December 2, 2019

Wildlife Research Permit Application

Please find attached a Wildlife Research Permit Application for James Hodson, ENR, GNWT to conduct the project titled "**Boreal caribou abundance surveys, boreal caribou collaring and wolf surveys: Tłı̨chǫ All-Season Road Project**".

This project will provide information on regional abundance of boreal caribou from which a population estimate may be derived. Information on population characteristic (age/sex/recruitment) will also be obtained during group counts. Surveys will be conducted by two fixed-wing aircraft and a helicopter, each with a survey crew of three. We would like a Tłı̨chǫ community member to be represented on each crew. Alternatively, NSMA, YKDFN, or WRRB will be asked to identify participants.

In the event of existing GPS collared animals dying or if collars stop working over winter, more boreal caribou will be collared to maintain 30 functioning collars.

Wolf surveys will be conducted with a fixed-wing aircraft, and one or two survey crew.
Wolf surveys will provide information on wolf population densities and distribution, and assist in filling in gaps about wolf-prey interactions.

Caribou and wolf surveys will provide valuable information in support of management and monitoring requirements for the Tłı̨chǫ All-Season Road Project, and the development of the Wek'eezhii Range Plan.

A recommendation form is attached for your response**. Please fax this form to 873-0293 or email to james_hodson@gov.nt.ca by Jan, 30, 2019.** If you have any questions or concerns, please contact me at (867) 767-9237 ext. 53227. We appreciate your ongoing support of cooperative wildlife management.

Sincerely,

James Hodson
Manager, Environmental Assessment and Habitat
ENR, Wildlife Division

Attachments: Wildlife Research Permit Application, Recommendation Form

Distribution List

North Slave Region	
Acting Regional Superintendent Department of Environment and Natural Resources Government of the Northwest Territories P.O. Box 2668, Yellowknife, NT. X1A 2P9 Bruno_Croft @gov.nt.ca Tel: 867-7679238 ext. 53253 Fax: 867-873-6230	Tlicho Government P.O. Box 412 Behcoko, NT X0E 0Y0 michaelbirlea@tlicho.com stephaniebehrens@tlicho.com TammySteinwand@tlicho.com info@tlicho.com Tel: 867-392-6381 Fax: 867-392-6389
Executive Director Wek'èezhìi Renewable Resources Board 102A 4504 49th Avenue Yellowknife, NT X1A 1A4 jpellissey@wrrb.ca Tel: 867-873-5740 Fax: 867-873-5743	Lands and Resource Manager North Slave Métis Alliance Box 2301 Yellowknife, NT XIA 2P7 general@nsma.net christine.ziegler@nsma.net Tel: 867-873-6762 Fax: 867-669-7442
Lands and Environment Coordinator Yellowknives Dene First Nation PO Box 2514 Yellowknife, NT X1A 2P8 mthomas@ykdene.com Tel: 867-699-9002 Fax: 867-766-3497	
South Slave Region : Fort Providence	
Priscilla Canadien and Wilma Field (A/E.D.) Deh Gáh Got'îê First Nation rm@dehgahgotie.ca and ed@dehgahgotie.ca 867-669-7004 or 867-699-7013	Pearl Leishman – Executive Director (finance_pvmetis@northwestel.net) Clifford McLeod – President (fpmcpres@northwestel.net) Fort Providence Metis Council 867-669-4320
Priscilla Canadien (rm@dehgahgotie.ca) Fort Providence Resource Management Board 867-669-7004	

Northwest Territories

Wildlife Research Permit Application Form

Applicant: James Hodson and Marie Nietfeld, ENR, Wildlife Division

Address: Department of Environment and Natural Resources
Government of the Northwest Territories
P.O. Box 1320, Yellowknife, NT X1A 2L9
Phone: (867) 767-9237 ext. 53227 Fax: (867) 873-0293
Email: james_hodson@gov.nt.ca

Sponsor(s): Environment and Natural Resources, GNWT

Funding Sources: Environment and Natural Resources and Department of Infrastructure GNWT

Additional Licenses Required: NWT Wildlife Care Committee Permit

Project Title: Boreal caribou abundance surveys, boreal caribou collaring and wolf surveys: Tłı̨chǫ All-Season Road Project

Rationale:

Boreal Caribou Abundance Survey:

Boreal caribou are listed as Threatened under the Federal and Territorial Species at Risk Act (SARA), and are a culturally and ecologically important species in the North Slave region. Maintaining a self-sustaining population is a goal of the national and territorial boreal caribou recovery strategy (Environment Canada 2012, Conference of Management Authorities 2017).

The Tłı̨chǫ All-Season Road (TASR) represents a large linear development within the North Slave portion of the boreal caribou range and is in the early stages of construction. The TASR development may have negative effects on boreal caribou as a result of collective impacts of: direct habitat loss, sensory disturbance and related behavioral impacts, barriers to movement and fragmentation, increased predation success, and increased hunting pressure resulting from increased access (MVEIRB 2018). Measure 6-1, Part 2 from the Report of Environmental Assessment for the TASR project directed the GNWT to conduct monitoring to determine population trends, abundance and distribution of boreal caribou in the North Slave region (MVEIRB 2018).

There was limited baseline information on boreal caribou abundance and demographics in the North Slave region at the time of the environmental assessment of the TASR project. Recent GPS-collar data and classification surveys of caribou are providing information on distribution, habitat use, movements, population composition, calf recruitment, and survival (collected under Wildlife Research Permit WL5005580). The proposed caribou abundance survey will compliment these surveys in providing a density estimate for boreal caribou in the regional study area from which a population estimate may be derived. Trends from collar-based monitoring and population surveys will assist in determining the self-sustainability of caribou in the North Slave region, will provide valuable information for the development of the Wek'eezhii

Range Plan, and will be helpful in determining sustainable harvest levels for boreal caribou in the region (as required by Measure 6-2 of the Report of Environmental Assessment for the TASR project; MVEIRB 2018).

GPS-Collar Deployment:

GPS-collars are being used to monitor boreal caribou population trend, response to construction and operation of the TASR, and to trigger specific mitigation measures when caribou are in the vicinity of road construction activities. Collars provide information on location, habitat use, movements, and cow survival, and allow caribou to be located for composition/recruitment surveys. At least 10 collared females with home ranges in the vicinity of the road are needed in order to monitor the effects of construction and operation of the road. The 30 collars that are currently deployed on boreal caribou in the North Slave region allow for an assessment of population trends and impacts of natural and anthropogenic disturbances on caribou population dynamics. It is necessary to maintain a sample of 25-30 collared adult females to generate reliable estimates of adult female survival, calf recruitment and population trend. Additional GPS-collars will only be deployed this winter if there are mortalities of collared females between now and March 2020. Maintaining an adequate number of functional collars is important to the quantity and quality of information obtained and data that will be used to inform mitigation and management of caribou in relation to the TASR and the development of the Wek'eezhii Range Plan.

Wolf Population Density Survey:

Predation, mainly by wolves, is considered to be the main factor limiting boreal caribou populations. Although wolves tend to prey on boreal caribou opportunistically, increases in abundance of alternate prey associated with early succession habitat stages following fire or human disturbance may increase wolf densities, leading to increased pressure on caribou. In addition, linear developments such as roads and seismic lines, allow wolves to travel through habitats more easily and thus hunt more efficiently. As the density of linear developments increases, the more difficult it is for boreal caribou to avoid predation.

Baseline information on wolf densities, movements, and predation rates in the North Slave portion of the boreal caribou range and specifically in the vicinity of the TASR is generally lacking. Without this information, the potential impacts of the TASR on boreal caribou as a result of wolf predation or habitat avoidance cannot be fully ascertained. Wolf population density surveys in the North Slave area will be important for filling in knowledge gaps about wolf-prey dynamics and informing the development of the Wek'eezhii Range Plan. Measure 6-1, Part 2 of the Report of Environmental Assessment for the TASR project also directs the GNWT to monitor predator populations including densities, movements and predation rates.

Time Period: Between 15 February to 31 March 2020. Boreal caribou surveys are expected to take 7-10 days. Wolf surveys are expected to take 6-7 days. Boreal caribou collar deployment, if required, will take 1-2 days.

Location and Nearest Community: The boreal caribou abundance survey will be conducted primarily within the North Slave region in within the boreal caribou range, as identified in Figure 1. A small part of the study area for this survey extends into the South Slave region. Any collar deployments, if necessary, would occur in the North Slave region.

The wolf survey blocks will include both the TASR alignment, and a reference area which will straddle the boundary between the North Slave and South Slave administrative regions southeast of HWY 3 (Figure 2).

The nearest communities are Whati and Behchoko.

Species Studied: Boreal caribou and wolves are the target species. Moose, bison, and other wildlife will be recorded opportunistically.

Project Leader: James Hodson

Project Personnel:
James Hodson, GNWT-ENR
Marie Nietfeld, GNWT-ENR
Dean Cluff, GNWT-ENR
Stephan Goodman, GNWT-ENR
Bruno Croft, GNWT-ENR
Judy Williams, GNWT-ENR
Community-based observers (3)
Other staff as required

Objectives:

1. To conduct monitoring to determine the abundance of boreal caribou in the North Slave portion of the NT1 range (as per Measure 6-1, Part 2 of the Report of Environmental Assessment (MVEIRB 2018)).

2. Deploy additional GPS-collars on boreal caribou if required. Currently, there are 30 GPS-collared boreal caribou in the study area. In the event of mortality of GPS-collared animals or collar malfunction, additional GPS-collars may be deployed to maintain 30 functional collars within the North Slave Study Area.

3. To undertake monitoring to assess predator population densities, movements, and predation rates in the North Slave Study Area (as per Measure 6-1, Part 2 of the Report of Environmental Assessment (MVEIRB 2018)).

Methods:

Boreal Caribou Abundance Survey

The boreal caribou abundance survey will use a two-phase aerial survey method developed in Quebec (Courtois et al. 2003). The first phase will be conducted with two fixed-wing aircraft (Cessna 185 or similar), and the second phase with a helicopter (Astar 350A or similar), each with a crew of navigator, two observers, and pilot.

In phase 1, the fixed-wing aircrafts will fly over the study area along survey lines spaced 2 km apart at a survey speed of 150-185 km/h and altitude of 120-185 m. The study area which is 26,300 km2 in size (Figure 1) will be divided into blocks along a north--south axis to identify areas to be covered by each team each survey day. The survey will advance north to south within each block to reduce the likelihood of animals being counted twice. Observations of caribou, caribou track networks and cratering activity will be recorded on survey maps and GPS locations taken. Sightings of moose and bison and associated track networks will also be mapped and GPS locations taken, as will observations of unidentifiable cervid track networks.

A helicopter survey (phase 2) will be initiated the day after the start of fixed-wing survey and will target GPS locations of caribou sightings and track/cratering networks provided by fixed-wing crew from the previous day. Cervid track networks unidentifiable from fixed-wing will also be visited to confirm species. At each boreal caribou trail network, the helicopter will perform an intensive search to locate, count and classify caribou into calves, yearlings, adult females, and adult males based on antler size/shape, body size, and presence of a vulval patch. Photographs will be taken where group size and movement precludes an effective count/composition determination. Other groups of boreal caribou observed (not recorded in phase 1) will also be counted, classified, and location recorded.

The surveys will be completed without prior knowledge of the location of collared caribou within the study area. The presence of collared-caribou within groups will be noted during the helicopter counts. The proportion of collared caribou that were in the study area and that were detected by the helicopter survey crew will be used to calculate a detection correction factor (Courtois et al. 2003), and allow for a more accurate population estimate. Collared caribou that were missed by the phase 2 helicopter survey will be located at the end of the survey by helicopter using radio-telemetry to determine if they have a calf at heel.

All other observations of wildlife and wildlife sign will be recorded and GPS-location taken during both the fixed-wing aircraft and helicopter survey when possible.

The study area boundaries (Figure 1) for this survey are based on the boreal caribou range boundary in the east, the Wek'eezhii resource management area boundary in the west, and the northern end of Lac La Martre. Some adjustments were made to ensure that areas of known caribou occurrence were captured in the study area. These adjustments were based on collar locations between February 15 – March 15 for the years 2017-2019 from boreal caribou collared in the North Slave, Mackenzie and Dehcho North study areas. This resulted in the study area extending slightly into the South Slave administrative region.

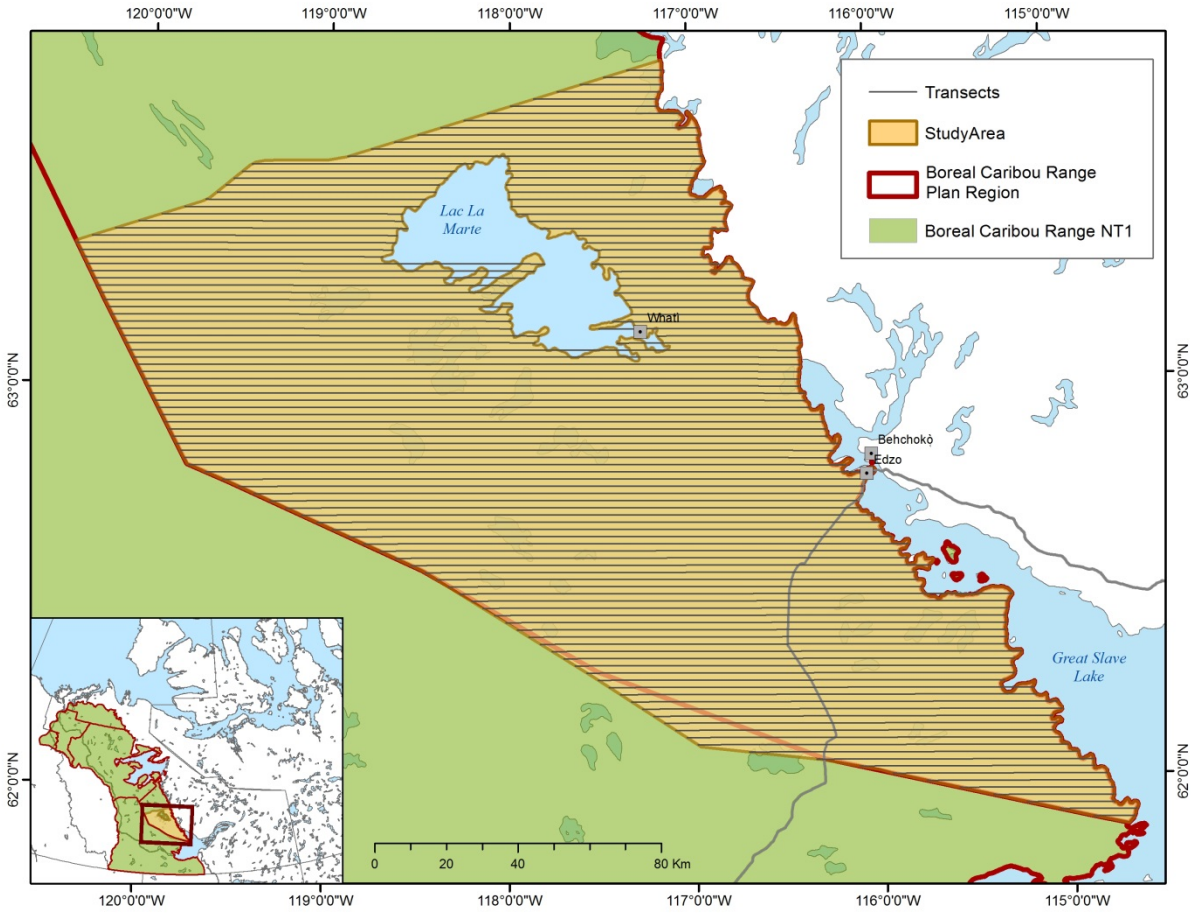

Figure 1. Boreal caribou abundance survey study area.

Boreal Caribou GPS-Collar Deployment

In the event of mortality of GPS-collared boreal caribou or collar malfunction over winter, additional GPS-collars may be deployed (dependent on number of collars lost) to maintain the target of 30 functional collars within the North Slave Study Area. The fixed-wing and helicopter surveys will assist in locating groups of caribou the study area, and may be used to guide deployment of further GPS-collars, if necessary. ENR will follow established protocols and the conditions of the Wildlife Care Committee permit for capture and handling of boreal caribou during collar deployment.

Capture and collaring of caribou will follow procedures used in previous boreal caribou collar deployment projects for the TASR project:

- a helicopter with a sliding door on the right hand (pilot) side will be used.
- caribou will be captured with a net-gun and restrained with leg hobbles
- blindfolds will be placed over the eyes to help calm the animal
- animals will be examined to assess condition and to check for capture-related injuries

- samples collected from each animal will include approximately 15 mL of blood from the cephalic vein in the foreleg, approximately 50 g of feces, and a sample of hair with roots taken from the rump
- winter tick hair loss will be documented and associated ticks collected
- score rump body condition (using elk body condition scoring guide)
- measure rump fat layer and muscle/fat thickness with portable ultrasound
- record age class based on tooth wear, struggle index, body condition score, capture location, chase and handling times, presence of calf, lactation status, chest and neck girth
- GPS-collars will be snuggly fitted around neck, allowing for an open-palmed had to move freely between neck and the collar material
- blood collected will be analyzed for genetic microsatellites and serum for stress and health assessment, and pregnancy rates
- fecal matter will be analyzed for parasites and genetic microsatellites

If boreal caribou die or need to be euthanized during collaring, additional samples to evaluate age, body condition, and parasites/disease will be collected for analysis. Every effort will be made to bring the meat to the nearest community.

Wolf Population Density Survey

A wolf population density survey will be conducted within the North Slave Study Area, as identified in Figure 2. Survey methods will follow those detailed in Serrouya et al. (2016). GWNT-ENR has conducted wolf surveys in the South Slave and Dehcho regions using these methods in previous years. The study area will be divided into two ~5000 km^2 blocks: one centered along the TASR alignment, the other located southeast of HWY3 to serve as a reference block (Figure 2). The survey will be conducted 3-6 days after a large snow event to allow for good track conditions, and will be flown by a fixed-winged aircraft. Transects will be set at 3 km intervals to detect wolf tracks, and will be surveyed with meandering lines. The aircraft may deviate from transect to loop over habitat features (lakes/wetland, road, seismic lines) to maximize track detection. Detected wolf track networks will be mapped, location recorded, and followed to locate wolf packs. Observed packs will be counted. Where packs cannot be located, numbers may be estimated based on track characteristics (e.g., amount of activity, track splitting, individual tracks). This survey will be conducted independently from the boreal caribou abundance survey.

Observations of boreal caribou, moose, bison, and wolf predation sites will also be counted and locations recorded, as will other wildlife and sign when possible.

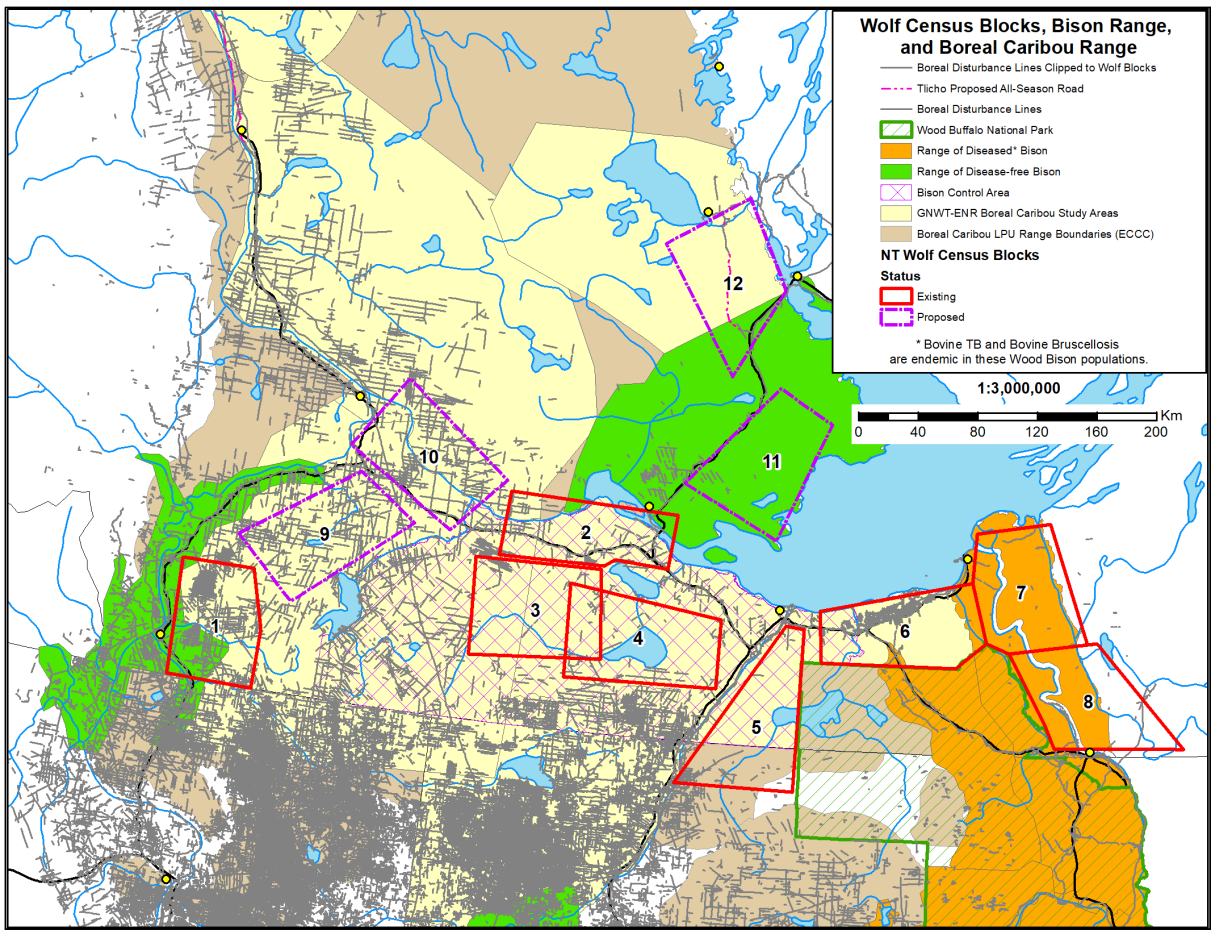

Figure 2. Proposed aerial wolf survey blocks (#11 and 12) to be surveyed as part of the Tłı̨chǫ All-Season Road Project Wildlife Management and Monitoring Plan. This map also shows study areas were aerial wolf surveys were completed in previous years (survey blocks 1-8 outlined in red).

Current Consultation:

The Wildlife Management and Monitoring Plan (WMMP) for the Tłı̨chǫ All-Season Road Project (TASR) underwent several rounds of public review and comment during the Environmental Assessment (EA) and post-EA land use permitting and water licencing phase. Comments were submitted by the Tłı̨chǫ Government, Wek'eezhii Renewable Resources Board (WRRB), Yellowknives Dene First Nation, and North Slave Metis Alliance. The WRRB completed a final review of the WMMP before it was approved by the Minister of ENR. The last version of the WMMP that the WRRB reviewed identified the requirement of GNWT to conduct monitoring to determine the abundance of boreal caribou in the North Slave portion of the NT1 range and monitoring to assess predator population densities, movements and predation rates (MVEIRB 2018). Methodology is provided in the current permit application.

Future Community Consultation:

The surveys proposed in this wildlife research permit application will be presented at the TASR corridor working group meeting in Behchoko on December 11, 2019.

GNWT-ENR and INF will include the results of the surveys and GPS-collar deployment (if undertaken) in the first annual WMMP report, and will present the results of the surveys to community representatives from Whati and Behchoko at a future meeting of the TASR corridor working group.

Opportunities for Local Participation:

ENR will work with the Tłı̨chǫ Government to hire community members (3) to participate in the boreal caribou abundance surveys. If there are not enough Tłı̨chǫ community members available, ENR will ask the NSMA, YKDFN or the WRRB to identify participants.

Management or Recovery Plans:

This project is part of the approved Wildlife Management and Monitoring Plan for the TASR.

References

Courtois, R., Gingras, A., Dussault, C., Breton, L. & Ouellet, J. P. 2003. An aerial survey technique for the forest-dwelling ecotype of woodland caribou, Rangifer tarandus caribou. The Canadian Field Naturalist, 117, 546–554.

Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou), Boreal population, in Canada. Environment Canada, Ottawa.

MVEIRB (Mackenzie Valley Environmental Impact Review Board). 2018. Report of Environmental Assessment and Reasons for Decision GNWT Tłı̨chǫ All-Season Road Project EA1617-01.

Serrouya, R. H. van Oort, C. DeMars, S. Boutin. 2016. Human footprint, habitat, wolves and boreal caribou population growth rates. Alberta Biodiversity Monitoring Institute, Edmonton, AB.