Amendment to Wildlife Research Permit Application

"**Boreal caribou and wolf monitoring program for the Tłı̨chǫ All-Season Road Project 2023-24**"

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We have amended this WRP application to include acoustic and accelerometer recorders that will be attached to up to 5 boreal caribou GPS collars for the first 5 months after deployment and will then drop off for retrieval. These small (204 g) devices will record for 6 hours daily from April 15th-July 30th, recording in 2-hour blocks (time is limited by the accelerometer battery). The release will be timed to drop off (e.g.) at noon on July 30th, or best date for pick up by other field programs (TBD before deployment).

What can we learn from these devices? These attachments will be able to provide detailed behavioral information on caribou around their calving period, one of the most sensitive points in their life history. We will be able to use this tool to record vocalizations between the cow and calf that can help us identify when the calves are born and if the calves survive past a certain date depending on the presence or absence of these vocalizations. Combining the audio data with the fine-scale movement data from the accelerometers will allow us to determine the suckling frequency of calves and the foraging patterns of the cows. The pattern of an animal's rest and rumination will also be easily observed with these attachments based on their movements and how frequently an individual is exhibiting eructation (i.e. 'burping'). Foraging, rumination and nursing are all fundamental behaviors for cow and calf health, and we can ultimately use these attachments to observe how the patterns of these behaviors change near roads, or are otherwise disrupted by human activities that cause noise.

Amendments to the Wildlife Research Permit application (blue text in the attached, amended application):

- Added a 5th objective in the Wildlife Research Permit application: "Use acoustic and accelerometer data to determine calving dates, calf survival (by presence/absence of vocalizations between cow and calf), patterns of feeding, nursing, resting and rumination (via hearing burps), and compare how these behaviours change near roads or human activities. This data will also be used to train models with data from both sensors together. This data will come from small devices that will attach to the collar for approximately 5 months and release from the collar using a self-contained drop off mechanism. Data will be analyzed by Megan Perra (PhD student, Gurarie Lab, SUNY College of Environmental Science and Forestry). "

- Under Methods, indicated that for caribou GPS collars (TGW-4677-4s GPS Iridium collars; weight ~1100 grams) 5 collars will have a 204 g acoustic and accelerometer recorder attached for the first 5 months of deployment.

- Changed the date from 2022 to 2023 where typos existed.

Acoustic and accelerometer recorder (from M. Perra)

Diagram below shows the general set up of the recording device and is not to scale (the release mechanism for the collar itself is also not shown).