



## **SUMMARY: MUSKOXEN AND GENOMICS IN THE COMMUNITY (MAGIC) WORKSHOP**



### ***ABOUT THE WORKSHOP***

From January 9 - 12, 2024, a diverse group of participants convened at the Canadian High Arctic Research Station (CHARS) in Cambridge Bay, Nunavut, for the Muskoxen and Genomics in the Community (MAGIC) Workshop. This hybrid in-person/online workshop brought together 30 individuals, encompassing two parallel sources of knowledge (Indigenous and Western), including:

- Elders from Kitikmeot Heritage Society (KHS), Cambridge Bay, NU
- Representatives from the Hunters and Trappers Organization (HTOs) and Hunters and Trappers Committee (HTC) from Cambridge Bay, Sachs Harbour, and Paulatuk
- Academic and government scientists from Canada, USA, and Europe, including genomic experts, microbiologists, wildlife biologists, wildlife veterinarians, and social scientists
- Representatives from government scientists, academia, and other members of the Muskox Expert Network (MOXNET)
- Representatives from the Nunavik Tourism Association, Makivik Corporation, and other Indigenous partners
- Other stakeholders such as outfitters and producers of Qiviut products



## ***GOALS OF THE WORKSHOP***

1. Enable community-led identification of concerns, priorities and needs that might be integrated with, or assisted by, genomics or DNA-based tools.
2. Increase awareness and understanding of genomics and DNA-based tools and how they may be used to address issues arising from climate change that may impact food security (the abundance and distribution of country food animals, for example).
3. Advocate for bilateral and reciprocal training, education, and capacity building to enhance knowledge transfer between Western and Inuit Knowledge Systems.
4. Demonstrate ways to access data derived from genomics and DNA-based tools and support information sharing between communities through the potential for accessible app-based approaches.
5. Generate a best practices framework on the use and applicability of genomics and DNA-based tools for supporting muskox co-management as prioritized by the Inuit.

## ***WHAT HAPPENED AT THE WORKSHOP?***





## **KEY TAKE-AWAYS**

- Looking at how we might use genetic tools in the future whilst maintaining the independence, strength and harmony of Inuit knowledge (IQ).
- We're also considering using environmental DNA (eDNA) – taking small samples of water, soil, snow or feces and detecting the DNA of life-forms held within them - to track things that could threaten Arctic biosecurity, such as monitoring the bacteria (such as *Erysipelothrix rhusiopathiae*) that are increasing mortality in muskoxen, and the parasites that are becoming more abundant (such as the muskox lungworm and its host animals (slugs and snails)).
- We're identifying important species in the muskox ecosystem based on Inuit Traditional Ecological Knowledge, which will help with further research (see the list of species in the appendix of the detailed report).

## **WHY DOES THIS WORK MATTER?**

We want to emphasize the importance of community involvement throughout this project. Community engagement is not just encouraged, it's vital to the success of our efforts, and we are committed to keeping the communities informed and actively engaged at each stage.

While the focus here is on ongoing collaboration, it's also crucial to highlight how genomic tools can play a key role in informing co-management strategies. For instance, genomics can help identify populations that are more sustainable, which can then be prioritized for harvesting, like how caribou populations are managed. By integrating genomic data with GIS maps, harvesters can gain insights into where specific population boundaries exist. Additionally, technologies like eDNA, paired with apps, could alert to the presence of species like grizzly bear scat in a given area, providing valuable, real-time data for better decision-making and conservation practices.

## **THANK YOU FOR MAKING THIS WORKSHOP POSSIBLE**

The MAGIC workshop organizing committee would like to acknowledge and thank all the participants, and especially the elders from the *Pitquhirnikkut Ilihautiniq* Kitikmeot Heritage Society, the HTO/HTC representatives from Cambridge Bay, Kuujjuak and Sachs Harbor, and many virtual participants for their time and for sharing their knowledge, food and performing the opening blessing ceremony.

The workshop was organized as part of the *Canadian BioGenome Project* and the *Role of Genomics in Fostering and Supporting Arctic Biodiversity* project, both of which are funded by Genome Canada with additional support from Genome BC and Genome Alberta. We are grateful to our partners at Polar Knowledge Canada for providing logistical and organizational support, accommodation, and meeting space at the Canadian High Arctic Research Station.

### **Funding**



### **Organizers**

