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Building Community Capacity for Monitoring Cumulative Impacts for the Bathurst Caribou Herd in the NWT.

The Dept. of Resources, Wildlife and Economic Development, Wildlife & Fisheries, held a workshop in Yellowknife on March 23 to 25, 2004. The Cumulative Impact Monitoring Program and the GNWT funded this workshop. The workshop was identified as "Building Community Capacity for Monitoring Cumulative Impacts for the Bathurst Caribou Herd in the NWT".

The NWT CIMP and Audit Working Group in their September 2003 report identified caribou as a Valued Component and cumulative effects was identified as the Knowledge Gap for the Bathurst caribou herd. Although models are being developed to predict cumulative effects, evaluating the models and monitoring the cumulative effects will require information on caribou health and condition. One of the CIMP recommendations is to use the monitoring recommendations from the co-management planning for the Bathurst herd.

The draft co-management plan for the Bathurst caribou herd (March 2004 draft) describes the need to develop community-based monitoring and the recommended monitoring indicators include several that could be collected during harvesting: body weight/fat, parasites/ diseases and pregnancy rates.

Aboriginal people and biologists recognize caribou body condition is an important indicator of general herd condition (Kofinas *et al.* in press, Wakelyn 2002). Body condition links to vital rates including pregnancy, calf survival, age to first breeding, and breeding pauses in cows all of which contribute to a herd's potential for increase (Thomas 1982, Cameron 1994; Gerhart *et al.* 1996, 1997; Thomas and Kiliaan 1998; Allaye Chan-McLeod *et al.* 1999). Changes in caribou body condition may point to environmental changes both natural and those caused by human activities.

As part of developing a long-term community-based monitoring system to monitor caribou herd well-being, we need monitoring indices that will not be an imposition on hunters and would use their own existing approach to assessing caribou condition. Aboriginal hunters use a number of body condition indices to form an overall impression of caribou body condition. At the same time, we need to know how the hunter's rating of condition compared to how biologists would describe condition.

The techniques to assess body condition were extensively discussed during a workshop (February 2000 in Whitehorse, Yukon) when biologists from across North America gathered to discuss the role that communities can play in monitoring caribou body condition (Kofinas et al. 2002). Attention focused on surveying current body condition monitoring programs and discussing linking body condition to pregnancy. The biologists discussed advantages and disadvantages of monitoring techniques and then proposed formats for local communities to monitor body condition. It is those formats that will be discussed with and demonstrated to the elders and youth.

Experience gained during community-based monitoring in Lutsel K'e (Lyver and Gunn In Prep.) already suggests that the hunter's overall impressions of caribou can be used to predict a more detailed semi-objective body condition index. In addition, the probability that a certain amount of fat would be at designated anatomical sites when hunters refer to a caribou cow, as being in a particular condition was determined.

The deliverables will be the training for the community-based monitoring for caribou condition assessed during caribou harvesting. The baseline information will then contribute to cumulative effects monitoring.

While preparing for the workshop, we considered conducting the workshop in one of the North Slave communities or RWED's Bliss Lake Trapper Training Camp. However, because of the caribou distribution and reasons of expense, we decided to hold the workshop in Yellowknife. Travel and accommodation arrangements were made for two individuals from each of the participating communities travel to Yellowknife for the workshop.

The workshop was designed in such a way that it required freshly harvested caribou. These caribou were butchered and discussed in detail as to what indicators on caribou helped to determine their health. Two hunters, Leon Betsina and Noel Doctor from the Yellowknives Dene and a Wildlife Officer from the North Slave RWED Office harvested four caribou on Sunday, March 21, 2004 on the North end of Gordon Lake. The four caribou had their abdominal and thoracic organs removed and kept in marked tubs for the workshop.

The workshop was held all day on March 23 and 24 and for a half day on the 25th. RWED's, North Slave Regional Office provided their garage for the workshop.

On Monday, March 22, the participants travelled to Yellowknife. The participants included; Frank Camsell and Marcel Lafferty (NSMA), August Enzo and Alex Rabesca (Lutsel K'e DFN), Isadore Tsetta, Alfred Ballargeon and Mike Francis (YKDFN), Maurice Lafferty and Leon Weyallon (DT11TC, Rae-Edzo), Charlie Quittie and Phillip Nitsiza (DT11TC, Whati), Jimmy B. Mantla and Fred Mantla (DT11TC, Gameti), Jimmy Kodzin and Louie Whane (DT11TC, Wekweti), Eddie Erasmus (DT11TC) and the workshop translator was James Rabesca from Rae.

The first day of the workshop, facilitated by David Abernethy from RWED's Wildlife and Fisheries, began at 9 am with an introduction of all participants, an opening prayer and an overview of the schedule for the next couple of days. The workshop participants were made aware during the introduction that the duration of the workshop would be video documented with the intent of making the video footage available to the communities.

Respect toward caribou was an important consideration during the workshop because it was noted that there were four harvested caribou laid out on tarps on the garage floor. It was very important that all participants were aware of why these caribou were here. The hunt was explained along with how the animals would be treated over the next day and a half. Feedback from the participants was welcome on this matter and recommendations were considered. Concerns from the participants included keeping the area clean and the meat cool along with ensuring that there would be no wastage. Prior to the processing of the caribou the participants had a short discussion about how the meat and remaining / unusable parts of the caribou would be distributed and disposed of. The meat from the processed caribou would be distributed among elders in Dettah and N'Dilo as well as the women's shelter in Yellowknife. In keeping with issues of respect and the recommendations of the participants, it was decided to dispose of the refuse at the Yellowknife waste facility.

There were two presentations given during the workshop, one by Anne Gunn on the first morning and the next delivered by Brett Elkin on the second morning.

Anne Gunn's presentation on the morning of the 23rd provided summary information on a research paper titled "Use of First Nations Dene knowledge to monitor changes in barren ground caribou (*Rangifer tarandus groenlandicus*) body condition" produced by P.O'B. Lyver with the Natural Resources Institute at the University of Manitoba. The research conducted by Lyver acknowledged the value of hunter and community observations for monitoring caribou health and condition. This can be achieved by observing caribou fat reserves at various times throughout the year between bulls and cows. Particular caribou fat reserves that help to determine health and condition have been identified as back and brisket fat, kidney fat, omental fat (fat around the stomach) and bone marrow. It was indicated during the workshop introduction and presentations that monitoring caribou fat indicators would greatly benefit the overall monitoring of caribou health and condition. Individuals in the communities harvest a large number of caribou annually and it's those individuals who have experience in identifying healthy caribou. The purpose of this workshop was to establish a common understanding between researchers and communities about caribou condition and fat observations. The intent is that these community-

based observations would be applied by researchers and governments to assist with caribou management.

On the morning of March 24th, Brett Elkin provided a presentation to the workshop about common caribou diseases and parasites. A discussion on parasites focused on their life cycles and reiterated the fact that parasites are a normal component of a caribou's life. More emphasis was placed on parasites that could have adverse effects on the health of people and their dogs. Parasites that can be harmful to people were explained in detail and where they could be found and how they would look was explained during the caribou butchering component of the workshop. One misconception that existed in discussions during the workshop was that a caribou with parasites is diseased. It was further clarified that a caribou could in fact be very healthy while still showing signs of some of the common parasites and would not be considered a diseased animal. This did not discount the health of individual caribou being compromised if heavy parasite loading caused increased stress making a caribou more susceptible to further health and survival complications.

Brett Elkin and Anne Gunn also provided information on other factors that may be having an effect on the health of caribou. Such causes being increased disturbances on caribou habitat by recreational and industrial activities as well as the possibility of climate change and increased seasonal temperatures. All of which may lead to the possibility of increased contaminants, injuries and stress.

The late mornings and afternoons of March 23 and 24 were set aside for an actual hands on cleaning and butchering of the four caribou. It was at this time that various fat reserves on the caribou were looked at and discussed among the group so as to establish a common understanding of what helps to identify a healthy or unhealthy caribou. Additional discussions took place while the caribou were being processed that dealt with parasites and diseases. Components of the caribou that typically show signs of the various parasites were observed and presented as an instructional tool for future identification by hunters in the field. Booklets titled "A Field Guide To COMMON WILDLIFE DISEASES AND PARASITES in the NORTHWEST TERRITORIES AND NUNAVUT", produced by RWED, were distributed among the workshop participants to assist them with future field identification.

The primary reason for having the four caribou to process during the workshop was for the facilitation of an actual hands-on approach supporting the discussions about caribou health and condition. With this method, the workshop participants were able to see and agree on the fat reserves used to determine an animal's condition. There were three prominent fat reserves that were looked at repeatedly, those being back fat, kidney fat and omental fat. There was the occasional reference to brisket fat as another external fat reserve used to

support condition analysis but was given less consideration. Bone marrow was another indicator of health and condition that was noted as well.

The caribou's fat reserves were identified and resulting discussions focused on how to interpret these fat indicators. While back fat tends to be one of the most obvious, it doesn't necessarily have to exist on an animal that would normally be classified as healthy. The internal fat reserves around the stomach and kidney in most cases still remain and would be strong enough indicators to suggest a healthy caribou. A discussion about how these particular fat reserves could be interpreted was important and it was here that a common language between science and traditional knowledge could be acknowledged. Each of the fat reserves was identified by the participants in terms of quantity and or quality but did not include an actual measured value. Back fat would be viewed as being "A LOT" which would be in excess of 4 to 5 cm, to "SOME" which would suggest a fat thickness up to 2 cm. Fat thickness that is just visible and less than .5 cm is considered "VISIBLE FAT" and "NO BACK FAT" would be self explanatory. The kidney and stomach fat is observed and noted as being "A Lot" when these organs are fully encased in fat, "SOME" when the organs may be partially exposed and "LITTLE OR NO FAT" which is self explanatory. Variations in fat content must also consider the sex of the caribou and the seasons.

The bone marrow in the mandible and long bones of a caribou are strong indicators as to the animal's health and condition. Thick, white or cream coloured marrow suggests a healthy animal while pink coloured marrow would suggest an animal with a much less degree of health. A red and runny textured marrow is a good indicator that the caribou may be in a poor state of health resulting from any number of potential stressors.

Examples of how this is applied would be:

- 1) A caribou is harvested with all physical indications that it is a healthy animal. As the caribou is being field dressed it is noted that there is very little back fat but there is some fat around the kidney and stomach. It is also noted that the bone marrow in the leg bones is a solid texture and white in colour. All indications would lead to believe that this would be a healthy but skinny caribou.
- 2) A harvested caribou exhibits a lot of back fat, a lot of kidney and stomach fat and solid white marrow indicating a fat healthy caribou.
- 3) A harvested caribou shows no sign of back fat, has little or no fat around the kidney and stomach and the marrow is runny and reddish pink. This would suggest a stressed and unhealthy animal.

Monitoring caribou health and condition by these means would only be beneficial as long as a large number of harvested caribou are looked at and that the information is passed on by hunters advising their Band or Land & Environment

Offices or RWED. Only by looking at a large number of harvested caribou can a trend in improved or declining health and condition be determined by the quality and quantity of fat on the animals.

A discussion about harvesting practices was acknowledged wherein the participants indicated that with their experience they would not harvest caribou that looked very skinny and or unhealthy. They are able to identify such caribou at a distance based on the caribou's physical appearance such as being able to see signs of ribs, backbone and pelvic bones and a lack of fat or muscle mass. Workshop facilitators expressed interest in such observations and explained how these are also important when monitoring health and condition. Suggestions were made that hunters record such observations of skinny caribou and advise their Band or Lands & Environment Offices or RWED, even if caribou had not been harvested from that group. It was also advised that these observations should include such things as date, location, number of caribou in the group and the number of caribou that appeared to be in poor condition. Although the participants claim that only healthy caribou are being harvested it was explained that any recorded fat observations are important, especially with respect to seasonal variations and long term trends.

There was one common misperception, during the workshop, that a skinny caribou was being considered a diseased caribou. While this is possible, it is not always the case. Seasonal variations regularly influence caribou fat reserves. As a result of Dr. Elkins presentation the participants had concerns about how to deal with a harvested caribou that may be diseased. Advice shared with the participants was the importance of collecting samples. It is important that potentially diseased caribou samples be sent to RWED, Wildlife and Fisheries for analysis and identification. Samples of infected caribou tissues should be bagged and frozen when possible. Infected tissue removed from a caribou should be handled with care, cut well around the infected site, use gloves when you can, clean your knives immediately after handling the sample, bag and label the sample. There is also important information that should be included with the sample that will assist Biologists with the analysis. This information can be written on a label or even the sample bag using a permanent marker and should include; date of harvest, location of harvest, sex of caribou, where the sample came from on the caribou and it is also important to provide any caribou behaviour observations. This could include the active state of the animal, did it appear ill or did it look OK and how many other caribou in the group. The collection of such samples and sending them to Wildlife Biologists is also very important when monitoring the health and condition of caribou.

The monitoring of caribou health and condition is not just for the sake of one caribou; it is beneficial to the whole herd. Aboriginal hunters spend a lot of time around caribou and are one of the best eyes and ears available to watch out for

the caribou herds well being. Keeping records of the health and condition of harvested caribou throughout the caribou range will be a very strong method to help identify any trends, whether good or bad, when it comes to the health of caribou and their habitat.

All who attended the workshop indicated that it was worthwhile and that future cooperation regarding the monitoring of caribou health and condition would be beneficial to the Bathurst caribou herd and people. As a result of this workshop, there will be experienced individuals in the communities on and adjacent to the Bathurst caribou herds range to help with such a monitoring initiative. Monitoring and the collection of information identified during this workshop could be done by communities or during organized community hunts. Individuals, such as the participants in this workshop, could be hired by one organization or another to assist in the collection of this information.

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