

LOCATION INFORMATION FOR EACH SITE

Date: _____ Time: _____ Site number: _____

Observers: _____

Location:

lat _____ long _____ OR

UTM Zone _____ E _____ N

Description of location: _____

Habitat¹: Bedrock complex _____ Boulder complex _____ Esker complex _____

Riparian shrub _____ Riparian Tall shrub _____ Heath tundra _____ Lichen veneer _____

Sedge wetland _____ Tussock/Hummock _____

Approximate distance and direction from observers to group of caribou: _____

Approximate distance and direction to industrial feature (road/pit/mine/etc.): _____

Description of industrial feature: _____

Weather Conditions:

Temp _____ Cloud cover: Clear _____ Scattered _____ Broken _____ Overcast _____

Rain: Light _____ Moderate _____ Severe _____

Wind: Light _____ Moderate _____ Severe _____

Upwind (from obs to caribou) _____ Downwind _____ Crosswind _____

Severity of insect harassment: Light _____ Moderate _____ Severe _____

Total # caribou in group: _____

Group Composition: #bulls _____ #cows _____ #yearlings _____ #calves _____

¹ These are taken from Ekati habitat classification derived from Matthews, Epp and Smith 2001)

FOCAL ANIMAL SURVEY - Active period

Purpose: This survey will partition the active period of caribou into common behaviours. It is particularly useful in determining if different categories of animals are doing different things during active time periods (i.e. cows with calves vs. cows without calves vs. bulls) *not doing bulls in Oct 2017

Categories and definitions of behavior:*

- **foraging** - standing or walking posture, with the muzzle touching or nearly touching the ground; can be ingesting food or not; head down or moving from side to side
- **standing** - stationary in an upright, standing posture with head elevated above the ground, and usually above the knees; if possible record time spent nursing.
- **walking** - similar to standing posture but moving at a slow gait (<5 km/h)
- **trotting/running** - similar to standing posture but moving rapidly in symmetrical or asymmetrical gait
- **alert/alarm standing**- quickly raising the head and orienting it toward a stimulus, pricking the ears and rotating them towards a stimulus, remaining motionless in an alarm posture
- **nursing** – calf is suckling cow. If possible record time spent nursing.
- **Insect response behavior** – twitching, stamping, tossing head

Stressor Categories:

- Helicopter
- Fixed wing aircraft
- Ground vehicle - light (e.g. pickup), medium (e.g. bus, water truck), heavy vehicles (e.g. large mine haul truck)
- boat
- Predator (wolf, grizzly bear, wolverine)
- Mine blasting
- Field personnel

Methods for focal animal survey:

Position yourself at a distance so that your presence does not influence the behavior of the caribou you are observing. Select one active (i.e. not lying down) animal from a caribou group to make focused observations on using a spotting scope and/or binoculars. Fill out the weather conditions, location, group composition, etc. parts of the datasheet. Record the start time on the datasheet and start your stop watch. In the first row of the datasheet, indicate with an X the behavior of the focal animal at the 30 second mark. Only enter an X in a single category at any one time. Make a new observation in 30 seconds and mark an X in the appropriate behavior category. Continue making observations every 30 seconds on the focal animal for 30 minutes for a total of 60 observations (or until the animal lies down or moves out of view). Make sure to record why observations were stopped. If possible record time spent nursing. If a stressor occurs close to the focal animal, record the time and type of stressor but you do not need to record animal behavior at that time². Record behavior at the regular 30 second mark. As much as possible focal surveys should occur throughout the 24 hour period. Start a new datasheet for each new animal.

² We do not record behavior at time of stressor as the caribou may be more aware of a stressor and be sensing and reacting sooner than the observer records it

* These categories are consistent with the references and also included Alert which has been used by the mines. Alert is associated with an activity to help assign an energetic cost.

FOCAL ANIMAL – Feeding Intensity

Purpose: This survey partitions foraging into its component parts: eating and searching. If a stressor appears to change foraging time it is useful to understand if this translates into changes in actual feeding/eating.

Foraging Consists of:

- **eating** -head down ingesting food while standing or walking
- **searching** - head down or moving from side to side but not ingesting food

Stressor Categories:

- Helicopter
- Fixed wing aircraft
- Ground vehicle - light (e.g. pickup), medium (e.g. bus, water truck), heavy vehicles (e.g. large mine haul truck)
- boat
- Predator (wolf, grizzly bear, wolverine)
- Mine blasting
- Field personnel

Methods for focal surveys to determine eating intensity:

Position yourself at a distance so that your presence does not influence the behavior of the caribou you are observing. Select one animal from a caribou group that is foraging for food on which to make focused observations using a spotting scope and/or binoculars. Fill out the weather conditions, location, group composition, etc. part of the datasheet. Record the start time on the datasheet, and start TWO stop watches. For 10 minutes you will observe the foraging animal. One stop watch will run for the full 10 minutes without stopping, the other will be used to measure feeding time. On the second stop watch press Stop when the caribou stops eating (taking bites) and Start when the animal starts eating again. Do this for the entire 10 minute period. When the 10 minute survey time is up record the total eating time accumulated on the second stop watch. Stop the observations if the animal obviously changes their activity – head up and starts walking purposefully. It is okay if they are walking with head down looking for another clump to start feeding. If a stressor occurs close to the focal caribou, record the start time, end time and type of stressor. If you didn't watch the caribou for the full 10 minutes record reason (e.g. had to leave, caribou no longer foraging; caribou moved out of sight)

GROUP SCAN SURVEY

Purpose: This survey will be used to develop average activity budgets which are mean daily percent time spent in each category of behavior (averaged over all caribou). Activity budgets can be compared across sites (e.g. near and far from development), seasonal time periods, and herds.³

Categories and definitions of behaviour:

- **foraging** - standing or walking posture, with the muzzle touching or nearly touching the ground; can be ingesting food or not; head down or moving from side to side
- **lying** - bedded on the ground, either upright or lying on its side, in a resting or ruminating position;
- **standing** - stationary in an upright, standing posture with head elevated above the ground, and usually above the knees; if cow is nursing, if possible record the time spend nursing.
- **walking** - similar to standing posture but moving at a slow gait (<5 km/h)
- **trotting/running** - similar to standing posture but moving rapidly in symmetrical or asymmetrical gait
- **nursing** – calf is suckling cow
- **sparring** – two males in contact
- **Insect response behavior** – twitching, stamping, tossing head

Stressor Categories:

- Helicopter
- Fixed wing aircraft
- Ground vehicle - indicate in notes whether light (e.g. pickup), medium (e.g. bus, water truck), heavy vehicles (e.g. large mine haul truck)
- boat
- Predator (indicate in notes whether wolf, grizzly bear, wolverine)
- Mine blasting
- Field personnel

Methods: Position yourself at a distance so that your presence does not influence the behavior of the caribou you are observing. Select a group of caribou to make observations on using a spotting scope or binoculars. The groups can be scattered out a bit. It is useful to have one person observing behavior and calling it out, and another, timing and entering data. Fill out the weather conditions, location, group composition, etc. parts of the datasheet. Record the start time on the datasheet and start your stop watch. In the first row of the datasheet, indicate the number of animals in each behavior category (place a tick in the behavior column for each caribou in that category as called out by observer 1 OR use tally-wacker to sum observation and then enter number in datasheet). Every 15 minutes after start time, record the number of animals in each behavior category. If a stressor occurs close to the group of caribou, record the start time, end time and type of stressor. Continue with observations every 15 minutes until caribou group moves out of view. As much as possible scan surveys should occur throughout the 24 hour period, be as long as possible and should span an entire active-rest-active cycle.⁴ Start a new datasheet for each new group of caribou.

³ On the Bathurst calving ground in 1998/1999 caribou spent 34.5% of their time lying, 4.5% standing, 8.4% walking, 0.5% trotting/running and 52.1% foraging (Griffiths et al 2001). During post-calving 2007-09 caribou spend 12.8% of their time lying, 3.2% standing, 27.2% walking, 7.3% trotting/running and 44.2% foraging (Witter 2011)

⁴ For the Bathurst herd in early June the active cycle is 98 +/- 34.3 min and rest cycle is 73 +/- 26.9 min (Griffiths et al 2001).

