

## Is Porcupine Caribou Herd body condition related to climate according to local experts?

*Don Russell, March 2018*

### What we did?

- Every year the Arctic Borderlands organizes a series of interviews in the range of the Porcupine Caribou Herd.
- Among the questions, people are asked about their impression of the body condition of caribou.
- Although specific answers are given they fall into three categories “poor”, “average’ and “good”
- We created a fall and a spring measure of overall body condition based on the number of answers that fell into these 3 categories.
- As well, management agencies in Canada and the U.S. monitor how productive the Porcupine Caribou Herd is. For example, what is the birth rate, how many calves are there in the spring, how many adults die?
- We also monitor climate in the range of the herd based on ground stations and satellite data.
- In this report we see if these 3 kinds of data (from communities, from agencies and from satellites) are related.

### Why we did it?

- We have annual data from the community interviews every year since the mid 1990’s – that’s almost 22 years of data.
- We have climate data over the same time period for different caribou ranges – winter, spring, calving, summer and fall.
- The data from management agencies is more unpredictable, in fact over the last 15 years, data on spring calves (how many calves make it to one year of age) was only measured 6 times.
- To adequately monitor the herd and see if any recommendations on management need to be made, the Porcupine Caribou Management Board meets every year and compiles monitoring data from all sources.
- This analysis will allow the Arctic Borderlands a better opportunity to be an important component of that process.

### What we found?

- Our measure of spring and fall body condition varied from year to year.
- We found that almost half (46%) of the variability in fall body condition of the caribou could be explained by 2 climate factors 1) how warm late spring weather was and how much freezing rain fell on the winter range the previous winter.

- We also found that most (85%) of the annual variability in spring body condition could be explained by 2 climate factors 1) the amount of freezing rain that fell in the previous fall period (September to December) and the average July temperature over the last 2 years.
- Further, our measure of spring body condition explained most of the annual variation in calves in the following spring despite only 6 field estimates of spring recruitment between 2001 and 2016.

### Why is it important?

- Incorporating community monitoring data on body condition offers a more timely assessment of population status (body condition is related to spring calves in the following spring), and offers an annual estimate when spring calf estimates are unavailable from management agencies.
- Over the last 22 years the Borderlands interview data from the communities have provided relevant data when monitoring by management agencies was either 1) not available (i.e. no population estimates from 2001 to 2010) or 2) not a priority as funding declines.
- In the first case from analysis done in 2012 (no population estimates) data from Borderlands interviews indicated that the herd was doing well; caribou body condition was improving, caribou were more available to the communities and more hunters were able to meet their needs. The survey in 2010 confirmed that the herd numbers had improved.
- This current analysis shows that community data can be used as an indicator of spring calves, an important measure of herd productivity because those calves represent “recruitment” into the population. Furthermore because spring body condition from community interviews is related to spring calves in the following year, the Borderlands data can be an early warning sign which management agencies might use to plan for monitoring activities the next year.