

YUKON FISH AND WILDLIFE ENHANCEMENT TRUST – RESULTS REPORT

PROJECT ACTIVITIES

In May 2014, I began preparations for a summer of field work in the Klaza caribou herd's range, northwest of Carmacks, Yukon. My goal for the summer of field work was to visit different aged burns and adjacent unburned areas throughout the herd's range to examine different habitat features that may influence forage lichen growth. My overall objective was to use these data to explore whether or not it was possible to determine an estimate of the age at which lichen regenerates in burns to a level which can support caribou foraging. Three questions of interest were developed to help guide the 2014 field research:

1. What is the average lichen regeneration time within burned areas?
2. What are the characteristics of caribou forage within burned areas?
3. Is it possible to provide an estimate of forage availability for caribou within a burn of a given age which could subsequently be used during an assessment of winter habitat availability?

After much preparation and planning, I headed out into the field in early July 2014. By late August, my field assistants and I had visited 100 plots in the Klaza herd's range. This was more plots than I had originally thought we could visit, so it was a pleasant surprise to see that all our hard work paid off in the form of more data!

After the summer of field work was complete, I moved down to Prince George, BC to begin my coursework at the University of Northern British Columbia (UNBC). The courses I am taking will augment my existing knowledge and help me produce a stronger research product. One my favourite things about the graduate level courses at UNBC, is that they are designed to allow students to use their own data in course assignments, making our time spent doing coursework also time spent working on our thesis topic.

This fall I began organizing and analyzing the data I collected during the summer. The preliminary results of the 2014 field work demonstrate that although it is difficult to narrow down an exact age at which all burns are no longer considered 'recent' for caribou, we can infer that some burns, depending on a number of factors (e.g., burn severity, aspect, site drainage, permafrost conditions, etc.), may be able to support late-winter caribou foraging as early as 45 years post-fire. At this stage of inquiry, it appears that a conservative estimate of lichen regeneration time in burns is likely 50 years, as is reported in other literature. At the time of writing, exploratory models that aim to predict post-fire conditions (i.e., aspect, tree cover, canopy openness, etc.) that favour forage lichen cover, volume, and biomass are in development.

I have almost completed the first year of study and will be continuing with data analyses and reporting throughout 2015 and into the first half of 2016. This year, my focus is on answering questions about how caribou use burns. Klaza caribou have been collared intermittently since 1987, with the current collaring program ongoing since 2012. These data can provide a breadth of information about seasonal range use, including any incidences of habitat use within burned

areas. Now with almost four years of late-winter location data, I will begin analysing these data to explore habitat use and movement. Currently, my approach is to develop a fine-scale resource selection function (RSF) model that focuses on collar locations that are within or proximate to known burns in late-winter. In addition to this model, I will also be conducting analyses of movement to further characterize individual behaviour in relation to burns. In combination with the results of the lichen-related data, these analyses will piece together the interactions between burns, late-winter habitat, and caribou behaviour in a novel way.

In accordance with the Trust's mandate, the results of this research will undoubtedly contribute to the protection of wildlife and their habitat. The Klaza caribou herd will serve as a case study; with the hope that any resulting findings can be applied to other caribou herds in the North. Currently, the North is relatively undeveloped, often enabling many northern herds to persist with little human disturbance in their range. Nonetheless, this is changing rapidly, and, as is evidenced by herds in the south, the slow accumulation of human development and activity can take a great toll on caribou populations. My research aims to address merely one small piece of this puzzle; however, I believe this added understanding is essential to caribou research in the North.

By addressing this small research gap, the cumulative effects to caribou can be more accurately assessed during an environmental assessment process, which will ultimately have long-term, indirect benefits to woodland caribou and their habitat. While this research focuses on one caribou herd as a case study, it will undoubtedly have positive impacts to other northern mountain caribou herds and potentially other wildlife species. Also, this research will add to the growing body of literature surrounding cumulative effects to wildlife, primarily by highlighting the importance of better quantifying cumulative effects to all wildlife species. The support from the Trust has allowed me to go back to my northern community and share some of my preliminary results with other funding agencies and local researchers. Also, by focusing funding efforts on research efforts in the North, the Trust is really taking a lead role in bringing about awareness and communicating the importance of northern research.

COMMUNICATIONS

The preliminary results of the field work conducted in 2014 were shared in report form with the Yukon Department of Environment on 1 January 2014, in support of a range-wide assessment of Klaza caribou currently underway by Environment Yukon. The YFWET was acknowledged in this report as a contributor. Also, in December 2014, the preliminary results and a project update were provided to the Trust as well as other contributors (EDI Environmental Dynamics Inc.) in the form of a PowerPoint presentation.

This research has also been communicated on numerous occasions during my time at the University of Northern British Columbia (UNBC). The Trust and its logo have been acknowledged and included in all presentations at UNBC.

Earlier in 2014, another supporter, Casino Mining Corporation, featured my research in their fall newsletter, available on their website (follow the link below):

http://www.casinomining.com/resources/pdfs/newsletter_fall_2014.pdf

As this project forms part of a larger, graduate student thesis project, the final results and inferences from this project will be fully realized upon completion of the research (2016). At this point, the research outcomes will be communicated in earnest. Along with the aim to publish this research in a pertinent scientific journal, I also plan to disseminate this information at conferences, workshops, or at the request of wildlife/species management boards. In the upcoming year I will have opportunities to attend national and international conferences, where I will have the ability to share this research formally (i.e., as an oral presentation or poster) and informally during discussions with other researchers and stakeholders. During these events, the Trust will be acknowledged as a primary contributor, and its mandate will be communicated where possible.



Figure 1. Winter caribou pellets amongst some *Cladina rangiferina* lichen, a primary component of the Klaza herd's diet in late-winter (also attached electronically).



Figure 2. A tree core sample taken from a tree in a 45 year old burn site (also attached electronically).



Figure 3. Graduate student researcher, Kelsey Russell, waits for the approaching helicopter used to access sites in the Klaza caribou herd range (also attached electronically).



Figure 4. Klaza caribou during late winter. The location data from GPS collars on Klaza caribou cows will help to inform how they used burned habitat during late winter (also attached electronically).