

**GNWT Response to:
GoC ECCC IR#1 (ID3)**

Topic

Erosion and Sediment Control

Comment

An Erosion and Sediment Control (ESC) Plan has not yet been provided for the Tłıchǫ All Season Road (the Project). This type of plan is essential to guide the Project-specific application/implementation of the Government of the Northwest Territories - Department of Transportation (the Proponent) ESC Manual (Appendix W, Project Description Report). ECCC requires this plan to assess whether Project-specific sediment and erosion controls will adequately protect the aquatic receiving environment. In the July 6, 2016 response to ECCC#6 on the Wek'èezhì Land and Water Board Online Review System (WLWB ORS), the Proponent stated that it will be using the ESC Manual as guidance in the development of an ESC Plan, including monitoring, reporting and adaptive management. The ESC Plan will be finalized by the contractor ensuring the contractor is fully aware and capable of the requirements in that plan, while the Proponent provides oversight and remains accountable. It is not clear when an ESC Plan will be drafted by the Proponent and finalized by the contractor. As a draft ESC plan has not yet been provided, Environment and Climate Change Canada (ECCC) is currently unable to assess this aspect of the Project.

Recommendation

ECCC requests that the Proponent provide a draft ESC Plan for review by parties during the environmental assessment (EA).

GNWT Response

An Erosion and Sediment Control (ESC) Plan is site specific; therefore, this Plan cannot be developed or finalized until the overall procurement process for the project has been completed. Procurement is not expected to be completed until after the results of the Environmental Assessment have been determined. Project Co (contractor responsible for construction) will be responsible for developing the ESC Plan. This Plan will be developed by following the Best Management Practices outlined in the [2013 DOT ESC Manual](#) and will be reviewed by the GNWT to ensure that the Plan meets the GNWT standards. The ESC Plan is something that is typically reviewed during the permitting phase and once final road designs are available. The ESC Plan will be available for review through the standard review process via WLWB's Online Review System. Regulators will have an opportunity to comment on the ESC Plan at that time. ECCC is encouraged to review the Project Co Erosion and Sediment Control Plan, reflecting the 2013 DOT Erosion and Sediment Control

Manual, during the regulatory phase of the environmental review process. The GNWT is committed to adequately protecting the aquatic receiving environment.

**GNWT Response to:
GoC ECCC IR#2 (ID4)**

Topic

Erosion and Sediment Control

Comment

As stated in the Proponent's July 6, 2016 response on the WLWB ORS to ECCC#1, the In-Field Water Analysis Plan will provide a monitoring plan for erosion and sediment controls as well as water quality. It will be updated to include grab samples to measure Total Suspended Solids (TSS) at select sites/time periods over the course of construction. ECCC notes that the In-Field Water Analysis Plan is a field sampling protocol, rather than a plan. Additionally, proposed TSS monitoring (as per the Proponent's response to ECCC#1) does not incorporate ECCC's recommended approach. TSS should be measured prior to, during, and following in-stream construction, using a site-specific TSS/turbidity regression curve. It is ECCC's understanding that the In-Field Water Analysis Plan will be updated to provide a comprehensive monitoring plan for erosion, sedimentation and water quality. However, it is not clear who is responsible for updating and finalizing the In-Field Water Analysis Plan and whether or not a draft version will be provided during the EA for review. ECCC requires an updated draft comprehensive monitoring plan to evaluate whether Project monitoring will be effective in detecting Project-related changes to the aquatic environment.

Recommendation

ECCC requests that the Proponent provide a draft comprehensive monitoring plan for erosion, sedimentation and water quality for review by parties during the EA.

GNWT Response

As mentioned in the ECCC IR#1 response, it is not possible to provide an ESC Plan during the Environmental Assessment. The ESC Plan is an adaptive management tool that will verify that sediment controls are working to control erosion and sediment. It is also not possible to provide a finalized In-Field Water Analysis Plan as this will only be available for review during the regulatory phase prior to construction. It is expected that Project Co will update the In-Field Water Analysis Plan and it will be reviewed by the GNWT to check for completeness prior to posting for review to the WLWB's Online Review System (ORS). ECCC is encouraged to review the Project Co In-Field Water Analysis Plan during the regulatory phase of the environmental review process. The GNWT is committed to adequately protecting the aquatic receiving environment.

The Proponent has already provided rationale indicating that the Project is not expected to cause significant changes to the aquatic environment (see ASR Chapter 3 [[PR#110](#)] for assessment of effects to fish habitat and PDR [[PR#7](#)] for aquatic environment); therefore, the Proponent is not committing to any long term monitoring.

**GNWT Response to:
GoC ECCC IR#3 (ID5)**

Topic

ESC – Baseline Monitoring

Comment

It is not clear whether a baseline monitoring dataset for water quality and sediment quality is available for this Project. This information is required to evaluate whether the existing baseline monitoring dataset, in combination with the proposed In-Field Water Analysis Plan, will be sufficient to permit detection of Project-related effects on water quality and sediment quality. Currently, insufficient information has been provided with respect to baseline monitoring for water quality and sediment quality.

Recommendation

ECCC requests that the Proponent clarify if water quality and sediment quality baseline data is currently available for this Project and if so, provide the information for review by parties.

GNWT Response

Water quality and sediment quality baseline data is not available for this Project. As indicated in [PR#24](#) and [PR#76](#), the GNWT believes that any potential impacts to water quality at the watercourse crossings can be monitored, detected and mitigated without conducting years of advanced baseline data collection; this would also apply to sediment quality. Geochemical testing of granular source material will ensure material used to construct the road will not be susceptible to acid rock drainage/metal leaching. A Spill Contingency Plan will be in place to prevent and contain any spills of deleterious substances such as fuel. Should a fuel spill occur and enter the water, baseline data would not provide any useful information as it is already expected that fuel parameters would not be identified in background samples. The GNWT's monitoring program will include collecting concurrent upstream and downstream samples from watercourse crossing locations and comparing the results. The GNWT is of the opinion that this monitoring program will more effectively detect project related effects than comparing downstream samples to baseline. The final In-Field Water Analysis Plan will be available for review and comment on the WLWB's ORS during the permitting phase.

**GNWT Response to:
GoC ECCC IR#4 (ID6)**

Topic

Adaptive Management

Comment

ECCC notes that the Proponent has provided insufficient information regarding adaptive management with respect to water quality, erosion and sedimentation. Adaptive management planning should be conducted in advance of construction and details provided in the relevant management plan(s). Additional adaptive management information is required to evaluate whether appropriate triggers and management responses will be in place to flag and address potential water quality issues, and potential impacts of erosion and/or sedimentation.

Recommendation

ECCC requests that the Proponent describe how adaptive management planning will be used to anticipate and address water quality issues and potential excursions from EA predictions with respect to water quality, erosion and sedimentation.

GNWT Response

Reporting procedures to address potential excursions from predictions will be incorporated into the In-Field Water Analysis Plan and Erosion and Sediment Control Plan, which will be available for review during the regulatory phase prior to construction. These reporting procedures would be an example of how adaptive management planning will be used to anticipate and address water quality, erosion and sedimentation issues. It is anticipated that there will be regular inspections of the mitigations by either Project Co or the GNWT and learnings will be documented and applied; these details will be further described in the approved plans.

As an example, step 23 of the current draft In-Field Water Analysis Plan indicates that if the downstream samples are more than 8 Nephelometric Turbidity Units higher than the upstream samples, then the INF-Environmental Affairs group will be immediately contacted for discussion and direction on further action. Adaptive management planning would entail clarifying what types of further action would be required should excessive levels of turbidity be encountered downstream. Both management plans require the input of Project Co; therefore, these final plans will only be available for review as a part of the WLWB's standard document review process for permits (i.e., posting to ORS).

The GNWT commits to working with ECCC and other stakeholders during the water licensing process to ensure that water quality and erosion and sedimentation plans

include adaptive management components. Once these plans are approved, the GNWT expects that reporting on the use of adaptive management will be required as part of the water licence for the Project.

**GNWT Response to:
GoC ECCC IR#7 (ID9)**

Topic

Boreal Caribou - Baseline Information - Boreal Caribou meeting summary (PR#107) -GNWT meeting minutes and post-meeting response: Boreal caribou population health (PR#99) - Developer's Adequacy Statement Response (PR#110), Section 4.7 - SARA receipt letter to MVEIRB (PR#34)

Comment

ECCC previously expressed concerns related to the lack of Boreal Caribou related baseline information to inform the EA during the Boreal Caribou meeting with Wek'èezhì Renewable Resources Board and the Proponent (November 2016, PR#99). Consistent with ECCC's Species at Risk Act S. 79(1) receipt letter to the Mackenzie Valley Environmental Impact Review Board (MVEIRB), ECCC maintains that the best available information should be used while assessing impacts to species at risk. The Proponent has recognized information gaps related to Boreal Caribou abundance, distribution and habitat use in the North Slave Region during meetings with ECCC (November 2016, PR#99). The Proponent advised that aerial surveys in the North Slave Region were conducted for bison (Winter 2016) and moose (November 2016); these surveys could include observations of Boreal Caribou. Also, a Boreal Caribou collaring program was initiated in March 2017 in response to filling information gaps within the North Slave Region. None of the results of aerial surveys nor any preliminary results of the collaring program were presented in the Adequacy Statement Response.

Recommendation

ECCC requests that the Proponent provide: a) a map of Boreal Caribou observations during the bison surveys conducted in the winter of 2016 and a map of Boreal Caribou observations during the moose surveys conducted in November 2016. Each map should include the area surveyed (transects and study area), the proposed Project footprint, the Project zone of influence and disturbed habitat (natural and anthropogenic); b) a map of the preliminary results of the Boreal Caribou collaring program in the North Slave Region. This map should include observations, deployment locations and movements of caribou in relation to the proposed Project footprint, the Project zone of influence and disturbed habitat (natural and anthropogenic). The temporal scale of the movements should be appropriate for the species and grouped by key periods in the species' life cycle (e.g. calving, post-calving, rutting and winter); and c) regular updates of b) to be added to the MVEIRB registry to inform this EA as it progresses.

GNWT Response

The Government of the Northwest Territories (GNWT) - Environment and Natural Resources (ENR) conducted an aerial bison survey along the proposed alignment for the Tłıchǰ All Season Road (TASR) on March 5, 2016. Light conditions during the survey were good along the southern end of the road alignment, but deteriorated in the afternoon making it hard to discern tracks north of the Duport River. There were 15 sightings of boreal caribou tracks along the survey route (**Figure 1**).

Aerial moose surveys were planned in the North Slave region in November 2016, but surveys within the portion of the study area that overlaps with the TASR alignment were not completed due to poor weather conditions.

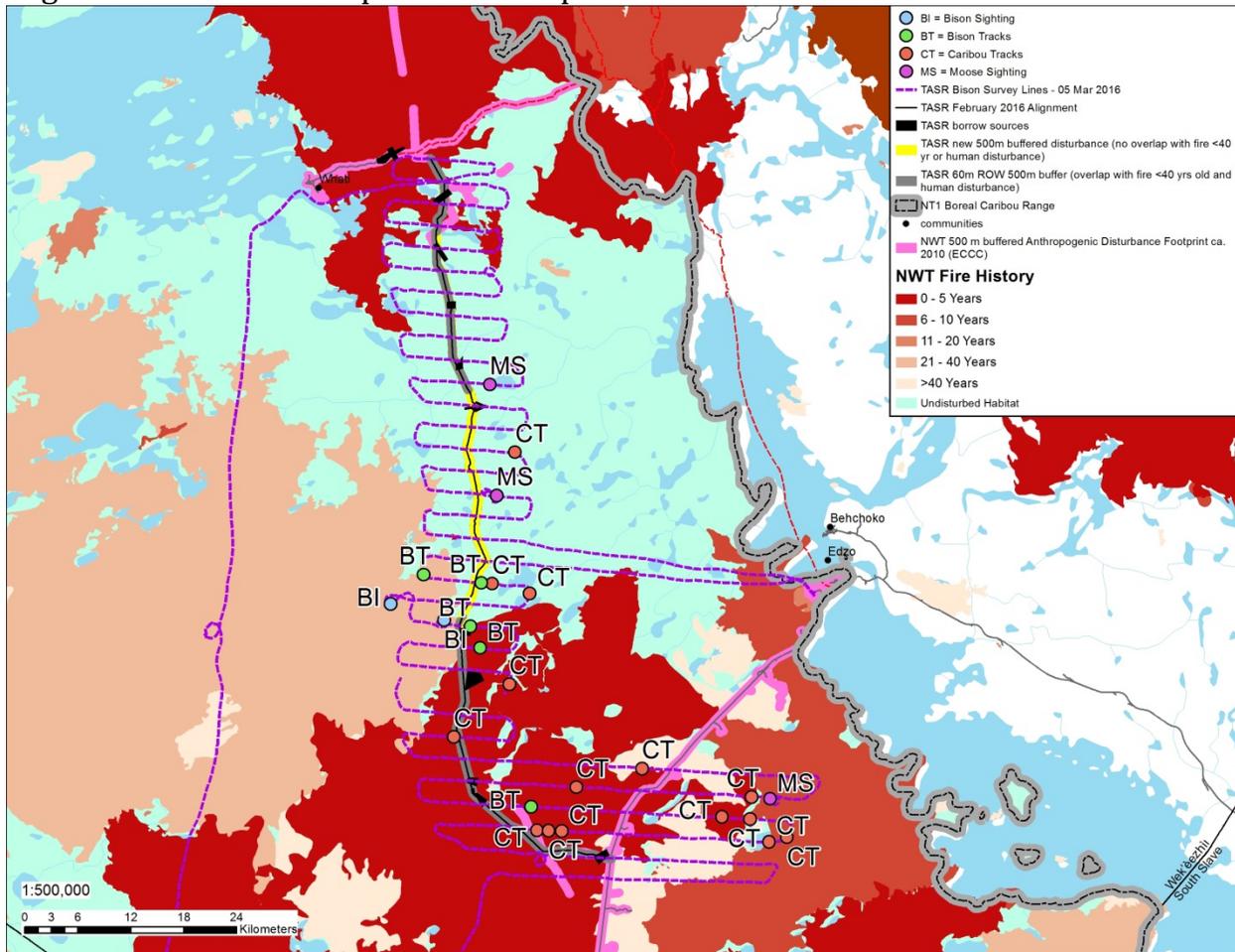


Figure 1. Observations of boreal caribou tracks, bison sightings and bison tracks, and moose sightings from an aerial bison survey conducted along the proposed TASR alignment on March 5, 2016. Moose tracks were not recorded.

In March of 2017, ENR deployed 20 GPS/Iridium collars on female boreal caribou in the Wek'èezhì / North Slave region, within a study area centered around the proposed TASR Alignment. A fixed-wing reconnaissance survey was conducted

prior to collaring. The objective of the reconnaissance survey was to establish where collars should be deployed based on the relative distribution and density of caribou in the study area.

A Bush Hawk (C-GROH; Hoarfrost River Huskies) operating out of Yellowknife and Whatı, flew 44.2 hours on survey between the 7th and 12th of March 2017. East-west transect lines were spaced approximately 4 km apart. Survey height was 500 feet above ground level (agl) and survey speed ranged between 80 and 100 knots depending on the terrain being covered (faster over burnt areas and slower over areas of dense trees). Temperatures were cold (between -28 and -37 deg C) but skies were clear and sunny for the duration of the survey. Lighting conditions to detect tracks were ideal. The survey crew consisted of a pilot, navigator and two back seat observers. Observers were from the ENR Wildlife Division and from the communities of Behchokǫ and Whatı. All observations of caribou and caribou tracks were recorded as well as observations of any other large mammal species (**Figure 2**). A total of 178 caribou were recorded during the 5 survey days, equivalent to an overall density of 0.8 caribou/100 km² within the 22,000 km² study area. This should be considered a minimum estimate of caribou abundance and density in the study area, as there was no correction factor applied for caribou sightability. Given that boreal caribou are difficult to see in areas of dense vegetation or closed canopy forest it is likely that individuals were missed.

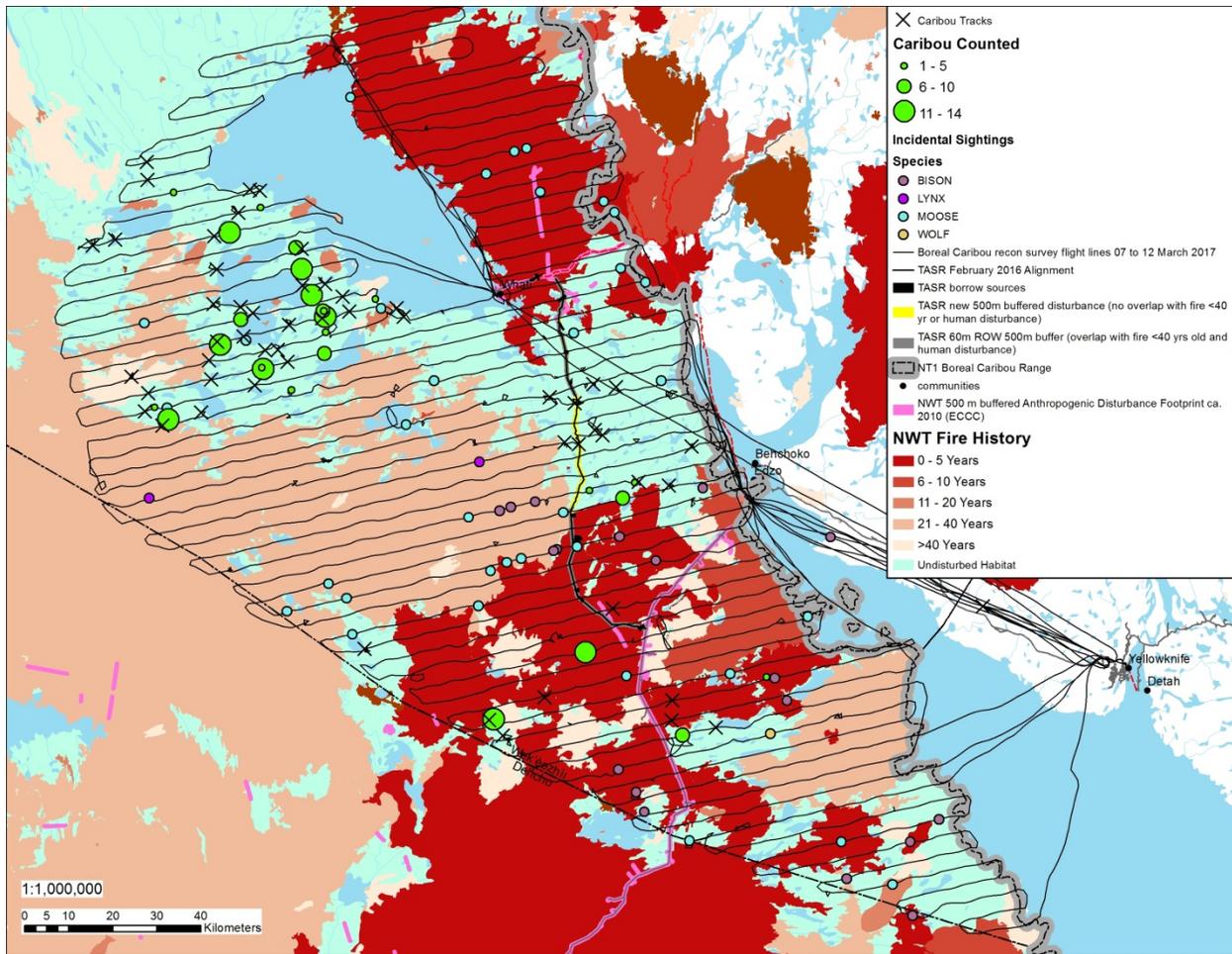


Figure 2. Boreal caribou sightings (symbol sizes are proportional to number of caribou counted) and boreal caribou tracks observed on aerial reconnaissance flights conducted March 7 – 12, 2017 within the Wek'èzhì resource management area. Incidental sightings of bison, lynx, moose and wolf were also recorded.

The primary focus of captures was to deploy collars in the area of the proposed TASR corridor. Based on the results from the reconnaissance survey, ENR attempted to deploy 15 collars along the road and in the southern portion of the study area and another 10 collars west of Lac La Martre, where most of the caribou observations were recorded.

A total of 20 Telonics TGW-4677-4 GPS/Iridium units weighing ~1100 grams each were deployed on female boreal caribou between 14-22 March 2017. Ten collars were deployed west of Lac La Martre, 3 immediately adjacent to the TASR road and another 7 in the southern portion of the study area (**Figure 3**). Collars were programmed with a “geofence” so that the location of collar fixes would increase from 3 times per day to once every hour when caribou are within 10 km of the proposed TASR alignment, to allow for a finer scale assessment of the behavioural

response of boreal caribou to the construction and operation of the TASR, and to traffic along the existing highway. Capture crews were able to obtain blood samples from 19 of the 20 collared caribou, and 17 of the 19 cows (89%) were pregnant based on blood serum analysis.

As collars were only deployed after March 14, 2017, it is only currently possible to provide maps of boreal caribou movements for the late winter (16 Mar – 4 Apr; **Figure 3**), pre-calving (5 Apr – 30 Apr; **Figure 4**), and calving (30 Apr – 6 Jun; **Figure 5**) activity periods. These activity periods are based on movement analyses conducted by Nagy (2011) and are reported in Table 6 of the Species Status Report for Boreal Caribou (NWT SARC 2012; copied below). Activity periods for the Southern NWT were used in creating **Figures 3-5**. It should be noted that although movements for the “calving” period are displayed in **Figure 5**, the long linear movements displayed by some individuals suggests that not all collared females calved during this period. It is possible that calving in 2017 was delayed relative to the periods defined by Nagy (2011). These figures also display the current fire and human disturbance footprint (with 500 m buffer), undisturbed habitat, and the proposed TASR corridor and potential borrow sources. Between March 16 and June 06, 2017, there were four instances where collared caribou crossed the TASR alignment (**Figures 3-5**). ENR can provide further maps for the summer, breeding, fall and winter periods as the environmental assessment for the TASR project progresses, if requested.

Table 6. Movement rates by activity period for boreal caribou in the southern study areas (Dehcho-north, Dehcho-south, South Slave, and Cameron Hills) and northern study areas (Gwich'in-north, Gwich'in-south, and Sahtu) in 1993-2009 (Nagy 2011; Nagy *et al.* *In prep-b*).

Activity period	Boreal caribou study areas					
	Southern			Northern		
	Dates	Daily mean (km)	Stdev	Dates	Daily mean (km)	Stdev
Pre-calving, calving, post-calving	5 Apr - 6 Jun	2.95	4.1	25 Apr - 8 Jun	3.08	4
Calving	30 Apr - 6 Jun			29 Apr - 8 Jun		
Peak calving	7 May - 21 May			13 May - 27 May		
Early/mid summer	7 Jun - 12 Aug	4.23	4	9 Jun - 23 Jul	3.16	2.71
Mid/late summer	13 Aug - 12 Sep	4.63	3.62	24 Jul - 11 Sep	3.62	2.76
Breeding	13 Sep - 20 Oct	4.63	4.52	12 Sep - 22 Oct	3.67	3.06
Peak breeding	20 Sep - 4 Oct			26 Sep - 10 Oct		
Late fall	21 Oct - 30 Nov	5.03	4.27	23 Oct - 30 Nov	4.89	4.22
Early winter	1 Dec - 25 Jan	3.25	3.12	1 Dec - 20 Jan	3.03	2.84
Midwinter	26 Jan - 15 Mar	2.22	2.55	21 Jan - 10 Mar	1.71	2.12
Late winter	16 Mar - 4 Apr	1.44	1.55	11 Mar - 24 Apr	1.12	1.64

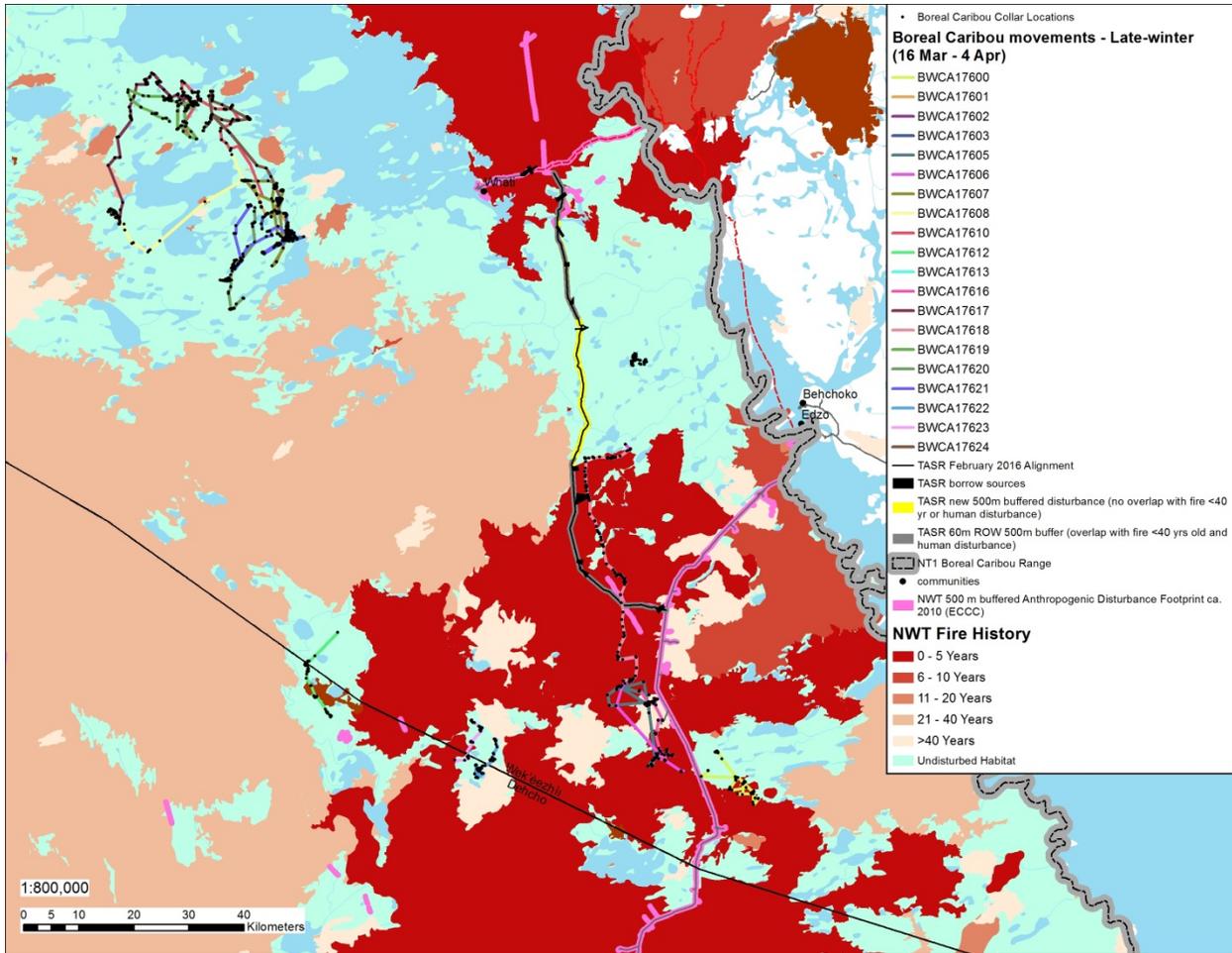


Figure 3. Late-winter (16 March – 4 April) movements of 20 boreal woodland caribou fitted with GPS collars between March 14-22, 2017. The star symbols represent the first location obtained following collar deployment.

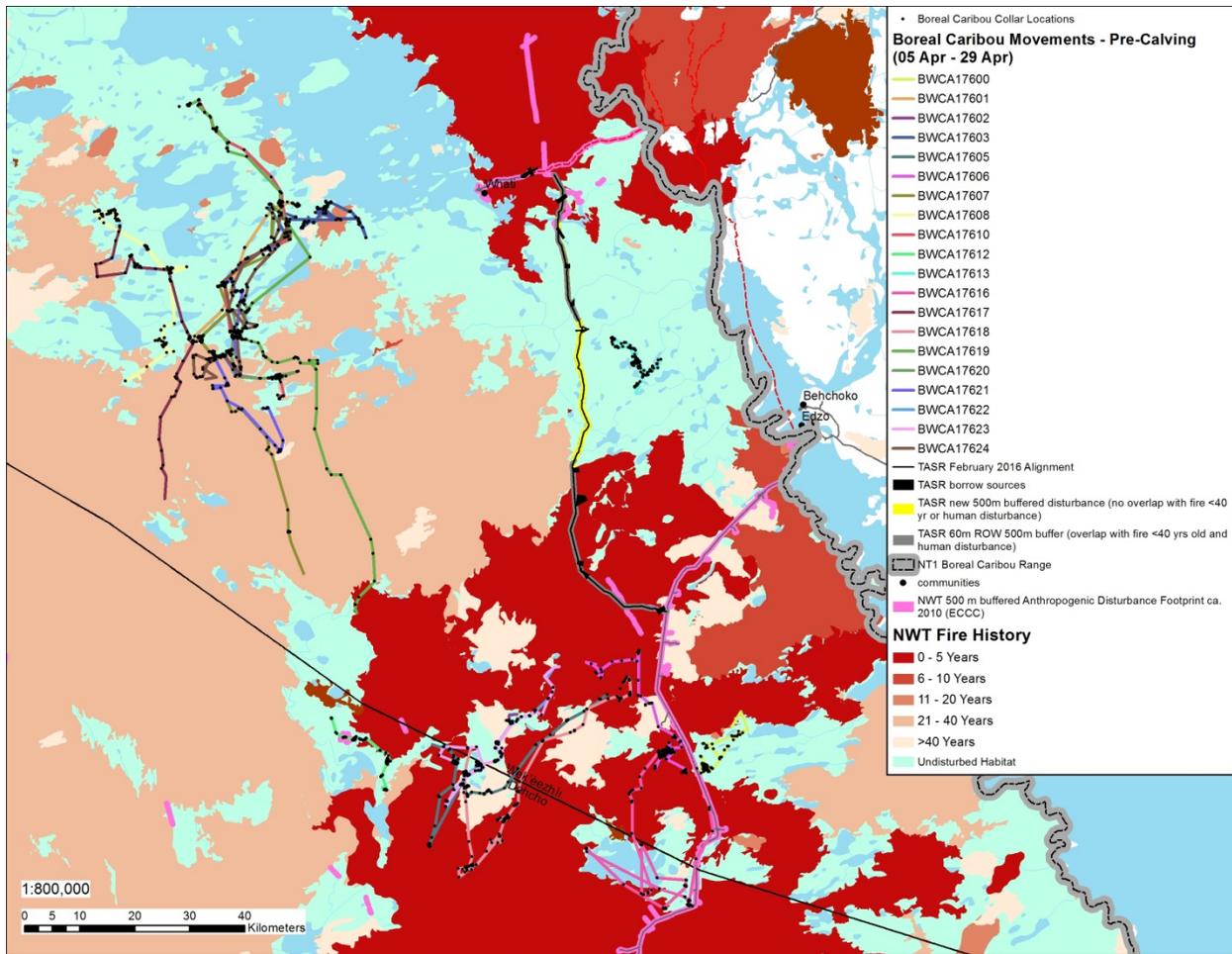


Figure 4. Pre-calving (5 April – 30 April) movements of 20 boreal woodland caribou fitted with GPS collars between March 14-22, 2017.

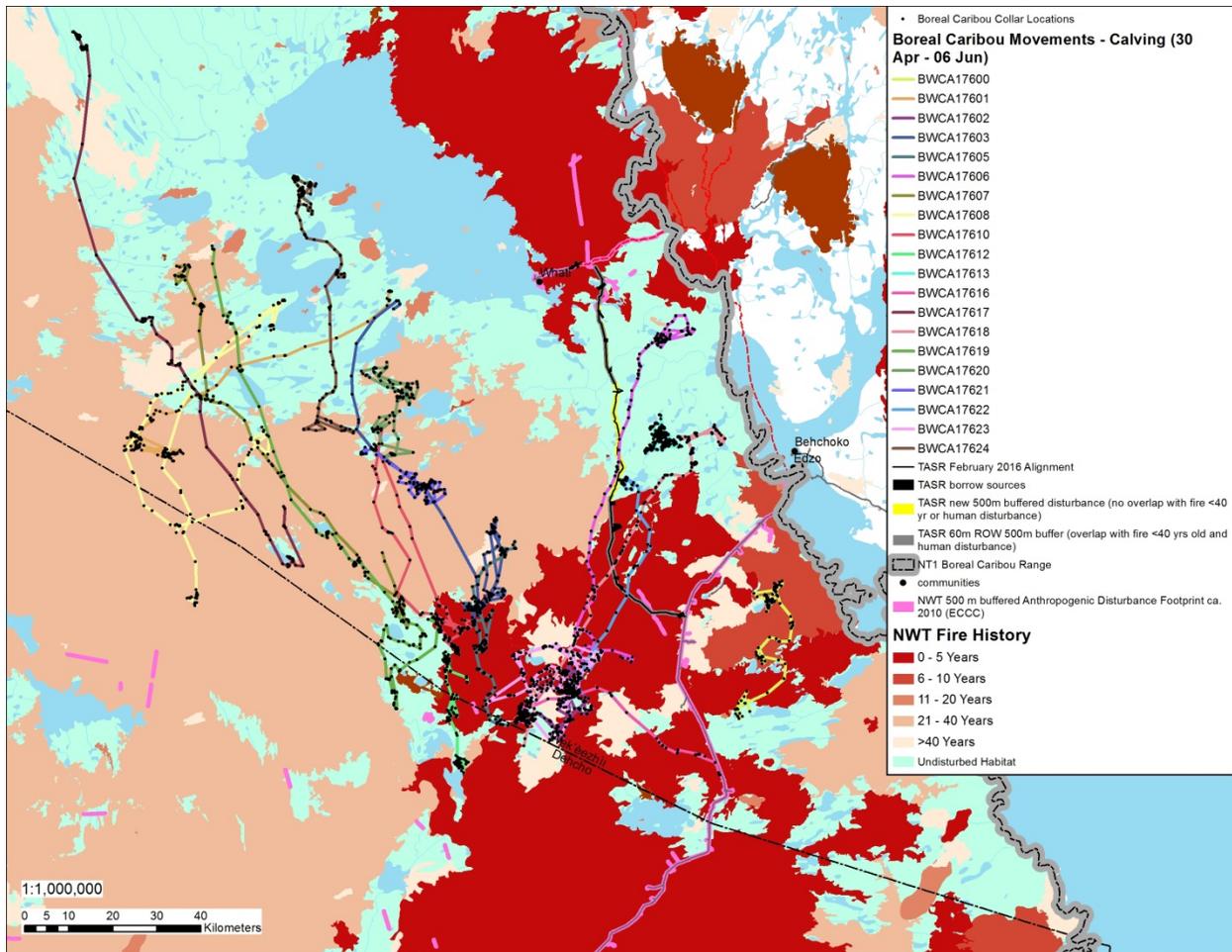


Figure 5. Calving (30 April – 06 June) movements of 20 boreal woodland caribou fitted with GPS collars between March 14-22, 2017.

References

- Nagy JAS. 2011. Use of Space by Caribou in Northern Canada. PhD Dissertation, University of Alberta, Edmonton, AB, 164 pp.
- SARC (NWT Species at Risk Committee). 2012. Species Status Report for Boreal Caribou (*Rangifer tarandus caribou*) in the Northwest Territories. Species at Risk Committee, Yellowknife, NT.

**GNWT Response to:
GoC ECCC IR#11 (ID13)**

Topic

WMMP - SARA Bird Monitoring

Comment

The Proponent recognizes the use of anthropogenic structures and habitats by some avian species at risk. However, the WMMP does not provide specific mitigation or monitoring measures to minimize disturbance and avoid the destruction of their nest and eggs at quarries and borrow pits. Disturbance at these sites presents higher risks for Bank Swallow and Common Nighthawk (both avian species at risk VCs) related to potential nest abandonment and destruction of nests/eggs. The general bird mitigation measures in the WMMP focus primarily on land clearing activities during the construction phase. Additional mitigation measures should be developed for quarries and borrow pits.

Recommendation

ECCC requests that the Proponent provide specific measures that will be used to minimize disturbance to and avoid the destruction of the nests and eggs of migratory birds, in particular Bank Swallow and Common Nighthawk, at quarries and borrow pits created by the proposed Project.

GNWT Response

As a general note, the WMMP will be finalized and available for review during permitting. It will also involve a refinement of the details that were provided in the first draft based on the results of the environmental assessment. It is expected that environmental monitors will be hired during construction and will be conducting regular inspections. Effectively managing pits and quarries to ensure there is minimal disturbance of Bank Swallow and Common Nighthawk nests and eggs is a current and ongoing mitigation for all the GNWT highway operations. These same mitigations will be applied to the TASR's construction and operations phases. The monitoring of pit run borrow sources and stockpile locations occurs on a regular basis as part of highway inspections. INF will undertake the same mitigation measures, such as maintaining a bank slope of less than 70% on all quarry stockpiles, overburden or exposed soil banks in an effort to prevent creating a nesting attractant for Bank Swallow. INF currently applies the mitigation and advice provided by the attached ECCC brochure *Bank Swallow (Riparia riparia) in sandpits and quarries*. (No de cat.: CW66-522/2015F-PDF; ISBN 978-0-660-23303-1) to all INF pits and quarries. INF will continue to engage with ECCC with respect to migratory birds that are listed under SARA and protected under the *Migratory Birds Convention Act*.

**GNWT Response to:
GoC ECCC IR#12 (ID14)**

Topic

Wildlife Management and Monitoring Plan - Project Description Report (PR#7),
Appendix M: Wildlife Management and Monitoring Plan

Comment

The current version of the WMMP was provided during the WLWB preliminary screening. This plan summarizes the Proponent's proposed wildlife mitigation and monitoring measures. ECCC notes that some sections of this document are incomplete and that some sections will likely be updated to reflect reviewer comments and Proponent's commitments during the screening and EA. It is unclear when a revised WMMP will be provided during this process.

Recommendation

ECCC requests that the Proponent provide information on when a revised version of the WMMP will be provided during this EA.

GNWT Response

The Government of the Northwest Territories (GNWT) is working on drafting a Wildlife Effects Monitoring Program (WEMP) and updating the draft Wildlife and Wildlife Habitat Protection Plan (WWHPP) ([Appendix M](#) of the Project Description Report). Together, the WEMP and WWHPP constitute a Wildlife Management and Monitoring Plan (WMMP). A draft WEMP will be provided prior to the technical sessions and a revised draft WWHPP will be provided to reviewers prior to the public hearing.

Did you know?

The Bank Swallow is a declining migratory bird species that has lost 98% of its Canadian population over the last 40 years.

This insectivorous bird is particularly drawn to sandpits, quarries, stock piles of sand and soil, and sandy banks along water bodies and roads. **Bank Swallows generally dig their burrows in near-vertical banks (slopes of at least 70 degrees) that are more than 2 metres high.** In Quebec, Bank Swallows typically use their nesting sites from mid-April to late August. This is the sensitive period during which the risk of harming the birds is especially high. The absence of the birds in August is a good indicator that the breeding season is over.



The best way to minimize the possibility of contravening the *Migratory Birds Convention Act, 1994* and its regulations is to fully understand the impact that your activities could have on migratory birds and their nests and eggs and to take reasonable precautions and appropriate avoidance measures. In fact, under the Act and its regulations, it is an offence for anyone to kill, hunt, capture, injure or harass a migratory bird or to damage, destroy, remove or disturb its nest or eggs without a permit.

The sand and gravel industry can play a major role in the conservation of Bank Swallows by adopting operating practices that do not harm the species.

www.ec.gc.ca/paom-itmb

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What you can do

Before the breeding season (generally before mid-April)

- Prevent Bank Swallows from nesting in areas where operations will be carried out during the breeding season by contouring your piles to have a slope of less than 70 degrees and by creating suitable nesting habitat in inactive areas with vertical faces of at least 70 degrees.
- Install scaring devices to deter Bank Swallows from establishing colonies in active areas.

During the breeding season (generally from mid-April to late August)

- Avoid intense activity near the colony. You can prevent disturbance by marking off a protective buffer zone around the colony and notifying all employees of its existence.
- Generally speaking, there is a particularly high risk of disturbing nesting when noisy activities or vibrations occur within 50 metres of the bird colony. This protective radius is only a rough guideline and must be adjusted after an assessment of the risk factors. In some cases, where operating activities are intense, a larger protective radius may be needed to minimize the risk of disturbance.
- Spend a few minutes flattening vertical faces in active areas at the end of the day to prevent Bank Swallows from digging burrows in them overnight or on weekends.
- Stop excavation work if Bank Swallows colonize a bank in an active area. Activities cannot resume until the birds leave at the end of the breeding period.
- Do not use scaring devices once the colony is established as they may interfere with ongoing Bank Swallow breeding activities.

After the breeding season (generally after late August)

- If a nesting site needs to be excavated after the birds leave, compensate by providing an alternate site that can support nesting in the following year. To be suitable for nesting, the bank must have a slope of at least 70 degrees.

Notify your employees of the restrictions and techniques that can be implemented to prevent detrimental effects on the species.

Thank you for participating in the conservation of Bank Swallows.



Environnement Canada

Environment Canada



L'HIRONDELLE DE RIVAGE

(Riparia riparia)

dans les sablières et les gravières



L'Hirondelle de rivage est un oiseau migrateur en déclin dont la population canadienne a chuté de 98 % au cours des 40 dernières années.

Cet oiseau insectivore est très attiré par les sablières et les gravières, les amas de sable et de terre, et les talus sablonneux en bordure des plans d'eau et des chemins. **En général, les Hirondelles de rivage creusent leur terrier dans des fronts de talus presque verticaux (pente d'au moins 70 degrés) à plus de 2 m de hauteur.** Au Québec, les Hirondelles de rivage utilisent généralement les sites de nidification de la mi-avril à la fin d'août. Il s'agit de la période sensible durant laquelle le risque de nuire aux oiseaux est particulièrement élevé. L'absence des oiseaux en août est un bon indicateur de la fin de la nidification.



La meilleure approche afin de réduire au minimum la possibilité d'enfreindre la *Loi de 1994 sur la convention concernant les oiseaux migrateurs* et ses règlements consiste à bien comprendre le risque d'incidence potentiel de vos activités sur les oiseaux migrateurs, leurs nids et leurs œufs, et à prendre des précautions raisonnables et des mesures d'évitement appropriées. En effet, selon la Loi et ses règlements, quiconque tue, chasse, capture, blesse ou harcèle un oiseau migrateur ou endommage, détruit, enlève ou dérange leurs nids ou leurs œufs sans permis commet un délit.

L'industrie des sablières et des gravières peut jouer un rôle important dans la conservation de l'Hirondelle de rivage en adoptant des pratiques d'exploitation qui ne nuisent pas à l'espèce.

www.ec.gc.ca/paom-itmb

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Also available in English

Avant la période de nidification (en général avant la mi-avril)

- Évitez que des Hirondelles de rivage nichent dans les zones qui seront exploitées durant la période de nidification en profilant vos talus avec une pente inférieure à 70 degrés, et en créant des zones propices à la nidification dans des zones non exploitées, avec des talus dont la pente est d'au moins 70 degrés.
- Installez des dispositifs d'effarouchement pour dissuader les Hirondelles de rivage d'établir une colonie dans les zones exploitées.

Pendant la période de nidification (en général de la mi-avril à la fin d'août)

- Évitez les activités intenses à proximité de la colonie. Vous pouvez empêcher le dérangement en délimitant une zone de protection autour de la colonie et en informant tous les employés de l'existence de cette zone.
- En général, le risque de déranger la nidification est particulièrement élevé si des activités bruyantes ou des vibrations ont lieu à moins de 50 m de la colonie d'oiseaux. Cette distance de protection ne constitue qu'un ordre de grandeur et doit être ajustée après évaluation des facteurs de risque. Dans certains cas, lorsque les activités d'exploitation sont intenses, une plus grande distance de protection peut être nécessaire afin de réduire au minimum le risque de dérangement.
- Prendre quelques minutes à la fin de la journée pour supprimer les talus verticaux afin d'éviter que des Hirondelles de rivage ne commencent à creuser des nids durant la nuit ou durant les fins de semaine.
- Cessez toute activité d'excavation si des Hirondelles de rivage colonisent un talus dans une zone exploitée, et ce jusqu'au départ des hirondelles à la fin de la période de nidification.
- N'utilisez pas de dispositifs d'effarouchement une fois la colonie établie, tant et aussi longtemps que cela peut interférer avec les activités courantes de nidification des Hirondelles de rivage.

Après la période de nidification (en général après la fin d'août)

- Si un site de nidification doit être exploité après le départ des oiseaux, en guise de compensation, voyez à fournir un site de remplacement pouvant soutenir la nidification l'année suivante. Pour être propice à la nidification, le talus doit avoir une pente d'au moins 70 degrés.

Informez vos employés des interdictions et des techniques qui peuvent être mises en œuvre pour éviter les effets néfastes sur l'espèce.

Merci de participer à la conservation de l'Hirondelle de rivage.

BANK SWALLOW (*Riparia riparia*)

in sandpits and quarries

