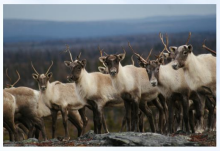

Moving in the tundra :
changes in selection and timing of use of summer habitat by migratory caribou

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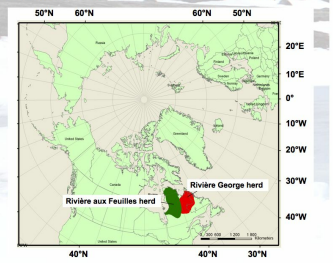
Introduction

Several animal populations undertake **large seasonal migrations**, usually associated to specific habitat requirements for parturition or to the exploitation of seasonal resources. **Migratory caribou**, *Rangifer tarandus*, are a dominant herbivore in the tundra ecosystem. In early spring, their migration is associated with calving, a period of high energetic requirements for females and high vulnerability to predation for newborns. The **choice of calving grounds and of summer range**, used during lactation, can affect the early survival and growth of calves.

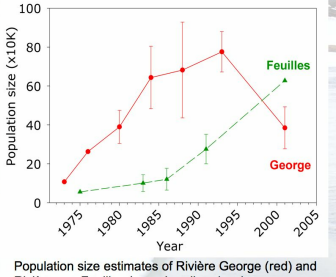
Our objective was to **verify whether changes in population dynamics reflected changes in the selection and the timing of use of summer habitat**.

Study area and Methods

Two migratory caribou herds range over nearly one million square kilometres in Northern Québec and Labrador: the **Rivière-George herd** and the **Rivière-aux-Feuilles herd**. Over the last few decades, these herds have shown large fluctuations in abundance, recruitment rates, and individual body condition.



Circumpolar map showing the annual range of the Rivière George (red) and Rivière aux Feuilles (green) caribou herds in Northern Québec and Labrador, Canada.

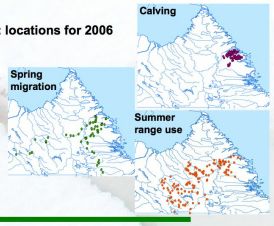


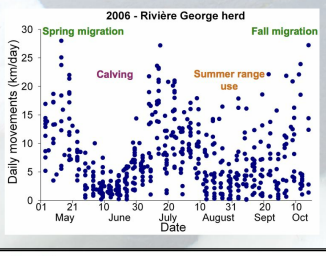
Population size estimates of Rivière George (red) and Rivière aux Feuilles (green) caribou herds.

Between **1990 and 2009**, we fitted **more than 200 females with satellite transmitters** to identify the location of annual calving grounds and summer ranges for each herd.

Determination of calving grounds and summer ranges

Calving grounds were determined using two criteria : 1) spatial aggregation of parturient females and 2) decline in individual daily movements. Use of the summer ranges ended with the initiation of fall migration, which was also identified by a sharp increase in daily displacements.

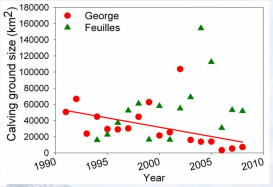




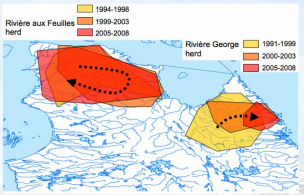
Results

Calving grounds

- **Variation in geographical extent :** the size of the Rivière-aux-Feuilles herd's calving grounds remained relatively stable, while we observed a sharp decline of the Rivière George herd's calving ground.

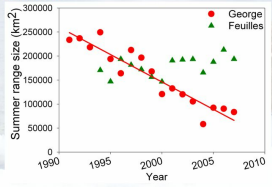


- **Variation in location :** the Rivière aux Feuilles calving ground shifted northward in the Ungava peninsula, whereas the Rivière George calving ground moved eastward to the Labrador coast.

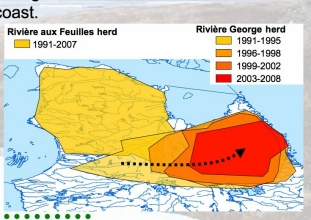


Summer range

- **Variation in geographical extent :** the size of the summer range of the Rivière-aux-Feuilles herd remained stable, while that of the Rivière George herd decreased by 5 times.

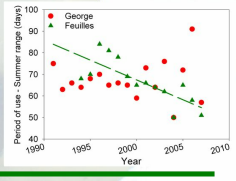


- **Variation in location :** the Rivière-aux-Feuilles herd's summer range cover the entire Ungava Peninsula, while the Rivière George moved eastward to the Labrador coast.

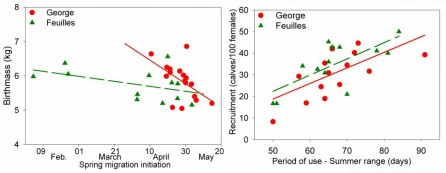


Timing of use of calving grounds and summer range

- There is **annual variability** in the date of **initiation of spring migration** and in the **period of use** of calving grounds and summer ranges.



- Preliminary analyses suggest that a delay in the initiation of spring migration is associated with lower **calf birthmass** and **fall recruitment rates**, and that a longer period of use of the summer range may be positively related to fall recruitment.



Conclusion

Several factors such as patterns of snow melt, topography, presence of predators and access to early vegetation, could potentially influence the choice and use of calving grounds. Future analyses will quantify how the pattern of snow melt, topography, and vegetation biomass affect the choice and use of calving grounds and summer range, as well as their consequences for the survival and body condition of calves.