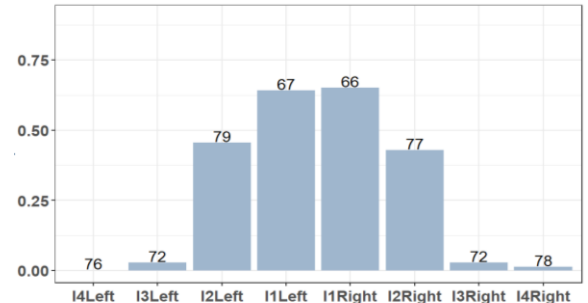


Figure 2. Proportion of incisors with anterior wear from Victoria Island and the Adjacent Mainland. Number over bars indicate sample size.

We are also seeing more anterior wear in mainland females than males (Figure 3). This may indicate mineral seeking behaviour since females require more nutrients to sustain pregnancy and lactation.

Proportion with Anterior Wear- **Mainland**

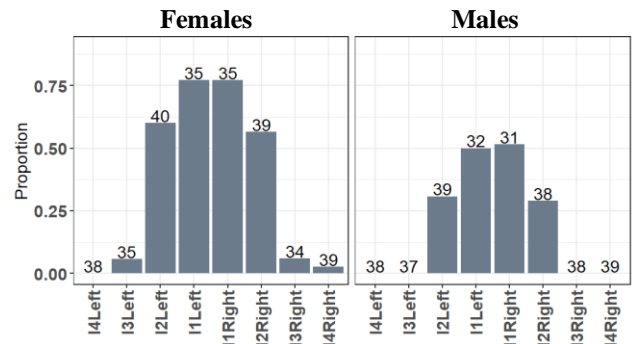


Figure 3. Proportion of incisors from males and females with anterior wear on the mainland. Number over bars indicate sample size.

## WHY DOES THIS WORK MATTER?

Arctic mammals need strong teeth so they can eat well and maintain good nutrition for survival and reproduction. When teeth become worn or broken, the decline in the ability to obtain forage efficiently can cause poor body condition and other health problems that can affect survival and population status.

## ACKNOWLEDGEMENTS

This work is the product of collaborations with many parties. I would like to thank all the community members, Hunter and Trapper Committees, and Government representatives for working with the Kutz Research Group to better understand muskox health. Also, a big thank you to all the funders that make this work possible.

